Himalaya Capital Exchange
ICO White Paper

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Himalaya Blockchain
&
Cryptocurrencies
Summit
India

Chief Guest Nick Szabo

Himalaya Labs - White Paper

A Smart Contract Platform for Companies to issue Initial Security Token Offerings

A Peer-to-Peer alternative to IPOs without the traditional stock exchanges or the investment banks

Author Arifa Khan, Founder & CEO, Himalaya Labs - 25 May 2018

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Greetings from the CEO

2018 marks the end of a most eventful decade in the history of money, wealth and economics. From the 2008 banks' freeze triggered by the collapse of gigantic institutions to the current crisis of confidence in banks, what a contrast we have seen in the past decade. Simultaneous with the disintegration of the solidity that banking represented, another more nimble, diffusive, amorphous, formless and pervasive technology started to make its presence felt - bitcoin.

Going by its sheer magnitude and impact on the established order (touching $0.8 trillion at its highs as of end 2017), we can deduce that cryptocurrencies are profound. So much so that banks had to admit in their annual reports in March 2018 for the first time that these new technologies pose a risk to their business models, and bank CEOs made public statements that cryptocurrencies are to be strictly shunned and guarded with intransigence. The year 2017 had proven an *annus mirabilis* for many crypto fans, and a *betenoir* for banks. It is a scarily unsettling time for some representing and guarding the old world, and at the same time a windfall and a never before seen promise for many who are ready to embrace the new world!

Opportunities to create whole new industries present themselves very rarely in history. The internet and Smartphone started this revolution. Now cryptocurrencies are taking humanity to another dimension. Thanks to bitcoin, and its underlying cryptographic technologies, we are faced with the possibility of redefining important large institutions such as investment banks and stock exchanges. If the last few decades hadn't already put the power back in the hands of technocrats, wielding it from capitalists and industrialists, such a clear tipping point is upon us right now. This is another rare chance at creating the future, disturbing the equilibrium of power, and redistributing the world's wealth. We would be unwise to miss it!

A moment of recognition that the next wave of power brokers may be let loose; that the shakeup of status-quo is imminent; that the stakes may well be with those who are the quickest to decipher the crypto wonderland, and to invest it with their time, intellect and capital!
For swathes of technophiles in finance, has there been a more exciting time than now?
For hordes of opportunists, could they hope for a more propitious time?

This moment belongs to the crypto adventurer!

The question to ponder is not "Will crypto be the future?"
The question to ponder is "What will YOU be in the new crypto economy?"
The chorus on everyone's lips is … What is our place in this new landscape?
We cannot afford to be unprepared for this new world.
We ought to grab opportunities to play a constructive and pioneering role in phasing out the old world, and paving way for a new.

We are one of the few base layer infrastructure builders like ethereum of this new crypto economy, in the $87 trillion gigantic capital markets. To start with, we are creating the NASDAQ of tomorrow, fully run on smart contracts! A public electronic platform where any company from any industry and any geography can raise capital in a matter of seconds from global investors, by issuing shares or bonds as tokens. No investment banks, and no IPO fees to be paid.

Our vision is Unstoppable Capital!

A global borderless marketplace for capital!

Come create history with us!

Himalaya Capital Exchange aims to build a Crypto economic network/platform to combine the best features of the first two internet eras: community-governed, decentralised networks that put the power back in the hands of the people.

We at Himalaya Labs are the category pioneers. We presented the world's first concept paper on decentralising capital markets in June 2017. In keeping with our Himalayan ambition to fete exalted geniuses, we hosted The Himalaya Crypto Summit 25-26 May 2018 at Taj Mahal Place Mumbai, where we launched Himalaya ICO White Paper with Nick Szabo participating.

This is your personal invitation to participate in the Himalaya Pre-ICO and become a change maker.

Arifa Khan,
CEO, Himalaya Labs

Synopsis

The natural quest of human beings to improve their quality of life, and achieve economic freedom has not yet been fulfilled by the successive technological revolutions (the miniaturisation of computing, the Internet, smartphone, platforms such as Apple, Google, Facebook), the recent rise of fintech, and even the advent of bitcoin and cryptocurrencies. Inequalities have risen worldwide, and democratic principles have eroded steadily, under the influence of greedy rulers, gatekeepers and policy makers in an increasing number of countries. In a well-researched conundrum labelled the "Allocation Puzzle" (Gourinchas and Jeanne (2013)), despite high savings rates and the high returns on capital in fast growing emerging economies, genuine small and medium enterprises in poorer economies have consistently failed to attract funding, grow, and prosper. The gatekeepers of capital markets are often to blame, with their propensity to extract high rents and their utter disregard for principles of capital efficiency. These self-aggrandising actors stand at the precipices of moral hazard, having slung Wall Street and the world to the brink of an abyss in 2008, and having no qualms about continuing to press for regular bail-outs and bail-ins funded by the public exchequer while benefiting crony capitalists.

The global financial system is characterised by substantial intermediation fees charged by investment banks to both investors and investees on the occasion of an IPO; this represents a frightful misallocation of capital that hampers productive growth. The humble small entrepreneur finds himself dungeoned by this heavily guarded and intermediated world, an impediment to the achievement of worldwide equality, financial and social inclusion. Financial intermediaries who had acquired prominence on account of their multidimensional roles of trust-building,match-making, price-optimising and traversing the complex labyrinthine laws of the land throughout the past century, are no longer performing these functions fairly, and without fear or favour. They have become mere barriers to the new class of inventors disrupting status quo and mere costs to be added to simple standardised processes of fund raising, which crowdfunding platforms would have rendered completely irrelevant by now but for regulation. The resulting misallocation of capital on account of perverse incentives of these intermediaries is pervasive. The economic consequences of sequestering deserving entrepreneurs out of these guarded castles of capital are all too pernicious.

The winners of this past decade, centralised digital platforms à la Facebook contribute their own share of societal maladies. Network effects that seem to be altruistic in nature at the beginning of a platform's lifecycle, start becoming channeled unilaterally for the platform owner's benefits in later stages. In a bait and switch, the incentives for cooperation morph into competition, arbitrary rent seeking and censorship. They align incentives with those of users at the beginning of the life cycle before shifting the equilibrium and the business strategy so that the incentives of platform-owners and users eventually diverge, and platform users become mere commodities, to be exploited for the furtherance of the platform owner's objectives.The incentives become structurally misaligned once a critical mass, synonymous with oligopolistic power, is attained. Platforms become then no different from the old centralised world, only worse now on account of monopoly status.

Moving away from purely centralised to decentralised type of networks would help overcome the aforementioned pitfalls of capitalism, pervasive centralisation, and rescue national resources from being squandered on financial profligacy.

That marvel of a technology underpinning bitcoin went mainstream a decade after the launch of bitcoin. Today, there is barely a bank in any corner of the world that is not besotted with and bewitched by blockchain. Yet, bitcoin is Wall Street *betenoir*. Not so surprisingly however, in their attempts to embrace blockchain, the enlightened incumbent brigade are reduced to simply trying to automate the existing forms of banking, financial services and capital markets - keeping themselves firmly intact in the picture, rather than re-imagining how banking's central function, value exchange, should occur in an entirely automated and decentralised world. This reverts to the classic Clayton Christensen's dilemma, where the incumbents are immobilised by forces of disruption. A case of *verschlimmbessern (where banks are seemingly trying to add value to end consumer, but only adding another centralisation layer in the blockchain world too)*. Any number of blockchain innovations by such intermediaries can only fetch benefits to themselves (if at all, and if only marginal compared to existing processes), and not to the public at large because such solutions are still centralised, and therefore maximise vested interests of the centralised entity. Investors and investees alike have found themselves shortchanged time and again in the pre-bitcoin era. The biggest benefits to the public in the post smart-phone era will accrue from embracing Satoshi's profound gift - decentralisation, which puts us at liberty to dis-intermediate industries where middle men are taking away a huge surplus from the society. And there are many such industries replete with opacity and over-populated by intermediaries.

The ICO frenzy in 2017 did see some interesting projects of decentralisation of capital markets. Not to mention, totally eroding the position of one intermediary that controls capital- the VC. However, these startups eventually sold out to banks and other incumbents that have somehow distorted the benefits of blockchain revolution, only to suit themselves. The irony could not be starker that even a technology which was born to decentralise for the benefit of common man, is being twisted by these vested interests so as to consolidate their position in the global financial system and increase centralisation further through alliances, private coteries and consortiums which are but a diaphanous veil to the old world, much too centralised.

The sole aim of Himalaya Capital Exchange is to break away with the status quo in global capital markets by giving the power back to both investors and investees, thereby improving the allocation of capital, and giving more chances to risk-loving entrepreneurs

to attract funding based on the intrinsic merits and promises of their business plan, and not merely on political considerations, or the strength of the bargaining power in the agency relationship. **Himalaya's motto is *unstoppable capital***. Our vision is to liberate man, in true tradition of *bitcoin* and *ethereum* which were beacons of hope in a world too centralised!

Himalaya Capital ICO is a paragon of empowerment and democratisation. Empowerment of entrepreneurs sprinkled around the world destitute for capital and funding, and democratisation of fund raising whose closing shall no longer be subject to the investment theses or whims of the Silicon Valley style VCs , nor of peripheral consequence to the optimisation of financial interests of investment banks merely maximising their selfish ends under pressure of well endowed shareholders with utter disregard for public goods and welfare enhancement.

The White Paper details the pre-issuance, the issuance, and the post issuance phases the conflicts of interest therein, and the scope for technology-enhanced superior process. Paramount to the pre-issuance phase is the discovery and the algorithmically determined issue price in such a way that incentives of investors and issuers are aligned, with those of the platform, and that the investment be welfare enhancing for society as a whole.

The way investment banks determine the issue price is by a process called Order Book Building, or Book Building, which can be easily replicated by algorithms without even using a blockchain. Replacing the investment banks by an algorithmic and smart-contract based blockchain solution with very low fees is in fact the true value proposition put forward by Himalaya Capital.

Himalaya Stock Exchange will feature modules for Initial Public Offering (Initial Security Token Offering - ISTO) and Initial Bond Token Offering (IBTO). Any governments, corporates or non-profit foundations will be able to use the decentralised platform powered by smart contracts and blockchain technology for raising capital through public markets. There will also be a Syndicated Loans Module wherein a syndicate of lenders will be able to easily coordinate through smart contracts the credit approval decisions, allocations, distribution of interest, covenant setting, penalties and other automated actions that will follow breach of covenants and default etc.

The trade-off between performance and scalability has been a recurrent topic and issue in the blockchain space over the last two years. New solutions such as Plasma Ethereum, Thunderella, Snow White, Algorand and Ouroboros have emerged in the recent period. Himalaya Capital is drawing on best practices in the industry, in order to greatly improve the scalability of its network to be able to put some competitive pressures including on the biggest players such as Nasdaq.

The White Paper contains a roadmap for the ICO divided into five phases namely pre-ICO, ICO, exchange listing, IPO platform launch, DEX tokenised stock exchange launch, and app store launch for third party apps. It also features a timeline for token supply, and the planned distribution of tokens between the different stakeholders of the ICO.
Finally, the core and advisory teams of Himalaya Capital team are made of a super-energised blend of leadership strengths, towering intellectual prowess and a rare confluence of skills (entrepreneurial, business, academic, financial, legal, technical, digital marketing etc) that complement each other, and give to this ICO a unique resplendence and credence in the world capital markets and smart contract landscape.

Prologue

Human beings are social creatures. From times immemorial, we have tried to add meaning to life, by adding value to ourselves, and to each other. Economic freedom is one such universal goal for all. Everyone aims for a progressively better life, economic prosperity being a key goal. High quality family and social relationships are another goal. While technology has advanced by leaps and bounds in its mass permeation, that even the common man today has the quality of experience and richness that a Rockefeller could not dream of, with all his fortune just a few decades ago, the same cannot be said of economic prosperity. Despite the pervasive technological progress, the economic disparity has only widened between the haves and have-nots. Not only has the gap widened due to capitalism, but also due to a variety of other market externalities. Even very talented and highly deserving and enterprising entrepreneurs are kept away from progress because the manna for progress - capital - is closely guarded by some institutions, and it has been hard to break these barriers social, economical and political.

Economic Freedom

The world today has plenty of resources, technology and talent that can feed the whole population on the planet and comfortably meet everyone's basic needs (Sen, 1999). But stories of starvation, misery and lack abound. There is abundance, yet civilisation has failed in granting basic needs for all. Greed trumps inclusiveness. Motivation of a few greedy actors trumps principles of democratization. It is time to change this. No institutions cover for the vulnerable who stray to find themselves on the peripheral edges of the human normal. While capitalists and economists are to be lauded for their stellar achievements in the past few decades - such as globalisation, liberalisation of trade etc, this has done little to lift the world hunger and equality indices. It is abominable that capitalism and the successive revolutions (the steam engine, industrial revolution, internet etc) have done little to ebb this polarisation of wealth. Atone end of the spectrum, the world's wealthiest 1% own 50% of the world's wealth, while at the other end of the spectrum, the world's 3.5 billion poorest adults each have assets of less than $10,000. Collectively these needy people, who account for 70% of the world's working age population, account for just 2.7% of global wealth. It is an awkward denouement and a blot on our collective humanity that some destitute farmers regularly have to resort to suicides to bring home this stark truth, to those whose conscience is still alive anyway. The institutions which specialise in the supply of capital do not actually cater to those who are really in need of capital, but to those they would profit the most from. Sometimes, perversely to those that are least skilled in putting that capital to productive use. This is due to a variety of reasons: ineptitude, agency problems of decision makers not being aligned with interests of the institutions they run, behavioural prejudices, analytical incompetence, and sometimes even reasons to keep certain sections of society excluded (World Inequality Report, 2018). Darwinistic theory of evolution does not offer the sole explanation to unbridled greed. Universal and fair access to capital is essential not only for the progress of capital seekers but for the betterment of society as a whole. Imagine a rich titan or an aristocrat living amidst squalor and lack, or surrounded by a populace ill equipped to either appreciating his refined sensibilities or to enriching his inner life which will scarcely accrue from resources he exclusively controls.

Concentrated Power

Evidence is mounting against professional gate keepers of capital and resources, such as banks, VCs, asset managers, and even rulers of democracies, who are known to mismanage and to put societal progress in backward motion time and again. Concentrated power is a peril to society, and so are centralised institutions. Such institutions do serve a purpose in times when majority of the population is ignorant of what is in their best interests, and the decision maker is a privileged genius who can make better decisions for them. But, current reality is quite the opposite.

Closed Systems

Today, the risk models of the society are skewed in favour of the morally abhorrent and obnoxious. Stories abound of many millionaires who were on the brink of bankruptcy, and needed a bail out of hundreds of millions of dollars so that they could revive the business fortunes, and banks readily lapped up this logic and obliged. If banks have already lent say $100 million to a business which is now on the brink of collapse, they would gladly lend another $100 million to resuscitate it from bankruptcy rather than write it off. However, suppose if a destitute man went and stood at the doorstep of banks and asked for a micro loan to survive, he would have very little chances of success. Faced with losses, human nature has been proven to be more risk loving (Tversky & Kahneman, 1974). Sunk cost fallacy and other well-researched decision making myopia are well heeded by owners of capital, rather than managers of capital. Conflicts of interest, corruption, inability to assess risks properly, and systemic business and market risk all contribute to failures of the capital markets.

This paper is not about altruism. However, we have systematically allowed an inordinate degree of morally reprehensible intellectual sloth to set in, in the way our economies operate. So much so that despite the majority of the world being characterised by large democracies, we as citizens are helpless to effect change even when such change seems mandatory. In effect, our institutions are failing, and we are unable to even notice, let alone effect any changes, because we have begun to operate in a highly conditioned world with numbed thought and learned helplessness.

Centralised Decision Making

The global credit crisis of 2008 set in motion a cascading global depression which resulted in unemployment of millions, all to save and bail out a few mismanaged banks from the follies of their greedy mis-incentived decision makers, with tax payer money. The recent $2 billion banking scam that came to light in India (Roy & Das, 2018) juxtaposes in stark contrast the miseries of farmers and students unable to get a loan to survive, often killing themselves due to shame of non-payment, compounded by the harassment of credit collectors, while the scammers including some glorified bank CEOs have no qualms about absconding with tax payers money, which the banks failed in safe-guarding with all their well-buttressed risk management systems and robust regulatory oversight. We have ample evidence to conclude that we fail not because of ineffective risk management systems, but because of excessive concentration of decision making power within one or a few individuals. The modern civilisation is replete with chronicles

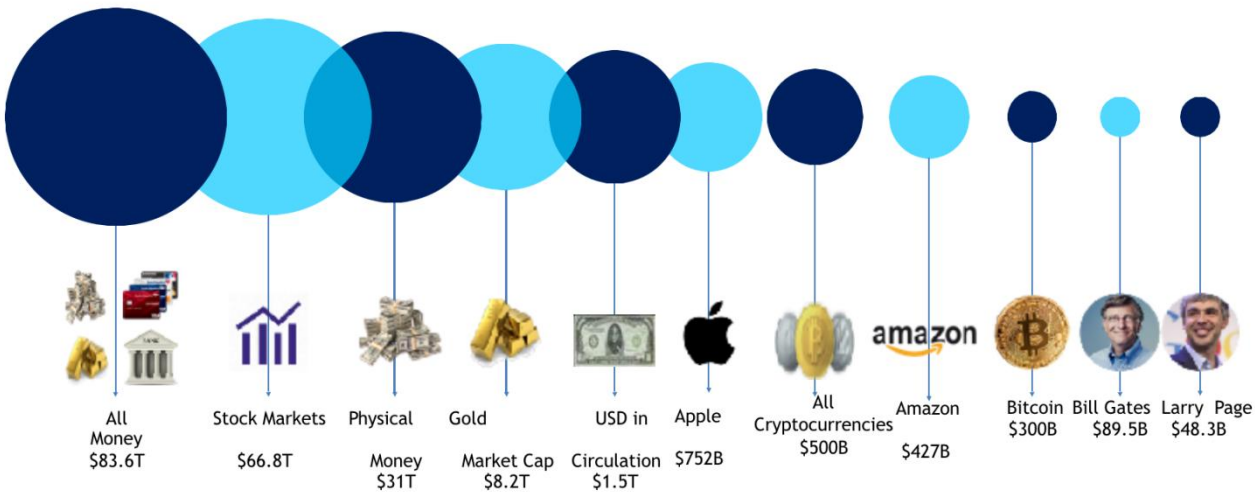
of moral hazard, double dealing, and conflicts of interest that so characterise the failures of our capitalist society. To the extent that our capital markets are imperfect in allowing capital flow to those with a fair probability of success given a chance, we as a society will have failed in tending to all sections, and in ensuring human progress remains on a higher trajectory.

Absolute Power

We have vested our institutions with absolute power for a long time, only to see the principles for which they were instituted severely compromised.

- We see democracies moving towards dictatorships.
- We see nations teetering on the brink of poverty, being exploited for resources or decimated, for power struggles.
- We see the gatekeepers of our capital, gambling with our money recklessly causing crises which take years to recuperate from.
- We see political representatives appointed to champion our values, quite often diverge and seek their own vested interests which are diabolically and diametrically opposite to ours.

Figure 1 Money Supply in the World



1. Blockchain - An Antidote to Imperfect Markets & Agency Problems

"Blockchain is a general-purpose technology that threatens to disrupt markets and institutions across the world. Where the internet enabled the publishing and digital transfer of information, blockchain authenticates the ownership of assets, makes them unique, traceable, and facilitates the digital transfer and hence trading of assets by providing trust in the transaction and reducing uncertainty (through its use of trustworthy self-executing code)." - (OECD, 2018, p.2)

Agency problems abound all over the world. Blockchain is the antidote to agency problems in every industry and market. Wherever two parties had engaged in a social contract to act in each other's interests, and then found themselves secretly cheating or tempted to renege on the contract so as to maximise their selfish interests, we can reinvent a new way to force honest behaviour because this model is based on self-interest and survivability rather than virtue.

Blockchain shakes up the status quo. Distributed network based economies give us the power to alter societal structures, which represents a "natural progression of humanity".

Public blockchain networks are a novel invention, contributed in no small measure by Satoshi Nakamoto's revolutionary bitcoin (Nakamoto 2008). Blockchain networks are templates for new economies where the interests of all stakeholders are safeguarded collectively by economic incentives designed with game theory in mind such that the dominant strategy for everyone is to sustain the ongoing development and furtherance of the ecosystem or network. Public blockchains are also a departure from electronic platforms which became hugely popular over the past decade, but run by centralised parties with concentrated power and incentives - such as Uber, Facebook, AirBnB, Google etc (The Economist, 2016).

