

## **THE NuGENESIS REVOLUTION:**

### **REALISING BLOCKCHAIN'S SURGE IN MASS ADOPTION WITH UNLIMITED SCALING, SPEED AND CROSS-CHAIN INTEROPERABILITY; and, BRIDGING WITH LEGAL AND MAINSTREAM ECONOMIC SUPPORT**

## **PART A INTRODUCTION AND SUMMARY**

### **INTRODUCTION**

NuGenesis is a fully completed native blockchain originally built for Government and transnational corporate applications. In the context of building a blockchain for Central Bank Digital Currencies (**CBDC's**), and an exchange clearing house for settlement, limitations to scaling and speed, latency and reliance on human miners and validators had to be eliminated. Security had to be enhanced, its integrity underscored by Artificial Intelligence (**AI**) and carbon neutral in its efficiency.

We have now made the NuGenesis gasless network of cross-chain blockchains available for commercial and social application for use by modifying it to maximise its efficacy for the up-coming tidal wave of mass adoption. This has meant not only the most advanced next-generation layer 1 multi-chain blockchain configuration system that is cross-chain interoperable, but which is easy and cost effective for developers to customise their own version which can run as a parallel network and accessing explosive new potential capabilities for Smart Contracts, NFTs, virtual reality innovation.

The NuGenesis multi-cross chain network provides:

#### **1. The Most Advanced Tech**

The NuGenesis blockchain network currently consists of a quad cross chain configuration interoperability:

- (a) The NuGenesis Main blockchain, built on Substrate;
- (b) The Ledger X (Exchange) chain based on C++ that is itself a parallel processing chain made of a tri blockchain configuration;
- (c) The Ethereum chain; and,
- (d) The Bitcoin Chain

NuGenesis achieves unlimited scalability and speed through eliminating the validation bottleneck to data flow, uses consensus before packing and, currently implementing load balancers, with their own blockchain, to maximise block data, creation and speed.

There is no limit to the number of chains from diverse languages that can be bridged/cross chained that can parallel process. Indeed the more users, the faster the transaction speed.

## 2. The Most Advanced Eco system

NuGenesis has prioritised the user experience by removing barriers to mass adoption, provided liquidity by incorporating a fully-fledged open market exchange which has decentralised data stores for optimal security; and, has relationships with a number of countries to implement a blockchain Code that will recognise and give legal certainty to a range of crypto asset instruments, provide better governance and disclosure standards to facilitate the growth of the crypto economy.

## 3. The Most Advanced Community, Governance and tokenomics

Fees are not existent. A community freely interact on a decentralised social media platform (Just Social) that puts all the information possible in hands of the user. Users and projects to interact and collaborate, whether Venture Capital projects that are being reviewed; accessing expertise from the many users selling their services to providing an exchange where projects can be properly funded without the leakage that currently is drained by exchange middlemen and liquidity pools.

The Governance built into the protocols provides for funded sustainable upgrades and a continual innovation rate of the blockchain infrastructure. This includes implementing 'zero knowledge proof' innovation to maximise data privacy, offline processing through satellite technology and the implementation of a virtual reality realm ('Parallel Worlds') where blockchain interface can be made virtually through avatars.

There are no pre-created or pre-minted coins in large volumes held by founders where Coins are sold to fund the creation of a theoretical blockchain. The blockchain is already built and functioning. The native currency, NuCoin, is minted in accordance with the governance protocol rewarding the contributions made to the on-going improvement to the system.

## 4. The Most Advanced Philosophy and Design principles

The governing doctrine is a self-governed and self-funded continually innovating blockchain that has unlimited scalability for cryptoeconomy with mass adoption. Transaction speeds that are instant as the mainstream expects from tapping a credit card or exchanging a QR Code; interoperability with other blockchains as the mainstream expects when connecting to wifi anywhere in the world regardless of device used. A user experience where they can recover a lost wallet or mnemonics, stolen crypto assets, share custody or bequeath their crypto assets.

The innovations are designed to be user friendly to facilitate mass adoption by removing the impediments perceived in the crypto-space to give the necessary comfort, confidence and security necessary for the blockchain to be commonplace.

We valued the development of a more complete ecosphere where value can be created and maximised for unlimited future uses, including the most advanced decentralised exchange and decentralised social media platform for vibrant community development.

The NuGenesis blockchain system has been designed to be fully complimentary with, and indeed 'fit hand and glove' the legal systems of the physical world. Indeed, an important part of the complete ecosphere is that we are in the process of co-writing special Crypto-friendly laws and institutions in Special Digital Economic Zones ('SDEZ's') of a number of countries ('Co-operative Jurisdictions') to

give legal backing and support for the innovations that are now possible by virtue of NuGenesis' contribution to crypto technology.

## **The LAYOUT OF THIS WHITEPAPER**

This paper should differ from traditional white papers. It is designed to assist incoming mass adopters. For veteran techies, the technical paper is **PART B**. As whole this white paper is pitched therefore to a sophisticated businessperson versed in traditional capital markets coming into the Cryptoverse having some knowledge of the space without any technical expertise as such.

**PART A**, we hope will provide an overview of the salient points. The features and benefits so that you can quickly identify the innovations that have been created.

The technical details that traditionally to be expected in White-papers' is in **PART B**, including the tokenomics concerned with miner-stakers and the minting of coin effecting a governance model written into the protocol.

**PART C**, is an explanation of the socio-political context in which Decentralised Ledger Technology evolves, why the mass adoption is an exponential explosion that our human linear-oriented minds struggle to fully appreciate, the difficulties that the crypto space presents to those looking at it from the traditional market perspective and why therefore we have designed the NuGenesis blockchain system in the way we have.

We discuss the importance of governance that has stalled the growth of the crypto space and the development of technical and legal infrastructure to foster mass adoption.

In **PART D**, is a legal analysis, which whilst cannot be exhaustive of all the jurisdictions in the world, is centred upon what is understood to be common approach taken by the most developed countries in the interpretation and enforcement of securities law.

In **PART E**, we provide risk disclosures and disclaimers so that the reader is alerted to the nature of risks inherent in crypto-currencies, blockchains, smart contracts and derivate technologies therefrom. We remind the reader that we are not financial advisers, do not provide financial advice and rely on the readers own due diligence.

Accordingly, in this main body we will be referring to technical and legal concepts that are important to a businesspersons' understanding of what the NuGenesis blockchain system has to offer but rely upon the reader taking such 'deeper dives' as is necessary by reference to all of the parts herein and of course, their own research and professional advice.

## EXECUTIVE SUMMARY OF KEY FEATURES

### Government and global enterprise applications

1. The NuGenesis blockchain has been created specifically for serious commercial and governmental applications that provides:
  - (a) freedom from reliance on POW, POS and any human validators which is considered resource and energy inefficient and insufficiently secure. (That is, to be clear, there is no resources, including electricity and carbon implications involved with NuGenesis. It is entirely zero-emission, clean and green);
  - (b) underpinning support by system validators and Artificial Intelligence ('AI') for security and system wide integrity;
  - (c) unlimited scalability with transaction speeds. A million plus transactions per second, readily comparable to VISA and MASTERCARD rates readily achievable. Likewise scalable to unlimited speeds, with the better the speeds the greater the number of parallel processing chains and parallel networks are added;
  - (d) other projects from whatever blockchain can be interoperable with, run as a para-chain or as a sovereign independent parallel blockchain network which, through the use of our blockchain load balancers and 'consensus before packing' actually improves transactional speed the more users on the combined ecosphere;
  - (e) modules for a variety of consensus systems and governance protocols. The NuGenesis blockchain consensus model is Proof of Authority with useful work AI, and Grandpa and the Ledger X consensus is Delegated Revenue Proof of Stake and Consensus before packing;
  - (f) is capable for new generation smart contracts and NFTs, called "Digital Notarised Contracts ('DNC's') and "Serialised Notarised Digital Assets ('SNDA's') wherein:
    - (i) Each coin/asset is serialised and has its own individual identifier that can allow for:
      - (A) lost mnemonic phrases or deaths etc to be recovered;
      - (B) conditions can be placed each individual coin such that it can have:
        - (aa) multi-signatures (multi-sig);
        - (bb) treasuries which, combined with multi-sig, allow for effective and meaningful use by corporate and institutions with far greater security than is traditionally available in capital markets, readily useable for small business and family accounts ;

- (cc) charges and restrictions on the Coin for building Defi applications including providing Coins as security for lending, put and call options etc;
  - (dd) allows the fragmentation and partial sale of Coins;
  - (ee) allows for conditions of vesting rights in cases of wills, trusts and other settlements;
- (ii) a DNC can interact with the physical world through RFID chips, stickers and nanotech to preserve the physical integrity and uniqueness of items useful for sports memorabilia, art, supply chain logistics, etc;
- (iii) in supplanting smart contracts, DNCs are fully fledged contracts. The System 'Notary' is the hashing function; hacking would be pointless; and, the AI would replace external oracles that are currently used, to allow for comprehensive contracts to be drawn with standard real world commercial applications;
- (iv) through the recognition of the legal status of our DNC's and SNDA's with the Cooperative jurisdictions, there is a means of arbitration and legal enforceability for the DNCs and SNDA's; and,
- (v) through the recognition of the legal status of our DNC's and SNDA's with the Cooperative jurisdictions, there will be government registries and administrative infrastructure to facilitate the utilisation of the technology in the physical world.
- (g) the limitations to the creation, attribution and/or exchange of value is not limited to tokens. NuGenesis blockchains provide the rails for Token-less exchanges of anything of value to be exchanged; and,
- (h) the NuGenesis blockchain system framework is the bedrock for the implementation of the Virtual Reality Real, "Parallel Worlds" where the interaction with the community can be through avatars in a virtual reality.

#### Conduciveness to mass adoption

2. NuGenesis is designed for mass adoption by providing:
  - (a) unlike a miner in other cryptos', it is not a race where the 'winner takes all'; every computational effort of Staker-miners yields NuCoin;
  - (b) Mining is done via smart phone and computer in seconds, can be delegated to a commissioned bot to do it, and every member of the community is earning NuCoin via their social media account;
  - (c) Easy to use crypto-centric social media interface (just social) through which they can readily participate actively and meaningfully in the NuGenesis community

- (d) Per para [1 (f)] above, with multi-sig treasury wallets, the fragmentation of Nu coins/SNDA's and ability to add conditions to the Nu Coins/SNDA's, become friendly, safe and easy to use for every day business, entrepreneurial, family and social transactions.
- (e) Existing, new or prospective blockchain projects can easily and cheaply:
- (i) Design/adopt our blockchain for their own purposes which can either be:
    - (A) its own independent native blockchain built out of and adopted from the modular version of NuGenesis which can then be bridged as a parallel network; or,
    - (B) a para-network of our own NuGenesis blockchain,

with the consequence that, unlike parachains, unlimited para-networks can be created without any of them straining the resources on any other chain needing to slow the system or requiring any transaction fees whatsoever;
  - (ii) true collaboration can be achieved, breaking down the 'silos' of expertise trapped in various existing blockchains that cannot otherwise effectively communicate with each other. NuGenesis has cross-chain network capability allowing for different blockchains to effectively communicate. True Cross-chain interoperability can be effected, including up to our public exchange. Whilst Ethereum and Bitcoin Chains are added in our cross-chain parallel processing system, there are 29 further chains to be connected;
  - (iii) The NuGenesis blockchain is built on the Substrate framework and as result is readily interoperable with other ecosystems such as Polkadot and Cosmos and has the benefit that it, and all the projects using customising the NuGenesis blockchain run as a parallel network will benefit from the upgrades regularly done by Substrate.
  - (iv) be listed either on either:
    - (A) Vision to Reality ('V2R') Venture Capital Board for seeking angel investors, collaborators, expertise, and human resources; and/or
    - (B) directly on our fully fledged decentralised Ledger X Exchange without the loss of funding that is usually involved in the requirements for listing on fully-fledged exchanged including funding liquidity pools;

An open market exchange removes the problems associated with slippage, MEV<sup>1</sup> and exchange rate inefficiencies found in DEX's, SWAPS and AMM's<sup>2</sup> that

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<sup>1</sup> Miner extracted value being the arbitrage of the price miner can sell and what is in the Swap site that is usually reflected as slippage. It is the inefficient overpricing of the trade.

<sup>2</sup> Automated market makers

fledgling projects have to deal with detracting the otherwise efficient allocation to the best projects;

- (v) those projects which lack the liquidity needed to further develop their existing projects further, can access the treasury wallets created on the NuGenesis blockchain to create a additional funding mechanism for the project without sacrificing their token price or unduly rewarding speculators.

Have access to a community of experts providing their services and ready to participate in projects all listed on the Just Social, social media site. The expertise is not limited to IT, but legal, project management, marketing and public relations, accounting and financial and range of financial expertise which projects can benefit from in their commercialisation. They can enjoy an incubator experience with wider pool of expertise and resources to draw upon.

- (f) Have access to one or more of our physical 'tech hub' communities where they can physically reside and be given residence (where also in a cooperative jurisdiction). The tech hubs will be communities of approximately 1,000 residences built around a smart city design with communal features for leisure and recreation and for offices, meeting rooms, lecture theatres, conferences, labs, audio-video facilities, and will include participating VC's and other professionals physically present to guide the projects' commercialisation.

[ Add pictures of the Farley Tech Hub ]

### The consummate migration experience for Existing/New Projects

3. Project migration support to the NuGenesis ecosphere is facilitated by providing:
  - (a) interoperable and cross chain agnosticism to allow for easy collaboration (see para [B 6]);
  - (b) the easy and cheap establishment of native blockchains customised from a modular NuGenesis blockchain that operates as fully independent blockchain in its own ecosystem without the draining of resources that would apply in parachain network (see para [C6-C7]);
  - (c) capability for listing projects either at VC level or directly to a fully-fledged exchange;
  - (d) "treasury re-financing model" capability that will allow existing projects to raise additional funding to improve existing projects;
  - (e) an intellectual property registration system whereby scripts, solutions and even modules can be contractually patented within the NuGenesis ecosphere and able to used by others in return for micropayments and other fee earning capability;

#### Legal Certainty and commercial confidence to facilitate mass adoption

4. Legal Certainty and commercial confidence will be induced because:
- (a) NuGenesis is a fully functional and operational blockchain at the time of this whitepaper and no funds are being raised by a pre-sale, ICO or IDO in order to build the blockchain and thereby nullifying the threat that it could be attacked as a 'security' and imperil the enjoyment and full opportunity community members have with respect to their NuCoin;
  - (b) NuGenesis has the confidence, sophistication, scalability and security necessary to satisfy governments to launch and settle their own CBDC's and SNDA's of their Government and infrastructure bonds and capital raisings;
  - (c) the NuGenesis blockchain is useable for Government business in a number of jurisdictions and is recognised in the Special Digital Economic Zones ('SDEZ's') in the recognition of instruments given legal effect such as, for example:
    - (i) Digital Autonomous Organisations ('DAO's) involving no directors or even shareholders to up to 1m;
    - (ii) Digital Wills and Estates, particularly appropriate to provide protocols for investment and distribution and avoiding family conflicts; and,
    - (iii) Insurance Pools/DAO's for compensating for hacks or exogenous price movements of crypto;
  - (d) That the SDEZ's provide arbitration and enforcement mechanisms in the real world for these digital instruments. ( The finality of transactions is not the most conducive to real world that has the expectation that obligations under a contract can be enforced and there is a court/arbitration process to clarify any dispute as to the same. We have sought to balance these competing interests by creating arbitration mechanisms, similar to Bills of Exchange and Instruments Act enforcements. SNDA's for example will be treated, subject to small exceptions, as final and enforceable whilst creating capacity for leave to be obtained where it can be shown that adjudication is appropriate, and providing the ability for cross-claims and adjustments to be made. );
  - (e) The Uniform Blockchain Code in the SDEZs will provide both voluntary and legally enforceable obligations to project registered with the SDEZ, standards for disclosure (especially on capital raises), duties on Devs/Founders/Managers/Miners, and market-driven incentives for mainstream investors to have greater confidence in crypto projects choosing to comply with some or all parts of the Code;
  - (f) There will be Digital Commerce University established in each SDEZ providing for a standardised universally recognised series of qualifications appropriate for the crypto economy. These qualifications will have the benefit of allowing for confidence in the



standards to be adopted, the skills that are forthcoming and the collaborative scholarship and innovation in the crypto-sphere.