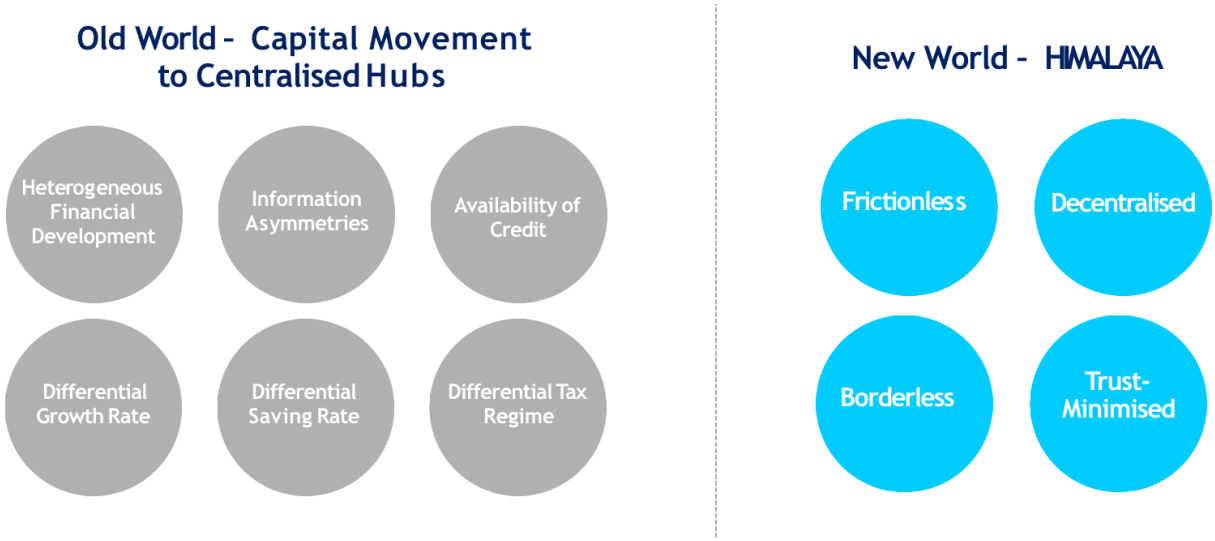
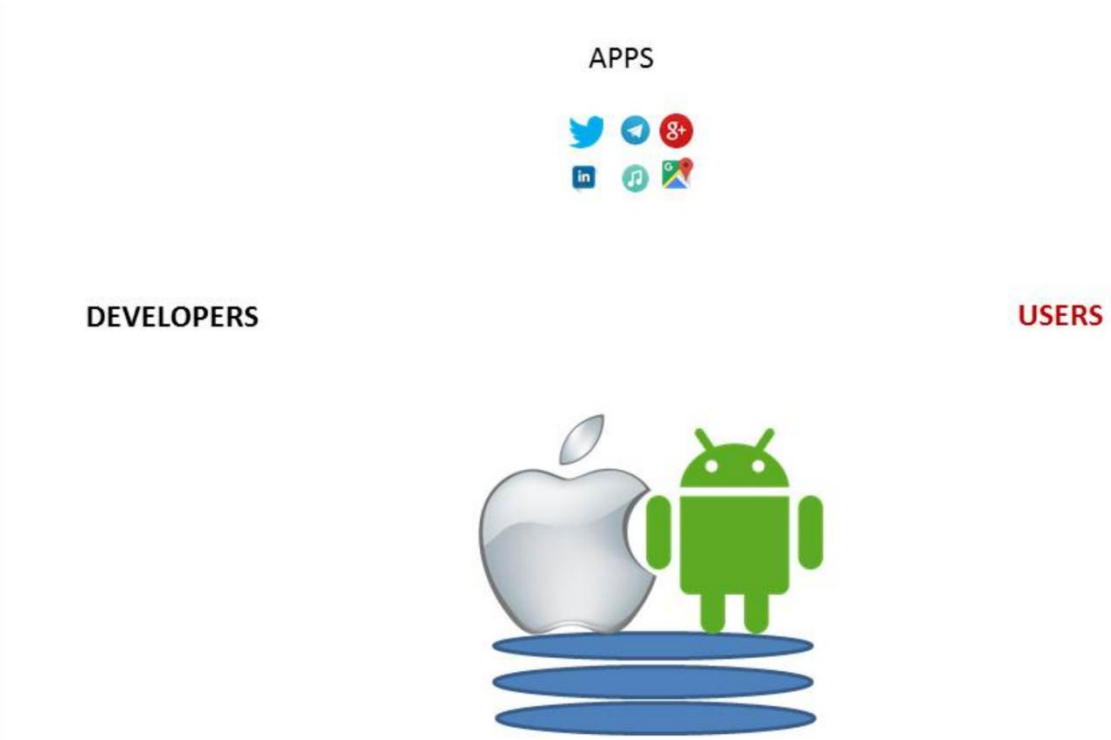


Figure 2 From the Old World to the New

1.1 The Platform Paradox

Figure 3 Two - Sided Platforms - Developers, Apps, and Users



Source: Sangeet Paul Choudary, 2015

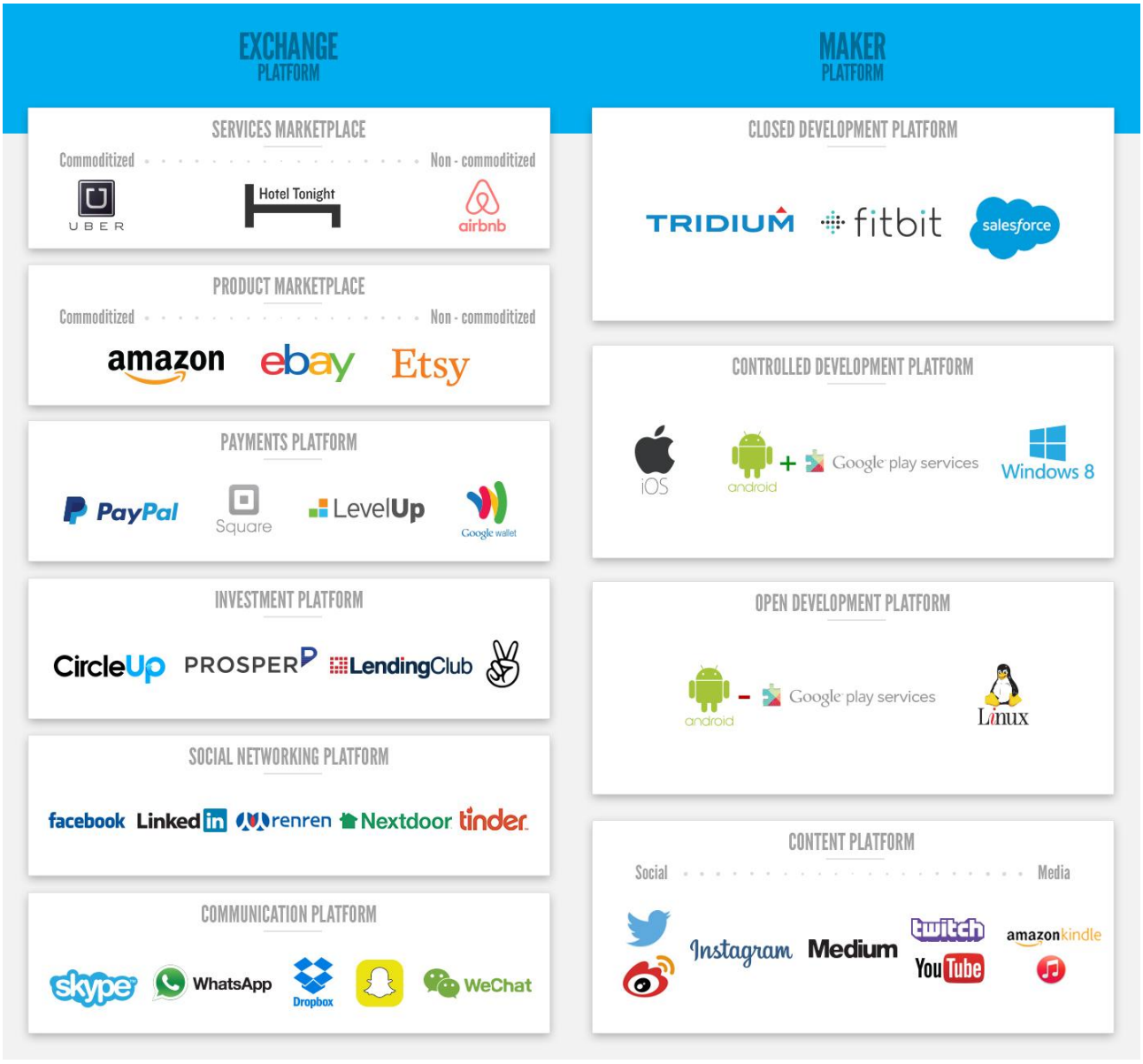
Centrally run platforms, though aligned with interests of users at large in the beginning of the network's life, and during the phase when the platform is growing and accruing network effects tend to pursue contradictory interests to those of platform users once the network effects and a dominant monopoly position have set in.

Interests of the network participants would be best served by cheaper cost of participation, allowing a diverse range of products to be served on the platform, and intangibles such as curating the network to keep out bad users, preserving privacy etc. Whereas the network owners would be motivated to pursue profits doing exactly the opposite. Steve Jobs had famously resisted the App Store idea in the beginning of Apple's success story, but eventually App Store did become a massive profit generator for Apple, way more than its own products did. Fortuitously, Apple had found a way to continue building network effects, beneficial to all network participants, while growing its profits. This, however, is not the case for all networks and their owners.

Facebook is a stark illustration of how when networks not owned by the constituents, align their interests perfectly with those of the users at the beginning of their life cycle, and after attaining a critical mass (a near monopoly status when costs for other imitator networks to acquire similar network scales have become prohibitive), then start to act against the interests of the users because their mantra then would be profit maximisation and more network effects are no longer a necessary condition to their profits. This is the conundrum of centrally run platform economies.

Figure 4 Successful Platforms

Source: Alex Moazed, Applico

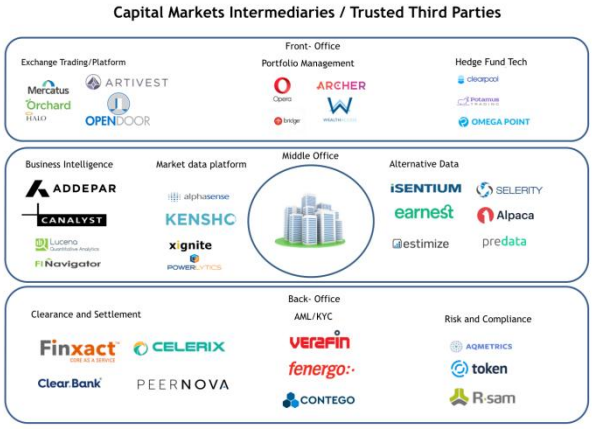


1.2 A Solution to the Platform Paradox

Public distributed ledgers provide an alternative to centrally run platforms. They can become a monopoly network, but without the concomitant adverse effects of a monopoly run by centralised parties, as the powers in decentralised networks would be vested with a much more distributed base of stakeholders and users, and governed by an incentive mechanism designed to further every stakeholder's interest. For example, stakeholders of a ethereum network would be: miners, investors who bought tokens, application developers, founding developers who brought the network to life, users of the network and the plethora of ICOs that are currently issuing tokens on ethereum platform, and ether-buyers from developing countries who are clueless about any of this. Even though mining is highly concentrated in the hands of a few, the network as a whole is pretty decentralised with multiple parties continually engaged in keeping the ecosystem vibrant and developing.

The specific advantage of decentralised networks is in aligning interests of the network users with those who are responsible for running the network, over time and not just in its nascency or growth stage when it is expedient to do so in order to grow the network, but also for the entire life cycle of the platform.

Figure 5 Capital Markets Intermediaries / Trusted Third Parties



A decentralised network to run the global capital markets would be a step towards a fairer, more democratic, more inclusive and more empowering world for all. As explained in our concept paper, we propose to augment the middle men with algorithms whose performance is verifiable by an army of computers, and build an ecosystem perfectly aligned with the user interests, where rules are overseen by a representation of users who would be raising capital and investing in capital and not by a third class of intermediaries driven solely by profits and whose interests may be in conflict with those of capital seekers and investors.

Capital Exchange aims to build a crypto economic network / platform, that combines the best features of the first two internet eras: community-governed, decentralised networks and that puts the power back in the hands of the people.

Blockchain has already disrupted Venture Capital funding for blockchain startups through Initial Coin Offerings (ICOs). Now, Capital Exchange will be a platform with a voice of the common man, a platform built for the entrepreneur. Not just for entrepreneurs in the blockchain industry, but every deserving entrepreneur around the world across a diverse range of industries. "It (Blockchain) therefore provides both a route to growth

for efficient SMEs, and the prospect of more intensely competitive markets, each of which are likely to help make growth more inclusive." – (OECD, 2018)

1.3 Evolution of the role of intermediaries in Capital Markets

Intermediaries in the incumbent model came into existence to facilitate business transactions between parties that did not know each other.

As societies evolved, and transactions became more complex, the rules governing such commerce also became complex and required a special class of intermediaries whose roles and specialisations were:

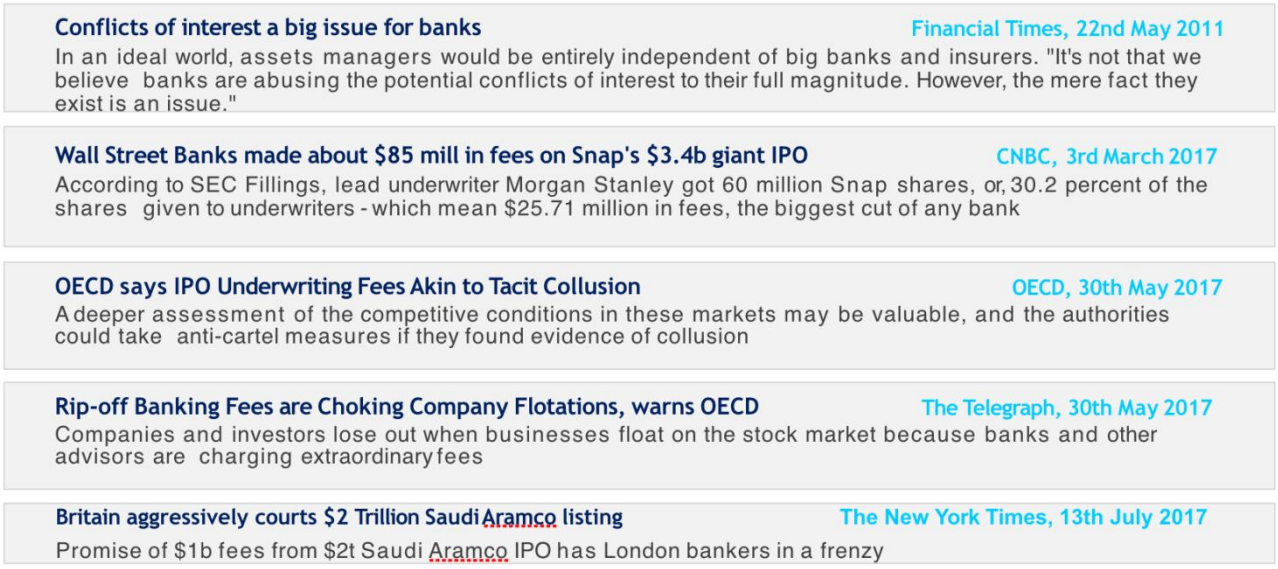
- To create trust between two strangers or potential counter-parties to a trade who did not know each other to conduct transactions directly without the guarantee of a trusted third party - example investment banks
- To decipher the complexity of rules, law and regulation - accountants, lawyers
- To reduce information asymmetry and to signal quality by virtue of their own reputation - rating agencies, reviews, credit scores
- To specialise in match-making, finding a vast range of counter-parties who would be willing to trade with each other - deal makers, investment banks
- To optimise price discovery - in conducting these capital raising transactions so as to maximise the issuer interests such as price optimisation and minimising equity dilution.
- To build economies of scale - to simply pool in parties from both sides, and conduct operations more efficiently because of volumes - such as commercial banks gathering smaller deposits and lending high value loans to borrowers

1.3.1 Feeding the Wolves

These intermediaries served their purpose so well, borne by the enormous success they tasted in the 20th century, catapulting themselves to one of the most well regarded professions (Wall Street) even more than those who created real value say from manufacturing, R&D, Intellectual property etc. This is simply **Coase** (1937) theory of **firms** in action, which posits that any firm that organises its resources for a common purpose and integrates several functions in its activities does add value to its customers by being able to do it more efficiently , at cheaper financial costs and certainly lower mental transaction costs. So Wall Street which focused its resources on capital markets transactions did add value to its clients. It would still be adding value, if it were an independently functioning eco-system that ran completely on market determined incentives, which would reward and punish good and bad behaviour, and did not bleed the treasury dry. However, these very intermediaries have come to be known for defeating the very purposes for which they came into existence - as they are no longer aligned with client interests as many IPO Frauds and Opaque IPO allocations prove. Worse, these intermediaries are now traitorously eating into the Public Exchequer as bailouts for Wall Street disingenuity and excesses come straight from the tax payer

money. Even worse, regulators are not protecting the common man, but the big behemoths.

Figure 6 Conflicts of Interest in Capital Markets



Today Wall Street, capital markets industry and the global financial services landscape have come to be characterised by profit-maximising players who want to grow at any cost, mostly at the expense of their customers, often increasing the systemic risk of these institutions. It is not even a wise long term strategy for their own firms or shareholders. But, who would inform these disciples of 'greed is good', with their sights firmly set on the short term goal? Risk is always borne by the society and not by these players who act in their very narrow personal self-interest, against even the interests of their firm. Wall Street has become the showcase for conflicts of interest, moral hazard and self-dealing. An example of 'Tragedy of the Commons' (Hardin's Tragedy)!

1.3.2 Continued Concentration

The banking crisis of 2008 which started the avalanche of a global depression affecting millions of jobs around the world, the unaccounted wealth of many a global millionaire being held by banks in safe havens around the world, and pilferage of tax payer money through banking scams which only seem to grow in magnitude - these are only a tip of the iceberg demonstrating the systemic risks that banks impose on society. However, the costs on society imposed by banks through their everyday business is humungous and the impact long-lasting. To a large degree, these failures on part of big banks have been exploited by fintech firms which have attained proximity to customers - beating banks, through trial and error, through more openness to innovation, more skin in the game, and more enterprising chutzpah. The fintech firms could have held the cards to truly transform traditional banking and disrupt status quo. However, only few firms Amazon, Alibaba, Google, Facebook, Apple took advantage of their vantage positions and industry-leading network effects they had already built. This is so because the fintech firms which held great promise, quickly sold out to banks. Either in their desperation to survive, or eagerness to succeed, or in their lack of vision, they courted banks early - for capital or partnerships or for client assignments. Once the old guard takes stake, it is safe to assume no real innovation can come about, let alone disruption. It is not for lack of ability to discern the future, but more from a fallacious and myopic thinking that if

they shield their business from a new challenger, and improve incrementally, things will stay the same and banks can thus extend their longevity. This banking stupor has been witnessed as an incurable malady of our times in the past decade.

1.4 A brief history of Cryptocurrencies

Then came bitcoin in 2009 (Nakamoto, 2008), coincidentally, just as the aftermath of the paralysing credit crisis started to take its toll on the global employment force across every industry, not just in banking and finance. Bitcoin shot to prominence over the past decade as the first successful experiment in privatised currency, taking along its stride every revolutionary thinker and alert observer of the economy. Inspired by bitcoin, a game changing platform Ethereum followed suit in 2014. Despite the mainstream not yet fully comprehending the multi dimensional aspects of bitcoin or Ethereum or the broad cryptocurrency asset class *per se*, the giddying returns that the early favourites fetched were enough to stir a frenzy among the early crypto faithful. Many more applications started to get built, realising the promise of decentralisation. The ecosystem grew richer, with exchanges, services, and intermediaries, albeit a replication of the old world.

1.4.1 A brief history of smart contracts

Nick Szabo (1994, 1996) first coined "Smart Contracts" in 1994, and proposed that a smart contract infrastructure can be implemented by replicated asset registries and contract execution using cryptographic hash functions and consensus mechanism based on Byzantine Fault Tolerance. Szabo originally envisaged Smart Contracts to have four functions namely: privacy, observability, enforceability, and verifiability.

Vitalik Buterin (2014) took this concept further in 2014 and invented a turing complete platform for building Smart Contracts – Ethereum, which offers a framework for all kinds of arrangements, financial and non-financial, whose logic can be summarised in binary code and automatically executed on a decentralised world computer - *Ethereum Virtual Machine*, which runs on thousands of nodes all over the world without requiring human trust or intervention. The performance of such an agreement/contract is independently verifiable by machines or computers, which makes a smart contract efficient, autonomous, transparent and free from human subjectivity as compared to agreements executed by humans. Smart contracts as applied to financial transactions between multiple parties would mean faster execution with reduced settlement times, free from human errors.

The above two landmark developments heralded a paradigm shift, where a future of self-governing societies that will maximise public interest rather than the interest of a privileged few is plausible and within reach. Concentration of privilege with a few gatekeepers is fundamentally opposed to the principles of democratic fairness, and has characterised the era of capitalism. Middle men were indeed useful and valuable in the era when we had no other option but to rely on third parties to connect two parties who would ultimately transact value. But the advent of internet and its gift of discovery platforms enabled us to leap past the Dunbar number of social connections, and find and do business out in the wild with those we had little prior knowledge of. Internet discovery platforms coupled with blockchain where value can also be exchanged seamlessly without requiring a trusted gatekeeper, is an ultimate leap for the financial services industry. Capital markets industry dealing with stocks and bonds, with the

highest prevalence of middle men - brokers, agents, investment banks, clearing and settlement, custodians etc is one such industry ripe for disruption.

Figure 7 The Evolution of Distributed Ledger Technology - A Snapshot

Source: Author

1.4.2 Decentralisation of Capital Markets

2017 turned out to be an *annus mirabilis* for cryptocurrencies. The markets spun out of control as coins and platforms found their takers, and with it their own momentum, beyond any simple explanations any expert could proffer. Then it brought forth in the form of a barrage of ICOs, over 1000 at last count raising over $5.5 bn and surpassing venture funding for the industry.

We published our concept paper on 7 July 2017 (Khan, 2017), the first ever detailed idea to be written outside of Banks and Financial Institutions, on the topic of decentralising capital markets and specifically re-architecting the roles of investment banks and exchanges involved in Initial Public Offerings. It was the first of its kind, and nothing preceded it. (http://himalayalabs.com/Himalaya-Executive-Summary2.pdf).

Mid 2017, regulators around the world started to take note of cryptocurrencies as a threat to fiat currencies, national economies, taxes, and their current schemes, and some dared to ban crypto. China, which interestingly contributed to over 90% of all bitcoin trading volumes historically as well as the ICO funding, started the trend, banning all cryptocurrency mining and ICOs in August 2017. Regulators around the world were caught in policy flip flop. The bans did little to stem the frenzy, the market activity just defiantly moved to greener shores. The Crypto-faithful continued to pour in subscriptions for new ICOs, totalling over $5.5 billion for the full calendar year 2017.

The Ethereum platform finally found its unique selling proposition and its stickiness quotient. It unexpectedly morphed into the most desirable fund-raising platform for blockchain ventures, ironically including those that would claim to be Ethereum competitors - like EOS. 2017 quashed all lingering doubts about Ethereum's success, firmly placing it ahead of all other platform competitors by this unique application - the Initial Coin Offering (or ICO) which became an instant buzzword and a phenomenon. Over 90% of ICOs in 2017 were launched on ERC 20 - the token standard on Ethereum

platform, boosting Ether price, concomitant with the ever increasing economic activity on the platform. Several mistakes were made by all participants, and lessons were learnt. Ethereum survived frustrating network traffic jams, multiparty sig wallet hacks, and later Cryptokitties. A platform's success can be seen not only by the economic activity, and the community rallying around it but also by the malafide actors it inevitably attracts. Even hacks to the tune of $30-50 million were not enough to deter users. One class of intermediaries were immediately enlightened of the true power of blockchain - The Venture Capital industry, who learnt that their clever investment themes notwithstanding, their jobs were on the line, and so was their industry, with no blockchain firms seeking VC funds anymore, faced with the option of a convenient ICO!

Himalaya ICO did a global tour of six long months trying to educate the masses on how capital markets could finally be dis-intermediated (Khan, 2018) - just like the ICOs had transformed the startup funding landscape, making VCs redundant.