User-friendly conducive experience

5. Upon entering the NuGenesis ecosystem, every user is in the crypto-business. We offer a more friendly and comforting end-user (especially novice) experience providing:
  - (a) automatic earning through on their smart phone or laptop (that is without the need for high-end specialised mining rigs);
  - (b) earn rewards (including in the form of NuCoin) for targeted advertising to them based on their metadata (not private information) on the Just Social, social media platform;
  - (c) ability to upgrade to a more substantial tier of miner-staker business, Silver-Miners, where it is not a race where the 'winner takes all'; every computational effort you make will yield you NuCoin;
  - (d) capability to add greater miner-staker business activity to increase earning potential in the more democratic fashion where they do not require specialised or expensive mining rigs and can rely on the common laptop or smartphone;
  - (e) ability to seek and perform governance roles remunerated through the minting process;
  - (f) through the decentralised 'just social' media platform, their business, can:
    - (i) offer their services to the community, whether administrative, marketing, technical or anything which can benefit the existing demand for support in the ecosphere;
    - (ii) access to relevant data; specialists; discussion forums; explainer videos; projects seeking expertise, collaboration, trading tips and live crypto-trading displays;
    - (iii) network and establish groups and friendships pertinent to their preferences and priorities;
    - (iv) access to ideas, crowdsourcing projects, venture capital initiatives and projects seeking expertise, collaborators and otherwise assistance;
    - (v) access to the most sophisticated exchange trading tools to participate in new projects being listed (without the inefficient, expensive and time consuming inconveniences currently experienced with DEXs, SWAPsites, AMM's etc);
    - (vi) access reviews and comments on prospective projects by other community members with the ability to regard such critique according to the authority of the source;

- (vii) earn badges<sup>3</sup> to denote their acquired expertise (whether pre-existing, obtained through the various educational course available or Digital Commerce University) and thereby improve their business earnings on making their expertise available to the community.
- (g) users with real opportunities for active participation in the consensus and governance of the ecosystem. The founders created the infrastructure for the community to raise to positions to govern it. A comprehensive governance model is provided see para [C 5] for more active participation to take place both regional and globally:
  - (i) to reward activities that secure the integrity of the system;
  - (ii) maximise the best conditions for their individual business;

One example of the first issues to be put to the vote, being the banning of 'pump and dump' schemes on the Ledger X exchange. Numerous research studies have been conducted to demonstrate the negative impacts on the project far exceeding any benefits from purported liquidity.

  - (iii) Where a project customises their own version of the NuGenesis blockchain and is bridged as a para-network, it has the freedom to design the governance model to suits its culture. Accordingly, as we say with the DAO experience in 2017 leading to the split of Ethereum and Ethereum classic (see para [C 5.15]), para-networks can readily co-exist even with entirely antithetical cultures.
- 6. Parallel Worlds is a comprehensive, virtual reality high-resolution and high-quality Gaming-type option available on the Just Social media platform, designed to:
  - (a) enhance, through a conducive leisurely setting, networking within and general engagement with, the community for extended periods of time;
  - (b) evolve into both a social and economic mode of human interaction and engagement with the yet to be imagined potential borderless interaction through avatars will create;
  - (c) provide a means of NuCoin generation, where the rewards (in the form of NFT and our 'DNC's) are interoperable with other games and can be used for payments in the physical world and,
    - (i) as a result, because of relative micro assets and payments that are involved, ensures the discipline of an efficient and inexpensive model of minting DNCs and trading digital assets through our exchange; and,
    - (ii) is a 'recession proof' contrarian activity that thrives in a bear market.

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<sup>3</sup> Being ranks or degrees of accreditation recognised by the community as having attained a certain level of expertise commensurate with such badge.

## 9. USE CASES AND RECOGNITION OF VALUE

NuCoin is the native currency of the NuGenesis blockchain. NuCoin will be required for:

- (a) miner-staking for the generation of rewards at different levels of business participation.
- (b) governance participation as to the direction of the NuGenesis community;
- (c) payment of services within the NuGenesis ecosphere, such as
  - (i) accessing the services of human resources on the Just Social platform, whether administrative, technical, marketing etc,
  - (ii) such of the users' own services offer to the community for your expertise (from marketing, administration, technical etc) and projects users may wish to join or collaborate with;
  - (iii) the payment of our internally recognised intellectual property and patent system ranging from scripts to comprehensive modules in the user's suite of 'hacks', templates etc;
- (d) to exchange for other currencies such as NuCoin Investment to participate in investment opportunities such as the Farley Tech Hub community for the purchase of housing estates, or infrastructure projects in several countries including those backed by Government Guarantees etc.,
- (e) access through staking and payment to participate in V2R venture capital and crowd sourcing opportunities;
- (f) to use as the currency in any of the SDEZ's whether for Government services such as registering a DAO, electronic will and estate, attend University courses, acquire property, accommodation and everyday living expenses; and

### **the greatest value proposition**

- (g) the largest of all value propositions is that the NuGenesis Layer 1 gasless rail network with its comprehensive legal and capital market infrastructure is the best scalable, fast, technically, economically and environmentally efficient opportunity for *existing* projects to be connected as para chains or parallel networks; for projects re-funded through our treasury services and exchange services; for new projects to frictionlessly enter the space; and for the world of dApp developers to connect and build on.

The capacity for new innovations in products as beyond linear smart contracts to parallel processing smart contracts and full DNCs; beyond NFTs to SNDAs; beyond tokens to token-less transfer; beyond crypto 'pawn-shop Defi' to fully powered Defi with serialised collateralisation; to a complete revolution in social and economic interaction in a virtual realm.

In joining the network, NuCoin will be staked (taking it out of circulation)

10. The value of NuCoin that is to be realised is a function of the collective efforts of the community. The rails have been built and paid for. The rails are continually upgrading and innovating with internal funding. What social and economic activity is done on the system is up to the user.
11. What has been built and currently fully functional at the time of writing and before any release of NuCoin by the founders, is an architectural infrastructure framework for which the blockchain and connected components ready to create and realise the maximum value for it. It is for users now to create and recognise new forms of digital assets, collaborate, attract new projects, manage the migration of the projects to the NuGenesis blockchain etc. The founders have no greater vote in the governance process than a newcoming member. It is a decentralised flat governance structure designed to incentivise those most actively participating.
11. There are endless opportunities for the creation of new assets whether in the form of SNDA's or DNC for fully fledged financial instruments, for gaming, for entertainment. The blockchain has been designed to for unlimited scalability, unlimited speed and efficiency, but it is for the community to transact upon it. The rails have been created for the evolution to tokenless social and economic reaction in and in a virtual world whose potential is open to the imagination and execution of the community. The exchange has been designed to allow new and existing projects to be listed and raise capital, but it is for the community to support those projects, hopefully with the benefit of reviews and commentary, suitably qualified expertise within the community is brought into the consideration.
12. We recommend the careful consideration of the tokenomics in para [C 13], our views on monetary policy in para [C 10], and valuation methods in para [C 11]. We submit the entire NuGenesis ecosphere is designed to incentivise the creation of value by the users in the new global virtual economy financially and socially.

## DESIGN FOR CONTINUOUS TECHNICAL INNOVATION IN MAINSTREAM ADOPTION

### B1. Design Principles

- B1.1 In the context of working with Governments in regard to the introduction of CBDCs, NuGenesis paramount concern was for unlimited saleability, instantaneous transaction speeds, high efficiency with zero emissions that would foster the mass adoption of crypto assets for the creation, recognition and exchange of value.
- B1.2 The design philosophy was the creation of a layer 1 network of multi-language cross chains parallel processing that would provide true interoperability to harness and synergise existing expertise and propel new modes of collaborative innovation. Our focus was therefore on building the infrastructure needs to cultivate mass adoption of blockchain technology, so that:
- (a) a community of developing projects can propel the opportunities provided by our infrastructure; and,
  - (b) we maintain our focus on continuous technical innovation to that infrastructure to harness the opportunity that mainstream use of crypto technology offers,
- which means that we seek to maintain the best conditions for 3<sup>rd</sup> parties to become developers to exploit the opportunities the infrastructure provides (such as, for example, Digital Notarised Contracts (DNC's), serialisation of coin creation for the development of next generation financial instruments) whilst we continue to evolve the platform to meet the challenges of the decades ahead, continuing our work into implementing:
- (a) 'quantum resistance';
  - (b) 'zero knowledge proof' technology that maximises data privacy and personal sovereignty without compromising the legal needs for the integrity of actors;
  - (c) Off-line processing with satellite technology for those parts of the globe that are not reliably on-line;
  - (d) Transition into complete virtual reality where global interaction is beyond the keyboard, beyond messaging texts, videos and numbers to a virtual interaction where play, economic and social life are effected through avatars in our 'parallel worlds'
- B1.3 This philosophy is one where duplicative competition, information silos, are avoided in favour of harnessing the synergy from the composability that the benefits of tested iteration

of tech are continually innovated upon to meet the imperatives that the crypto revolution offers to humanity.

B1.4 Effecting the design philosophy involves implementing the cornerstone interdependent priorities:

- (a) achieving unlimited scaling capacity. Indeed, the more users, the faster the transaction speed;
- (b) achieving parallel processing of unlimited amounts of data in the order of millions of transactions per second, through simply adding the parallel processing power to meet anticipated requirements without any sacrificing data which we consider valuable in and of itself;
- (c) establishing a mechanism for continual innovation of the infrastructure, not only through the on-going upgrades and development for future needs, but ensuring the platform funds that continual innovation as an accepted principle in the governance of the blockchain;
- (d) achieving true interoperability of blockchain protocols through cross chains and hyper brides able to communicate with different languages;
- (e) effecting interoperability by parallel networks running as independent sovereign blockchains that do not burden the resources of each other; and,
- (f) provide through a fully fledged exchange protocol which is answerable to the market, the opportunity for funding to flow to the best tech, rather than having tech development influenced by the needs to access capital.

B1.5 The broader infrastructure of our ecosystem includes legal arrangements with Co-operating Countries establishing Special Digital Economic Zones that provide supporting regulatory regimes for the recognition of Crypto assets and their use; an administrative infrastructure and accreditation. These are discussed in Part C. This Part, deals with the tech.

## **B2. The multi-chain, cross chain network**

B2.1 The NuGenesis blockchain network is a multi cross-chain ecosystem that uses 4 languages interoperability:

- (a) The NuGenesis main blockchain that is built on Substrate;
- (b) The LedgerX (Exchange) Trade chain that is based on C++ that is a parallel processing chain made of a tri blockchain configuration;
- (c) The Ethereum Chain; and,
- (d) The Bitcoin Chain.

B2.2 Any dApps built on Ether for example can be interoperable within the NuGenesis network. The 3,000 dApps and ecosystem built on Ethereum for example can work on NuGenesis and settle on the Ledger X exchange chain. The goal is that the innovations and benefits of

iteration that has occurred over the last decade can be fully interoperable with and through NuGenesis.

- B2.3 Through multiple blockchains we can also have a chain operate as an intermediate blockchain if for some unforeseeable reason that may arise, we cannot connect to the right one directly in the interim.
- B2.4 Currently being completed are the hyper-bridges necessary to bring another 28 blockchains project chains within our interoperable network in a matter of months.
- B2.5 NuGenesis blockchain can meet the scaling needs of any enterprise. It can be customised by any project cheaply and easily and bridged to the ecosphere as a parallel network.

### **B3. The NuGenesis main chain**

- B3.1 The NuGenesis main chain(s) are build on the Substrate Blockchain builder framework. It was specifically chosen so that the issue of interoperability is standard feature. Binance, Polkadot and Cosmos are likewise built on Substrate. The NuGenesis chain upgrades as the Substrate framework upgrades and benefits from the extra functionally continually introduced.
- B3.2 As will be discussed below as to how we achieve unlimited scalability, we have chosen a 3 second block finality as the standard being the most efficient speed. The speed can be readily reduced to 200 millisecond block finality.
- B3.3 NuGenesis uses system validators and is given added integrity by a layer of AI monitoring to avoid corruption. Optimal efficiency with excess capacity has been achieved with 4 validators nodes that are super nodes and 1 simple or authority node. The network topology, P2P, uses the Aura round robin protocol to ensure randomisation between validators and integrity of the block.
- B3.4 There two consensus mechanisms:
  - (a) Proof of Authority with useful work AI (Artificial Intelligence); and,
  - (b) Grandpa, being substrate functionality to ensure block transactions are valid and the longest chain is the best chain.

We discuss the validation process below in terms of achieving scalability by removing the validation process.

- B3.5 Each block can store 5MB of data, even though we typically use only 2KB. The capacity is necessary for achieving larger numbers and size of transactions, and for the file size to account for video, data streaming etc which involved with Digital Notarised Contracts ('DNC's) and Serialised Notarised Digital Assets (SNDA's) (broadly comparable to NFTs). This should be contrasted with 54Mb and less than 1 Mb for Ethereum and Bitcoin respectively.
- B3.6 Once validated, the transaction becomes timestamped and part of the blockchain. NuGenesis currently uses SHA 256. It can go to SHA 512, but SHA 256 is optimal.

## ACHIEVING UNLIMITED SCALABILITY

B3.5 The constraints to scalability are:

- (a) data flow management to ensure enough data flows into the block within the finality time to seal the block;
- (b) the block size;
- (c) the block speed; and,
- (d) the bottleneck caused by the consensus mechanism.

### Resolving the validation bottleneck

B3.6 The NuGenesis chains can run at 200 milliseconds, but it is currently run at 3 second block finality to maximise the block height at zero fault tolerance. This will be relevant below at para [B 7.1] where our solution to maximising the data flowing into the block is discussed.

B3.7 A bottleneck is created by the consensus mechanism. Proof of Work slowness is notorious and need not be repeated here. Even Ethereum 2, because it will be using people node validators will require communications between them, including fee auctions etc that creates at least a 4-17 second delay before reaching the point of going into the block and hence will continue the bottleneck in the validation process.

B3.8 Solutions for mitigating bottlenecks to scale include 'processing data before packing' which we use in the Ledger X blockchain and sharding. Sharding has problems for commercial enterprises because all the relevant data for that enterprise is no longer retained in the same system. It is split into different shards and cannot be merged. Each shared blockchain is its own independent body and with it also the inherent problem of duplication.

B3.9 Whatever the language used, pre-processing extrinsics (events, signed or unsigned transactions) by time ordering and verifying transactions at the event speed tends to have a more theoretical than real increase in the speed of transactions. These solutions tend to come at the cost of data retention. Any solution that seeks to limit the amount of data is not acceptable to us because we believe that data is valuable and will increasingly be so.

B3.10 In the Ledger X chain which is primarily to payment settlements, including through our off-chain payment card, settlement is instant using the liquidity pools before updating the blockchain ledger.

B3.11 On the NuGenesis main chain, we used system validators comprising the 4 super nodes and 1 authority node which is a simple node. The authority (non validator) node keeps the blockchain data. It can be transacted upon but cannot make a block. It runs the explorer, data analytics and outputs data generally, designed to keep these activities from putting pressure on the validator nodes.

B3.12 The system validator nodes run on the randomness of the round robin protocol and monitored by AI and can achieve transaction speeds in the milliseconds. There are no requests from 1000's of validators and fee actions. The streamlined validation process



through the super nodes with byzantine fault tolerance and randomness via round robin monitored by AI, makes unnecessarily superfluous broadcasting through validation networks. We have found that 4 super node validators is optimal spec efficiency to be an enterprise solution for any of the worlds current global corporations.

- B3.13 The simple node is there to be able to add more nodes to the network and to connect with other blockchains. When a project becomes a parallel network, a simple node will be configured to it giving full ledger data access (without validation capability).

## **B4. Parallel Processing scalability solution**

- B4.1 Instead of sharding and have different data in different shards, NuGenesis has parallel processing. So instead of having a shard that has one data set, NuGenesis have a whole chain for a data set, implementing dedicated chains for:
- (a) ordinary Coin Creation;
  - (b) serialised Coin Creation;
  - (c) smart contracts/DNCs; and,
  - (d) serialised Notarised Digital Assets ('SNDA's)/NFTs
- B4.2 As these chains are developed, they will have different optimal block finalisation speeds whose optimal efficiency may vary from higher speeds 200mil/secs for coins to slower, 6 secs for DNCs. The importance for scaling purposes is that by keeping the specialised chains separate, there is no pressure to slow the network.
- B4.3 With the implementation of load balancers and consensus before packing on the load balancer discussed below at para [B 7.1], there is no limitation to the number of chains that can be bridged/cross chained parallel processing.

## **B5. Unlimited scalability roll-out**

- B5.1 The current innovation that is being rolled out is the use of specially designed load balancers for blockchain. Load balancers are used on the internet to transact millions of transactions per second. There is no apparent limitation on the load balancer. All requests from wallets, apps etc come to the load balancer, whose role it is to send the data to the right chain.
- B5.2 The load balancers work on the hardware level (routers, switches and dedicated systems) and software level. They allocate the data according to the utilisation of the relevant chain at the relevant time with where the data is supposed to be processed.
- B5.3 NuGenesis load balancers do not require a continence chain to reconnect the data from the separate chains because they have a blockchain ledger built into them with a consensus mechanism that records what is in each block and backs up to a storage chain.
- B5.4 With parallel processing, scaling up to 1,000 chains parallel processing data is efficient. Data is sent through the load balancer which keeps track of the database and storage of where

data is sent in the storage chains. Data can be readily searched from the explorer on the load balancer.

## **B6. Interoperability and parallel networks**

- B6.1 The NuGenesis 4 cross chain system is designed to provide for and promote interoperability. Of the 4 cross chains, the NuGenesis main chain frame is built on Substrate to take advantage of its interoperability features. The EVM Palette is installed for Eth dApps to be inserted and readily interoperable. Whilst RUST is a powerful blockchain language, existing projects use a variety of languages giving rise to multiple ways to cross chain or bridge between systems. By having multiple languages, whatever cannot be done in the Substrate framework, can be done in another framework.

### **Para-chains and Para-threads uses**

- B6.2 The NuGenesis blockchains use relay chains and para-chains and para-threads can be created easily if required. There are situations where projects and dApps developing specific use cases justifiably benefit from avoiding the establishment of security and consensus builds of a mother chain. Nu Genesis provides for that option but offers developers a more precise cost/benefit analysis by a cheap and easy NuGenesis-based blockchain modular framework to build on that saves time, costs and distractions. The Ledger X exchange option offers developers access to liquidity so that the choice of seeking a parachain slot is not influenced by liquidity objects. Developers' architecture should be focused on optimal tech.

### **Parallel Networks**

- B6.3 At NuGenesis, we do not believe in the concept of para-chains and para-threads for any independent project. Instead the design principle is that new and existing projects should have their own customised blockchain and ecosystem. Projects should be bridged or cross-chained as sovereign parallel networks.
- B6.4 Amongst the many difficulties with the para-chain and para-thread philosophy is the inherent limitation to scalability. That para-chain shares the same security etc of the mother blockchain. Each parachain relies on the power of the mother chain and consequently adds resource burdens upon the entire para-network.
- B6.5 Other inefficiencies arise with inherent delay from multi-node validation which increases as more nodes are necessary to support the para-chain network. The multiplication effects kicks in where the more pressure on the mother network, the more it requires nodes for each ecosystem. Para-chains inherently duplicate transactions and tend to double-count them as a transaction increase which can be misleading in the assessment of transaction speed.

### **Sovereign parallel blockchains, not para chains**

- B6.6 Our design philosophy is that to facilitate mass adoption each project and enterprise application would desire its own sovereignty and control over its data within its own blockchain(s) and ecosystem. Existing projects which are on different programming languages and blockchain systems can be easily cross chained and/or bridged to the

NuGenesis network through the substrate palettes or the Ledger X exchange blockchains. If a new project or enterprise application desire to build a blockchain(s), even with multiple projects, they can easily use the NuGenesis framework to customise their network. They determine their own security protocols which they share with their own para-chains for their sub-projects. They can then be bridged to the NuGenesis system and be a parallel network.

- B6.7 Model applications contemplated in our design are for example, licencing or registries in a federal system. Global remittance networks are another. These types of use cases require their own security priorities in selecting their blockchain network with simple or authority nodes in local jurisdictions for example, and validator nodes at a federal or headquarters level, with such limitation to data storage access as is efficient for that ecosystem.
- B6.8 The costs inefficiencies with parachain networks are staggering to contrast. The number of nodes required Polkadot for example run into the hundreds and the discussed cost of a single para-chain slot is in the multiple millions of dollars. By contrast projects running as independent sovereign parallel networks to NuGenesis will be measured in the thousands of dollars. NuGenesis can dynamically add nodes as required. However, NuGenesis does not even need the 5 nodes it currently uses. It can operate efficiently on 3. The extra 2 is provided for additional capacity to cover the layer of Artificial Intelligence to monitor for any potential corruption. Nodes can of course be added as may be required. There are no fees charged on the NuGenesis network. Fees are unnecessary requests on the blockchain. Projects can design their own fee structure within their own ecosystem.

## **B7. Data flow processing, not layer 2 processing**

- B7.1 With the implementation of load balancers and consensus before packing on the load balancer, the more parallel network chains that are added, the more data is injected into block creation of the connected chains. Without a validation delay (validation occurring within a 100<sup>th</sup> of a microsecond), and accordingly there are more dramatic increases in the speed of transactions. The more chains that connect with their own sovereign systems, there is no extraneous pressure on any particular system. With parallel processing, the more systems, the faster the transactions processing. Rather than having any layer 2 processing, NuGenesis opted for data flow processing.

### Scalability to build liquidity and support Virtual Reality Real (Parallel worlds)

- B7.2 The emphasis on the speed of transactions in the millions per second, is not only because of the priority for remitters to on-board and off-board the crypto capital markets necessary to build up the liquidity pools for the NuGenesis ecosystem, but because this quantum leap in scalability is essential to the virtual reality realm, parallel worlds. NuGenesis will shortly be announcing major partners for the Satellite network and Virtual Reality platform.
- B7.3 The Virtual Reality Realm of 'Parallel Worlds' is an important implementation being worked on that is coming to the NuGenesis network. It will be a virtual, but actual, place of

exchange where avatars can meet, negotiate, socialise using crypto currency for services and crypto assets. A users' Avatar is created by a scan and not easily changed to prevent cheating of the system. There will be on-going 24/7 education, virtual offices, business, e-games and e-sports. The virtual realm will interact with the real world, for example a user's Avatar may purchase a pizza in a virtual shop and it is delivered to their home. Fully implemented, the network capacity must cater for millions of transactions per second, and the file size of blocks will require enormous capacity for voice messages, video streaming and digital assets created by users in virtual reality.

## **B8. The continuing innovation rate design doctrine**

### Forkless upgrades

- B8.2 At the most basic level, there is no risk that upgrades and necessary changes to adapt to technical innovation does not send the blockchain into a panic and wipe the data or tread into Layer 2 transactions. Being forkless, NuGenesis does have risks involved in upgrading the network. There are no noticeable effects on the runtime environment or downtime.
- B8.3 In para [C5], we discuss the governance system that is designed to ensure that NuGenesis projects continue their innovation rate and that the improvements in the pipeline are both provided for and also funded through the treasuries in the coin creation process that is discussed below.

## **B9. MINERS, STAKERS IN GREEN, ZERO CARBON**

- B9.1 There are several types of stakers and Staker-Miners. Platinum, Executive and Gold Stakers are stakers only and described in the reward system. The Silver Miners are the staker-Miners who interact with the system.

### Miner-stakers are minters

- B9.2 In NuGenesis, staker-miners are not validators. They have a different duty. They are minters of coin to ensure that the tokenomics run as expected. NuGenesis is focused on maintaining an innovate rate in a constantly evolving blockchain ecosphere. It did not start with a large number of created or pre-minted coin. Rather, it is based on a minting system to reward all those participating in the various roles to support the evolution of the system.

### Zero energy emission

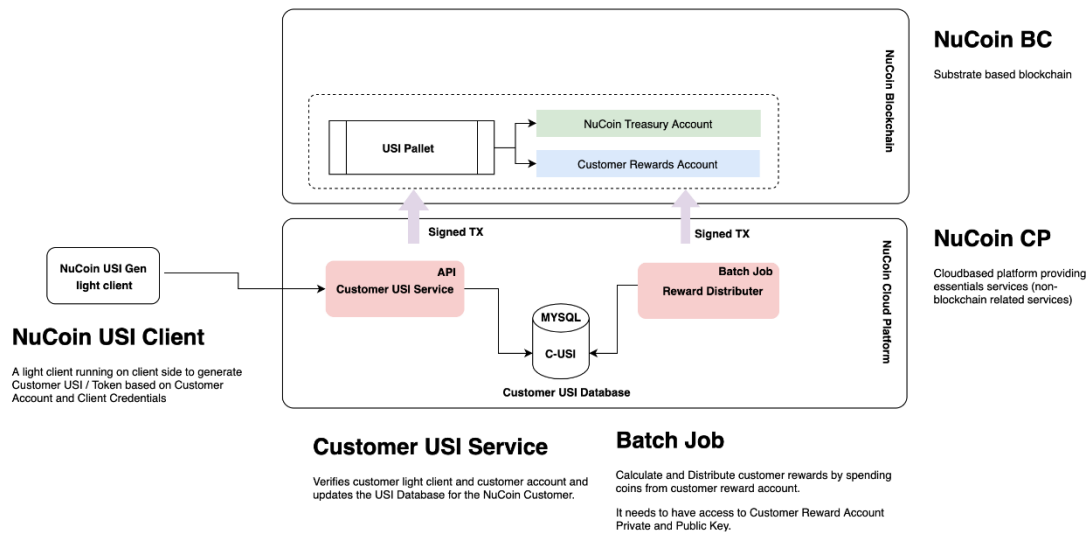
- B9.3 Furthermore, the system was designed to be Green. It was designed to eliminate unnecessary computational power required from validation and unnecessary requests on the system. Moreover, mining involves no extra energy beyond that which the chain is using anyway in running on AWS or other applicable storage service.

### Creating USI's (Universal Serial Identifier)

- B9.4 In NuGenesis, the guaranteed uniqueness on any block hashing address is achieved by a randomised number known as the universal serial identifier (USI). The USI facilitates the capabilities for blockchain parallel processing, sharding, para-chains and minting. Coins are

minted with audit trackability through the USI. Each Coin, Crypto Asset whether NFT/SNDA or DNC can be serialised. This serialisation is a foundational requirement for CBDCs (Central Bank Digital Currencies) and provides the basis for the DeFi to be revolutionised. Crypto assets can have security attached for lending, can be multi-party owned etc and consequently do not have leave a users' custody to be utilised.

The below diagram illustrates the high-level design for USI implementation:



### The role of the Staker-Miner

B9.5 The role of Staker-Miners are therefore to interact with the system, activate it and direct it to:

- (a) Mint Coin; and,
- (b) Create USI

Which in the NuGenesis mainblock chain is vital because the doctrine of constant innovation rate funded through the treasuries, the overall development of the ecosystem depends upon the minting process. Moreover, the USI's are central to the serialisation of crypto assets which NuGenesis offers for the advancement of the crypto economy.

## **B10. Nu Genesis Layer 1 Smart Contracts/DNCs and NFTs/SNDA's**

### Smart Contracts/DNCs

B10.1 The NuGenesis innovation to facilitate mass adoption by the mainstream economy is to go beyond existing limitations of smart contract protocols. Digital Notarised Contracts (DNCs) allow for parties to transact with more comprehensive contracts that cater for a wide range of terms and conditions to cater for the various possibilities that can arise and consequent allocation of risks in common business practices. The AI capability will build suggested templates of contracts and instruments in an increasingly number of commercial scenarios.

- B10.2 The AI will pull the suggested templates to a contemplated transaction, fill in the data from the respective chains and wallet IDs, and the counterparties have signed the respective DNC, the system will witness and notarise the DNC by time-stamp hash it with a unique identifier.
- B10.3 Transactional scenarios may require money to be held in trust wallets, with or without multi-signs, and impose standard business customs such as for example SGC inspections for import/export contracts. At para [B12.11] below, the Ledger X blockchain system allows for smart contract developers to innovate with parallel processing in the smart contract protocols removing the limitation of linear time ordering and allowing for the flexibility for both vertical and horizontal events to be incorporated.
- B10.4 In para [B 12], we discuss the adoption of a Blockchain Code of Conduct and Crypto laws to recognise and provide forums for efficient dispute resolution that arise in blockchain technology. These jurisdictions can be made the forum for dispute resolution and governing law for a wider variety of templated business situations.

#### NFTs/SNDA's

- B10.5 Likewise, DNCs and SNDAs are discussed in part A, and para [C 3]. The DNCs and SNDAs can extend beyond digital-only object and interact with or fuse with the physical world through RFID chips, stickers and nanotech. DNCs and SNDAs are Layer 1 assets, minted and traded on the NuGenesis blockchain.

### **B11. COIN CREATION, AND SERIALISATION OF ASSETS**

- B11.1 As identified in para [B 9.4] above, serialisation applies to blockchains that created serialised coins where there is a particular requirement for CBDCs and for blockchains dedicated to DNCs and SNDAs. Those blockchains operate on system generation rather than individual miners. Government and enterprise users do not wish to rely upon human staker-miners.
- B11.2 Serialisation is not attached to ordinary NuCoin per se because it is primarily a payment coin and not designed to be a store of value. However, NuCoin can be wrapped and effectively become a DNC or SNDA. By contrast, NUI (NuCoin Investment) that is an investment token for participation in significant investment projects will be serialised for each and every coin.
- B11.3 A system generated serialised NuCoin chain can be activated by community governance.
- B11.4 The capability is for ordinary, serialised coin and digital asset creation on their own separate blockchains. Accordingly, if it is desirable to change the block speed from 3 sec finality to 200 nano/sec finality, according to the transactional needs.
- B11.5 Ordinary NuCoins created per block are reduced in a linear algorithm by 1 every 10 years, until it reaches 0 Coin creation.

The Coin Creation Table in attached as Schedule 1

## **B12. THE LEDGER X EXCHANGE BLOCKCHAINS**

- B12.1 Ledger X is fully fledged exchange where prices are determined by the brutality of the open market. It was designed within the NuGenesis ecosystem for capital to be allocated by the market rather than bond curves and technocratic formulae.
- B12.2 Ledger X is decentralised in that, unlike say Binance which has a central point of data storage, the data is decentralised with the 11 witness nodes across the globe. This offers a vital security advantage without compromising the instant settlement time.
- B12.3 The decentralisation is designed to encourage users to consolidate their holdings, view, monitor and manage their portfolio, apply metrics and analytics available without the risks of a centralised exchange. Assets from other blockchains can be deposited whilst remaining interoperable. With multi-sig, treasury wallets and allowing users to keep their private keys, it is intended to provide the user experience comfort needed to optimise mass adoption.
- B12.4 Ledger X is scalable and high performance designed for new projects to cheaply and efficiently create or mint coins made available to the open market, or for existing projects to obtain further liquidity through supplemental release mechanisms.