Figure 8 Previous ICO Showcases by Himalaya Labs

1.5 The Origins of Smart Capital

Definition: As opposed to VCs that bring in smart ideas and execution to the startups they fund, smart capital in our context would mean capital that is raised through decentralised crowd sourcing, for the benefit of the public, for a stated purpose.

As early as 2015, UBS was experimenting with "smart bonds" that use the bitcoin blockchain in which payment streams could hypothetically be fully automated, creating a self-paying instrument. There were other early attempts at using distributed ledger technology in capital markets, led by Bitshares, Second Market, and some hedge fund managers on Wall Street.

However, there are no current implementations from Wall Street or in the Blockchain ecosystem that let the public enjoy the full benefits of such a decentralised platform. Any experiments have been closely guarded by the banks, or protected in IP by the firms that have built such products that serve these incumbent institutions. To our knowledge no such platforms/solutions exist that can dis-intermediate investment banks, even partially for some specific functions.

1.6 There is a better way

This presents a unique opportunity to establish a new generation platform that marries the idea of two-sided marketplaces that have evolved over the past several decades of internet era, with principles of blockchain and smart contracts as applied to financial institutions, and in particular capital market transactions.

We aim to build a global borderless eco-system where capital markets transactions happen between peers seamlessly, and trust-lessly within a legal framework, and with no risk of centralised intermediaries withholding or running away with your funds. We hope to create a marketplace that has rich participation from service providers whose presence is optional, and not mandatory for the transaction - as opposed to the traditional exchange eco-system where you cannot transact without involving multiple intermediaries. Our transparent ecosystem will also bring in the much needed competitive pricing from players, in an industry currently characterised by cartel behaviour and oligopolistic pricing.

"The central bank must be trusted not to debase the currency, but the history of fiat currencies is full of breaches of that trust." -
***Satoshi Nakamoto**.*

"The wall street institutions are trusted to maintain the stability and integrity of the global economy, but the history of economic crises, market crashes and ensuing long cycles of depression such as post 2008, is full of breaches of that trust." -
Arifa Khan

"With the advent of decentralised databases that can technologically replicate the network effect gains of a single monopoly, everyone can join and align for their benefit, without actually creating a monopoly with all the negative consequences that it brings." -
Vitalik Buterin

2. Decentralisation of Capital Markets

Much after our concept paper (July 2017) and our worldwide talks (for the rest of 2017), we finally started to see ICOs related to Capital Markets towards the end of 2017. Several ICOs emerged purporting to create decentralised banking, but also fell prey to the same follies of their fintech predecessors who sold out to banks. Many capital markets and securities related ICOs raised hundreds of millions USD in the ICO mania of 2017, parading their associations with banks. As expected, scarcely any proposed a solution to remove banks from the equation. Most are fintech solutions catering to the incumbents, and as far as we are aware none of those ICOs proposes a radical solution that either aims to re-architect the landscape or to dis-intermediate anyone, barring a few exceptions such as ***Equibit*** or ***Bitshares*****,** which in their limited scope propose to exchange shares for bitcoin. These exceptions are a small but significant step in the desired direction. All such ICOs catering to incumbent class came into existence only in late 2017. Much after we proposed a radical decentralised solution to totally dis-intermediate investment banks, where capital raising is concerned. But, everyone knows that where there are banks you cannot expect autophagy! So, ICOs which line up support of banks, can never challenge bank's business models leave alone disrupt them. Investing in innovators early is another anti-competitive strategy employed by the well-padded and profitable institutions with strong balance sheets. Moreover, banks and other intermediaries such as exchanges now have tougher walls erected around them in the form of regulation which exists not to protect consumers from banks, but to further the protection banks enjoy from competitive forces. There is an unmissable *cartelisation* of banks around the world, in commercial banking and in investment banking, as noted by OECD. Regulators are doing nothing to attack this cartelisation, but giving in weakly to these forces, depriving the common man of the fruits of technology and industrial progress. Thanks to our obsolete institutions and impotent regulation, the common man is standing still on a treadmill of collective progress despite sprinting at breakneck speed.

"There are always parasites benefiting from regulation. Situations where the business person uses government to desire profits, often through protective regulation and franchises. The mechanism is called ***Regulatory Recapture****, as it cancels the effect of what a regulation was meant to do"* - Nassim Nicolas Taleb (2018) in **'Skin in the Game'**.

So, as far as creating a public good is concerned, not much faith can be reposed in these bank-supported solutions. A brief analysis of those ICOs is presented in the paper later. It would be gross injustice to all, if even ICOs related to Capital Markets played along with the centralised interests passively.

We have now in principle established that intermediaries are not aligned with their clients' best interests.

2.1 The New World

Keeping Conflicts of Interest side, let us analyse the real functions some of these financial intermediaries have served well, and the rationale for why the older systems are now no longer state of the art and a computer-science based alternative to these middlemen is a superior solution.

Further to my concept paper "Decentralised Global Capital Markets Platform" (Khan, 2017) published on 7 July 2017 - the first ever proposal of its kind, there have been

several follow up white papers in late 2017 to implement smart contracts in the capital markets world. Varying use cases have been proposed, to deal with tokenising existing assets and trading them trust-lessly, creating a platform where trusted intermediaries like investment banks and market participants can engage in capital market transactions, equity crowdfunding and so on.

Our pioneering concept paper laid down a detailed road map of how investment banks can be dis-intermediated and their functions in IPOs can be replicated on smart contracts following which there have been several attempts by recent ICOs to take a shot at this industry.

Polymath, NXT, Bankex etc have tried to mimic the existing financial services eco-system, but with a blockchain. They do not dis-intermediate the industry, but keep the incumbents and offer them a new way of trading in those instruments.

Equibit, Bitshares etc propose a full peer to peer transaction protocol where counterparts can bypass the existing players, but it is too niche and does not envisage a rich self-sufficient alternative eco-system for the crypto savvy capital markets of the future.

USA based t zero (t0) aims to cater to accredited US investors, but SEC as we know is crypto unfriendly and stymies innovation, so we think such bottlenecks can scarcely be overcome. We have learnt that t0 raised hundreds of millions of dollars in private ICO round, and was promptly subpoenaed by SEC for investigation.

However, we are yet to see a digital super market or a global highway for securities, an alternative eco-system for capital markets transactions, where a large swathe of erstwhile intermediaries such as Clearing & Settlement Agents, Custodians, Central Depositories, Brokers Dealers, and even Investment Banks and Regional Stock Exchanges are unnecessary.

We propose a new eco-system facilitated by advances in blockchain technology, and our unique understanding of how smart contracts technology can be applied to institutional level functionality.

Capital Exchange is the first such attempt to replicate the multi-layered infrastructure of a sophisticated financial services institution on a single platform. Of course, our aim is not to create a fully automated version of wall street and we still envisage some inputs from the centralised world, which we consider essential to the performance of complex systems. In keeping with the spirit of bitcoin which is based on probabilistic revolution and not 100% certainty, the goal is not to achieve 100% machine performance which would come at an astronomically high cost, but to minimise redundancies, inefficiencies, and vulnerabilities that characterise otherwise fully centralised institutions. We adopt reputation systems, peer scoring and social curation as lessons from successful marketplaces of the past few decades, such as Amazon, Airbnb.

Figure 9 Doing away with Wall Street intermediaries

Source: Author

2.2 The IPO Process demystified

The various steps of a stock issuance or a capital raising process in an IPO can be broken down as follows:

2.2.1 Pre-Issuance Phase

- Determining Optimal Issue Price
- Building Price Tension
- Reducing Information Asymmetry
- Match-making between investors and Issuers

2.2.2 Issuance Phase

- Allocation
- Communication with Investors

2.2.3 Post-Issuance Phase

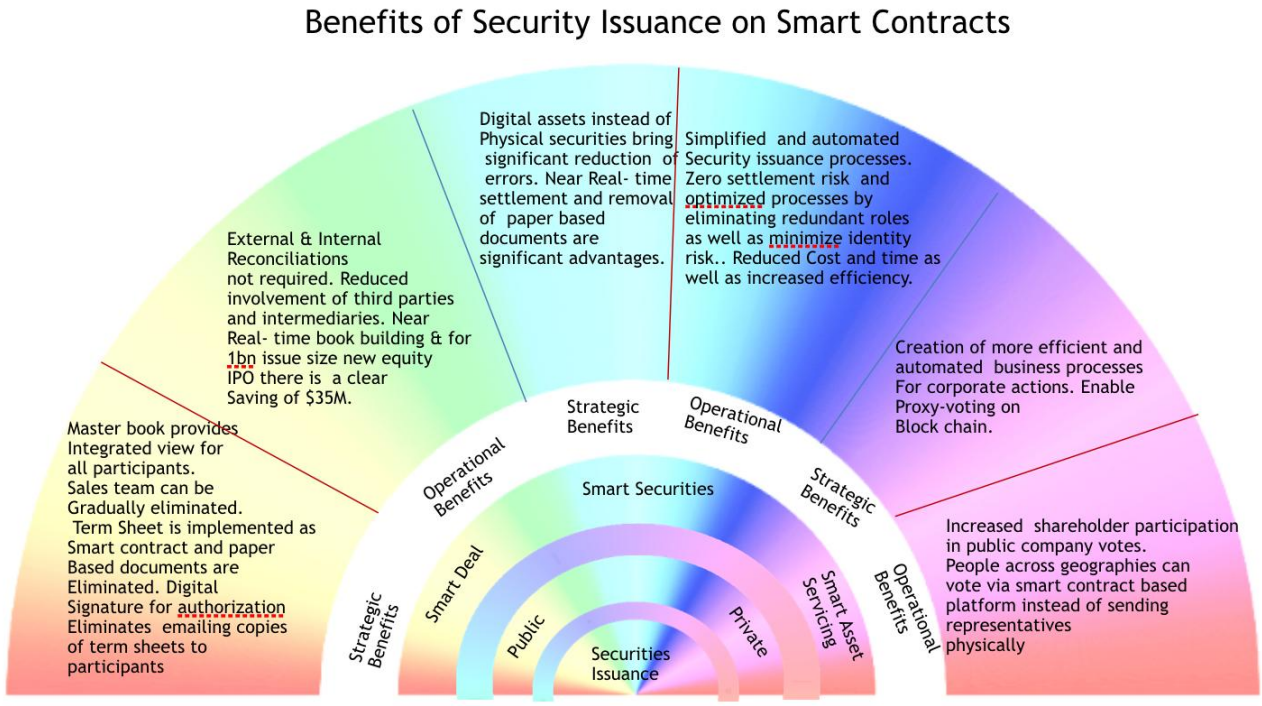
- Investor relations
- Servicing of dividends
- Annual General Meetings

- Managing transfers of shares
- Resolving investor grievances
- Performance Reports to investors
- Staff incentive issues
- Continuous disclosure

Of the above, there are also some capital issuance functions executed by the issuers themselves with no role of intermediaries, that we argue would be better met by unprecedented features that the modern technology stack enables, such as:

- Dividend Distribution
- Annual General Meetings & Referendums
- Participation of Activist Shareholders
- Governance Mechanisms
- Communication with Investors post-issuance

Figure 10 Benefits of Security Issuance on Smart Contracts



Source: Deloitte

2.3 What is wrong with the current IPO process in investment banks?

The ills of the current investment banking processes for Initial Public Offerings (IPOs) can be delineated as below:

2.3.1 The Pre-Issuance Phase:

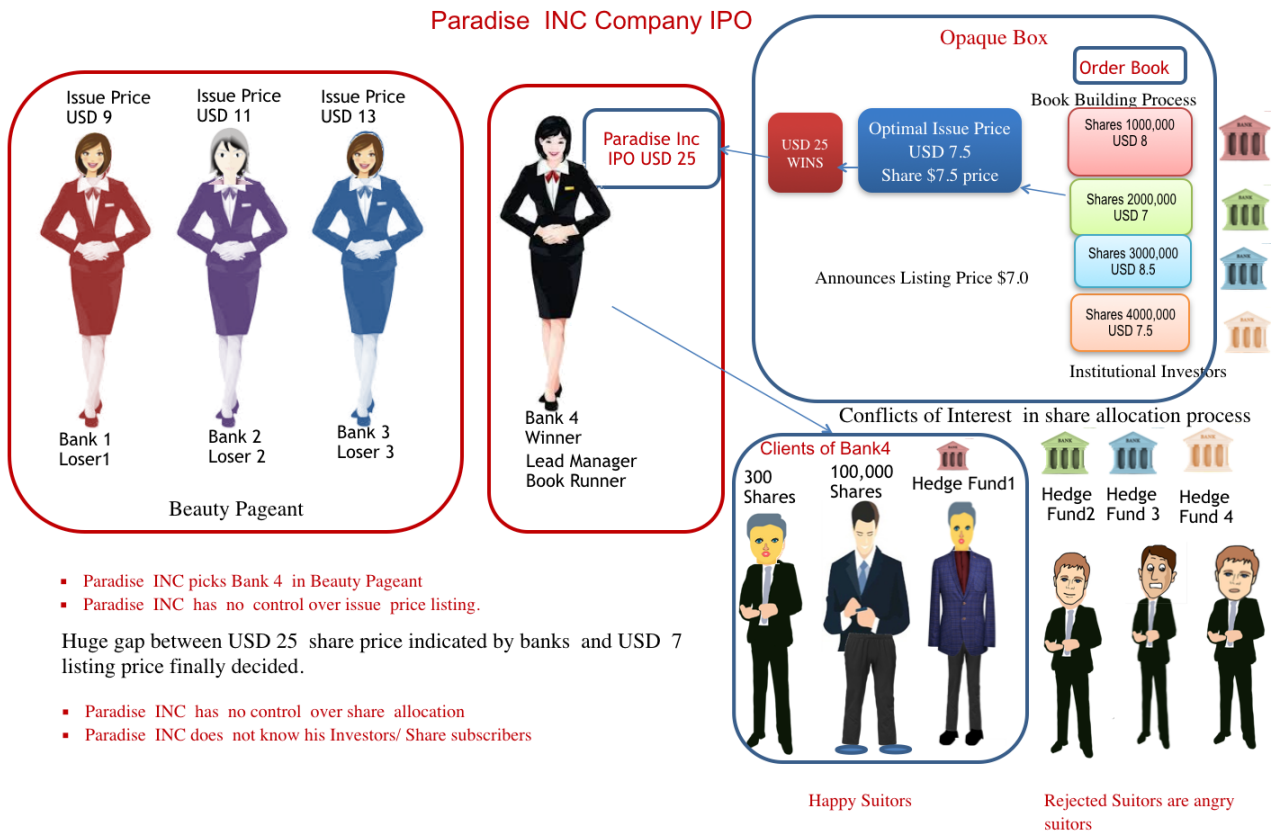
The pre-issuance phase concerns the role of investment banks in book-building and in determining the issue listing price.

Banks have conflicts of interest. They are concerned with winning the mandate against their competitors in the *beauty pageant* phase (Ming, 2017), and once they have won the mandate their interests are not aligned with maximising client value, but their own, which is congruent with minimising issue risks by lowering the issue price to ensure over-subscription of the issue.

2.3.2 Managing the Price

Under-pricing the issue is a common practice followed by banks, because the bank's reputation is tied to the stock price appreciation soon after the issue is listed, where banks have their regular institutional clientele to please (Derrien & Womack, 2003). Under-pricing and stock appreciation upon listing benefit the favoured clients of banks who get pre-allocation. Minimising issue risks for banks is often at the expense of maximising client value (Krigman & Jeffus, 2016).

Figure 11 Conflicts of Interest during an IPO



Source: Author

Tactically, this manifests as over-indication of issue price during beauty pageants and under pricing the issue later, in order to fill order books. So clients, or the issuers, have no control of the listing price of their securities. Clients are at mercy of banks, once they have chosen the bank (s). The best the issuers can do is to maximise competition between banks before selecting the lead manager. But they have no control over the process once a lead manager is selected. So the entire system disadvantages the issuer from a game theory point of view. Pages Jaunes is an illustrious case study of a French company which tried a novel IPO process to maximise competitive forces between banks during the entire IPO process, but such efforts pose mental transaction costs and most issuers just tend to go with the flow, accepting status quo which is far from optimal.

2.3.3 The Issuance Phase:

The issuance phase deals with matching of investors with issuers. This pre-supposes access to an investor database which currently only the banks and exchanges are able to provide because of their hegemony in the market, and they command a hefty fee for this match-making. This is the more challenging part of our vision because we have to build a two sided marketplace with adequate traffic of issuers and investors. However, if the success of ICOs is anything to go by, this would hardly be a challenge. Moreover, the appetite from the real economy (manufacturing, SMEs etc) to access capital on a global borderless exchange, with the speed and frictionless-ness of crypto albeit with real securities, would be infinite. Our vision of *unstoppable capital* would become the most liberating and resounding motive for public to use blockchain-fuelled capital markets.

In the current paradigm, clients (or Issuers) do not know who their investors are, and do not control the interaction or the message. This is a great foregone opportunity for issuers to build relationships with investors in one of their significant life events, when they have decided to become your shareholder (Sherman, 2000). Clients have no control over which investors get allocation of shares, and do not decide the rules. Banks do.

Clearing and settlement are rather tardy with a 2-3 day timeframe, with many intermediaries present such as custodians, broker dealers, Central Clearing Parties (CCPs), Central Securities Depositories (CCDs), and escrow accounts. These intervening roles and processes are redundant in the blockchain stack where value is exchanged simultaneously, without the need for a trusted third party to guarantee the transaction.

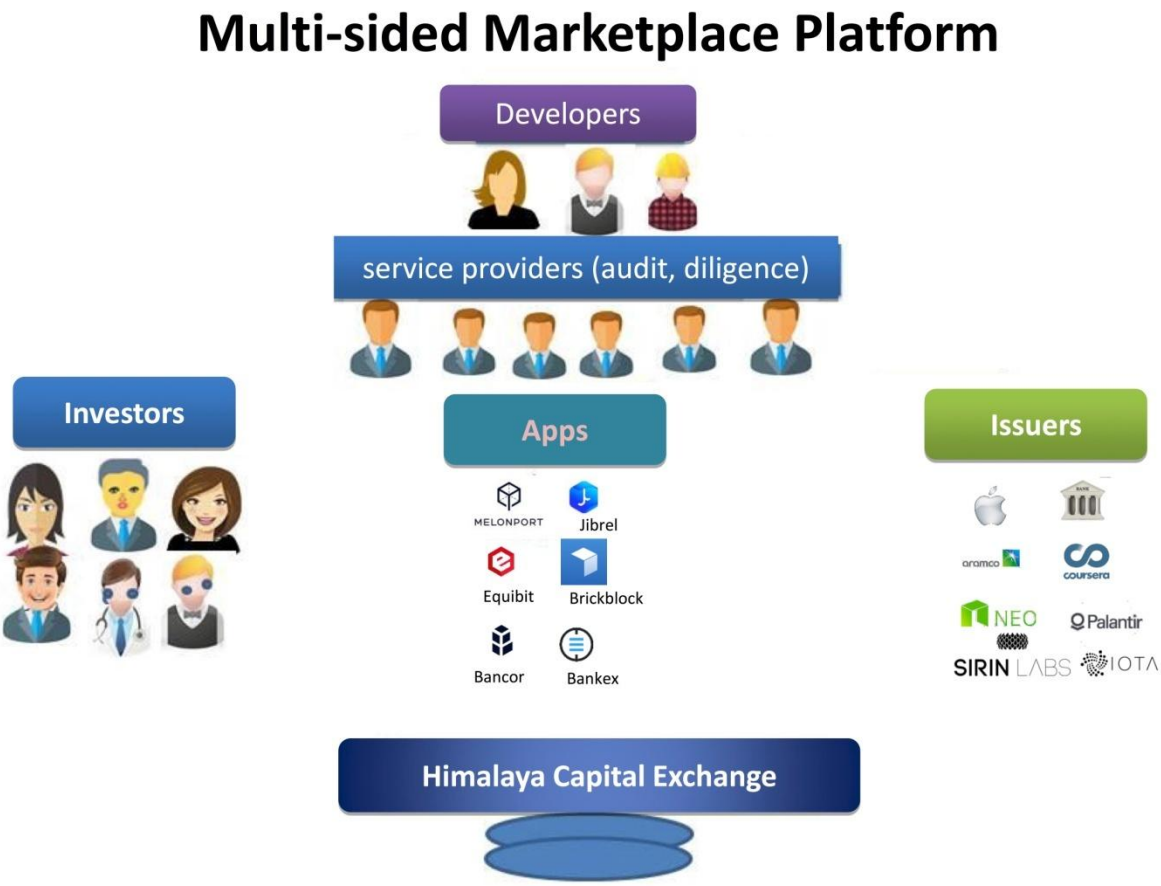
2.3.4 The Post-Issuance Phase:

This involves investor relations management which comprises servicing of investors, distributing performance and earnings reports, dividends, interest coupons, managing transfer of ownership of shares etc. Blockchain has a pathbreaking role to play where all these functions can be served much more autonomously, efficiently, free of error, and in ways that support more participatory decision making and more robust corporate governance than has ever been possible before. Take for instance, voting on key management decisions which is currently carried out at poorly attended physical Annual General Meetings, and imagine adding a blockchain feature for electronic voting by shareholders, or transferring dividends to shareholders through the same smart contract that issued them the shares in the first place.

The Post-Issuance phase has revolutionary implications for the securities market, which has not been implemented before. Companies being able to garner more active participation by shareholders, not just activist shareholders in itself is ground-breaking for corporate governance and social responsibility. Many moral fiascos such as those relating to *Uber's* aggressive corporate culture, *ICICI Bank's* conflicts of interest leading to an unprecedented level of Non Performing Assets, and data breaches at *Facebook* would occur much less frequently with shareholders having a say in such decisions. Currently, the voices of activist shareholders who do protest vociferously, are getting buried in corporate paperwork. Same is the case for NGOs, non profit entities where decisions on how the dollar is best spent can be taken in committees rather than on the whims of one Chief Executive, and such votes can be recorded for posterity, with or without anonymity. Bill Gates and Warren Buffett can breathe easy with a blockchain based decision-making on the spending of their trust funds, in remote regions of Africa and Afghanistan.

2.4 A proposal for an electronic platform to disintermediate the current IPO process

Figure 12 Himalaya Capital Exchange Platform



Source: Author

2.4.1 Determining Optimal Issue Price

The problem of price discovery was first solved by the internet or *World Wide Web*, when firms such as *amazon* and *e-bay* created reliable behemoth platforms where one could find the most reliable market price for anything that was tradable. Price discovery acquired social scalability with new emerging platform models such as *AirBnB*, where goods that did not have a clearing market price earlier, such as a spare bedroom in your home, also found a way to be priced efficiently. So it can be argued that internet platforms can solve the problem of pricing - even of sophisticated, unique, and arcane goods such as art or collectibles, without the need for specialised intermediaries.