### **Tri blockchain configuration**

- B12.4 The Leger X exchange is a parallel processing tri blockchain configuration

The three chains include:

- (1) Settlement chain;
- (2) Match chain; and
- (3) Content chain

which are running parallel together.

### **Consensus mechanisms**

- B12.5 The consensus mechanism involves two major protocols:

- (1) Delegated Revenue Proof of Stake; and,
- (2) Consensus before packing

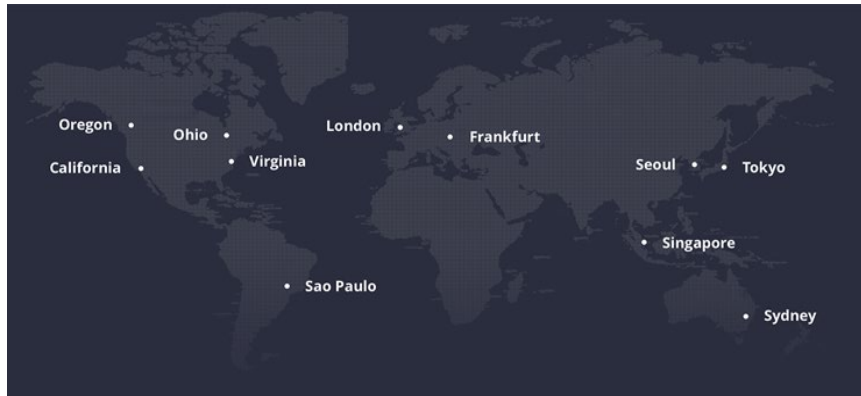
the combined effect of which is that the transaction has already been processed when it goes through the block. This tri-chain concurrent processing achieves a 1 second block speed creation finality.

- B12.6 The user therefore experiences a completed order within 1 second that compares with a centralised exchange.
- B12.7 The settlement chain does the 'consensus before packing' and the settlement. The content chain stores the data on finality and the match chain matches the data (order matching) when trying to resolve it or search it. An explorer search will identify the ID of multiple transactions however they are processed as between the blockchains

B12.8 Like the NuGenesis blockchain it is scalable such that parallel chains can be created and bridged. It is flexible in that it allows developers to create more vertical side-chain scenario.

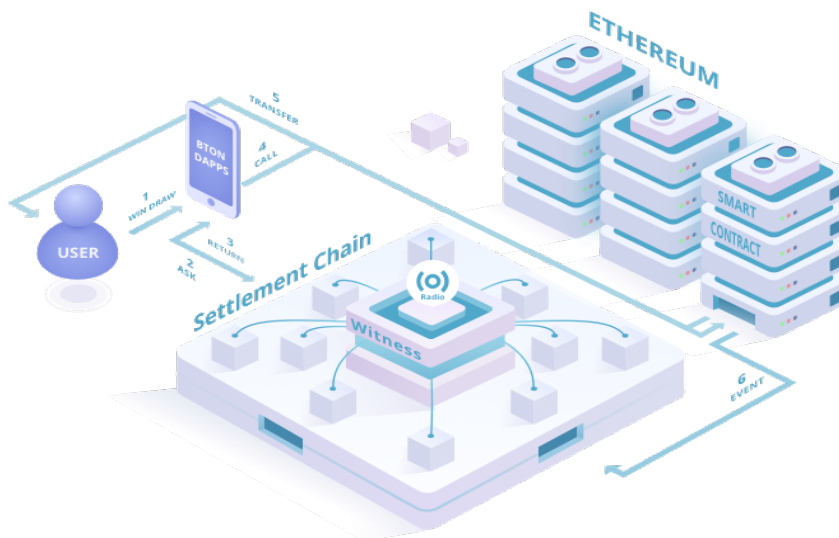
Globally dispersed super-nodes

B12.9 The 11 witness nodes are Super-nodes that are deployed in 8 countries on four continents.



The Ledger X Cross-Chain Agreement value circulation Hub

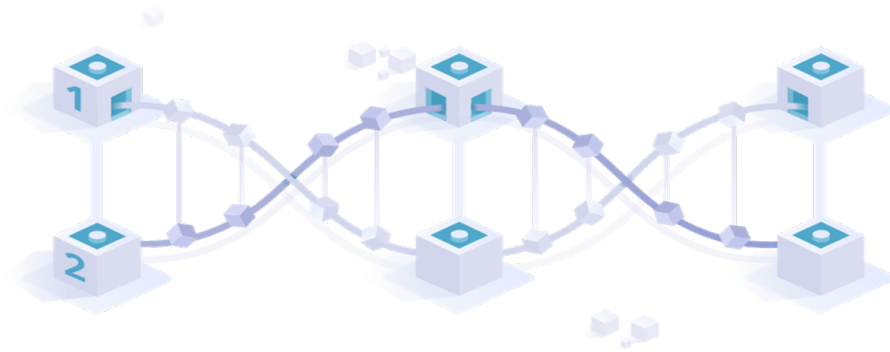
B12.10 The cross chain protocol allows assets on other public chains to be anchored through smart contracts and scripts to create or be part of newly created crypto assets on the users' Ledger X exchange wallets.



Ledger X Side Chain protocol for smart contract parallel computing

B12.11 A current limitation of smart contracts is that they are not designed with parallel computing in mind and operate on a linear time ordering process. The Ledger X side-Chain protocol allows smart contract developers to introduce side chain mechanisms that concurrently process providing greater flexibility for vertical side chain scenarios.





### **B13. THE NuGenesis REWARD SYSTEM**

B13.1 NuCoin was not created on masse or pre-minted for pre-sale release, IDO, IEO or ICO.

B13.2 The NuGenesis blockchain systems have been developed, are fully functional.

B13.3 NuCoin is the payment currency for the ecosystem to operate and is minted per day reducing at a linear algorithm of a negative 1 per block every 10 years over a total period of 110 years.

B13.4 The NuGenesis Reward system is tied to the minting of Nu Coin. The minted coins per day are disturbed by the treasury through a series of sub-treasuries for the following purposes:

(a) on-going funding for the NuGenesis ecosystem and continual innovation;

(This is represented by the Tech Fund Treasury, Legal Treasury and Investment Treasury)

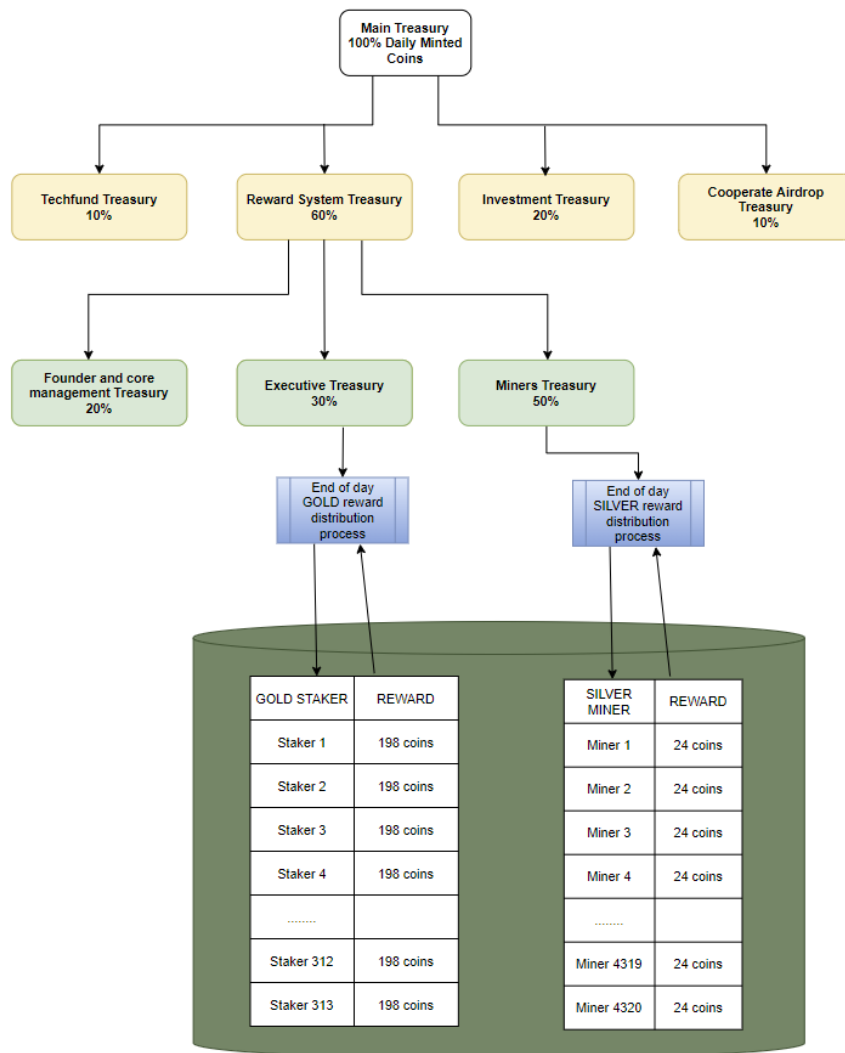
(b) on-going rewards and payments for governance and participation throughout the ecosystem which includes the 313 executive and governance positions described in the governance system;

(c) return of investment being the smaller category of reward to the early investors taking a higher risk and stakers;

(d) the Silver Staker-Miners who function it is to mint coin and create USI; and,

(e) the participant members who through their membership in the Cooperative NuGenesis Community receive free daily airdrop NuCoin rewards of 10% of all NuCoin minted each day.

A diagram of the reward allocation is as follows:



### Mining: the staker-miners or Silver Miners

- B13.5 Unlike other blockchain models where Miners receive the Coin they mine, with NuGenesis the Staker-Miners or Silver Miners instead work for the system. They consequently receive a 30% reward of what NuCoin they caused to be minted each day.
- B13.6 The mining is designed to require negligible computational resources and can be done in a matter of seconds. Moreover, bots can be hired by the Miner to mine for them by paying the bot 10% of the Miner's reward.
- B13.7 The AI System does not trust miners and creates a secondary mining capacity to pick up any slack from the daily coin creation tokenomics requirement (being 34,560 Coins per day in the first 10 years). The AI System will burn off automatically anything in excess of the coin creation required.

B13.8 It is possible to 'turn off' this AI system minting back up should future governance voting decide so.

The Staking Amounts per Silver Miner membership type

B13.9 The Staking Amounts for the different levels of Staking membership are set out in **Schedule 2**  
**[ or set out a table]**

The NuCoin Treasury and Accounts

B13.10 The NuCoin System Account Types are set out in **Schedule 3**  
**[or set out a table]**

NuCoin Pie Chart Holdings at time of White Paper

B13.11 The Pie Chart of the Allocation of Existing NuCoin is represented below:  
**[insert Pie Chart]**

B13.12 The observable features of the allocations, it is submitted is:

- (i) the Founders and Core Devs have a relatively modest holding given the blockchain networks ecosphere development paid for to the operational state.

This is suggested to compare favourably to traditional blockchains where there are enormous pre-release creation of coins or pre-minting that are sold to investors whose funds are used to build the blockchain and hopefully bring it to an operational stake.

- (ii) the Founders and Core Devs are locked in for 2 years plus cannot sell their NuCoin where the price impact is or could be 10%.
- (iii) the Founders and Core Devs are, to the extent they contribute to on-going governance and management, rewarded through the daily minting process. Such a reward structure is designed to incentivise a team to remain committed to the longer term interests of the NuGenesis ecosystem.
- (iv) there is an allocation of NuCoin to strategically important investors that provide disproportionate economic benefit by virtue of their coin holdings than a more typical investor regardless of size of holding.

## PART C- THE NuGENESIS REVOLUTION:

### Solving 3<sup>rd</sup> and 4<sup>th</sup> Generation Blockchain evolution issues to embrace global mass adoption

#### c1 Introduction

- C1.1 NuGenesis is the evolution of decentralised blockchain technology<sup>1</sup>, in which NuCoin is its native decentralised currency and payment system, that eliminates the need for trusting authorities or intermediaries. The blockchain and the ecosystem, honours Satoshi's grand ambition of supporting direct monetary transactions among a network of peers, by creating a decentralised payment system eliminating the need for central banks and governments which are prone to be corrupted, to censor, permission use or otherwise influence the system in a non-neutral manner.

#### Unifying the vast majority of the globe through code

- C1.2 Satoshi's grand ambition, is a curious solution for governance without governments that is neutral and accessible to all, which appeals to liberal sentiments both from the left and from the right. Moreover, it is equally applicable to the vast majority of the Governments themselves and the many billions in the world that do not enjoy the privileges of the elite which the current legacy financial order extols and produces. Only 1/3<sup>rd</sup> of the world's Central Banks are part of the Bank of International Settlements; 2/3<sup>rd</sup>s are not. Those excluded are the casualties of the elite decaying financial order.
- C1.3 On the one hand, the Bitcoin revolution can be presented as a neoliberal project insofar as it radicalises Friedrich Hayek's and Milton Friedman's ambition to end the monopoly of nation-states (via their central banks) on the production and distribution of money<sup>2</sup>, or as a *libertarian dream* which aims at reducing the control of governments on the economy<sup>3</sup>. On the other hand, it has also been framed as a solution for greater social justice, by undermining oligopolistic and anti-democratic arrangements between big capital and governments, which are seen to favour economic crises and inequalities. What we would like to add to this equation is that entire national states, indeed the vast majority of the world's nation status, are just as much the victims, and blockchain technology offers them the same hope it does for most of the world's population. The implicit political and social evolutionary solution is the shift of significance of politics to relying on technology.

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<sup>1</sup> currently permissioned, until such time as the NuCoin community considers itself sufficiently confident in the protection of its leading edge innovations, the security of its systems – particularly after the AI has completed a sufficiently matured machine learning phase to underscore entirely the integrity of the system to go open source.

<sup>2</sup> Hayek, F.A. (1990), *The Denationalization of Money: The Argument Refined*, 3rd edition, London: The Institute of Economic Affairs.

<sup>3</sup> De Filippi, P. (2014), "Bitcoin: a regulatory nightmare to a libertarian dream", *Internet Policy Review* 3(2), <http://policyreview.info/articles/analysis/bitcoin-regulatory-nightmare-libertarian-dream>

### Crypto means decentralisation of power

- C1.4 When we refer to cryptography and the crypto industry, we do not reference to any perseverance of secrecy in transactions. Rather, we refer to crypto in the endeavour to create a *trustless infrastructure* for financial transactions. In this context, cryptography is merely used as a discrete notational system<sup>4</sup> designed to promote the autonomy of the system, which can operate independently of any centralised third party (or more specifically a ruling financial elite). Crypto and the crypto-economy referred to herein is less about cryptography used to protect the privacy of information, and more about a means to promote further decentralisation and disintermediation when combined with a peer-to-peer architecture.

### Crypto is social, and therefore political

- C1.5 It is not possible to separate the technology from its social and political dimensions<sup>5</sup>. The greatest gift that Satoshi Nakamoto has given us is the gift of decentralisation. It is the first time in human history that we can govern communities without a hierarchy. Hierarchy has historically been the only method by which human organisations have been able to scale. However, we have now reached the point where the opposite is true: nation states, and their laws, and traditional institutions (in the form of national banks, government bureaucracies, Parliamentary democracies) can no longer scale to the imperatives of a global economy. We say that to the global economy, scalability can only be achieved by decentralised non-hierarchical structures: governance by mathematical protocol.
- C1.6 The rise of investment in the crypto-economy<sup>6</sup> has been buoyed by extraordinary gains<sup>7</sup>. It is universally accepted crypto being mainstream is inevitable. Mass adoption is being recognised in the exponential growth of the crypto market; the race by institutional investors to service the demand by their clients<sup>8</sup>, increasing integration into the traditional economy by such things as Paypal, uber, Amazon and major retailers accepting crypto as

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<sup>4</sup> DuPont, Q. (2014), "The politics of cryptography: Bitcoin and the ordering machines", Journal of Peer Production (4), <http://peerproduction.net/issues/issue-4-value-and-currency/peer-reviewed-articles/the-politics-of-cryptography-bitcoin-and-the-ordering-machines>

<sup>5</sup> Far from being an exclusively economic tool, money is closely associated with social and political systems as a whole which Nigel Dodd refers to as *the social life of money*: Dodd, N. (2014), *The Social Life of Money*, Princeton, NJ: Princeton University Press. See also Simmel, G. (2004), *The Philosophy of Money*, 3rd enlarged edition, London and New York: Routledge.

<sup>6</sup> Crypto economy as an abstract concept is used in this paper to denote an emerging sector of economy that is based on the technological innovations of bitcoin and distributed ledger technologies.

<sup>7</sup> For example, Safemoon did 6000X and investors as low as \$100 became millionaires within 2 weeks.; HOGE and FEG are the same. Others include: 11,000x for DogeCoin; Neo 378,453% ROI; Ethereum — 279,843% ROI; Spectrecoin — 149,806% ROI; Stratis — 102,338% ROI; Ark — 37,805% ROI; Lisk — 26,367% ROI; DigixDAO — 12,044% ROI; QTUM — 9225% ROI; NXT — 1,265,555% ROI; IOTA — 424,084% ROI; THETA-18,716.71 %; FTM-13,426.68 %; ONE- 7,719.49 %

<sup>8</sup> For example Exchange Trade Funds filed by Goldman Sachs, Fidelity, Van Eck, JP Morgan. Likewise with Microstrategies, Rothchild through Gray Scale, BlackRock just to name a few.

payment; and, recently as a harbinger of things to come, the Korean crypto trading market volume exceeding that of the national stock exchange.<sup>9</sup>

- C1.7 Moreover, it is also accepted that crypto markets support an asset class that is uncorrelated with any other investment asset class and is highly liquid, given the crypto markets trade 24 hours a day. The mere recognition of crypto as an asset class is a powerful risk management tool in an investment portfolio. It therefore becomes a commercial imperative for all investment managers to have a portion of their portfolio in Crypto. The economic impact of this alone filtering into the relatively tiny \$2.5T plus crypto market will have staggering financial impact to boost capital availability.
- C1.8 To say that mass adoption is inevitable is not just a matter of pointing to institutional investors entering the market. Nor is it about the reversal of the recommendations of the largest banks who now find themselves recommending their clients invest, even a small portion of their portfolio, in crypto projects. The inevitability of mass adoption comes from something far deeper. It comes from the asymmetry of power between centralisation and decentralisation. For centralisation to sustain, it must be total: 100%. Every part of the system must be controlled or the money, like water, will flow to the 'loophole'. Decentralisation has no such requirement.

## **c2. SOLVING THE 3<sup>RD</sup> AND 4<sup>TH</sup> GENERATION PROBLEMS OF MASS ADOPTION**

- C2.1 The Bitcoin revolution was the first generation of the evolution. The Second generation was the proof of concept that became known as the smart contract platforms lead by Ethereum. The third-generation evolution is now putting these smart contract platforms to some proper commercial application. The 3<sup>rd</sup> generation problems, and how we have sought to solve them discussed in this paper, are:

- (a) **Scalability:** being the ability of the blockchain and the ecosystem within which it operates must be capable of billions of users with instant speeds and inconsequential transaction costs. Our background in providing Central Bank Digital Currency ('CBDC's) for governments mandating global scalability and speeds had us perfectly placed to solve these problems as we explain in paras [B 3.5-3.7].

The TX speeds of a million per second to unlimited parallel processing chains fed data through load balancers applies not only to Coins, but also to Smart Contracts/DNCs.

- (b) **Interoperability:** just as we expect our wifi and smartphones to operate in any part of the world regardless of which brand of device we use, blockchain projects should be able to seamlessly talk to each other. Thereby breaking down silos of information and accelerating innovation through collaboration. In para [B6] we explain how we have

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<sup>9</sup> South Korean crypto exchange volumes surpass those of its entire stock market. Shaurya Malwa; March 15, 2021 <https://cryptoslate.com/south-korean-crypto-exchange-volumes-surpass-those-of-its-entire-stock-market/>

solved these problems with interoperable cross-chain bridges parallel processing chains from different languages.

- (c) **Governance and innovation sustainability**: the lessons of the Bitcoin wars and the inability to evolve into smart contracts, highlights the problem of an inability to upgrade and sustain the ecosystem because of a failure of adequate governance structures.

NuGenesis has built a continued innovation rate of the system in the code. The governance structure preserves the best of decentralisation with the internal funding and sustainability for continual improvement. The imperative to continually upgrade is built into the protocol; the innovation rate is funded to be sustainable. By doing so, NuGenesis:

- (i) caters for future possible applications and threats such as for example Quantum Resistance and 'zero knowledge' ('ZK') proofs; and,
- (ii) ensures the integration of virtual reality interaction and off-line processing with Satellite technology.

C2.2 However, we believe solving the 3<sup>rd</sup> generation problems is insufficient. True mass adoption involves some greater challenges on the interface between blockchain technology and the expectations of the mainstream public. A broader ecosystem infrastructure is required that better interfaces with the physical and legal systems of the world. These 4<sup>th</sup> generation problems include:

- (a) **Broader capture and creation of instruments of value.**

Money, or instruments representing and exchanging value, have become increasingly more abstract in the course of human history. The increasing abstraction is facilitated by the legal and commercial infrastructure created to support it. The Crypto markets are the latest evolution.

The next evolution does not need to be limited by expression in the form of tokens. It can be token-less. Take for example the vast value locked in large infrastructure projects that takes decades to realise their economic benefits. Take large R&D and IP in technology, pharmaceuticals etc trapped in the decade before they can go to market; or worse, where they are in countries who cannot properly access global liquidity markets.

Our new generation smart contracts and NFTs, called "Digital Notarised Contracts ('DNC's') and "Serialised Notarised Digital Assets ('SNDA's') discussed further in para [C 3.2] allow for decentralised rails to work what counterparties want without trust to recognise and exchange value. The Virtual Reality Realm, "Parallel Worlds" will allow users new forms of innovative expression.

(b) Liquidity and capital market efficiency in the crypto economy

The immature state of capital markets in the crypto space, whilst remarkable in how far it has progressed in the circumstances, is far too inefficient to ensure that best technology and innovation is properly funded, or for risk to be properly priced.

The lack of liquidity and its impact in drives the direction of technology. It should not. Efficient capital markets should ensure that money flows to advance the best tech. Inferior tech should not be developed because it has better access to liquidity. We discuss in para [C 7], our solutions to the problems in terms of providing our own decentralised exchange (Ledger X), launchpad and venture capital sites with some rigours and disciplines that our DNC and SNDA technology allows us to contribute. Indeed, we believe this technology will truly revolutionise the financial markets in crypto converting it from a glorified pawn-shop approach to a truly efficient financial market.

From the perspective of mainstream capital markets, the immature state of the crypto capital markets are not conducive to maximising incoming investment potential. The NuGenesis ecosystem seeks to facilitate mainstream capital investment into the space by providing:

- (i) a peer assessed platform through the Just Social crypto-centric social media for the review, critique and monitoring of new and existing projects. Self-regulatory customs and norms will arise through the commercial competition where more transparent, better reviewed projects attract more capital;
- (ii) the technological tools – e.g. conditions in an ICO release, multi-sig treasuries etc that avoids rug-pulls and releases funds on the projects achieving KPIs and meeting roadmap promises; and,
- (iii) legal regulation at SDEZ's of participating jurisdictions, including standards of disclosure, duties on founders, devs and miners etc for those projects opting to be regulated in return for greater access to traditional capital market inflow.

(c) Integration and 'hand and glove' relationships with the legal world and nation states.

We believe that the true mass adoption of crypto technologies is a proper, 'hand in glove' supporting relationship with the laws and administrative infrastructures of nation states. Whilst common law countries are familiar with case law developing to recognise legal instruments behind the evolution of merchant practices, that evolution would be inadequate to meet the rate of innovation required in the crypto space.

Accordingly, we believe that legal recognition, starting with Special Digital Economic Zones of crypto instruments is necessary to give the comfort to, and better interphase with the expectations of mainstream investors. In para [B 12] we describe further the development of payment instruments recognition and enforcement, digital wills and estates to allow for succession planning and even arbitration systems to recognise the conditions imposed through DNC and SNDA's.



- C2.3 At para [B 11], we discuss valuation methodologies for NuCoin in the NuGenesis blockchain and ecosystem, suggesting it is best reflected by Metcalffs law or as a currency in a developing country.

### **C3 SCALABILITY FOR SERIOUS GOVERNMENT AND CORPROATE APPLICATIONS**

- C3.1 NuGenesis blockchains were built for CBDC's and required scalability and securities issues relevant to Government and Serious Global corporate application. This required a number of problems to be solved, which included:
- (a) On the question of transaction through put, the transactional speed had to be efficient with confirmations occurring in seconds and certainly no less than is expected with traditional financial market systems like MasterCard and Visa. Although Bitcoin is a popular blockchain-based global cryptocurrency, scaling it to handle the large transaction volumes worldwide raises some concerns. Among other things, the transaction processing rate of Bitcoin is affected by (1) the available network bandwidth, and (2) the network delay. Miners with high bandwidth and with less network delay can broadcast their blocks among peer nodes with ease and speed, while on the other hand low bandwidth miners with limited computational resources possess less probability of getting their fair share in a successful execution of proof-of-work.<sup>10</sup>
  - (b) The Proof of Work ('POW'), whilst understandable in its day, is the steam engine equivalent of the industrial revolution. Sure, it was more efficient than human labour, but only as useful as the next evolution inevitably replaced it. The resource intensity involved in POWs systems, as best exemplified by Bitcoin, is simply too irresponsible for Governments to countenance. We designed the Proof of Authority system.
  - (c) Part of the computational resource intensity involved miners in a lottery style campaign to guess the nonce was an inefficient use of resources for those that did not succeed. Instead, we required all useful computational work to have utility and as such designed our blockchain that all mining effort would, eventually, be rewarded. The Proof of Authority system was modified to be proof of useful work.
  - (d) Human validators were repugnant to a Government or serious global corporation security requirements. We sought to underscore the system to allow for AI systems to run parallel and increase/decrease the reliance on AI as required for optimal system efficiency or by the community governance for the blockchain. The Proof of Authority system was modified to be proof of useful work/AI.

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<sup>10</sup> Y. Sompolinsky and A. Zohar, "Accelerating bitcoin's transaction processing fast money grows on trees," Not Chains, 2013.

## **The solution for unlimited scalability**

- C3.2 As discussed in paras [B 3.5 – B 7], our scalability solutions included:
- (a) using system validators overlayed by AI to prevent corruptibility;
  - (b) removing unnecessary computational resources – for example gas fees;
  - (c) parallel processing of multiple chains with each chain having its own dedicated function and speed requirements (e.g. an NFT video has a 6 second block speed finalisation; a payment transaction has a 200 milli-second block finalisation);
  - (d) incorporating ‘consensus before packing’ protocols to order and maximise data going into the block; and, ultimately,
  - (e) rolling out blockchain load balancers to read and feed maximum data into the blockchain, with the end result that the greater the use of the system, the faster the transaction speeds.
- C3.3 Having set the bedrock for unlimited scalability, we are better able to roll-out the virtual reality realm where millions of events, including videos need to be processed instantly.

## **Smart Contracts and Oracles replaced by DNCs and SNDA’s**

- C3.4 The great promise of the 3<sup>rd</sup> generation of blockchain technology given the proof of concept provided by Ethereum, is smart contracts. Smart contracts can simply be viewed as algorithmic enforcement of an agreement among, often, mutually non-trusting entities. More technically, a smart contract is a program that executes on blockchain in a distributed manner and possesses unique identification.
- C3.5 Smart contracts help automate the logic of an arbitrary value transfer system in an immutable manner where conditional transactions are recorded, executed, and distributed across the blockchain network. These contracts have the potential to reduce the legal (up to a certain extent) and enforcement costs while largely ruling out the need for central trusted or regulating authority.<sup>11</sup>
- C3.6 Companies are increasingly launching smart contracts as prototypes; for example, the insurance giant AXA has rolled out the Fizzy insurance contract<sup>12</sup>. It links the Ethereum blockchain to a flight traffic database and aims to automatically compensate travellers’ if their flight is delayed. The essence of smart contracts, hence, is the automatic and fully pre-defined execution of certain (contractual) obligations once pre-defined conditions are met.
- C3.7 It should be noted, however, that these smart contracts do not automatically inherit the trustlessness and informational integrity of the blockchain, as they often have to rely on off-

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<sup>11</sup> D. Bargar, “The Economics of the Blockchain: A study of its engineering and transaction services marketplace,” Ph.D. dissertation, Clemson University, 2016.

<sup>12</sup> AXA, ‘AXA goes blockchain with fizzy’ (13 September, 2017), <https://www.axa.com/en/newsroom/news/axagoes-blockchain-with-fizzy>.

chain information, provided by specialised intermediaries.<sup>13</sup> Despite an impressive growth in Defi projects built on Ethereum and other smart contract platforms, as a general rule, smart contracts are neither smart nor contracts. They are rudimentary and very limited by code. dApps in Defi for example involve composites of multiple smart contracts build on top of each other.<sup>14</sup> Oracles developed as the interface by which AI could assist converting more practical needs to the simplistic code necessary for smart contracts to function.

- C3.8 AI can help in understanding, recognizing, assessment decision making in the blockchain. Whereas Machine Learning ('ML') techniques could help to find ways to improve decision making and smart contracts. For instance, AI can help to build an intelligent oracle without the control of the third party. This would learn and train itself to make the smart contract smarter.<sup>15</sup> This lead to developing our new generation smart contracts and NFTs, called "Digital Notarised Contracts ('DNC's') and "Serialised Notarised Digital Assets ('SNDA's') which replace smart contracts.
- C3.9 The function of Oracles have been subsumed and inbuilt as a standard feature of the NuGenesis blockchain. The AI evolves a library of template commercial agreements based on increased learning from the greater number of business scenarios. These are modified from comprehensive standard commercial contracts. See para [B 10].

## **C4 TRUE INTEROPERABILITY AND THE FOSTER OF COLLABORATION FOR MAXIMUM INNOVATION**

- C4.1 You do not expect that your Samsung or Apple smartphone communicate only with a Samsung or Apple router; you expect that our wifi connects just as seamlessly in a hotel room in Bangalore or Tehran as it does back at home. It is therefore somewhat surprising that interoperability was relative recent, late push in the evolution of blockchain technology. Standardisation of protocols to allow an efficient collaboration (among different blockchains) still do not exist which implies a lack of interoperability. Whilst the space has enjoyed flexibility for blockchain developers to code with a variety of programming languages and platforms; nevertheless, this approach renders blockchain networks isolated and lack in-between interactions. An example here is the GitHub, which offers more than 7500 active blockchain-enabled projects (i.e., coded with different platforms and programming languages), protocols, and consensus algorithms. Hence a standard protocol is needed to permit collaborations within these developed applications and integration with existing blockchain systems<sup>16</sup>.

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<sup>13</sup> Elisa Mik, 'Smart Contracts: Terminology, Technical Limitations and Real World Complexity' (2017) 9 Law, Innovation and Technology 269, 278.

<sup>14</sup> Hopefully there is composability between different building blocks of multiple smart contracts used in the development of dApps where such building blocks have been tested through iteration and are robust. Otherwise there are multiple layers of bugs in the stacked smart contracts making risks unacceptable.