However, the capital markets industry, one of the largest and estimated at over $87 trillion, remain under-penetrated by technology due to many reasons:

Complacency of market participants, barriers to entry such as reputations and brands of trusted third parties built over decades, lack of awareness of these highly specialised and highly guarded fields among the technology savvy disrupters, regulatory moats, lack

of ambition or vision on part of fintech firms that did attempt such solutions earlier but instead of taking them on became their accomplices, the list can go on…

Figure 13 Modules for Himalaya Capital Exchange Users

Source: Author

Even though *Capital Markets Theory* is replete with various models for valuation of firms, and those models do serve a purpose in investment banks to embellish pitches and investment memorandums with rich industry comparables, in practice, the issue price is determined like everywhere else, simply by the intersection of supply and demand. That is by determining a price at which investor demand meets client target.

2.4.2 Communication and access to investors

Of course, since the market participants are separated from each other, there isn't a reliable way for issuers (firms raising capital through shares, bonds etc) to learn the reservation price of investors (the price at which they are willing to buy the 'issue'). Communicating with these investors individually is not an optimal process for issuers. One reason investment banks are able to charge a premium for lead managing the issues is their exclusive access to investors, specifically the institutional investors such as hedge funds, mutual funds, insurance funds, High Networth Individuals, Sovereign Wealth Funds and so on, with whom they have interacted on several issues in the past engendering trust.

The world's capital can be thought of as being composed of Public Securities and Private investments. Essentially most of the surplus money in the world is seeking returns in the capital markets industry, because even other assets such as Gold, Commodities, Real Estate etc are represented by shares of companies which have exposure to those assets, or in other words some form of securities. The only exceptions are investments held directly in less liquid assets such as homes, land etc or more fungible assets such as cash or cryptocurrencies or in privately held companies which are not traded publicly, and

are in the domain of the private equity, venture capital, angel investments and so on. So an alternative mechanism to connect seekers of capital with those who have excess capital at disposal could in principle impact every segment of capital markets as described above. However, for the scope of this white paper, we have chosen to focus on the narrow precincts of Initial Public Offerings or IPOs as a capital raising tool for companies when they first go public.

The way investment banks do determine the issue price is by a process called **Order Book Building**, or *Book Building*, which can be easily replicated by algorithms without even using a blockchain.

The Order Book gives a rich chart of price elasticity of demand so that issuer can also decide what the trade off is, if he chooses to raise more capital, or if demand will suffer if he picks a higher issue price.

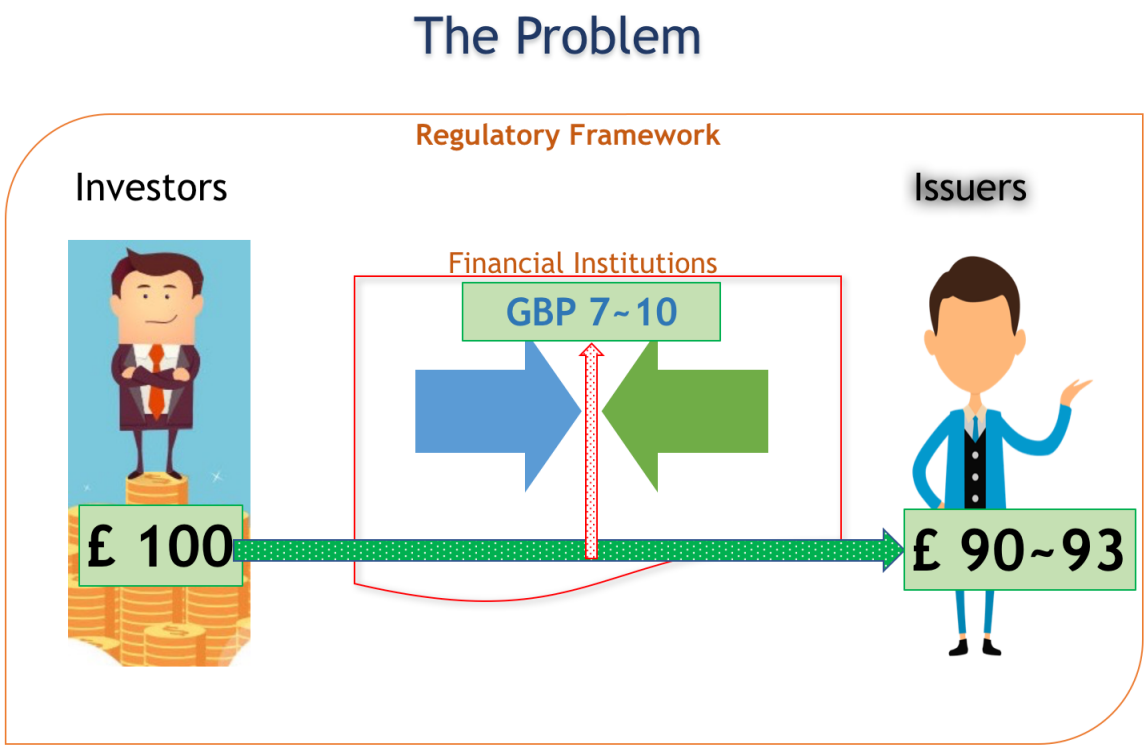
Then the bottleneck for thrifty issuers who want to cut out investment banks remains - how to get access to the investors.

This is a well defined problem called **match-making**.

Himalaya Capital Exchange will now seek to solve this world-wide problem, by getting rid of investment banks and traditional stock exchanges.

"Money and markets (also) incentivize creation of more accurate price signals that reduce negotiation costs and errors for participants in other similar exchanges. The potent combination of money and market thereby allowed a far higher number and variety of participants to coordinate their economic activities than previous exchange institutions, which more resembled bilateral monopolies than competitive markets." – Nick Szabo

Figure 14 The eroding relevance of intermediaries as match-making platforms



Source: author

In the United States alone, securities industry comprises over $30 trillion with over 29000 regulated intermediaries. In a global securities industry of an estimated $87 trillion, there are millions of retail investors and institutional investors that are actively trading in capital markets. Despite the tremendous leaps in technology, where platforms such as Linkedin and Facebook have emerged for serious professionals to find their counterparts and do business with, the previous technology stack stopped short of enabling commerce on those websites (apart from ads served by platform owners that is).

It is extra ordinary that in a market with millions of the investor breed, even successful firms do not dare to go to the market directly and do not find these investors on their own, without engaging the intermediaries. There are examples such as Pages Jaunes of France which modified the IPO process, and the way they engaged the investment banks, but did not completely circumvent the process altogether. Barring exceptions such as Daimler Chrysler AG which attempted a blockchain enabled bond issuance on its own, and a few others who issued special instruments on blockchain, we are yet to see solutions obviating the need for investment banks. This is because there is still cost involved in terms of resources and effort required to custom build a platform and gather investors for each deal. It is not in the interest of investment banks to build these platforms for the use of their fee paying clients.

Rich firms which do not hesitate to shell out 7-10% fees to investment banks, are doing so for reasons of expensive signalling, and not because of any sacrosanct reasons to have investment banks in the first place.

2.4.3 It's time for easy access!

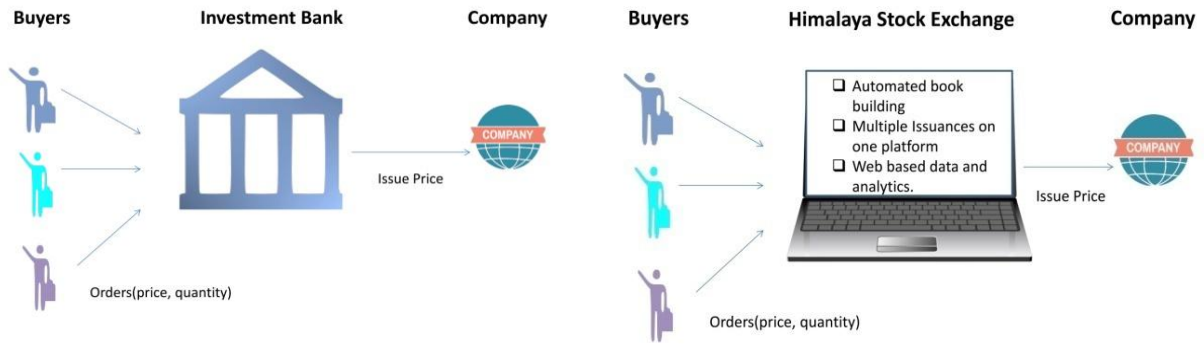
Expensive signalling has its place. Let extravagant firms chased by VC herds do it. In the meantime, let us build a public platform which many thrifty firms will use for raising capital efficiently. For them, let us also find thrifty ways of signalling quality.

Bitcoin has found a signalling mechanism to prove veracity of a transaction, that is different from and that is independent of participation of a central bank - which is called ***Proof of Work***. We will find a signalling mechanism within the scope of IPOs that is different from and independent of the participation of investment banks. The mechanism will be called **Proof of Markets**, based on rating/scoring in a token economy.

It is extra ordinary that public platforms where one can access these investors easily have yet to emerge. Deal making sites such as (Deal Room, Drooms) do exist, but only as technical solutions to be used inside the current banks. Software sites such as Ipreo are successfully executing deals, but for bond issuances and so on. Blackstone and Goldman Sachs acquired Ipreo in 2013. Blackstone can easily underwrite $1bn in debt and place what it does not want with other investors, bypassing banks altogether. However, not all companies have the wherewithal as Blackstone. Banks have also spun out tech platforms in the past, such as Markit (for Credit Default Swaps) whose market cap is over $5bn, in the hope that efficiency and volumes would compensate for greater transparency.

In essence, solutions do exist in current markets for efficiently bringing together various counter parties and doing inter-bank trades. What is lacking however, is a public good that enables any company to discover investors on a public platform and issue securities to them, raising capital directly. No platforms exist that pose as independent rivals to the current partnership of investment banks and stock exchanges.

Figure 15 Himalaya Capital Exchange - a viable alternative to investment banks



Source: author

2.4.4 Testimony for Securities Tokens from Securities Exchange Commission, USA

"Through the years, technological innovations have improved our markets, including through increased competition, lower barriers to entry and decreased costs for market participants. Distributed ledger and other emerging technologies have the potential to further influence and improve the capital markets and the financial services industry. Businesses, especially smaller businesses without efficient access to traditional capital markets, can be aided by financial technology in raising capital to establish and finance their operations, thereby allowing them to be more competitive both domestically and globally. And these technological innovation can provide investors with new opportunities to offer support and capital to novel concepts and ideas.

History, both in the US and abroad, has proven time and again, that the opportunities flourish best when pursued in harmony with our federal securities laws. These laws reflect our tripartite mission to protect investors, maintain fair, orderly and efficient markets and facilitate capital formation. Being faithful to each part of our mission not in isolation, but collectively, has served us well. Said simply, we should embrace the pursuit of technological advancement, as well as new and innovative techniques for capital raising, but not at the expense of principles undermining our well founded and proven approach to protecting investors and markets. - ***SEC's testimony on virtual currencies***

2.4.5 What about ICOs touting to be marketplaces for tokenised securities?

We are the pioneers who introduced the concept in July 2017, and no other ICO is creating the public good as described above. There are securities in real world, and you can tokenise them and make them easier to trade, infinitely divisible into fractional units, transferable and so on. Imagine taking an already listed Apple share, tokenising it and trading it more easily. This doesn't however change the constitution of the current market place, or the market participants or their roles. In fact, it introduces a new kind of intermediary while keeping existing incumbents and intermediaries intact. Evidently, this can benefit the current security holders, by offering new channels of liquidity. But, this does not make it easier for entrepreneurs to raise capital, bring about democratisation of capital raising (or reduce opacity in the markets, or dis-intermediate the industry. It can only make securities easily tradable.

We go several steps ahead. Our ICO has the mission of empowering humble entrepreneurs spread around nooks and corners of the world. It is to facilitate easier capital formation of such entrepreneurs, to increase productivity by channeling the 7-10% fees otherwise spent on middlemen, and to empower many more entrepreneurs to succeed giving them easier access to capital, than they avail of in the current system. On the other hand, we also want to empower the retail investor, who can now participate in the IPO of a future NASDAQ (like ourselves) or in any of the promising tech IPOs, as democratically and frictionlessly as he can participate in ICOs today, with the added benefit of protections that come with a *security* (share or a bond as opposed to a token). Our solution is to expand the universe of participants in capital formation - both on the investing and issuing side, and to do it with fewer arbitrary barriers and privileged gateways that are rent-seeking.

3. Unstoppable Capital - Our lofty mission!

First came *unstoppable cash* - **Bitcoin** - 2009

Then came *unstoppable computing* - **Ethereum** - 2015

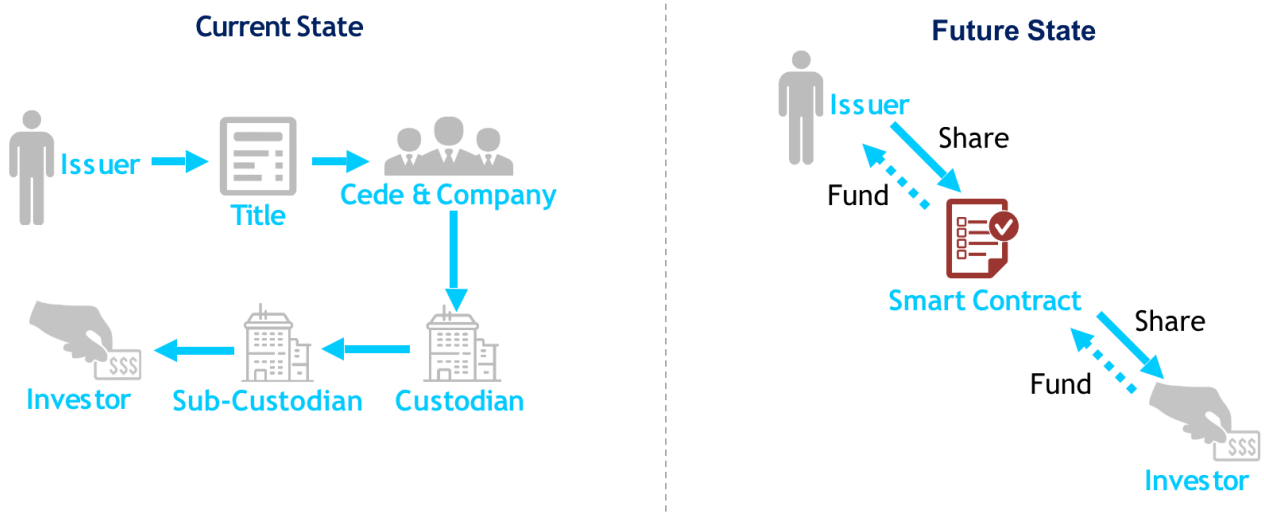
Now comes *unstoppable capital* - **Himalaya** - 2018

Our mission is not only a challenging task, but also a less rewarding one for profit seeking entities when you see it through the lens of risk vs reward. But, it is an enormous public good. One that would truly redefine the capital markets architecture and liberate many. The world would be better for it, even if the incumbents were not. This is why we have little competition for our core idea, despite us introducing the pioneering concept of decentralised capital markets a year ago and many ICOs imitating related, more profitable, peripheral ideas within capital markets but not the core idea. Simply making this a regulatory reality would be an uphill task. Our project is as visionary as bitcoin in its scope and potential.

3.1 Our mission is *Unstoppable Capital*!

We would not settle for anything less. But, thanks to Satoshi, it is not Mission Impossible. Everything we have done so far is unique, and will be unique as you will see, with the explicit purpose of achieving buy in of the real stakeholders, currently outside the token economy - those common entrepreneurs around the world who stand to gain enormously from this platform coming into existence.

Figure 16 Current State vs Future State of capital markets



3.2 Partnerships with big banks, the secret sauce of many a successful ICO?

Counter-intuitive though it may seem to many ICO subscribers, partnerships with big banks is against the long term vision for our platform. Taking funding from banks/ giving away equity would be the death of this vision, and would lead us down the same ignominious path of many a fintech firm that started out with a glorious mission and was

acquired by banks and went nowhere. Any ICOs which purport to create an intermediary solution, and charge fees say 5% are still toeing the same line, and playing the same role of intermediaries. Any ICOs that purport to create a blockchain channel to match the investors, issuers *and* *investment banks* are merely creating a new tool to interact with existing incumbents without changing the process (eg., Polymath). It is similar to having a messenger app for the various parties. Such solutions already exist in the form of (Dealroom) etc, and whether a new tool (Polymath) uses blockchain to achieve the same purpose of matching is irrelevant. Our solution is to introduce a low cost platform where access fees is paid only in the form of tokens, and the token denominated fees will be progressively pruned so as to keep the dollar fees within a reasonable range and within reach of all thrifty users, even when the token appreciates in value. We believe that any platform that charges a non zero fees, is a poor substitute for the incumbent intermediaries in the current model, and will be out-competed by platforms that can drive fees down to zero. Token Economy when thought out well does give a sustainable model to incentivise all stakeholders and participants.

3.3 Democratisation of Capital Markets

We do not believe in actively seeking private consortiums, alliances with big enterprises, and big brands as we set out to create a democratic platform which has not been built for decades. We are inspired by Satoshi who did not need anyone's validation before gifting the world bitcoin. A democratic platform ought to be truly for the people, by the people, and of the people. This is why banks have not built it, in their decades of existence, despite access to technology, access to resources, and talent millions of times greater than startups like us do. This is why we distinguish ourselves from the typical *Wolf of Wall Street*, by our stubborn, indefatigable mission. We are here to create this public good. This is why such a public good of immense value, is eminently suited for an ICO, and we exhort you the future beneficiaries of our platform to support its creation and sustenance.

3.4 What is a Digital Asset?

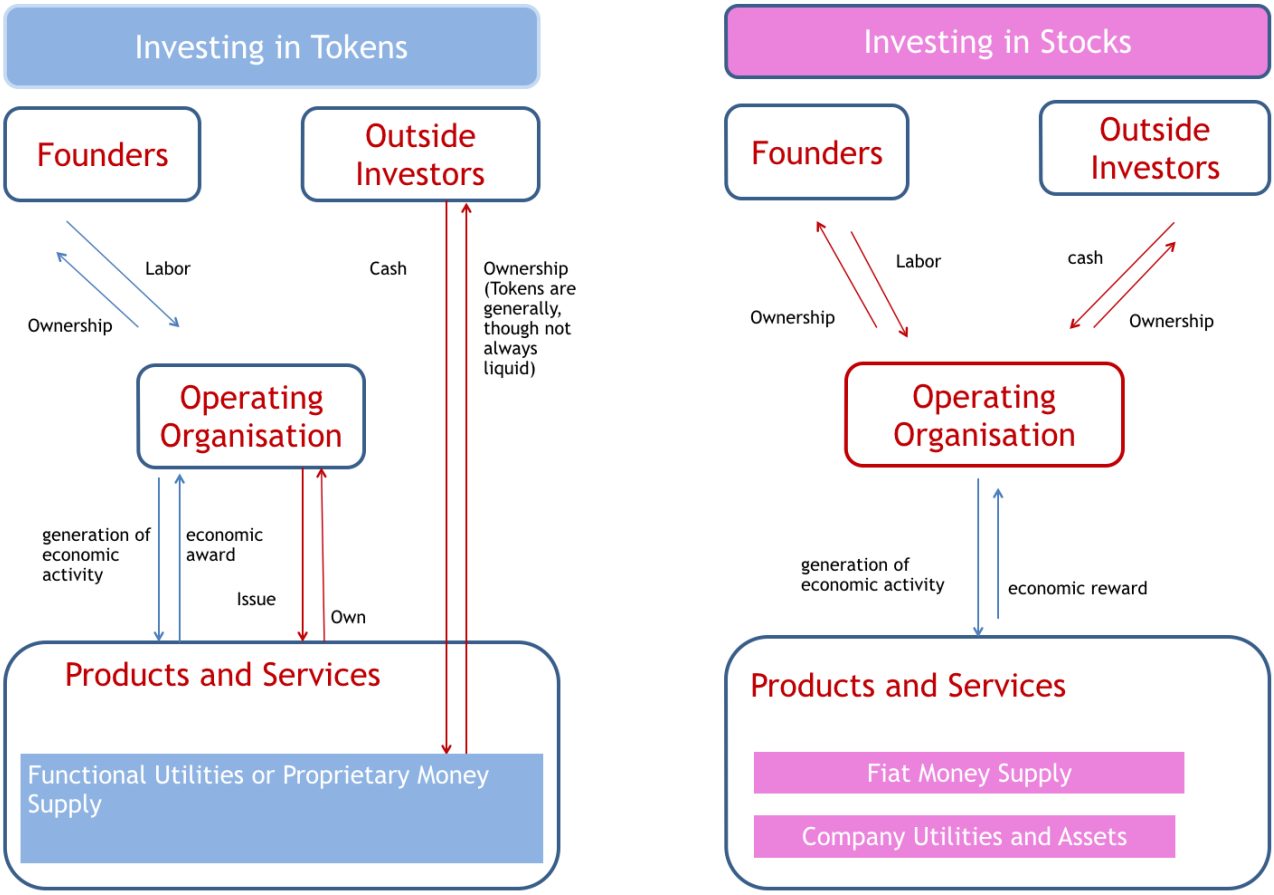
Digital asset is a floating claim of a certain service or goods assured by the asset issuer, and the transactions involving a digital asset are governed entirely by computer technologies and the Internet, including asset issuance, claim of ownership, and transfer.Financial securities are a great example of digital assets.

Blockchain technology can be used to create pure digital assets (i.e., self-sufficient assets not acting as a "proxy" for real-world assets), which is revolutionary.

Digital asset management could leverage security properties of blockchains, including:

- Counterfeit-proof
- Single source of truth
- No need for a single intermediary
- Censorship-resistance
- Transparency and auditability
- Transferability
- Network effects

Figure 17 A distinction between Tokens and Securities



Source: Autonomous Next

3.5 Distinction between Tokens and Securities

Tokens that are issued in Token Generating Events or Coins issued in Initial Coin Offerings are distinct from securities issued by real companies when they raise capital in public markets.

Tokens typically are products, with some pre-defined utility, that a company sells to the market or its customers, sometimes even before the product is ready to be used, in order to fund development of a technology product or platform through pre-booking. Tokens (unless specifically defined to be so) typically do not represent a share in company's value or assets, but shares or securities usually do.

Those who own equity securities in a company typically are part owners of the company and own some rights to company's assets, whereas those who own tokens are typically do not.

Equity holders also have a residual share in the company's assets after the company has met its obligations and paid off all its liabilities.

Those who own loans or debt of the company (liabilities) have a priority claim to company's assets before the equity holders can claim their share.