<sup>15</sup> Z. Zheng, S. Xie, H.-N. Dai, and H. Wang, "Blockchain challenges and opportunities: A survey," Work Paper, 2016.

<sup>16</sup> A. A. Monrat, O. Schelen, and K. Andersson, "A survey of blockchain' from the perspectives of applications, challenges, and opportunities," IEEE Access, vol. 7, pp. 117134–117151, 2019; H. Jin, X. Dai, and J. Xiao,

- C4.2 Interoperability is critical to the development of the cryptosphere generally. The current version of the NuGenesis main blockchain is designed follow the broad architecture of Ethereum as opposed to IOTAs tangle or Hashgraph. Almost 90% of all listed tokens are issued on the Ethereum blockchain.<sup>17</sup> Ethereum represents the enterprise market consensus of approach with developers via their 2,800+ dApps built upon it and real world adoption, exemplified by the Enterprise Ethereum alliance over 450 enterprises business members including Microsoft, JP Morgan Chase, Accenture, ING, Intel Cisco and others. Private permissioned variants of Ethereum are represented by JP Morgan's investment in Quorum and folks thereof such as XinFin, whilst Public versions of the Ethereum have been developed by Big Four Accounting firm, Ernst & Young with Nightfall.
- C4.3 The scaling problems of Ethereum are well known and the focus of the cryptoworld whilst the hope of Ethereum 2 might ameliorate it. Scaling solutions using side chains such as Plasma and OMG have failed or stalled. 'Roll ups' (of the computational result from off-chain/side chain process), as a solution pending sharding to be perfected, in their various flavours such as Optimism and Arbitrum are plagued with the problem of a single node point of connection between the side chains and Ethereum (known as the Sequencer) that compromises decentralisation. Whilst Polygon offers an interoperable network model for all scaling solutions to Ethereum which its own POS chain being more promising.
- C4.4 Interoperability is essential to the space and competition helps as increasingly more complex dApps use composites of other smart contract composites as their building blocks. This composability reduces the layers of risk as the building block components are reiterated and proven robust through use. Boundaries between collaboration and competition blur to a balance in favour of innovation.
- C4.5 A number of projects have emphasised interoperability<sup>18</sup> and we have sought to take the issue further by providing for dual/multi-chain bridges to allow for both information and value to exchange between blockchains. As a result, the NuGenesis blockchain system is currently a quad cross chain configuration operating in parallel interoperability:
- (a) The NuGenesis main blockchain that is built on Substrate;
  - (b) The LedgerX (Exchange) Trade chain that is based on C++ that is a parallel processing chain made of a tri blockchain configuration;
  - (c) The Ethereum Chain; and,
  - (d) The Bitcoin Chain.

There are 28 other chains centric to particular projects that are ready to be added to this cross-chain parallel processing configuration.

## **Para-chains and Para-networks**

- C4.6 Para-chains, relay chains and the ecosystems created within the blockchains have been promoted in the space as a means of achieving interoperability. The cost of doing so must be assumed to be significant if not cost prohibitive to all but the more well-funded projects.

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"Towards a novel architecture for enabling interoperability amongst multiple blockchains," in 2018 IEEE 38th International Conference on Distributed Computing Systems (ICDCS). IEEE, 2018, pp. 1203–1211.

<sup>17</sup> Fabrian Schär, Decentralised Finance: On blockchain and smart contract-based financial markets, Federal Reserve Bank of St Louis Review, 2<sup>nd</sup> Quarter 2021, 103(2) pp 153-174, at 158.

<sup>18</sup> Polkadot, Cosmos, Polygon, Blocknet, Aion, WanChain, Harmony, MantraDAO, Kylin, RampDeFi

At the time of writing the auction of slots on Kusama and Polkadot have not occurred. However, if the cost to Polkadot of running a chain is measure of how much they must charge for a slot on their parachain, there is a significant contrast with NuGenesis. Polkadot's infrastructure requires 10 Nodes per relay chain which compares to an equivalent of only 4 Nodes on NuGenesis to produce the 100 slots to run the parachains. Therefore it is safe to say that new projects joining as parachains under NuGenesis will be competitively more affordable and efficient.

- C4.6 There are cost and time benefits of projects with very specific use cases, to benefit from being a para-chain and/or having para-threads. They save the infrastructure costs associated with consensus and security etc provided by the mother chain. For that reason, NuGenesis provides the option for projects to be para-chains.
- C4.7 However, in the main we have not been able to appreciate how a projects' blockchain can satisfactorily be operating as para-chain of another projects' blockchain. In our testing, para-chains operating together drain the efficiency of the entire network. Instead, we preferred to have projects, whether using our NuGenesis blockchain, customised for their purposes or existing blockchains, run as separate networks within their own ecosystem and using their own resources in terms of consensus mechanisms and governance systems. We preferred to develop our 'super-bridges' to aid interoperable communication and exchange between the networks run instead as "para-networks". That way we found speed and efficiency to be maximised and no drain on the resources by one network linked with the others.
- C4.8 We tend to view the parachains as having more to do with the unspoken need for providing, a work-around for having a fully-fledged decentralised exchange in their ecosystem. Liquidity is certainly a critical drain on the ability of the cryptospace to flourish. However, pretending that what is being sought to be achieved is an exchange, does help. Bonding curves and other mechanisms to create a sort of internalised technocratic market for determining the value of tokens, we do not believe should be the new standard. The rigours of the external market, with all its harshness should be the default way of providing liquidity. We discuss this further in para [C 7].

#### Extended operability through Hybrid private and public blockchains

- C4.9 Our background with Government capital raising projects has necessitated a susceptibility to the ensure that informationally-sensitive is treated within private blockchains, yet be interoperable with other information that is better utilised with public blockchains for its transparency and verifiability. Accordingly, our interoperability architecture allows us to create hybrid public/private networks and sub-networks operating within a paradigm of a collective group of blockchains such that there an appropriate mixture of security, scalability, and speed.
- C4.10 This hybrid infrastructure will assist in establishing appropriate linking between business and government use and cater for particularly sensitive information to be managed in international commerce.

## C5. GOVERNANCE

- C5.1 A sorely neglected<sup>19</sup> and limiting area which is pivotal to the mass adoption of blockchain technology and the fulfilment of its promise, is governance. As will be discussed below, the Bitcoin and Ethereum experience demonstrates the problems in maintaining the innovation and evolution rate of blockchain technology. The ideal of governance by mathematical and mechanical protocol in a non-hierarchical decentralised structure to achieve the promise of global scalability nevertheless requires a level of governance that will:
- (a) allow for the innovation rate and evolution of the blockchain to seamlessly be implemented by way of technical upgrades, commercial applications and their funding to occur. The NuGenesis Governance structure provides a system for Governance and the funding of technical, marketing, legal and commercial evolution of the blockchain through a series of treasury wallets and rewards.
  - (b) allow the in-built system of evolutionary sustainability to resource the development of solutions not only for current issues, but issues that will extend into the coming decades. For example, the NuGenesis governance system funds the technical development of:
    - (i) Quantum resistance to meet the challenges that Quantum computing will create;
    - (ii) ‘zero knowledge proofs’ to allow blockchain technology to prove for example that everyone has voted and has been counted without knowing what they voted for or proof that a transaction is valid without revealing anything about who sent it, who received it or how much money it contained. This is particularly focused to deal with the community concerns regarding data privacy.
    - (iii) Tokenless exchanges of value, particularly with our evolution on the traditional smart contracts and NFTs into Digital Notarised Contracts (**‘DNC’s’**) and “Serialised Notarised Digital Assets (**‘SNDA’s’**)
  - (c) allow for decision-making to occur through pre-defined and certain rules with roles and responsibilities for those with ‘skin in the game’ to undertake. Whilst ‘code is law’ will still govern, there is appropriate room for the ‘prophets’ in tech and business to lead the evolution and upgrade of the NuGenesis ecosystem as more users are added. The ability to upgrade is predictable; without forks.

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<sup>19</sup> The exceptions are Tezos and Cardano which we will discuss in this Part.

### The problem of the current lack of governance in the crypto space

- C5.2 Governance is a key concept in studies on the internet ecosystem,<sup>20</sup> and sociological literature is helpful to deal with the disputes<sup>21</sup> that arise when interactions become problematic in challenging system coordination.<sup>22</sup> What is perhaps most striking about the state of the market is the opacity and informality when it comes to the updating of the protocol itself.<sup>23</sup> There are no clear guidelines in place describing how the protocol itself can be changed, particularly when conflicting views have to be reconciled.<sup>24</sup> In stark contrast to the exactness of the protocol itself, governance mechanisms are thus almost entirely lacking when it comes to changing the rules of the game in moments of dispute.
- C5.3 Nearly all blockchains are maintained by a small group of people (“core developers”).<sup>25</sup> While anyone may make proposals for updating the code, only the core developers have the power to actually implement changes.<sup>26</sup> Nonlinearity and unpredictability in changes to the protocol arguably result from the lack of a procedure to accommodate dissent within the community of developers and, more broadly, of users and stakeholders.<sup>27</sup> Core developers use “informal processes that depend on rough notions of consensus and that are subject to no fixed legal or organizational structure”.<sup>28</sup> They do, however, often coordinate their actions with operators of large mining pools;<sup>29</sup> these are entities that supply the computing power to validate transactions in the chain and that are rewarded for

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<sup>20</sup> See, e.g., Eric Brousseau et al. (eds), *Governance, Regulation and Powers on the Internet* (CUP, 2012). <sup>64</sup> Jeanette Hofmann et al., ‘Between coordination and regulation: Finding the governance in Internet governance’ (2016) *New Media and Society* 1, 10.

<sup>21</sup> Luc Boltanski and Laurent Thévenot, ‘The Sociology of Critical Capacity’ (1999) 2 *European Journal of Social Theory* 359.

<sup>22</sup> Jeanette Hofmann et al., ‘Between coordination and regulation: Finding the governance in Internet governance’ (2016) *New Media and Society* 1, 10

<sup>23</sup> On the difference between these two governance layers, see Primavera De Filippi and Benjamin Loveluck, ‘The invisible Politics of Bitcoin: Governance crisis of a decentralised Infrastructure’, 5(3) *Internet Policy Review* 1 (2016) 10.

<sup>24</sup> Cf. De Filippi and Loveluck, *supra*, 14.

<sup>25</sup> Cf. Gerald P Dwyer, *The economics of Bitcoin and similar private digital currencies*, April 2015, *Journal of Financial Stability* 17:81-91 at 82; Arthur Gervais et al., ‘Is Bitcoin a Decentralized Currency?’ (2014) 12(3) *IEEE Security & Privacy* 54, at 55.

<sup>26</sup> Gervais et al. *supra* 57; De Filippi and Loveluck, *supra*, 13-14; Angela Walch, ‘The Fiduciaries of Public Blockchains’ Working Paper (2017). Note only core developers have the “commit key”; Angela Walch, ‘The Bitcoin Blockchain as Financial Market Infrastructure: A Consideration of Operational Risk’ (2015) 18 *NYU J Legislation and Public Policy* 837, 865-882

<sup>27</sup> The core developers note: “We are fairly liberal with approving BIPs [Bitcoin Improvement Proposals], and try not to be too involved in decision making on behalf of the community. The exception is in very rare cases of dispute resolution when a decision is contentious and cannot be agreed upon. In those cases, the conservative option will always be preferred.” <https://github.com/bitcoin/bips/blob/master/README.mediawiki> (accessed on June 8, 2017).

<sup>28</sup> Shawn Bayern, ‘Of Bitcoins, Independently Wealthy Software, and the Zero Member LLC’ (2014) 108 *Nw. U. L. Rev. Online* 257, 259.

<sup>29</sup> See Angela Walch, ‘The Bitcoin Blockchain as Financial Market Infrastructure: A Consideration of Operational Risk’ (2015) 18 *NYU J Legislation and Public Policy* 837, 873.

their efforts with newly “minted” coins.<sup>30</sup> A small group of agents crucial for the development and maintenance of the network (core developers and operators of mining pools) may thus acquire true power to change the protocol, even when holding less than 50 % of computing power,<sup>31</sup> and independent of their financial stakes in the currency. While these agents effectively regulate the crypto-economy, they are accountable to no-one, and users do not play any significant role in their appointment.<sup>32</sup>

#### The difficulty to evolve

- C5.4 Bitcoin and Ethereum are exemplars of the inability to evolve. Ethereum Classic, Bitcoin SV can be considered Governance failures. Even if Bitcoin wanted to improve its smart contracts capability, it is impossible to upgrade because of the lack of a governance structure. The problem is with the internet as well. IPV6 compliance is taking 20-30 years upgrade. With the increasing rate of innovation and competition, governance failures will be increasingly obvious and limiting.
- C5.5 Distributed networks have long been associated with a redistribution of power relations, due to the elimination of single points of control. This was one of the main interpretations of the shift in telecommunications routing methods from circuit switching to packet switching in the 1960s and the later deployment of the internet protocol suite (TCP/IP) from the 1970s onwards,<sup>33</sup> as well as the adoption of the end-to-end principle which proved to be a compelling but also partly misleading metaphor.<sup>34</sup> The idea was that information could flow through multiple and unfiltered channels, thus circumventing any attempts at controlling or censoring it, and providing a basis for more egalitarian social relations as well as stronger privacy. In practice however, it became clear that network design is much more complex and that additional software, protocols and hardware, at various layers of the network, could (and did) provide alternate forms of re-centralisation and control and that, moreover, the internet was not structurally immune to other modes of intervention such as law and regulation.<sup>35</sup>

#### Avoiding the Bitcoin Governance Failures

- C5.6 From a socio-technical point of view there are two co-ordination mechanisms: governance by the infrastructure (achieved by the NuGenesis protocol) and governance by the infrastructure (managed by the community). Similar to the Bitcoin precedent, in being self-governing and self-sustaining, the NuGenesis network relies on a market driven approach to social trust and coordination by embedding it directly into the technical protocol. However, unlike Bitcoin, we do not rely on the hidden unaccountable power of a small core of highly skilled developers who are the key to the development of the protocol. Nor do we allow them to coordinate or be influenced by heavily concentrated in mining pools who have an asymmetry of power.

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<sup>30</sup> See Andreas M Antonopoulos, *Mastering Bitcoin: Unlocking Digital Cryptocurrencies* (O'Reilly 2014)207-210.

<sup>31</sup> Gervais et al. *supra*, at 55.

<sup>32</sup> Gervais et al. *supra*, 55.

<sup>33</sup> Abbate, J. (1999), *Inventing the Internet*, Cambridge, MA: MIT Press.

<sup>34</sup> Gillespie, T. (2006), "Engineering a principle: end-to-end in the design of the internet", *Social Studies of Science* 36(3), pp. 427-457.

<sup>35</sup> Benkler, Y. (2016), *Degrees of freedom, dimensions of power*, *Daedalus*, 145(1), pp. 18-32.



- C5.7 The Bitcoin governance crises of 2013 and 2015/2016 revealed the limitations of excessive reliance on technological tools to solve issues of social coordination and economic exchange. Whilst there is a layer based on infrastructure seeking to govern user behaviour via a decentralised, peer to peer network, there is a second layer of developers with an unacknowledged power architecting this infrastructure, exposing an antithetical centralised and undemocratic development process. This can be a technocratic power structure insofar as it is built on automated rules designed by a minority of experts with limited accountability for their decisions.

#### The Bitcoin Hard Fork of 2013 lesson

- C5.8 On March 11, 2013, the Bitcoin blockchain forked into two chains that were no longer mutually consistent.<sup>79</sup> This unintended hard fork was a result of slow updating to the newly released version of the protocol. Importantly, the new chain was growing faster than the old one. However, the core developers convinced the largest mining pool (BTC Guild)<sup>36</sup> and other major pools via the bitcoin-dev IRC channel,<sup>37</sup> without any coordination with users, to back the shorter chain because it functioned under both old and new versions.<sup>38</sup> In doing so, they violated the basic blockchain rule of the authenticity of the longest chain.<sup>39</sup> Thanks to the efforts of the mining pools which controlled roughly 70 % of the hash power of the Bitcoin network, the shorter, old chain caught up and eventually surpassed the new chain.<sup>40</sup> Mining rewards worth 26,000 \$ in the new chain were lost, and 10,000 \$ double spent as a result of the fork.<sup>41</sup> In this case, therefore, the operators of major mining pools and core developers informally colluded to take the blockchain into a novel, non-majoritarian, direction. While their intentions to quickly resolve the fork may have been laudable, the episode shows the vulnerability of the infrastructure to ad hoc coalitions of the willing.

#### Further Bitcoin Hardfork Wars curtailing Bitcoins responsiveness to scale and innovation

- C5.9 Even after two hard forks in August and October 2017, creating Bitcoin Cash<sup>42</sup> and Bitcoin Gold,<sup>43</sup> the Bitcoin network is still facing the challenge for a stable and sustainable future: the scaling debate.<sup>44</sup> With its current configuration, the Bitcoin blockchain can only validate a limited number of transactions per block.<sup>45</sup> The most notable implementation that would

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<sup>36</sup> Arvind Narayanan, Analyzing the 2013 Bitcoin fork: centralized decision-making saved the day <https://freedom-to-tinker.com/blog/randomwalker/analyzing-the-2013-bitcoin-fork-centralizeddecision-making-saved-the-day/>, introductory section, and under Achtung !.

<sup>37</sup> <http://bitcoinstats.com/irc/bitcoin-dev/logs/2013/03/11>.

<sup>38</sup> Gervais, *supra*, 56; Buterin, *supra*.

<sup>39</sup> As a maximum, the new chain was 13 blocks ahead: Buterin, *supra*.

<sup>40</sup> Buterin, *supra*.

<sup>41</sup> Buterin, *supra*; the transactions in the lost blocks of the new chain, however, were later added to the dominant, old chain so that they could be executed.

<sup>42</sup> Alyssa Hertig, 'Bitcoin Cash: Why It's Forking the Blockchain And What That Means' (CoinDesk, July 26, 2017), <https://www.coindesk.com/coindesk-explainer-bitcoin-cash-forking-blockchain/>.

<sup>43</sup> *ibid*

<sup>44</sup> See, e.g., Ofir Beigel, 'Segwit vs. Bitcoin Unlimited and Bitcoin's Fork Explained Simply' (99 Bitcoins, March 27/April 2, 2017), <https://99bitcoins.com/bitcoin-fork-segwit-vs-bitcoin-unlimitedexplained-simply/>; Pete Rizzo, 'Making sense of Bitcoin's divisive block size debate' (CoinDesk, January 19, 2016), <http://www.coindesk.com/making-sense-block-size-debate-bitcoin/>; De Filippi and Loveluck, *supra*, 7-9; CoinDesk, 'Bitcoin or Bitcoin2x? News & Guides to Navigate November's Fork' (CoinDesk, October 30, 2017).

<sup>45</sup> Arvind Narayanan et al., 'Bitcoin and Cryptocurrency Technologies. A Comprehensive Introduction' (Princeton University Press, 2016) ch 3.6 and 7.

achieve increased block size is called Segregated Witness (SegWit). Without going into the details,<sup>46</sup> it is safe to say that the proposal that came closest to adoption, called SegWit2x, would have freed up space for transactions in the blocks and additionally raised the block size to 2 MB. SegWit2x would have been implemented by a hard fork around November 16 if only enough miners backed it.<sup>47</sup>

- C5.10 To demonstrate that a lack of formal governance system, inevitably leads to informal, already powerful groups exerting their influence through different avenues, a greater block size would make it more difficult for conventional computers to process transactions in the first place, making those with significant computing power even more relevant.<sup>48</sup> As in the case of Bitcoin Unlimited, there was a growing fear that under SegWit2x control would be effectively handed over to mining pool operators.<sup>49</sup> Unsurprisingly, miners, and not users, were the only ones able to cast votes on whether SegWit2x would be adopted.<sup>50</sup>
- C5.11 Many users and, notably, the Bitcoin core developers therefore opposed the SegWit2x proposal.<sup>51</sup> However, the alternative is also all but devoid of power problems. Earlier in 2017, the core developers held meetings with large mining pool operators, for example in China, to discuss possible solutions, raising the fear of collusion between the groups.<sup>52</sup> Core developers have also been accused of illegitimate censorship in the scaling debate.<sup>53</sup> Again the issue is a small group of unaccountable leaders, appointed or elected by no-one, can potentially leverage their position to assume informal power in opaque ways. This

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<sup>46</sup> For an excellent technical introduction, see Aaron van Wirdum, 'Segregated Witness, Part 1: How a Clever Hack Could Significantly Increase Bitcoin's Potential' (Bitcoin Magazine, December 19, 2015), <https://bitcoinmagazine.com/articles/segregated-witness-part-how-a-clever-hack-could-significantly-increase-bitcoin-s-potential-1450553618/>.

<sup>47</sup> Pete Rizzo, 'Understanding Segwit2x: Why Bitcoin's Next Fork Might Not Mean Free Money' (CoinDesk, November 1, 2017), <https://www.coindesk.com/understanding-segwit2x-bitcoins-nextfork-might-different/>.

<sup>48</sup> De Filippi and Loveluck, *Supra*, at 8; Pete Rizzo, 'Understanding Segwit2x: Why Bitcoin's Next Fork Might Not Mean Free Money' (CoinDesk, November 1, 2017), <https://www.coindesk.com/understanding-segwit2x-bitcoins-nextfork-might-different/>.

<sup>49</sup> Don Tapscott and Alex Tapscott, 'Realizing the Potential of Blockchain' World Economic Forum White Paper (2017), 11; Ofir Beigel, 'Segwit vs. Bitcoin Unlimited and Bitcoin's Fork Explained Simply' (99 Bitcoins, March 27/April 2, 2017), <https://99bitcoins.com/bitcoin-fork-segwit-vs-bitcoin-unlimited-explained-simply/>.

<sup>50</sup> This is due to the use of the BIP 9 activation protocol, see Matthew Haywood, 'All roads lead to Segwit — Segwit2x, BIP 91 Segsignal and UASF' (Medium, July 24, 2017), <https://medium.com/@wintercooled/segit2x-segsignal-and-the-uasf-all-roads-lead-to-segitd66fedf7fba>; Rizzo, *supra*; Alyssa Hertig, 'Why Are Miners Involved in Bitcoin Code Changes Anyway?' (CoinDesk, November 1, 2017), <https://www.coindesk.com/miners-involved-bitcoin-codechanges-anyway/>; critique also in Ariel Deschapel, 'Why Segwit2x Is Doomed to Fail' (CoinDesk, November 6, 2017), <https://www.coindesk.com/opinion-segit2x-doomed-fail/>, under "Scheduled chaos": "The almost nine-year-old cryptocurrency is facing its gravest test yet. Whether or not it will survive, or in what form, is anyone's guess";

<sup>51</sup> Alyssa Hertig, 'Bitcoin 'Battle'? Core Developers Apathetic as Segwit2x Fork Approaches' (CoinDesk, November 1, 2017), <https://www.coindesk.com/bitcoin-battle-developers-apateticsegwit2x-fork-approaches/>; Rizzo (n 104).

<sup>52</sup> JP Buntinx, 'Bitcoin Core Members Discuss Blockchain Consensus At Chinese Event' (The Merkle, December 11, 2016), <https://themerke.com/bitcoin-core-members-discuss-blockchain-consensus-at-chinese-event/>; Walch, *supra* at 9.

<sup>53</sup> John Blocke, '/r/Bitcoin Censorship, Revisited' (Medium, February 27, 2017), <https://medium.com/@johnblocke/r-bitcoin-censorship-revisited-58d5b1bdcd64>.

tendency sparked the Bitcoin Gold hardfork heralding the restoration of user power<sup>54</sup>, but dwarfed by the Bitcoin's chain legacy.

- C5.12 The Bitcoin block-size dispute of 2015/2016 was instrumental to the cryptoeverse, at least because it brought back Satoshi to weigh in on the debate. The somewhat arbitrary limitation of block sizes preventing Bitcoin from scaling and impeding its growth, and the Bitcoin XT proposal proved controversial. Increasing the block size cap inherently involved more centralisation by marginalising miners with less powerful machines and the overrun of mining pools. The governance debate resulted in outright censorship and banning Bitcoin XT supporters from the most then popular Bitcoin communication forums, even DDoS attacks. Even Bitcoin's resort to the only thing that matters being ultimately is the amount of computational resources that every node is providing to the network, has been inadequate to deal with the disturbances by mining pools having 50-75% of the network control.
- C5.13 This type of situation cannot arise in NuGenesis. Rather than being hidden in effective oligarchies, the governance is expressly recognised in the 313 positions. Save for the role of 313 executives, the NuGenesis protocol eliminates status recognition at the root by creating a trustless infrastructure where the identity of the participant nodes is entirely irrelevant. There is no centralised authority in charge of assigning a network identifier (or account) to each individual node. The notions of identity and status are thus eradicated from the system. Even the disturbance potential of excessive computational powers has been eliminated in NuGenesis with system validators underscored by AI.
- C5.14 There will always have to be some degree of points of influence.<sup>55</sup> Rather than a hidden technocratic, highly centralised and undemocratic approach, NuGenesis has made it express in the 313 executive positions and a voting system to regulate it.
- C5.15 Social organisations will continually have to face the difficult challenge of accommodating incompatible and often irreconcilable interests and values. As Bitcoin has shown, it is unrealistic to believe that human organisations can be governed by relying exclusively on algorithmic rules. In order to ensure the long-term sustainability of these organisations, it is necessary to incorporate, on top of the technical framework, a specific governance structure that enables people to discuss and coordinate themselves in an authentically democratic way, but also and perhaps more importantly, to engage and come up with decisions as to how the technology should evolve.

#### The Ethereum Hard Fork of 2016 Example

- C5.16 Another sorry example is the Ethereum Hard fork of 2016 which lead to Ethereum Classic. The story shows that even transaction histories may be changed retroactively, sacrificing a second basic rule of blockchain: its irreversibility.<sup>56</sup> This is what happened on July 20, 2016

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<sup>54</sup> See BitcoinGold, 'Roadmap', <https://bitcoingold.org/>.

<sup>55</sup> Internet governance has been fraught with many frictions, controversies and disputes over the years an international fight to control the basic rules and protocols of the internet described by some as a *global war*: DeNardis, L. (2014), *The Global War for Internet Governance*. New Haven, CT: Yale University Press. Even the much-praised governance model of the internet protocol suite based on the IETF's (deceptively simple) rule of *rough consensus and running code* effectively involved, at certain points, fair amounts of power struggles and even autocratic design: Russell, A.L. (2014), *Open Standards and the Digital Age. History, Ideology, and Networks*, Cambridge and New York: Cambridge University Press.

<sup>56</sup> See, on rewriting blockchain history, David Siegel, 'Understanding The DAO Attack' (Coindesk, June 25, 2016), <http://www.coindesk.com/understanding-dao-hack-journalists/>.

in the Ethereum blockchain, a then younger blockchain which not only defines a cryptocurrency (ether) but also enables smart contracts.<sup>57</sup> As is well known, Ethereum is also configured to support networks of smart contracts known such as token-based ventures.<sup>58</sup> These decentralized applications can take a broad variety of forms. In the specific instance, a German startup programmed a smart contract running on Ethereum called “The DAO” which was intended to function like a decentralized investment platform. Having collected a surprising equivalent of 150 million dollars in ethers, representing 15% of all outstanding ether, The DAO was hacked and deprived of a third of its funds.<sup>59</sup> Overnight, ethers lost half of their value.<sup>60</sup>

- C5.17 In an unprecedented move, core Ethereum developers decided to effectively rewrite the history of their blockchain in order to undo the hack and restore the funds to all investors via a hard fork.<sup>61</sup> This process is unique in so far as the blockchain, which is supposed to be an irreversible record of all transactions, was changed in order to erase the consequences of the fundamental coding error which led to the greatest hack in the history of blockchain-based organizations. The proposers of this rewriting of the Ethereum blockchain subjected their radical ideas to the majority vote of users by conditioning the hard fork on the approval by the majority of users.<sup>62</sup> The proposal was fiercely contested.<sup>94</sup> Only a minority of ether owners voted,<sup>63</sup> but in the end, the vast weighted majority of those users that did vote<sup>64</sup> and, after this, a similar majority of computing power of miners backed the hard fork.<sup>65</sup> Other than in the case of the unintentional Bitcoin fork just discussed, the intentional Ethereum fork was thus subjected to a dual mechanism: first, a vote by users, and then, the (unavoidable and economic) vote of miners by virtue of their computing power, who decided on whether to back the old or the newly forked version.<sup>66</sup> Nevertheless, in a way difficult to foresee ex ante, the principle of the immutability of the chain was sacrificed.

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<sup>57</sup> Joon Ian Wong and Ian Klar, ‘Everything you need to know about the Ethereum “hard fork”’ (Quartz, July 18, 2016), <http://qz.com/730004/everything-you-need-to-know-about-the-ethereum-hard-fork/>.

<sup>58</sup> Vitalik Buterin, ‘Ethereum White Paper’ (2014).

<sup>59</sup> Siegel ‘Understanding the DAO attack (Coindesk, 25 June 2016); Joon Ian Wong and Ian Klar, ‘Everything you need to know about the Ethereum “hard fork”’ (Quartz, July 18, 2016), <http://qz.com/730004/everything-you-need-to-know-about-the-ethereum-hard-fork/>.

<sup>60</sup> Luke Parker, ‘Ethereum hard fork results in two surviving cryptocurrencies, both are now trading’ (Brave New Coin, July 26, 2016) <https://bravenewcoin.com/news/ethereum-hard-fork-results-in-twosurviving-cryptocurrencies-both-are-now-trading/>.

<sup>61</sup> The ethers originally collected in The DAO, which had then siphoned off to a child DAO by the attacker and to yet another DAO by friendly hackers (white hats), were restored to a WithdrawDAO recovery contract. The token holders can reclaim their investments in this way. See Jeffrey Wilke, ‘To fork or not to fork’ (Ethereum Blog, July 15, 2016), <https://blog.ethereum.org/2016/07/15/to-fork-or-not-to-fork/>.

<sup>62</sup> The vote was weighted by the ethers of the users, <http://carbonvote.com/>; see also See Jeffrey Wilke, ‘To fork or not to fork’ (Ethereum Blog, July 15, 2016), <https://blog.ethereum.org/2016/07/15/to-fork-or-not-to-fork/>.

<sup>63</sup> Angela Walch, *supra*, p. 7; Luke Parker, ‘Ethereum hard fork results in two surviving cryptocurrencies, both are now trading’ (Brave New Coin, July 26, 2016) <https://bravenewcoin.com/news/ethereum-hard-fork-results-in-twosurviving-cryptocurrencies-both-are-now-trading/>.

<sup>64</sup> In the end, 87 % supported the hard fork: Parker, *supra*.

<sup>65</sup> Already on June 20, 2016, 85 % of miners were mining on the new fork: Vitalik Buterin, ‘Hard Fork Completed’ (Ethereum Blog, July 20, 2016), <https://blog.ethereum.org/2016/07/20/hard-forkcompleted/>.

<sup>66</sup> e.g.: “To me [the hard fork] is totally unacceptable and is a departure from the principles that drew me to ethereum.” (user “nustiudinastea”, posted on [https://www.reddit.com/r/ethereum/comments/4oiqj7/critical-update\\_re\\_dao\\_vulnerability/](https://www.reddit.com/r/ethereum/comments/4oiqj7/critical-update_re_dao_vulnerability/) (June 2016).