If a company takes risk such as taking on leverage (or borrowings/ debt) and uses it to grow its revenues and profits, equity holders benefit by this risk-taking by way of profits accruing to the reserves which the shareholders have a claim on.

Token holders have no stake either in company's equity or debt, unless specifically defined to be so.

Token holders, while having no claim on any residual share in company's balance sheet, do benefit when the value of tokens appreciates. This usually happens when company's product gains more traction or popularity, more users start using the company's technology or application or platform, making the platform more useful to everyone (positive network effects).

So, while the shareholders benefit in proportion to a company's profitability, token holders benefit in proportion to the future value of the platform which directly reflects the number of users using the platform and its token.

A company can specifically define a token to be a utility token or a token mimicking a real life security - such as a share or a bond.

In some cases, even when the company defines its token to be a utility token which does not explicitly act like a share, does not have any dividend distribution promised and does not represent any residual ownership in company's assets, it can still be classified as a "security token" by virtue of it failing the Howey test, as defined by The Securities & Exchange Commission (SEC, 2017), used to classify tokens into utilities and securities.

The commonly accepted definition of a security as defined by Howey test being, where some individuals contribute capital to a third party or enterprise, with the motive to benefit predominantly from the labour or efforts of the third party or enterprise, even if the said instrument does not promise or advertise any future profits, or returns on the said investment. It is thus possible for a token to be classified as a "security token" in an ICO, even when it was not purported to be one.

However, if companies are offered a platform to issue "security tokens" which are designed to be securities from the outset, this would open up the capital markets for entrepreneurs from every legal industry and geography and disrupt many traditional pathways such as Venture Capital and Private Equity.

Predominant reasons for an Initial Security Token Offering from an issuer's standpoint:

- Eliminating 7-10% fees paid to investment banks managing IPOs
- Instant access to a global borderless investor base
- Reduced friction in accessing capital, by making gatekeepers redundant or optional rather than mandatory: such as investment banks, VCs
- Better control over issue price, allocation, and investor communication and management pre and post issue
- Improved governance through blockchain-based stakeholder voting

3.6 Distinction between Security Tokens from ICOs vs Security Tokens from ISTOs

Let us now distinguish such Security Tokens that are accidental outcomes of ICOs, from Scrips or Security Tokens of issuers who come from real world economy (as opposed to token economy) which our platform proposes to facilitate the issuance of.

Figure 18 Distinction between Security Tokens issued in ICOs Vs ISTOs or Scrips **(Initial Scrip Offerings or Initial Security Token offerings)**

Source: author

Figure 19 Distinction between IPO, ICO and ISTO (from an Issuer's standpoint)

IPO	ICO	ISTO
Investment banks give access to investors	Internet gives you global access to investors. Over $10bn raised!	Internet gives you global access to investors
Banks signal quality issuances	No one signalling quality. Investors decide for themselves	Token holders regulate, curate and monitor issuers, quality on platform
Securities regulation protects investors from incomplete disclosures	ICOs are gradually coming under regulation. Worse case scenario, ICOs are seen from the lens of a security	Security tokens are regulatory compliant to start with Treated as securities from Day 1 affording investors protection.
Regulation protects from misleading statements in prospectuses	No disclosure norms	Disclosure norms per securities laws
Investment banks tell you what IPO price you should list at	No one tells you. Issuer decides price.	Algorithms guide price
Represents true ownership in company's assets	Represents access to products, services not company ownership	Represents true ownership in company's assets
Any company, any industry	Only blockchain companies	Any company, any industry

Source: author

Figure 20 Distinction between IPO, ICO and ISTO (from an Investor's standpoint)

IPO	ICO	ISTO
Raise money from regional investors	Raise money from anyone	Raise money from anyone - global borderless exchange
Listing requirements of regional stock exchanges	No listing requirements	Some listing requirements
6 month + preparation time	Less time	Less time
Investment banks have to put their quality stamp	No one is putting any quality stamp. Advisers indicate quality	No one is putting any quality stamp
Limited tradability in secondary trading	Enormous tradability	Better tradability of tokens
Good liquidity on regional stock exchanges	Mushrooming crypto exchanges all over the world	Secondary exchanges for security tokens will unleash enormous liquidity

Source: author

4. Technical Specifications

4.1 Basic Requirements (for Phase I)

1. Users of the system:

   Issuers (public and private firms, governments, non-profit foundations)

   Primary market investors (both institutional and retail)

2. Transactions:

   A global trust-less platform for investors and capital seekers to transact directly

   Can issue a broad array of digital assets to investors

3. Processes to be automated:

   Primary Issuance of securities

   Auctions of Govt. Assets

   Syndications

   Govt. Bond issuance

   Dividend Distribution

4. Enhancements on platform:

   Asset managers and other intermediaries can build applications on top of our core protocol

   Multi country support

   Multi currency support

5. Interaction Points

   Investors of capital and seekers of capital can interact freely

6. Information Sharing

   Investment opportunities across the globe

   Regulatory aspects

   Risks vs. expected returns

   Access to due diligence reports

7. Validation Engine:

   Every participant can take part in multiple capital markets with low capital threshold

8. External Dependency

   The platform can operate with or without intermediaries

4.2 Advanced technologies (for advanced phases)

1. Blockchain

   Cryptographic currency

   Capital allocation to be made in a cryptographically way

   Smart Contracts

   Mitigate settlement risk or delay

   Delay in processing of refunds

   Minimize counter party risk by removing need of escrows

2. Artificial Intelligence

   Suggest investment opportunities to investors

   Suggest suitable investors for each issue

   Drive efficient book building process to achieve optimal pricing by

   - Finding investors with higher reserve prices
   - Finding issuers with lower reserve prices

4.3 Requirements of a Trading Platform

Key steps involved in entering into a contract on a Centralised Exchange:

Centralised electronic exchanges offer the following:

- *Price discovery:* An electronic board for any participant to see prices at which participants are willing to buy and sell, and market depth. i.e., how many buyers and how many sellers and the quantities they are looking to buy and sell. This forms the basis for most participants' actions. i.e., based on where the market is currently trading, they may decide to buy or sell an asset and depending on liquidity, they decide on the size of their trading quantity.
- *Trading:* The ability to express an intention to buy or sell at a given price. i.e., place a firm order to buy or sell an asset in a certain quantity at a certain price. It is important to note here that when an order is placed the participant is committed to trading if his intention is fulfilled. i.e., he cannot backtrack if his live order is fulfilled.

- The ability to cancel such an order instantaneously as long as it has not been filled
- The exchange charges a fee for offering this service. In return, the exchange, apart from arranging for buyers and sellers to meet in a secure environment, also ensures that the trading parties' buy or sell transactions are fulfilled. i.e., it sits between the buyer and seller and underwrites to fulfil both sides of the transaction. So the buyer and seller are not directly exposed to each others' counter-party risks. Therefore, if one of them fails to honour the transaction, the other party is not affected.
- Anonymity: Since the exchange sits between the buyer and seller (or in other words, each transaction actually comprises two transactions – one between the seller and the exchange and another one between the buyer and the exchange), the identities of the buyer and seller are not required to be disclosed to each other. It remains private information with the exchange. This is a feature that institutional investors find quite useful since they are large holders of financial assets and do not want their trading actions to be public information. For example, Warren Buffet would not want anyone to know if he began to sell the shares of a company he has invested in.

4.4 A Blockchain based exchange where smart contracts facilitate trading

"A fully automated transaction processing is preferred in the long run, from the point of view of both security and compliance, which could be achieved by embedding prerequisites for regulatory compliance into the blockchain specification." - Bitfury

Public multi-asset blockchains and overlay asset protocols could form the basis for the Internet of Value – a global, ubiquitous, largely permission-less network for digital asset transfer.

While the technologies for this hypothetical network are not yet mature and the operation of the network poses unsolved regulatory and legal challenges and obstacles, blockchains could transform asset transfer in the same way the Internet has transformed data transfer.

4.4.1 Auction Mechanism Design - A Case for Smart Contract Based Auctions

Online auctions are akin to ascending auctions which make collusion and coordination easier between bidders, and therefore less fair for bidders who are outside the cartel. In sealed-bid auctions, however, the same coordination cannot be achieved as there is neither the opportunity to signal, nor the ability to retaliate against a bidder who fails to cooperate.Smart contracts are akin to a sealed bid auction, which is better for both consumer and producer surplus - in our case both the issuer and the investor, than an ascending auction.Smart contracts lend themselves to a fairer process in auctions.

Although transparency of internet sales leads to lower consumer search costs and dealer costs,auction-theoretic considerations mount a strong case in favour of smart-contract based sealed bid auctions. Therefore a smart contract based exchange will result in increased consumer surplus over the existing exchange technology. (Though the ***Revenue Equivalence Theorem*** (Vickrey) posits that the type of auction does not influence the seller revenue, in reality the demand curve is downward sloping and not inelastic, which is an assumption for the theorem's deduction.)

4.4.2 Marketplace Requirements

A Blockchain based decentralised marketplace which brings buyers and sellers together through smart contracts needs to be able to offer the following:

- Price discovery: In the initial stages of development, perhaps this is not something the marketplace needs to offer to begin with, but it is useful to keep this aspect in mind while building the marketplace.
- Ability for a buyer or seller to get an order to a node in the network to buy or sell an asset and offer an economic incentive to the node to fulfil order.
- Nodes capable of talking to other nodes to search for the best fit to fill the order that the node is holding
- Ability for the buyer or seller to cancel the order as long as it is not fulfilled.
- Special kinds of orders such as stop loss and take profit orders which get executed only if a certain price level is seen are nice to have if contracts can be designed to execute these. i.e., smart contracts that understand that the order is not meant to be executed at current prices and that it is only to be executed if a certain higher or lower price level is reached. These will be nice to have in the initial stages itself but become necessary as the market matures and the needs of the participants mature.
- Add to the blockchain, any confirmed transactions
- It needs to be capable of allowing anyone globally to get in touch with the nodes. This will turn out to be a key advantage for decentralised trading systems since most exchanges usually offer services only to local clients mainly. To be able to effectively compete with electronic exchanges, blockchain based trading systems should be able to service anyone globally.
- An effective mechanism to keep out non-serious or fraudulent participants.

4.4.3 The System Requirements

- Type and amount of the issued securities should be specified
- Issuer identity should be determined by a defined set of identification rules using
- standard pre-defined rules
- User security; the ledger needs to implement adequate authorisation protocols to identify ownership and permit transfer or issuance of assets
- Counterfeit resistance; the system needs to have mechanisms to ensure impossibility of counterfeiting assets
- Properties of the securities such as “Non-transferable”, “Locked”, etc. should be specified
- Trust and Reputation Systems
- Scoring Mechanisms

4.5 Technical Specifications on Smart Contract features

"In the ideal case, the specification would include all rules of transaction processing, enabling parties to create direct contracts between themselves where the blockchain network is merely a conduit for value transfer rather than an active party. Public blockchains could indeed be compared with the Internet as a means of data transfer. The Internet protocols (such as HTTP and HTTPS) do not reflect any financial logic. Nevertheless, these protocols are widely utilised in modern electronic financial services facilitating, e.g., end-to-end encryption with the help of HTTPS. Similarly, a public blockchain could facilitate compliance for next-generation financial services without directly implementing service-specific compliance, such as obligatory customer identification, on the blockchain-wide level." - Bitfury

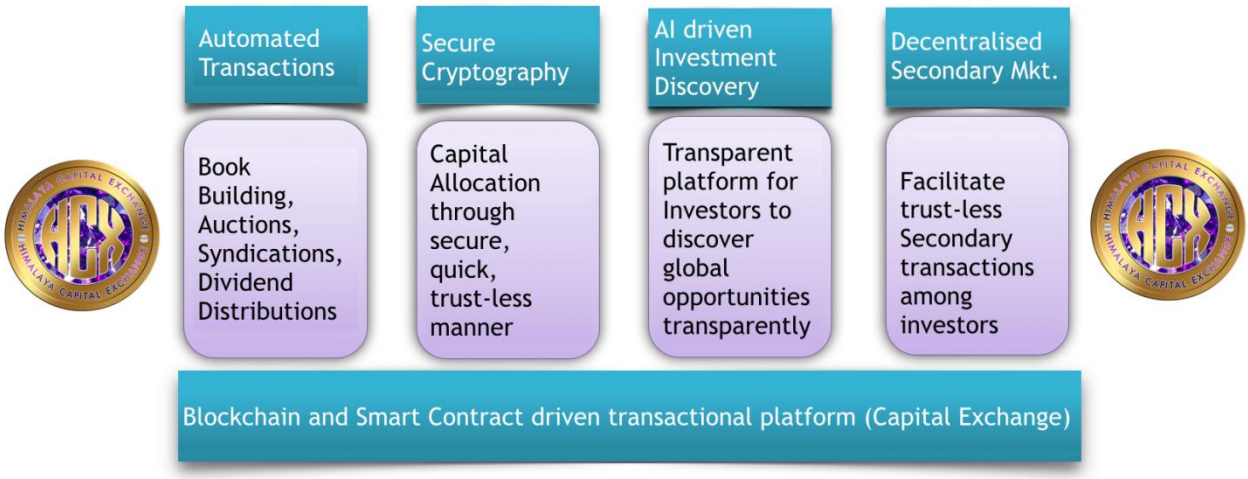
We are currently researching and developing further the features of smart contracts.

- What does the smart contract need to actually say? i.e., exact details
- Price discovery–how will the smart contract know which node to get in touch with
- Mechanism to pro-actively penalise non-serious and fraudulent participants. Though the sections below explain how HCX token holders can curate and regulate this marketplace, we would also be keen to explore a smart-contract based proactive encouragement and enforcement of good behaviour, and penalising of bad behaviour.
- Ability to retract an order

4.6 Technical Architecture for Himalaya Capital Exchange Project

Let us now define the technical aspects of our implementation. The long term vision for our Marketplace is a super highway of securities eco-system with investors and capital raising entities, and comprising of multiple ingredients of varying complexity technology-wise, both blockchain-based and non blockchain-based.

Figure 21 A Smart contract-driven transactional platform



Source: author

4.7 A Binary Token Architecture

We will have two tokens, HCX and CCX within our eco-system.

HCX is an access token to our platform which is sold to subscribers during ICO and does not have any relationship with nor exchangeable with any security tokens that may be traded on our platform in the future. HCX is a cryptocurrency that will be issued on ERC 20 standard during our ICO. We will endeavour to list HCX on popular crypto exchanges, post our ICO.

CCX is a native payment token. CCX will be pegged to a fiat currency (or a basket) and the token will be easily exchangeable with other fiat and cryptocurrencies as well as with security tokens that will be launched on our platform. CCX's main utility is to function as the native digital currency for use within our platform.

Other Security Tokens: Other security tokens that may be launched on our platform will be easily tradable with CCX. We will tie up partnerships with other securities complaint crypto exchanges to list and trade the security tokens of issuers on our platform. We will also endeavour to create our own secondary trading platform for the security tokens.

CCX will be a security token that will be traded on our own securities complaint secondary trading exchange for security tokens (when such an exchange is ready).

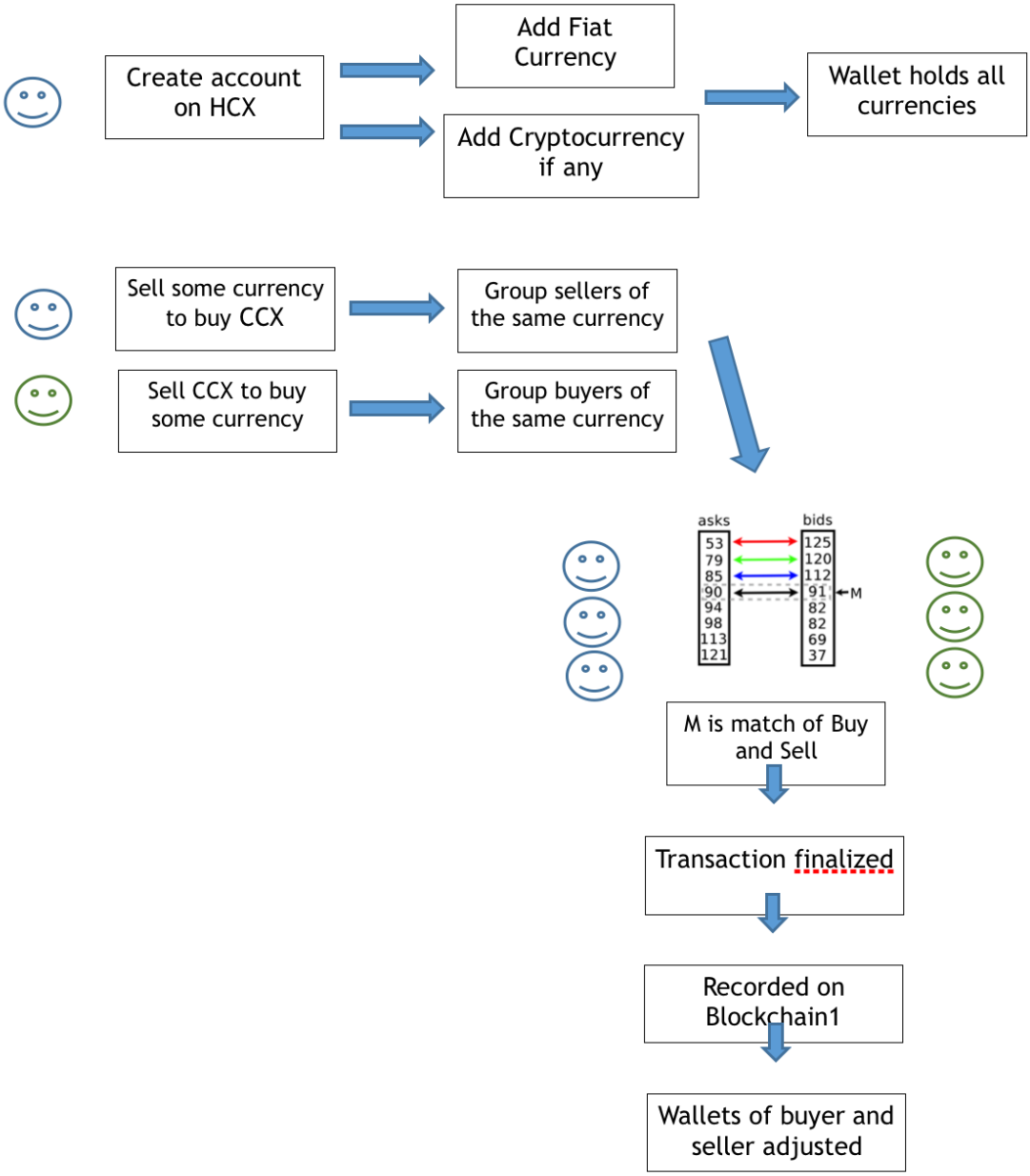
4.8 Distributed Ledger Technology

Related Systems within our eco-system for Users of the Capital Exchange Platform would be:

- A crypto to fiat exchange
- A pegged coin - which will serve as the native digital token for our issuer and investor marketplace. This is different from the token issued to our ICO subscribers which will be used as a utility token to access the platform.
- A smart contract platform for first time issuance of tokenised securities (this is similar to an ICO platform, but will be complimented by a legal and compliance framework that will enable securities issuance legally in specified jurisdictions)

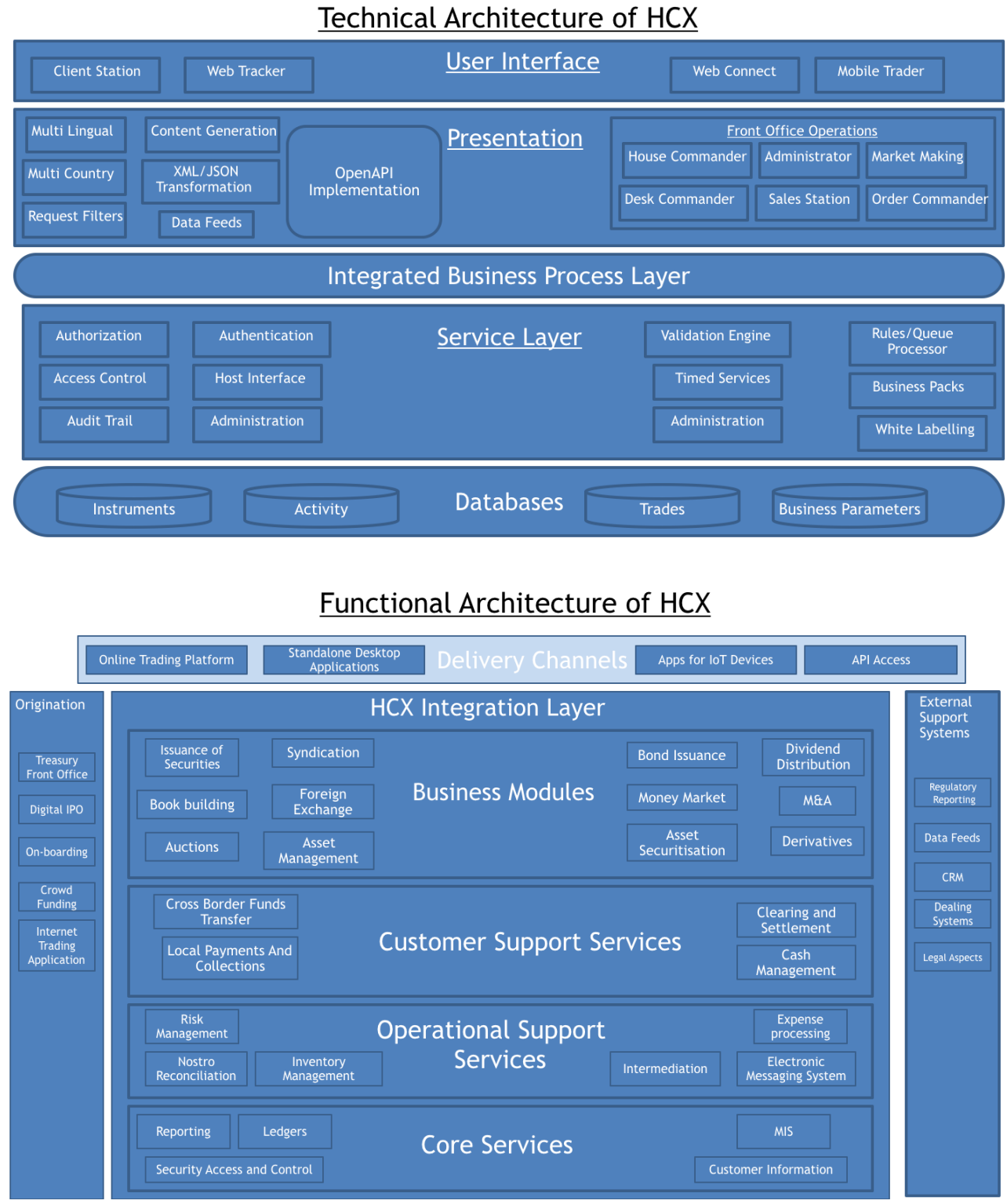
- A smart contract module for servicing of securities (dividend distribution, register and transfer of ownership etc)
- Algorithms for building order books and determining issue listing price (this is just a software module and does not need a blockchain functionality)
- A virtual exchange for listing tokenised securities (this can be done on our exchange or on our partner exchanges such as Lykke, to provide additional liquidity to our issuers.)
- An order-matching exchange for buying and selling of such tokenised securities (this will be a hybrid between a decentralised exchange and some amount of off-line order matching)
- Governance Mechanism of Issuers (Participants, Decision Making, Voting, Punishing bad behaviour and incentivising good behaviour, Implementation)
- A Voting System for Issuers and their Annual General Meetings
- KYC system
- AML system
- A wallet functionality (not mandatory to the functioning of our platform but optional)

Figure 22 CCX Wallet Functionality - An illustration



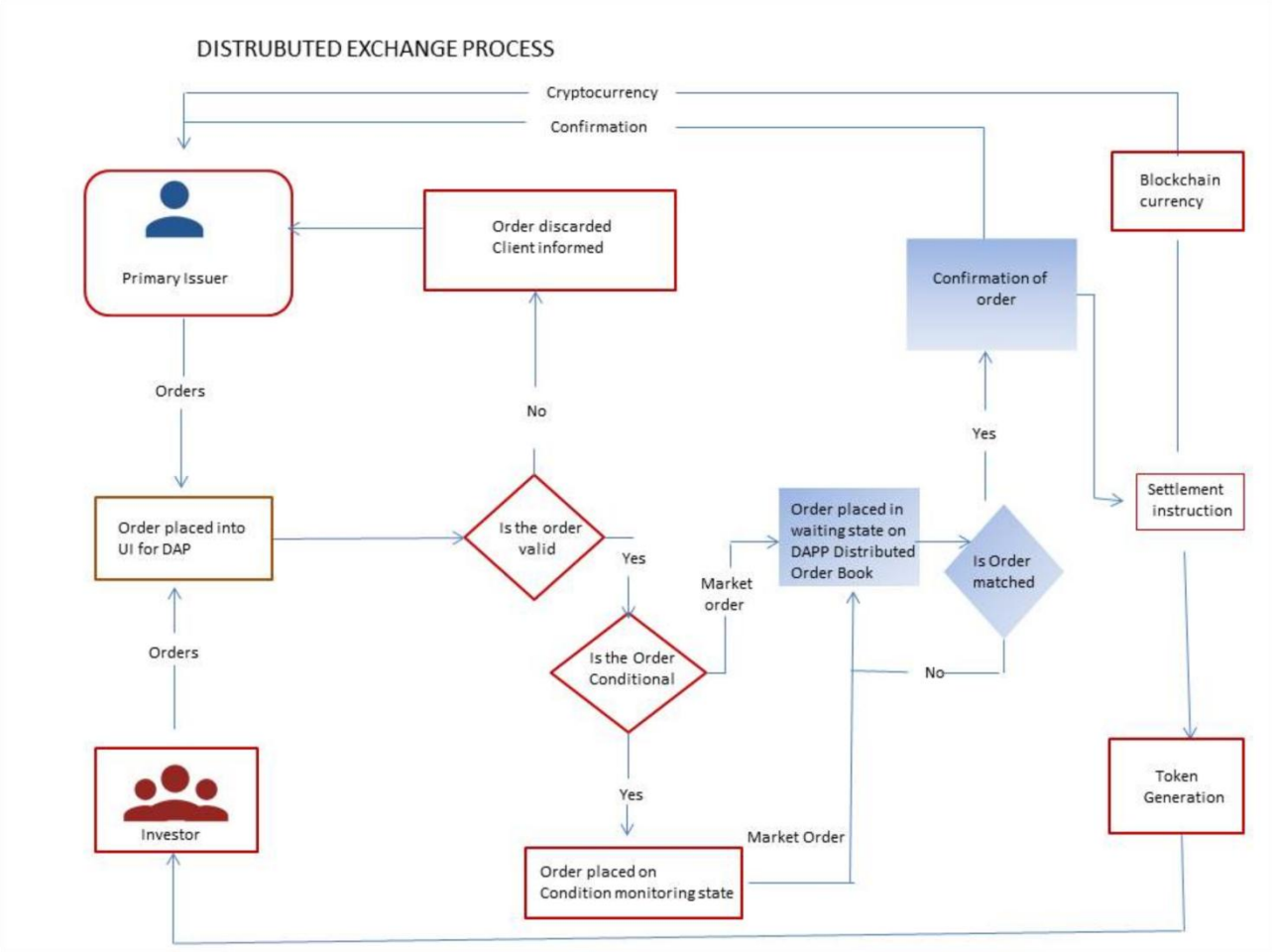
Source: Himalaya Labs

Figure 23 Architecture of HCX



Source: Himalaya Labs

Figure 24 Distributed Exchange Process



Source: Himalaya Labs

4.9 Community Related Systems for Stakeholders of our Platform:

"The idea of releasing a new currency as a mechanism for funding protocol development is perhaps one of the most interesting economic innovations to come out of the cryptocurrency space. But a critical determinant of success is architecting this distribution of value right. It also seems important for the manifestation of this value, the coin to be of continuing value as the platform grows and matures. And what's also important here is to think of the coin as not just currency, but as a store of value, like shares in a private company. The coin provides returns to early contributors - of human capital. of risky early participation, of effort publicising the marketplace and facilitating critical mass - a new breed of purpose-driven investors." - Vitalik Buterin

The following token functionalities will be available to holders of our HCX token:

4.9.1 Democratic selection of Issuers:

Voting to select the issues that ought to be listed on the exchange (such voting will happen by staking HCX tokens issued at our ICO)

4.9.2 Democratic selection of Apps:

Voting to select the developer applications that build out rich features on our Market Place (similar to Apple and Google Appstore, we expect our platform to be leveraged by developers to

build a rich alternative eco-system to the existing capital markets infrastructure and to also draw a vibrant community that would add positive network effects)

4.9.3 Community Rating & Scoring of participants:

Token holders will stake their tokens to rate and score issuers on their information reliability and investors on their performance reliability. These ratings will do the job of investment banker in vetting of a traditional IPO

4.9.4 Ancillary Service Providers:

We envisage the current intermediaries in capital markets to also play a role on our platform, by offering services, now optional and no longer mandatory, such as due diligence reports, audit reports etc. Since it will be a rich marketplace, service providers can propose bids for a specific report, and the selected bids can possibly be crowd funded by participants interested in a particular scrip or security token. Some issuers (companies raising capital) may wish to provide/ finance these at their own cost. Note, however, that these services are now unbundled from the investment banks lead managing the issue, therefore making it unnecessary to mandate a bank at all. A report can be produced at a decimal fraction of the cost billed by banks. Some issuers and investors may choose to bypass these reports altogether.

4.9.5 Non-Blockchain based Systems

Ancillary offers complimenting the marketplace would be:
A compliance framework sandbox

Support modules for investors (Institutional Investors, Accredited Investors, Retail Investors at a later stage)

Support Modules for Issuers (Corporates, Non-Profits, Governments)

Code Audit / Formal Verification

Secondary applications:

Third party developers would be free to build applications on top of our infrastructure such as: fund portfolio creation and management modules, indices, rating scores, due diligence, compliance reports etc, index traded funds etc to leverage our ground-breaking new infrastructure.

5. Community Building Initiatives

5.1 Himalaya Foundation

The philosophy of decentralisation is best served by a foundation

Himalaya Labs founders believe that the Himalaya Capital Exchange platform is best run by a non-profit foundation to guide the decentralisation of heavily intermediated industry with big muscle incumbents who would be unhappy with the development. Public interest is best equipped to resist the might of such vested interests. The brief history of decentralisation in the past decade bears the fact that you cannot benefit much from decentralisation, unless it is to give back to the community. Contemporaries of Ethereum failed in their vision because of their profit-making pursuits, even if some of them may have had very interesting ideas, because the irony of centralising profits using the technology for decentralisation was not lost on anyone. So, the two-

sided marketplace platform Himalaya Capital Exchange by design is - by the people, of the people, and for the people. It will always be. Giants like Satoshi ought to be paid tributes in the same coin. The Himalaya Foundation will be set up as an independent Swiss / Lichtenstein entity whose goal is to build the Himalaya Capital Exchange platform, oversee the ongoing development of the technology, promote the use of the platform and grow the community.

5.2 Regional Leads all over the world:

Recognising early in our odyssey that disintermediation of a centuries old system is a people's movement, and not so much a technology movement, or another ICO, the founder has spared no efforts in building an organic community around the globe painstakingly from very early on.

Through the founders unprecedented global roadshow of over a year evangelising the concept of decentralised capital markets, the project now has many ardent believers who have volunteered to steer their local communities to this platform. As such, we have several parties with concentrated pockets of access to regional companies looking to list on our platform. These numbers would only grow with the launch of our platform and the community's acceptance with growing word of mouth and the landmark first of its kind public token air drop and token sale targeted at non-token users.

5.3 Beta Sign up Page

We will start to gather interest from a pipeline of companies around the world that want to be the early adopters to access beta of Himalaya Capital Exchange or Ticker Highway - our next generation tech highway for security tokens on our beta sign up website. This would also serve as community for our own ICO, and word of mouth promotion of our platform.

5.4 Token Airdrop

An Airdrop of our utility access token HCX is planned for millions of people around the globe, so as to democratise fund-raising ability of every deserving entrepreneur and participants of capital markets even outside of crypto economy. We will engineer a set of rules and criteria for the first global inclusive airdrop of this nature, and will announce this compendium to the community when we launch our airdrop. We wish to contribute to a fair, transparent, self-governed ecosystem as pioneers of the blockchain ecosystem. Ofcourse, we will aim to distribute this to the common man who has never heard of blockchain, but would like to invest in securities and to the companies which have never thought of an ICO, but would be intrigued by a global exchange offering investor access and unparalleled convenience.

We will also formulate and release rules for our Token Airdrop.

5.5 Providing Liquidity for issuers of security tokens on our platform

Universally Agreed Standards on Financial Smart Contracts and Cash Flow Conventions

5.6 Education on the New Platform and Eco-System

A Non-Profit Foundation dedicated to building out this eco-system

6. A discussion on Technical Protocols for building a Tokenised Securities Highway

6.1 Consensus Mechanism

Though we believe in the robustness of Proof of Work that Ethereum currently implements, a form of hybrid **Proof of Stake** appears to be emerging as a desired option at present for a *Platform As a Service* Marketplace, which has the promise of becoming a busy highway, attracting a large number of mainstream users such as issuers, and investors, including those who may not be familiar with crypto economic systems at all. Simultaneously, a successful platform such as this would be populated by a large number of developers of third party applications, and other market place participants forming a wholesome eco-system to substitute the current traditional financial infrastructure rails. This would presage daily transactions running into millions per second, which none of the existing protocols are equipped to deal with, at least reliably and securely anyway. However, we have reviewed various protocols in proposal that promise the desired performance in future.

We envisage building our utility or access token HCX (to be issued at ICO) on an ERC 20 (ERC) standard on Ethereum Blockchain.

We will build the prototype for Initial Security Token Offering (ISTO) platform (a smart contract platform for first time issuance of tokenised securities) on Ethereum Blockchain. While Ethereum is currently on Proof of Work, we envisage this to migrate to Proof of Stake later. We have the flexibility to decide to migrate to the most suitable blockchain in future.

6.2 Wallet

We have examined several wallet protocols such as **Radar Relay**, **Altcoin**, **Lykke** etc.

6.3 Crypto Exchange

This exchange would accept crypto currencies such as Bitcoin, Ethereum and other main coins, and also leading fiat currencies such as USD, CHF, GBP and convert them into our native digital token and vice versa.

6.4 Pegged Coin

We will need a pegged coin as a bridge to the real world of fiat, so that investors and issuers can be certain of their money balances lying within our Himalaya Capital Exchange or Ticker Highway platform, without being excessively concerned about volatility as crypto currencies are prone to. So let us say investor X is eagerly awaiting new issue of a promising firm, and wishes to use our platform to buy some security tokens at initial issue price. If he invests $10000 today, our crypto exchange converts the fiat into our native digital token (pegged coin) equivalent to $10000. If two days later, the investor X still has not utilised his balance to buy any security tokens, his balance would still be $10000 and not subject to a delta arising from price appreciation or depreciation. This pegged coin is essential to the integrity of this platform, as otherwise users who are mostly from the real non-crypto world would be aghast at seeing their balances dwindle or appreciate for nothing they could take credit or blame for. The only exposure that investor X ought to take and

prepared to take, must be the exposure on the security tokens he invests in, or the prospects of the company issuing the security token, and not on account of volatile nature of the native digital token. This is the distinction between a regular token and the Scrip or Security Token that will be offered on our platform. For all practical purposes, it acts like the real security (share or bond), and depends on same factors for its price appreciation as the real stocks do, except that it looks like a crypto key - that represents a security, rather than a paper or e-share. The issuers (or companies issuing securities) will have liberty to define the characteristics of *Scrips*.
We are currently examining various mechanisms that have been postulated for achieving stable prices of a coin, but believe a simple dollar reserve of 1 to 1 which is scrutinised by independent auditors would achieve this purpose elegantly. Known mechanism for pegged coins include 1. Using a 1 for 1 dollar reserve, that is subject to a reliable audit (as opposed to the ethical quandaries of Tether which was caught cutting corners with audit of this tethering mechanism using USD reserves) 2. Using other cryptocurrencies in a dynamic portfolio to create a pegged coin 3. Seigniorage shares to manipulate supply and demand of coins to achieve stable / pegged price.

We must distinguish a Pegged Coin from a Stable Coin, and what we need in our platform is a pegged coin, and not so much a stable coin which is more complex to achieve and maintain. Researchers are not in consensus on what is the best way, without having to set aside 4X, 5X or nX (where n is unknown) margins to shield from volatility. Problems of reserve banking, leverage etc impede the objectives of maintaining a coin utterly stable. However, some real coins have shown remarkable stability in practise.

6.5 Scalability

The most popular public blockchains today, namely Bitcoin and Ethereum suffer from severely limited transaction throughput (Lee et al., 2018). Scalability is a design constraint in blockchains because they are duplicated databases over distributed nodes, which by their very definition cannot offer the same performance as centralised servers. It is a popular misconception that blockchain delivers faster, better performance. Blockchains offer better security in presence of malafide actors, but not better speed. Infact, Cap Theorem states that blockchains cannot optimise for more than two out of three features: security, decentralisation, performance. So any improvements in scalability and performance have to necessarily derive from compromised security. Even though alternative protocols such as POS and DPOS have been proposed that promise superior scalability, and performance, implementations are yet to be seen that will withstand the test of time. No single protocol exists today that has gained public confidence to the degree that Bitcoin Blockchain and Ethereum have. When asked about protocols like POS designed for scalability for mimicking securities industry, Nick Szabo opined that these are yet to be peer reviewed and declared robust for the purposes of conducting massive multi-million transactions in a trust-minimised fashion. Ethereum Founder Vitalik had proposed that transaction initiators voluntarily limit the value of each transaction to $50 million in light of the ongoing hacks such as Parity Wallet, Bitfinex hack, Coincheck and the future scope for pilferage.

Nick Szabo points out that centralised interventions in the decentralised world (namely centralised crypto currency exchanges, and oracles that depend on humans for edifying the system on the state of truth) are sources of vulnerability. Yet, the same probabilistic revolution that perhaps inspired Satoshi and other pioneers like Nick Szabo, Wei Dai, Hall Finney and later persuaded the crypto community that 100% certainty is neither necessary nor desirable in designing and building decentralised consensus systems, will also tell us that 100 % decentralisation is not necessary to achieve the stated purpose of disintermediation and getting rid of agency problems and conflicts of interest so rife in the centralised world. Indeed, the last mile of decentralisation is prohibitively expensive and impractical and almost impossible to achieve.

The breakthrough of 'exceeding certainty with which you can arrive at a consensus among multiple nodes who are all acting as independent observers, given a certain length of blocks in a Proof of Work protocol', is the lynchpin of *trust-minimisation*. This has withstood the test of time, steely resolve of hackers driven by greed, growing criticism of envious contenders for intellectual rivals, and all manners of rationale offered by centralised incumbents for why a third party is required to guarantee the completion of a transaction. Blockchain has incontrovertibly established that a third party is not required for the completion of a transaction. Also that a transaction on a blockchain can be universally acknowledged as a single source of truth. Ofcourse, examples have come to light where these supposedly decentralised protocols have been proven to be extremely centralised - NEO was one such recent case exposed by an academic researcher. Other facetious attempts were made at characterising the degree of decentralisation in specific blockchains by superficial intellectualists, which also came in for public criticism for their simple failure to comprehend what kind of decentralisation adds to the robust security of a blockchain (not every feature such as number of nodes disregarding the control of those nodes, number of client implementations you have on a blockchain disregarding the nature of clients etc..) A decentralised system is only a safeguard against centralised decision making to the extent that the parties that participate in the consensus mechanism are not colluding. To the extent this assumption is overlooked, this is a chink in the armour of all decentralised systems.

6.6 The role of token-holders in the eco-system - and incentive design

Voting

Rating

Staking to vote and rate

Companies will not be allowed to stake more than a certain number of coins. This is to prevent a "race to the top" by mindless pumping of tokens just to rank at top. Responsible selection can be equally achieved with a ceiling on number of votes.

The company which first meets the ceiling stakes of say 10000 gets selected.

Tokens staked by community will be recycled to incentivise positive contributors to the eco system and network effects such as developers with most up-voted apps, innovative proposals etc..

Figure 25 Performance metrics - Centralised Vs Decentralised systems

Today, the extant blockchain protocols have a trade off between performance and scalability, and rightly so. The current performance metrics are no where close to the desired transaction throughputs required to equal the centralised entities such as Visa and NASDAQ.

We have seen protocols for peer to peer decentralised exchanges evolve, to swap one digital asset for another such as a digital currency - from a maker-taker relay model, to atomic swaps, cross chain swaps. However, the current crop of decentralised exchanges are rudimentary in technology and suffer from a number of challenges such as lack of user friendliness, and lack of liquidity.

In the meantime, we aim to build out and launch the platform for the issuance of Initial Security Token Offering (ISTO) or Initial Script Offering in late 2018, where the technology is already robust and well-proven and not constrained by transaction throughput, speed and other such performance metrics. We expect to explore decentralised exchanges for trading these tokenised securities already issued on our platform, in 2019 by which time these protocols are expected to have mature peer reviewed implementations, and we will have picked the most desirable protocol with the best feature trade off.

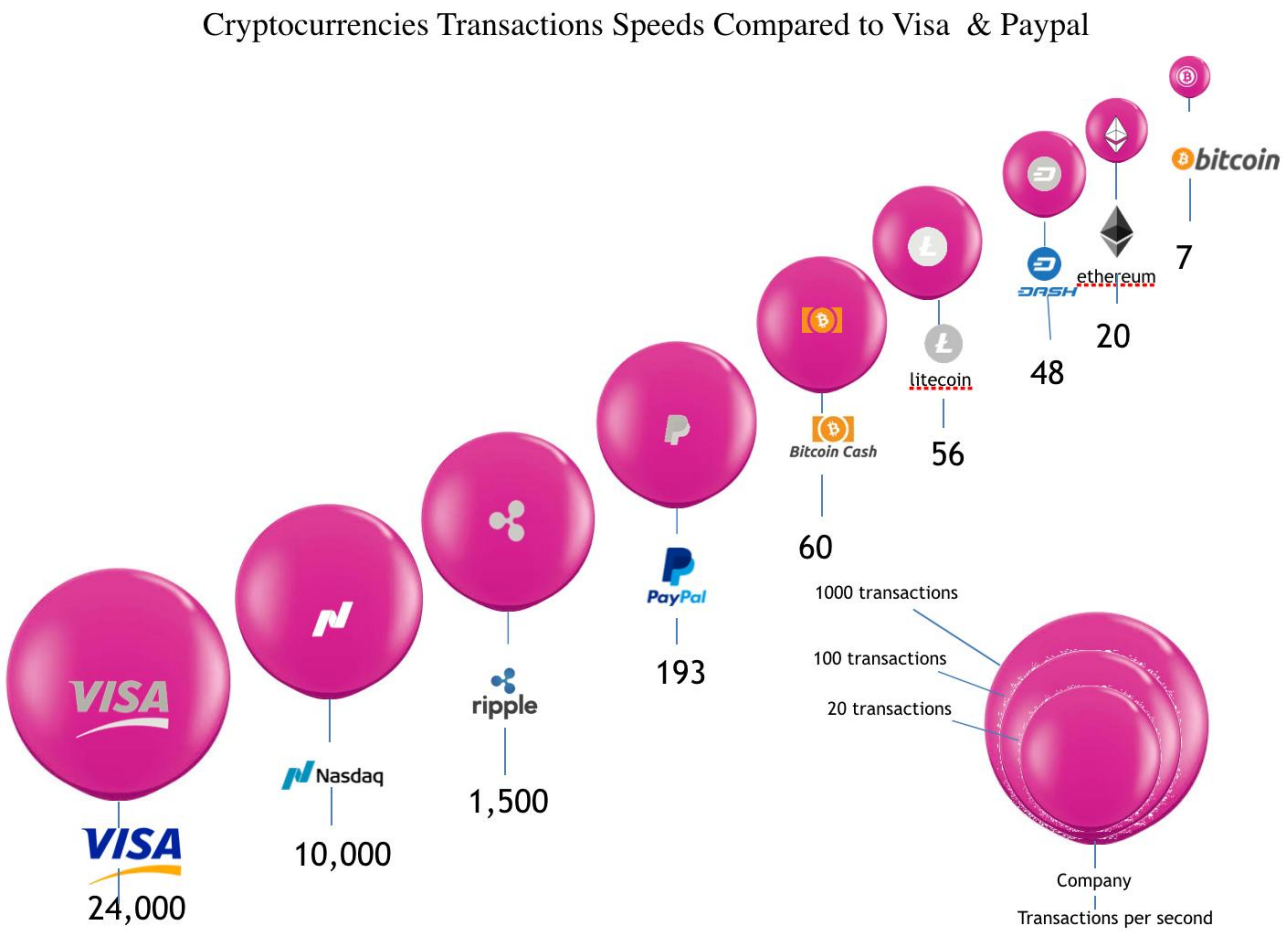
Hope is on the horizon.

Lightning protocol which was proposed in (2015) is close to production.

Vitalik proposed **Plasma** Protocol in late 2017, specifically to solve the scalability and performance issues on ethereum, (following my publishing of the world's first concept paper on decentralising capital markets), once again showing intellectual leadership on conquering roadblocks between current blockchain protocols and simulating the traditional centralised rails such as Visa, Nasdaq, Paypal etc. Cosmos is another protocol that solves interoperable chains problem.

The Plasma protocol proposes a root blockchain that can run on any consensus mechanism and child blockchains that run on Proof of Stake and interact similar to a Lightning network, with a new addition of selective Fraud Proofs that optimise performance while making the protocol robust against attacks by nodes. Vitalik also proposes that for the Plasma protocol to work efficiently, the child chains have to run on proof of stake and also backed by a token. Several other promising multi-blockchain interoperable protocols have since emerged besides Plasma, which warrant our attention, notably: **Ouroboros, Snow-White, Algorand, Thunderella, Omniledger etc.**These arein various stages of implementation and we expect to see usable protocols deployed on live-net beginning 2019.

Figure 26 Scalability, a Comparative Perspective



6.7 Decentralised Exchanges - Specific Protocols currently available

There are currently at least four ways to build decentralised exchanges, as illustrated to me by Vitalik Buterin, Founder of Ethereum.

6.7.1 Relaying orders:

Placing an order by relaying a message, and fulfilling/completing a given order by a counterpart by replying to the message. Messages act as equivalent of transactions in many blockchain protocols.

6.7.2 Hash time locked contracts:

Where two parties send their respective digital assets / funds to a contract, and the contract either completes the swap or reverts the funds to originators if both parties do not confirm fulfilment of order within a certain time, so the parties are fully in control of the funds at all times and do not risk their funds with the exchange at any point.

6.7.3 Atomic swaps

Where digital assets are exchanged peer to peer on a blockchain or inter-blockchain. Again the assets are held in respective wallet accounts with the owners, and there is no risk of losing funds to an exchange.

6.7.4 Plasma Chain

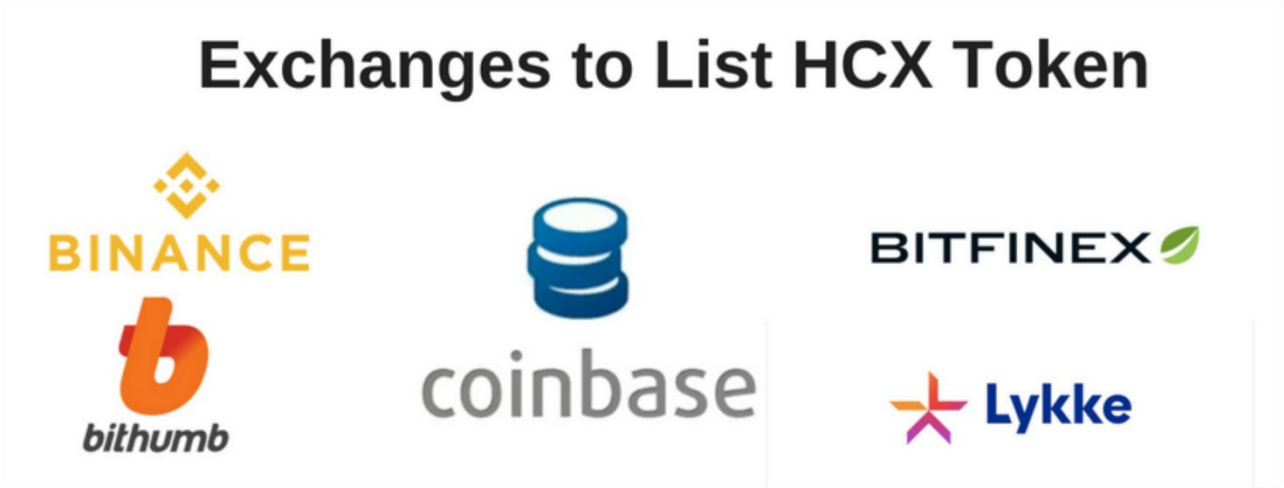
Order matching transactions happen off-chain in child chains or child channels that are anchored to the parent chain, and only occasionally record the state on parent chain. Neighbour nodes are responsible for checking and reporting fraud on child chains, if and when fraud is proved result in misbehaving nodes getting penalised.

Decentralised exchanges are superior to centralised crypto exchanges because no central entity has any control over the user's accounts, funds, conversations etc. Transactions, exchanges and messages would be fully decentralised and peer-to-peer. No funds are held by the exchange. This is particularly relevant in light of billions of dollars lost to internal fraud and external hacking of crypto exchanges.

7. Crypto Exchanges to list HCX token

We will endeavour to list in important exchanges, though due process will only start post-ICO. We will also list HCX on our own exchange - Himalaya Capital Exchange as and when we have a ready crypto exchange.

Figure 27 Exchanges to list HCX token



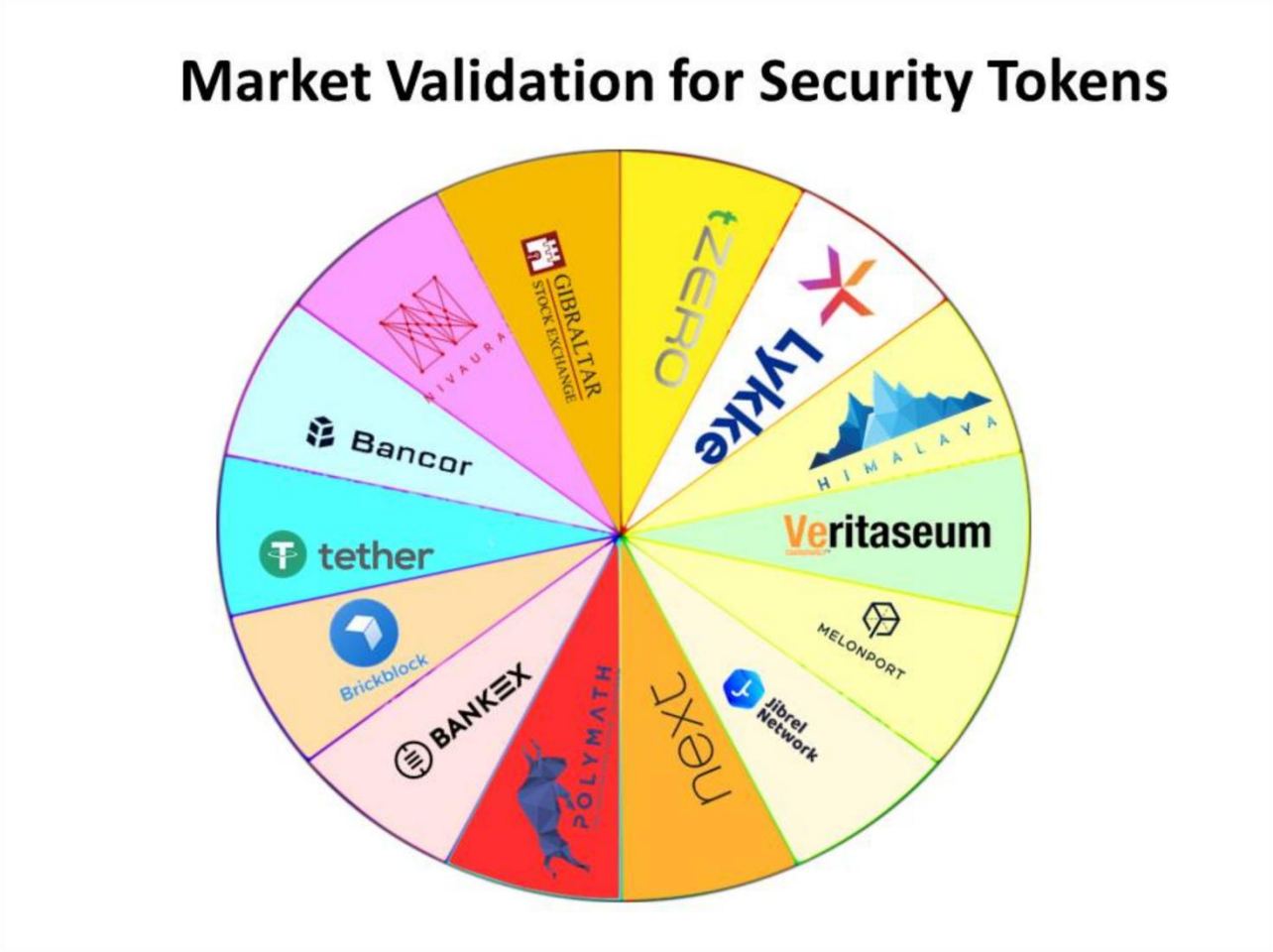
Source: Author

8. Analysis of current crypto endeavours in capital markets

An unmistakeable trend towards less middle men and more direct control

We believe the ultimate vision of a blockchain is to democratise markets, for the common man, and by the common man. We believe that any public good that uses an ICO for public fund raising ought not to cater to incumbents in the financial markets, but ought to strive to provide digital and intermediary-less alternatives to the consumers. If a product caters to the incumbents, who undoubtedly are resource-rich, and will vote for the commercial viability of that product by their willingness to pay. Indeed, return seeking capitalists such as VCs would also be drawn to funding such a product if they see it being commercially viable in future. The product which purports to cater to big financial institutions, if commercially viable would already have paying clients - in this case banks. We question the need of such products to seek crowd funding through ICOs. ICOs ought to be for such projects, which no incumbents would have an incentive to build, but ultimately have a major utility for the public once built.

Figure 28 Market Validation for Security Tokens



Source: Author

9. Market Validation for Security Tokens

In December 2015, NASDAQ announced that Chain was able to use its Linqtechnology to successfully complete and record a private securities transaction. NASDAQ stated this reduced settlement time and eliminated the need for paper.

BNP Paribas announced a pilot scheme with Smart Angels permitting private companies to issue securities on a primary market with e-certificates and access to a secondary market via blockchain.

Australian Stock Exchange announced 'CHESS' in 2018 in collaboration with Digital Asset Holdings.

All the above fell short of the true potential of Blockchain in securities issuance. An year after I first proposed Initial Security Token Offerings in July 2017, we started seeing attempts at various forms of security tokens, some even from traditional wall street.

However, centralized digital asset issuance systems necessitate significant investments into back-end infrastructure, user authentication and regulatory compliance, which makes it out of reach for small and medium enterprises. Case for a public platform.

9.1 Morgan Creek (traditional wall street)

Morgan Creek Blockchain Capital announced 10 May 2018 it is tokenising a private company's equity, turning its existing shares into new security tokens. Tokenising Anexio's shares allowed it to raise funds from a broader group of people: "By tokenising the business, we took the cap table, the paper shares - every company in the world has paper share certificates - and we tokenised it. We swapped, one for one, the paper shares for tokens, which allow for a global investor base and trade on a security exchange."

"It has all the benefits of a cryptocurrency, but the underlying asset is a company with assets and cash flow.", said a partner on the benefits to investors.

9.2 Daimler Chrysler AG Bond Issuance

Daimler AG did a $100m bonds issue on blockchain to its investors. However, for companies to create a self-issuance platform is time-consuming, and resource intensive and may not warrant the cost of building such a platform as the capital raising is infrequent.

9.3 Spotify IPO

Spotify's Unusual IPO Offers New Path for Tech Unicorns: Spotify represents the next chapter of "unicorn" financing with no underwriters, no investment banks and no fees paid. Investors were not constrained by a traditional "lockup" period enforced by Wall Street underwriters. Spotify did not market its IPO behind closed doors, and took the unusual step of live streaming its investor "roadshow" presentation in New York. If this is a harbinger of new transparency and new public capital raising standard for Tech Wizards, this is great news for *Himalaya Capital Exchange*. While Spotify had plenty resources to build its own platform and snub wall street, there are millions of companies around the world who won't. Himalaya is building this *Public Good* for those firms.

We see all the below entities as complimenting the eco-system and none competing with us. No such platform exists as of date, to our knowledge, as what we are trying to build.

9.4 Equibit:

Offers an ingenious mechanism to deliver crypto equity or a tokenised share via an autonomous exchange with bitcoin. However, the exchange is between a contract and an individual. The tech is rudimentary and does not solve the liquidity issue for secondary trading of such a crypto equity instrument. This market is nascent and a new eco system is needed which completely does away with the existing infrastructure rails.

9.5 Bitshares:

Bitshares has been a long standing protocol and a well proven one, and also supported by Dan Larimer. But, we are not aware of their ambitions to get into mainstream capital markets like ours.

9.6 t zero:

t zero has been talked about by Overstock (the listed company affiliate by same promoter Patrick Byrne) for many years, and finally the ICO was launched late 2017/ early 2018 and Overstock / t zero were promptly subpoenaed by SEC for investigation in Feb / March 2018 in the slew of over dozen investigations SEC launched regarding dealing in securities tokens. Apart from stated intention of t zero (like most other crypto endeavours related to capital markets) to offer security tokens to accredited investors (which is a small sub set of the activities we wish to undertake), we are not aware of their plans to participate in Initial Security Token Offerings or build out an automated Investment Banking like we purport to do. As far as we are aware, we are the first in the world to aim to do so. This has not changed since June 2017, even though we were the very first to publish a full fledged white paper in this regard.

9.7 Polymath

Polymath caters to existing incumbents in financial markets, and does not create a public good by our definition. It creates a blockchain communication channel connecting investors, companies and investment banks (what they call 'sponsors'), so it keeps the current incumbents intact, and keeps the processes the same, except that it is an electronic way to match each other. The current problem with capital markets is not that matching is inefficient or conflict-ridden. Matching is perfectly efficient, though it is done in traditional wall street style through pitches, and *beauty pageants* (Ming, 2017, p.67). Even if such matching adds any value, it adds value to the current incumbents - investment banks. So Polymath solves a problem that does not exist, or at best a hypothetical problem of the investment banks. We do not need a blockchain to match the incumbents. We need a blockchain to get rid of the intermediaries, get rid of barriers to capital raising and get rid of the fees paid to investment banks (and fees for listing on stock exchanges) which could have been channeled towards productive use of capital. We are not here to get fees from investment banks. We are here to render some if not all of their services redundant, atleast for the benefit of some believers if not the entire market.

9.8 Brickblock

Brickblock connects old and new economies - a bridge between traditional assets and digital instruments.

Brick block is building a decentralized exchange platform for trading Exchange Traded Funds (ETFs), Real Estate Funds (REFs), passive Coin Traded Funds (CTFs) and active Coin Managed Funds (CMF). The basic idea is to create Proof of Asset tokens and link them with foreign asset in the ration of 1:1. Brickblock allows physical shares, commodities and currencies.

- Digital Trust Fund: It holds the assets that are backing PoA tokens. A separate custodian will hold these assets. The custodian will notarize the activities happening on DTF account and publish proof of the change to network participants so that they can verify the liabilities accounted for.
- Legal enforceability of claims: Brickblock enters a legally binding contract with fund managers and brokers involved. As an effect of this, every fund manager has direct liability to the investor.

9.9 TaaS

A closed ended crypto fund. From investor's perspective there is no legal agreement between Taas and users.

9.10 Melonport

It is an open source protocol which aims to simplify the process of developing portfolios of different crypto currencies. It is mostly for Contract for Difference for non-ERC20 tokens.
Melonport core offering is an asset management solution for traditional asset managers to trade in portfolios of traditional equity instruments which have been tokenised. They are capturing a different part of the value chain, which will be impacted once crypto assets become a real alternative to traditional financial instruments. Melon Port can be likened to an APP that will be useful, once the proverbial iPhone is ready (which is yet to come for crypto driven capital markets).

9.11 Digix

Digix, like Brickblock, aims to tokenize real world assets like Gold. After depositing ETH into smart contract, a new DGX token is created and asset vendor delivers gold to custodian.

9.12 Proof of Suite

Similar to Brickblock concept. They are trying to reduce bureaucratic procedures. They rely on change occurring in companies and legal acceptance of their technology.

9.13 Bankex

Bankex is an ICO that is heavily invested in by banks. We will offer no further comment.

9.14 Gibraltar Stock Exchange

High entry barriers, pre-approved by sponsors, acts as a precursor funnel to other physical stock exchanges like London Stock Exchange.

Sponsors are a replication of the old trusted third party intermediary model, and not achieving any disintermediation.

This is one step ahead of blockchain-driven stock exchange ideas proposed by traditional stock exchanges like Hong Kong Stock Exchange and Australian Stock Exchange, which purport to act as a stepping stone to traditional exchange listing, and target companies just a bit shy of the exchange listing requirements. Himalaya's vision, on the contrary is to establish a complete alternative to traditional securities industry rails , and not as a stepping stone to the traditional exchanges.

We envisage a complete self-sustaining comprehensive ecosystem with a liquidity provision, a pegged coin which acts as a converter to fiat, ratings system, and constituent token-holders whose self-interest would be tied to adding value to the platform and to make it grow in value exponentially.

9.15 Veritaseum

ICO was launched in 2017, and one of the first attempts in capital markets. It is too overarching and gets into products for traders, derivatives etc and does not have a simple clear crisp positioning or plan of action.

9.16 Tether

Tether is a pegged coin that has come under a cloud of suspicion following audit discrepancies and failure to back the supposedly pegged coin with the underlying reserve of USD. Tether works on centralised IOU Issuance, and requires the user to trust the issuing party. The Tether model imposes counterparty risk on holders of the token.

9.17 Bancor

Bancor was one of the very successful ICOs of its time based on a simple premise of exchanging one token for another with inbuilt liquidity mechanism of offering a price, with the protocol acting as a ready market maker. It is at best one of the tools in the crypto industry and is not a base layer infrastructure or an useful architecture for capital markets.

9.18 Lykke

Lykke is one of the early applicants for a FINMA regulatory license for security tokens. We have agreed on a strategic partnership with Lykke's founder so that Lykke will consider listing the security tokens that will do their Initial Security Token Offering on Himalaya Capital Exchange. We plan to have several such exchange partners around multiple jurisdictions.

9.19 Jibrel Network

CryDrs - similar to Proof of Asset tokens - Eco system for tokenising existing physical securities through depository receipts. This enhances liquidity of current traditional financial instruments for crypto community to participate in the traditional market through tokenised CrDRs. However, this does not do anything to stock exchanges or capital raising. So not a competitor.

9.20 Nivaura

Nivaura has successfully issued certain bond instruments on the blockchain. But, this is nothing complex and just proves the concept validation. We are attempting to build out an entirely new infrastructure layer to support basic capital markets transactions on a combination of peer to peer protocols and other simple algorithms.

9.21 Current Token Sale Platforms for ICOs

Gatecoin

Coinsafe

ICO Age

Ambisafe

Waves

10. Regulation

We believe, regulatory aspects are of importance.

We envisage Himalaya Labs having to acquire licenses to operate as a securities exchange in many jurisdictions. We believe it is best to start with a few jurisdictions that are friendly to the philosophy of decentralisation and to the new economy. Europe and Switzerland are also heavy weights in Asset Management and Investment Banking, where users would be naturally inclined to pay attention to a viable alternative, even before its vast superiority over current systems is established.

10.1 Regulatory Licenses

Below is a list of licenses required for dealing in investment banking activities (for primary issuance of ISTOs) in key jurisdictions:

Switzerland – Securities Dealer Licence, issued by FINMA
Germany – Securities Trading Licence, issued by BaFin
Singapore – Capital Markets Services (CMS) Licence, issued by Monetary Authority of Singapore
Hong Kong – Securities Dealer, issued by Hong Kong Securities Futures Commission
India – Stock Broker licence, issued by SEBI
China – Broker Dealer, licensed by China Securities Regulatory Commission
United Kingdom – FCA authorised investment bank, issued by Financial Conduct Authority
Malaysia – Securities dealer (general) – issued by Securities Commission

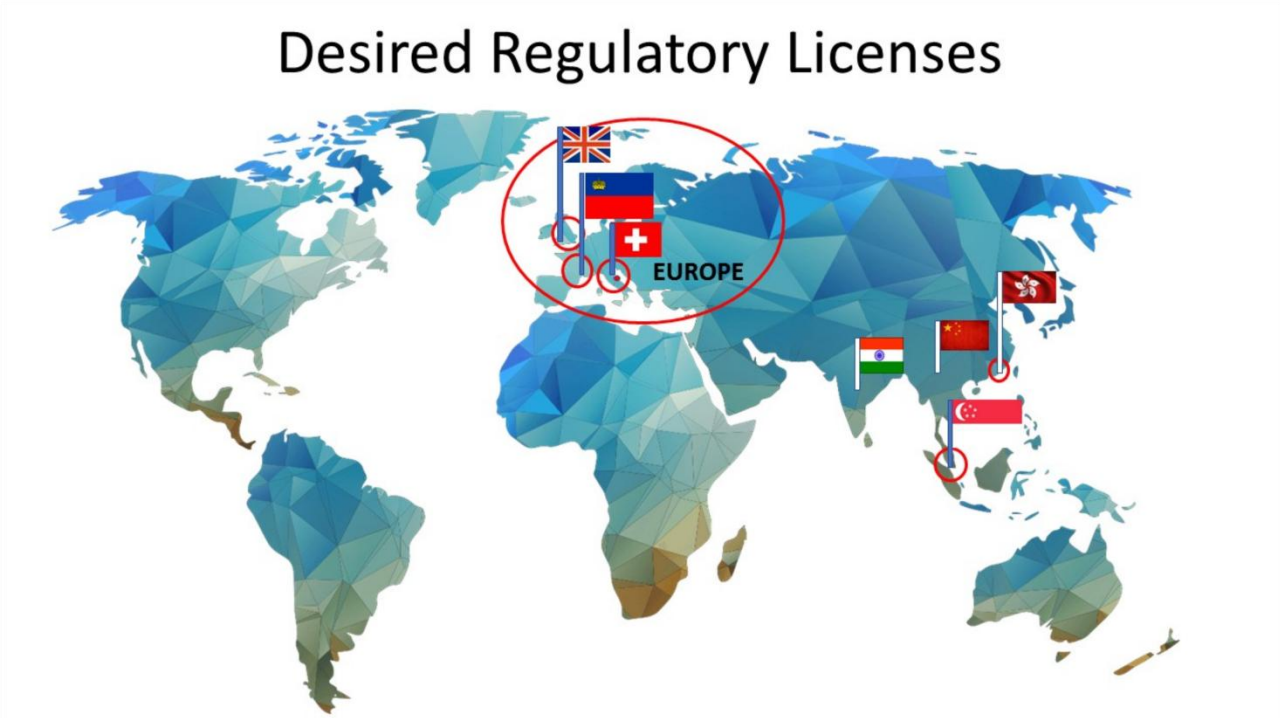
We are currently in talks with partners across jurisdictions such as National Stock Exchange (NSE) who will be valuable partners in this dialog and ongoing engagement with regulators.

Some other jurisdictions:

Vanuatu – Dealers in securities licence – issued by Vanuatu Financial Services Commission
Mauritius – Investment Dealer Licence – issued by Financial Services Commission
Georgia – Trading / Brokerage Licence – issued by National Securities Commission

For advanced phases such as an Exchange for Secondary Market Trading, we require an additional type of license, which is the equivalent of Alternative Trading System (ATS) issued by SEC in USA.

Figure 29: Regulatory Play field for Himalaya



Source: Author

11. Potential Partnerships

Figure 30 Potential Partnerships

Source: Author

12. Token Supply (To Be Confirmed)

A well-designed token network carefully manages the distribution of tokens across all five groups of network participants (users, core developers, third-party developers, investors, service providers) besides those who purchase the initial access tokens during the ICO, so as to maximize the growth of the network. Since HCX is the first token in the crypto economy targeted at taking the token to mainstream capital markets, we have designed a unique waterfall mechanism and a token airdrop to we give ourselves time for this concept to spread far and wide, and become an unstoppable public movement.

12.1 Token Supply

Each token would be sold for 12.5 USD cents in Pre-Sale and starting at 20 Cents and at 5% monthly inflation for every month for the first year.

40 Million Tokens at 12.5 cents = USD 5 Million in Pre - Sale

First Month of Public Token Sale = 25 Million Tokens at 20 Cents USD 5 Million

Second Month of Token Sale = 25 Million Tokens at 21 Cents USD 5.25 Million

Third Month of Token Sale = 25 Million Tokens at 22.05 Cents USD 5.51 Million

Fourth Month of Token Sale = 25 Million Tokens at 23.15 Cents = USD 5.79 Million

Fifth Month of Token Sale = 25 Million Tokens at 24.31 Cents = USD 6.08 Million

Sixth Month of Token Sale = 25 Million Tokens at 25.52 Cents = USD 6.38 Million

Seventh Month of Token Sale = 25 Million Tokens at 26.80 Cents = USD 6.70 Million

Eighth Month of Token Sale = 25 Million Tokens at 28.14 Cents = USD 7.04 Million

Ninth Month of Token Sale = 25 Million Tokens at 29.54 Cents = USD 7.39 Million

Tenth Month of Token Sale = 25 Million Tokens at 31.02 Cents = USD 7.78 Million

Eleventh Month of Token Sale = 25 Million Tokens at 32.58 Cents = USD 8.14 Million

Twelfth Month of Token Sale = 25 Million Tokens at 34.20 Cents = USD 8.55 Million

Total during Pre-Sale = USD 5 Million

Total During First Year of ICO sale = USD 79.61 Million

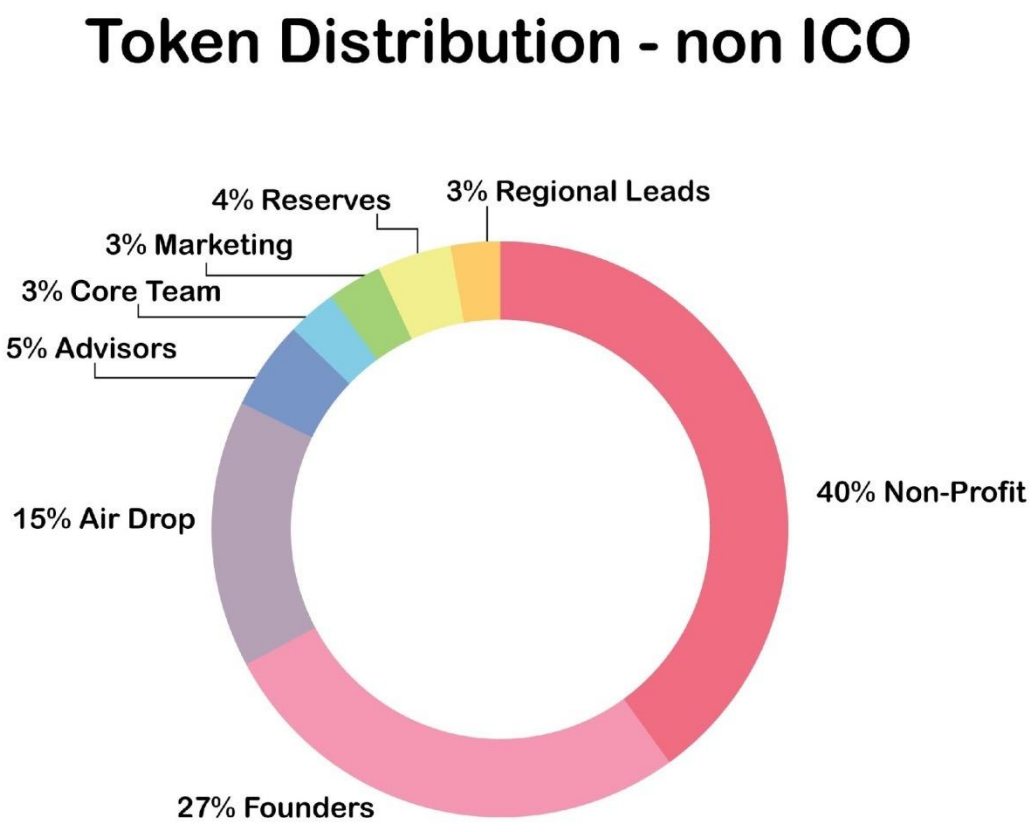
Total Raised in First Year = USD 84.61 Million

Total Tokens sold in First year - ICO = 340 Million Tokens = Money Raised USD 84.61 Million

Total Tokens distributed for internal purposes in First year non - ICO= 160 Million

Total Tokens = 500 Million

Figure 31 Token Distribution - non ICO



12.2 Token design: HCX tokens are *utility tokens*.

Benefits for token owners are:

- Listing Services
- Rating
- Voting
- Most of transaction fees collected in tokens will be recycled and used for incentivising network development

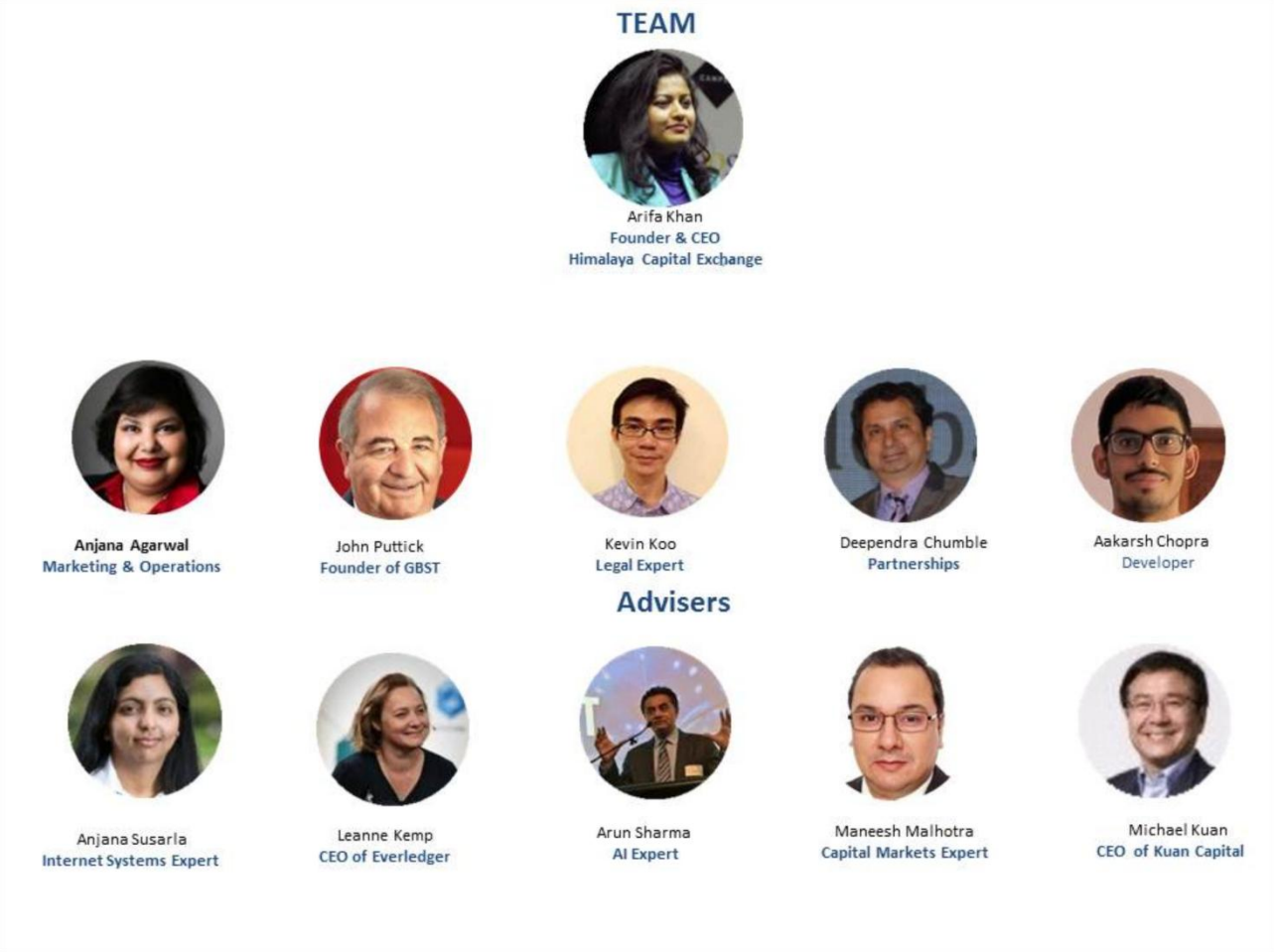
Applications

- **Protect against price fluctuations**
- Designed to offer each regular and crypto investor the tools to participate in new age IPOs without fear or favour.
- Every investment conversation happening on the platform is interactive. It is useful especially for new investors.
- List your Security Tokens on the Exchange Trading platform
- The platform allows all Users to list their tokens on the auction market.

Figure 32 Capital Exchange ICO & Platform Development Road Map

13. Team

Figure 33 Team



13.1 CEO

Arifa Khan is a finance and investment banking whizkid with a deep mathematics and computer science background, often labeled a *Force of Nature by her contemporaries*. Arifa Khan was born in India and inspired by geniuses like Tagore, Einstein, Da Vinci in her early childhood. She traveled to the USA in 2002 to pursue management studies at **Wharton School of Business**. She was most excited when she saw Quantum Mechanics and Wave Theory come together with Financial Markets in Black & Scholes Options Valuation in Professor Kavajecz's Course "Speculative Investments" and Jeremy Siegel's "Securities Markets". She performed at the top of her Wharton class "Microeconomics" by Professor Neil Doherty, Head of Risk and Insurance Management at Wharton - dealing with Game Theory and Nash Equilibrium. Financial Derivatives and exotics later caught her interest which led her to completing a Special Thesis on Derivatives under the same Professor.

She topped her class at **IIT Madras** in 3rd year with a 9.6/10.0 CGPA, while she was pursuing her undergraduate degree in engineering in India, a remarkable feat for the only girl from a small town in Andhra Pradesh to have made it to IIT and with no coaching. In an event demonstrative of her enterprising nature and leadership ability, and one that would foretell her trail blazing and gutsy dynamism, she was the only female engineering student that joined the Institute-led Industrial Tour of 23 male engineering classmates, which visited engineering plants across India from Bangalore to Dehradun and Mussoorie. She has evangelised blockchain since 2014 in Europe and India, and has been influencing the RBI and Indian government towards an intellectual approach to cryptocurrencies. She has presented Vitalik Buterin to India.

Arifa enjoys the confidence and support of towering geniuses today. She is a well known figure in blockchain and is listed among top 100 Fintech influencers by Lattice 80. Arifa's talent was spotted by one of India's pioneering financial innovators, the late R. Ravimohan, CEO of India's first credit rating agency CRISIL, a financial services pioneer, who mentored Arifa through her early investment banking career in Wall Street. Arifa was listed in Economic Times 30 under 30, well before global fame courted her. Throughout her investment banking career starting 2004, Arifa received extensive training and grooming from **Credit Suisse** and **UBS** in New York and London and she rode the boom in Leveraged Buyouts as a young banker. Before his untimely demise, Mr Ravimohan told her she is a visionary and designed for a greater purpose like entrepreneurship. Arifa has been on her entrepreneurial journey for over 6 years.

Figure 34 Himalaya World ICO Tour 2017 - 18

13.2 CSO

John Puttick has a fifty-year career in the development and governance of technology-based enterprises. He is a systems professional with a long list of accomplishments in successful systems architecture, development, delivery and management. He formed and built GBST into a significant international systems provider to capital markets with operations in all key time zones. During this time, GBST developed a good reputation as and innovator bringing many firsts to its clients - STP, real-time portfolio, WFM, smart contract evaluation, online trading, multi-entity & multi-jurisdictional ledger to name some. GBST platforms transact $Billions per day and manage in excess of $500B AUM.

John currently Chairs Over The Wire Ltd and Tanda Ltd, both IT service companies. He has extensive experience in governance in the non-profit and higher education sectors. We are pleased to have John's skills and unstinted support available to us full time during the formation stages of Himalaya Capital Exchange.

13.3 Adviser

Ghanshyam Dass is Senior Advisor, KPMG and NASDAQ OMX Group, assisting KPMG and NASDAQ teams in the region to develop and further strengthen core businesses, and also strengthening relationship with the Regulators, various trade bodies and Government Departments at Centre and State Level.

Ghanshyam has had an outstanding career in Indian, international banking and Capital Markets for over 37 years, during which he developed a firm understanding of the complexities of global

markets. He is thoroughly familiar with the regulatory and business environment in USA, European Union, South East Asia, The Middle East, India and other major money-center locations. While working for various organisations in the region, he has been able to establish close and mutually cooperative relationship with most Banking and non-Banking Financial Institutions, Stock Exchanges, Corporates, Regulators and Government Departments.

Ghanshyam has travelled extensively across all continents and has been a speaker and participated in panel discussions and conferences (including World Economic Forum) in Australia, China, HongKong, India, Singapore, South Korea, Vietnam, Thailand, Malaysia and several countries in the Middle East, among others. He is also regularly invited to speak, lead and participate at various seminars and panel discussions organised by industry associations, leading institutions and regulatory bodies. Ghanshyam has been a strong advocate of sound corporate governance and high standards of transparency to the corporate sector in the region.

Ghanshyam joined NASDAQ OMX Group in 2000. He also worked on several assignments, including the British Bank of the Middle East for two years as the Chief Executive Officer for its India operations, and with the HongKong and Shanghai Banking Corporation for over ten years as Manager – South Asia & Middle East, Financial Institutions Group amongst other assignments.

Directorships Present
Independent Director on the Boards of Jain Irrigation Systems Ltd, Jain Farm Fresh Foods Ltd., Mayar Infrastructure Development Pvt. Ltd., and Mayar Health Resorts Ltd. Powerica Ltd., and Member, Governing Council, Bangalore International Mediation, Arbitration and Conciliation Centre (BIMACC).

Past

Government Nominee on the Governing Council of The Institute of Company Secretaries of India (2007-2010). Member of the CII National Council on Corporate Governance and Regulatory Framework (2004-2009), CII National Committee on Capital Markets (2004-2009). Was Special Advisor to investment bank STJ Advisors LLP, UK (2010-2015)

Former Independent Director on the boards of Dhanlaxmi Bank , Jubilant Industries Ltd (2010-2018),Estel Technologies & Communications Ltd. (2011-1018), Online Recharge Services (2011-2018), BQ Padmavathy Finance Academy Private Limited (2015- 2017).

14. Conclusion

- Capital markets are bloated with too many intermediaries, opaque processes, over-priced securities and consequent fat fees - resulting from old world processes.

- The high fees and costs impede factor mobility and productivity of capital.

- Investment banks consistently exhibit cartel behaviour and keep fees high, at the expense of the common man.

- The common man cannot enter this world due to high threshold costs, which rewards the incumbents only.

- Technology is now available and proven that solves this problem.

- There are no costs of entry into this new market, lending to fairer distribution of wealth creation ability.

- The project has been scoped out in detail and deliverable as described in the white paper by our founder Arifa Khan who was the inventor of this solution.

- This would be a game changer and would upend several industries (such as investment banks, wealth management, VC funds, online lending, government bond financing etc).

- This is the first crypto application that targets the common man and the entire economy touching world GDP; this is not just a tokenizable blockchain application (which is a small subset of global GDP).

- The trend from ICOs towards Security Tokens is imminent, so time is of the essence.

- First mover to establish basic infrastructure for ISTOs will have inordinate leverage and a long term advantage in this industry.

- This is a base infrastructure layer play (like ethereum) and a platform play, and would be the highest risk vs return payoff for crypto economy players, if successful.

- Understand this offer is furthering technological progress and beneficial for societal impact. No banks, and for-profit institutions would do this, because this is a public good which impacts many incumbents.

- The unique token model ensures that incentives of management team and subscribers are 100% aligned.

We require seed funding and support to create this enormous public good.

Come, let us create history together!

Appendix 1

Building a Decentralised Exchange: Technical Aspects

Source: External

Ethereum based open source blockchain decentralized trading platform for trading crypto-currency denominated IPOs

- It has following features:
- A frequent batch auction market mechanism with autonomous market maker
- Enhanced liquidity pools across a wide range of assets
- Instant price discovery for digital tokens
- On-chain encryption of sensitive transaction data
- The proposed design provides:
  - High liquidity
  - Reduced spreads
  - Protection from "flash crashes"
  - Improved traders' welfare
- Nowadays, both fiat and crypto derivatives contracts are settled off-chain (eg. CBOT, Deribit, Cryptofacilities).
- The lack of existence of full-on-chain trading platform derives mainly from-
  - Inability to guarantee on-chain encryption of transaction (miners front-running problem, spoofing)
  - Insufficient market depth (large transaction may have high impact on average execution price)
  - Insufficient liquidity in general to offer liquidity pools across a wide range of asset.
- The BBOD trading platform is designed to benefit community and therefore all fees earned by the platform return to token holders' wallet through buy back program.

General flaws in design of centralised exchanges

- **Lack of security**

  Centralized trading platforms and third-party wallets store your private keys on your behalf. This is a giant risk since in the event that anything goes wrong with their servers, or if they make a decision to close business, then your assets are gone forever.

  BBOD solves this problem by decentralized server so the user holds funds with them.

- **Lack of market depth**

  The problem arises when substantial amount of cryptocurrency needs to be hedged or converted. Therefore, large orders would have a negative market impact on subsequent change in price and in consequence the price taken by user. Lack of market depth is responsible also for flash-crashes.

  BBOD addresses this problem by providing hybrid market model for Frequent Batch Auctions and Autonomous Market Maker.

General flaws in decentralised exchanges

- <u>Exposure to arbitrage and miner front – running</u>

BBOD stops this abusive process by using *double-blind encryption on the price and volume* of each transaction on its entire trading platform

- Slow cancelation and slow order processing

  Since the transactions are, in first order, settled between BBOD's Central Reserve and the client, after which BBOD settles the transaction between the Ethereum Main Network and itself; *a fee on the transaction and cancellation is levied.*

- Encryption and protection from abuses

  BBOD's system uses *double-blind encryption* for all transactions in order to ensure that neither any of the users nor the system itself has access to their details.

  BBOD *insulates anyone from front-running,* including itself. It also prevents a pursuit of faster order execution that consumes high gas costs.

Services Portfolio:

- Trading (Frequent batch auctions)
- Trading (Autonomous market maker)
- Listing service
- Reserve Contributors service

Market Design

- The idea behind using a hybrid model of Frequent Batch Auctions and Autonomous Market Maker was to enhance market liquidity and maximize trader welfare.
- Frequent Batch Auctions provide a fair mechanism of price discovery and *prevent high-frequency trading arms races*
- But a batch auction market could potentially hurt liquidity. Therefore Autonomous Market Maker helps to increase liquidity.
- The capital for making the market is provided by initial contribution to Central Reserve (from initial token sale) and continuously leveraged by Reserve Contributors in exchange for BBD utility tokens.

The process flow of Frequent Batch Auctions

- The BBOD Platform regularly gathers buy and sell orders in batches, in order to facilitate efficient price discovery and match buy/sell orders.
- Frequent Batch Auctions is a process where Users and Central Reserve feed the auction with buy and sell orders, their preferred limit prices and volumes.
- After all bids and asks are sent, the equilibrium price is calculated at which the orders are executed simultaneously. Thus, concluding the auction.
- In case some orders are left unmatched, either due to insufficient volume or a mismatch in corresponding prices, the order may either be cancelled or are carried over to the next batch.

The Process Flow of Autonomous Market Maker

- This market is a continuous-time trading model where the *counter party of a User is always the Central Reserve.* With the help of a quote driven market it provides instant liquidity.
- In a regular market maker model there is, however, a limit to the amount of liquidity any market maker can provide. As a result, there is always a cap on the volume of the transaction dictated by the size of its reserve (capital) and the net exposure to the financial instrument it holds.
- BBOD is built to fix this limitation through Reserve Contributor. The Reserve Contributor provides capital to the Central Reserve, thus increasing volume of transactions, in exchange for BBD utility tokens.
- From the User's perspective, both markets operate independently
- The platform is designed to prevent arbitrage between the two markets by *pegging* the quotes found at the AMM to the quotes found at the FBA
- From the perspective of the whole system, both markets are closely connected through Central Reserve, which may *hedge their net exposure at either market*
- The main goal of the system is to provide maximum liquidity and keep net exposure of Central Reserve close to zero. This complex problem is managed by Central Reserve AI Manager.

Process on UI

- User selects the type of market (Auction or Market Maker), the appropriate window is activated and selects respective options.
- User may set limit price to take part in auction and wait if his order is filled or take the price offered by market maker.

Features on the platform

- Reserve Contributors
- BBOD's trading platform is designed to attract Reserve Contributors to participate in providing capital to the Central Reserve in exchange for BBD utility tokens.
- Safety of the Central Reserve
- Encryption algorithms
- Central Reserve AI Manager
- Its purpose is to gather all data related to transactions including incoming orders, the amount of funds in the Central Reserve and the net exposure of Central Reserve and distribute liquidity to provide the tightest spreads and highest rate of fulfilled order at auction.

The Trading Service Fees:

- Frequent Batch Auctions: Trading fees in the auction market are paid with tokens. When users use the platform to trade, they will be *charged a trade execution fee as a percentage of the trade size.*
- Autonomous Market Maker: There is no execution fee. BBOD intends to set the lowest possible trade execution fee, in comparison to existing and future competitors.

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