- C5.18 It says much about the ethos of the original cyperpunk-mindset in dealing with the expectations of the mass adopters moving into the crypto space. The hard fork split of the Ethereum blockchain into mainstream Ethereum and Ethereum Classic, was led by supporters continue to maintain that the hacker rightfully exploited a bug in the smart contract and that the diverted funds should not have been returned to investors.<sup>67</sup> The hacker claimed that he or she had a right to do so because the smart contract provided for this opportunity, and threatened to sue anyone aiming to recover the spoils.<sup>68</sup> To those investing in DAO, they understood the purpose was to collect funds for investment and redistribution to all investors – the purpose which was violated by the unilateral application of funds by the hacker to his/herself. This example points to deeply conflicting views over the relationship between code and law, and appropriate governance mechanisms, within the cryptocurrency community.<sup>69</sup>

#### The Tezos example

- C5.19 Tezos was the first blockchain project that sought to make Governance its feature. In July 2017, then a start-up called Tezos, almost unknown outside the world of blockchain, completed a fundraising in the form of an initial coin offering (ICO) that netted it the equivalent of around \$230 million. Investors paid to receive digital Tezos tokens (or “coins”) that they hoped would rise in value. The amount raised was then the largest ICO and it was accompanied by high-sounding promises to reshape social interaction through technology. Tezos pledged to use the funds it had raised to develop a software platform that would overcome the governance issues that plague existing blockchain-based networks, such as Bitcoin or Ethereum. Despite their open source roots, most such platforms are based on a take-it-or-leaveit approach, akin to the ubiquitous and non-negotiable online ‘terms and conditions’ that provide a kind of constitution in which users have little or no say. Tezos promised instead that its own software would empower users to democratically shape the future of the platform they were interacting on. In its own language, Tezos aimed to create a ‘digital commonwealth’.
- C5.20 Already shortly after its record-breaking fundraising, clouds began to gather over Tezos’s technological utopia. Feuds and disagreements mounted. By the end of 2017, investors hit the company with several U.S. class-action lawsuits based on Tezos’s perceived failure to deliver on its extraordinary claims. Not for the first time and certainly not for the last, a technology that promised to liberate exchange from the shackles of centralizing authority, ended in a U.S. court. Having bought into the vision of a ‘digital commonwealth’ with its own cryptocurrency beyond the state, the plaintiffs now turned to the U.S. legal system to recover their investments as well as any possible compensation in dollars. This mismatch between technological promise and legal reality is not unique to Tezos but a constituent feature of the new world of blockchain.
- C5.21 Whilst Tezos recovered, Cardano has come to centralise the importance of Governance systems. Not only is the NuGenesis Governance system explicit with rules as to how the

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<sup>67</sup> Arvico, ‘A Crypto-Decentralist Manifesto’ (Ethereum Classic Blog, 11 July, 2016), <https://ethereumclassic.github.io/blog/2016-07-11-manifesto/>.

<sup>68</sup> A Guest, ‘An Open Letter’ (Pastebin, 18 June, 2016), <http://pastebin.com/CcGUBgDG>; see also the chapter by Philipp Hacker in this volume, and David Siegel, ‘Understanding The DAO Attack’ (CoinDesk, 25 June, 2016), <http://www.coindesk.com/understanding-dao-hack-journalists/>.

<sup>69</sup> See De Filippi/Loveluck, ‘The invisible Politics of Bitcoin: Governance Crisis of a Decentralised Infrastructure’, (2016) 5(3) Internet Policy Review 1.

Governance will work such there are no power-grabs by opaque and unaccountable people, but that these Governance rules, and the funding to bring them to fruition as a virtue to ensure the NuGenesis blockchain thrives in the increasingly competitive innovation imperatives necessary for mainstream adoption.

- C5.22 Our approach is to gain synergy with the world's legal systems and accordingly, whilst the NuGenesis blockchain provides its own Governance system, the Special Digital Economic Zones ('SDEZ's') will be introducing a blockchain Code of Conduct, which mostly voluntary will enshrine legal duties on key players in a blockchain ecosystem. This is discussed further in para [C 12].

#### Outline of the NuGenesis Executive Structure

- C5.23 The executive structure comprises of 313 positions responsible for the management of the platform's development. The minting reward system mints coins that are allocated to the specific treasuries to fund the remuneration of these executive positions. The precise number of coins and the allocation is set out in para [B 13.10].
- C5.24 Of those 313 positions, provisionally names "the Senate":
- (a) 100 are filled by early investors with substantial investment in the platform and by reason of that investment, the platform arrives as fully operational and in whose interests are the business development aspects of the platform;
  - (b) 13 positions are appointed as technical leadership in technical aspects of the platform; and,
  - (c) 200 positions are elected by the community. These 200 positions will involve a multitude of requirements and will be for a specified period of time.
- C5.25 By 2/3 of Senate vote, the senators will elect a President<sup>70</sup> who between any governance meetings will have executive responsibility. The roles and responsibilities and particulars thereto are to be determined by a vote of the community.
- C5.26 Subject again to the vote by the Community, the current view is that there will be 10 governates each comprising a region of the globe<sup>71</sup> and that the Senators should be regionally responsible. The objective being to cater for the needs of and be responsible to the needs of the locals and their culture. For example, the needs of the middle east are for the optimisation of remittance, and the physical conversion and custody of fiat. The needs of Africa are for off-line payment systems.
- C5.27 For legal reasons, it is currently proposed that the umbrella legal structure, whilst not necessary, should be in the form of Co-operative Limited Company under Australia's National Cooperative Law to which the State Governments adhere. The finalisation of this structure is to be determined by reference to the advantages of the flexibility by which an

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<sup>70</sup> If no presidential candidates are able to meet the two-thirds majority requirement in the first round of voting, a second round of voting is scheduled in which absolute majority suffices.

<sup>71</sup> Africa, Asia, Central America, Eastern Europe, European Union, Middle East, North America, Oceania, South America, and the Caribbean

unincorporated organisation in the form of Just Social alone provides and how the legal and code interrelation is best resolved.

## **THE 4<sup>TH</sup> GENERATION ISSUES – FOSTERING THE POWER OF MASS ADOPTION**

### **C6. AN EASY, USER-FRIENDLY BLOCKCHAIN ECOSYSTEM FOR MASS ADOPTION**

#### Measures to add confidence

- C6.1 Losing crypto by reason of lost pneumatic phrases, laptops or wallets are no longer a reason to strike fear for users. The NuGenesis blockchain serialises each crypto asset such that with appropriate proofs, we are able to recover lost crypto, recover pneumatic phrases etc. There is no reason why, for example a death, or a lost or stolen laptop should have the consequences it currently does and the inconvenience for all concerned. Accounts, wallets, and crypto assets can be reconstructed, and the old ones burned. We believe the more confident and secure new adopters are in user NuGenesis crypto assets, the greater the use and exponentially the value to the entire ecosystem if not the crypto space.
- C6.2 Multi-sig wallets, conditions placed on NuCoin crypto assets etc, make for NuGenesis crypto assets to be more user friendly, versatile, and flexible for everyday use. This includes Corporate Treasuries, small business and simple household affairs being properly managed. Secondary verifications, acknowledgement or otherwise of conditions being met are just as important to the payment by a global corporate as it is for the household paying the teenager on mowing the lawn.
- C6.3 Whilst finality is a valued imperative, it should not come at the expense of allowing fraud. As we discuss below in para [B 12], the NuGenesis ecosystem seeks to synergies with SEDZ jurisdictions to provide a legal framework for both traditional and crypto markets to flourish. Where there is an adequate proof of fraud and appropriate judicial determination has been entered, we see no reason why users should be the victims of fraud. Stolen coins will simply be burned and victim's assets restored.

#### Capturing and fractionalising value: why do we need tokens at all?

- C6.4 NuGenesis blockchain technology is intended to be used with SEDZ participating jurisdictions to allow for a wide variety of new and yet unimagined assets to be recognised, represented, valued and exchanged. From our background in seeking to find investment and financing solutions for large infrastructure projects mostly involving Governments<sup>72</sup>, we have

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<sup>72</sup> 'ours' in this context are individual experiences of many of the founders and contractors in projects under numerous entity names.

continued to be plagued with issues where value has been created but cannot be adequately represented, fractionalised and exchanged. Examples are:

- (a) A large subdivision setting out 1000's of homes, shopping centres, recreational facilities schools and associated infrastructure. Such a subdivision may take a decade from Greenfields stage, through the development approval processes to final registration of title deeds with necessary service facilities. Along the way there is enormous value that has been created and many multiples of return on investment that cannot be represented and captured.

These types of developments can be tokenised allowing for global sources of finance to be accessed lowering the cost of capital and risk; exchanged at any point in time providing liquidity and the opportunity for a vast array of investors be involved in projects that were otherwise reserved for those who command what are to most, prohibitive capital means to hold such illiquid assets for such a long term.

- (b) There are countries with such exceptional engineering innovations that involve again a 10 year R&D effort before they can be taken to market and realised; specialised equipment and infrastructure projects re-developing entire regions all of which have limited pool of investors/financiers. Through tokenisation, the funding sources become vast

Why shouldn't an individual's retirement fund in New Zealand not enjoy an investment in an Iraqi Cement Factory with a guaranteed buyer in the Government requiring continuous cement supply for the next 50 years? Why shouldn't returns of 100% of more be available for this farmer's retirement simply by by-passing established elite banking intermediaries?

#### Token-less exchanges of value

- C6.5 Blockchain technology has also been used to develop digital financial marketplaces, particularly in conjunction with the 'Internet of Things', bypassing financial middlemen and allowing almost any asset to be digitised and traded over a decentralised computer network.<sup>73</sup> But why does their have to be the limitation of those representations of value in the form of tokens or NFTs only? The NuGenesis Blockchains provides the rails for anything of value between counterparties to be exchanged. Our Virtual Reality platform means that the exchanges mechanisms are not limited to the inventiveness of our developers. The users, within the Virtual Reality Platform, can between themselves invent representations or otherwise exchange value that satisfies their needs. It allows completely token-less exchanges of value.

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<sup>73</sup> Konstantinos Christidis and Michael Devetsikiotis, 'Blockchains and Smart Contracts for the Internet of Things' (2016) 4 IEEE Access 2292, 2295; Alex Mizrahi, 'A Blockchain-Based Property Ownership Recording System' (2015), <http://www.the-blockchain.com/docs/Chromaway-Research-A-blockchain-based-propertyregistry.pdf>; see, more generally, Primavera De Filippi & Aaron Wright, *Blockchain and the Law* (Harvard Univ. Press, 2018), Chapter 10.



#### Business vehicles and combinations (DAOs) that do not need humans at all?

- C6.6 The NuGenesis blockchain is agnostic as to who the user is, or whether they are human at all. The capacity is created for even a simple Digital Autonomous Organisation (DAO) to be created for a variety of business, social and household uses. A charity can be created to fund a crisis event; a buying DAO to manage a bulk-buying group to import a specialised product; or a DAO pooling potential customers seeking to customise the fabrication of specialised sporting or business equipment as an example.
- C6.7 Through our relationships with participating SDEZ jurisdictions, a variety of DAOs can be given formal legal recognition. Foundations or Corporations with no members or 1 million members and/or directors for example. A Digital Will or Estate wherein in the DAO can invest according to its protocols and distribute intergenerationally between family members eliminating bitter family disputes and confident succession and estate planning.

#### Easy, cheap and quick blockchain projects, dApps for developers and humble users

- C6.7 NuGenesis was built on the Substrate Blockchain Builder framework to allow, as Substrate upgrades its features and capabilities, these to flow naturally and accelerate the continual upgrades on the NuGenesis modules for building blockchains. The object is to allow non-expert programming of customised blockchains for individual projects, particularly in the current 'dev shortage' environment.
- C6.8 The Virtual Reality world takes customisation to a new realm. The most humble user in the Virtual Reality world can interact with, represent value and exchange it with counterparties according to their own respective needs. They 'build their own rails' through inventing solutions to their particular objectives and priorities in the course of the interaction. They can make virtual reality agreements without the formality of programming code.

### **c7. LIQUIDITY AND CAPITAL MARKET EFFICIENCY TO FUND INNOVATION**

#### The rise of an alternative capital market for crypto

- C7.1 To their credit, crypto markets have pioneered an alternative capital market for both Venture Capital and mature capital markets in the crypto space. That is, by using smart contract protocols in the form of ICOs to self-regulate fund raising. The ICO<sup>74</sup> model through which capital is allocated in a decentralised manner via blockchain technology, democratises access to investment opportunities. Indeed, the barriers to investing have disappeared as start-ups conducting an ICO can engage in global fundraising and disperse the high-risk venture by spreading it over a larger pool of investors.<sup>75</sup>
- C7.2 The ICO model is particularly attractive to issuers as an efficient and convenient way of fundraising. Issuers benefit from: (i) engaging the community by enabling an ordinary

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<sup>74</sup> An Initial Coin Offering ('ICO') is a form of a financing method, whereby the issuing company offers cryptographically secured digital assets (usually called 'tokens' or 'coins') in exchange for fiat currency or other form of virtual currency.

<sup>75</sup> At the heart of the ICO funding model is a promise to utilize blockchain technology and smart contracts to enforce financial contracting via the underlying code.

blockchain enthusiast to directly contribute to the business idea instead of limiting the investment opportunity to accredited investors; (ii) lowering transactions costs associated with the ICO (since there is no need to hire underwriters, with the only costs being marketing and overseeing the ICO execution); (iii) avoiding the venture capital funding pitfalls of raising capital by stages at the expense of suffering a dilution; and (iv) community creation, whereby the digital outreach coupled with the ICO hype offers greater marketing exposure and concurrently engages early adopters who, in order to profit from their early investment, will strive to market the business idea to expand its adoption (and thereby capitalize on the benefits of the network effect).<sup>76</sup> ICOs are known for raising astronomical sums, usually unheard of at the seed stage in the traditional venture capital setting.

#### The problems of crypto markets for mainstream investors

- C7.3 However, in pioneering the alternative capital market revolution, it has been criticised for ignoring the law and expectations of capital markets and hence the technology of self-regulation doesn't work<sup>77</sup>. As Cohnen et al. demonstrate, the underlying code effecting the token sale has failed to deliver on not just the ideational expectations, but also the whitepaper promises.<sup>78</sup>
- C7.4 The mainstream market makes assumptions about the crypto markets that are simply non-existent. Most projects are in their infancy, and at best, juvenile. Most projects have raised capital *before* the blockchain is built or operable and indeed with the express purpose of using the capital to build the infrastructure. Few were on testnet, even fewer were on mainnet.<sup>79</sup>
- C7.5 From the perspective of traditional capital market investors, the cryptomarkets are opaque on how advanced blockchain projects are in the development, and those that appear to have an operable blockchain of significance, are opaque as to their business plans and commercial directions. They consider there is complete opaqueness as to how the business model translates to any increase in the value of the coin (other than through speculation).
- C7.6 Traditional market valuations guides, such as price/earnings ratio, do not apply to Crypto assets. Empirical study that finds evidence that the long-term fundamental value of bitcoin,

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<sup>76</sup> Howell et al. single out the following benefits of the ICO funding model: to finance decentralized networks, to raise financing from future customers, to establish immutable and non-negotiable governance, to provide rapid liquidity, to hasten network effects and to reduce transactions. See Sabrina Howell et al., Initial Coin Offerings: Financing Growth with Cryptocurrency Token Sales, European Corporate Governance Institute (ECGI) - Finance Working Paper No. 564/2018 (June 21, 2018), <https://ssrn.com/abstract=3201259>.

<sup>77</sup> To sustain the argument of self-regulation, ICO issuers painted a picture where they can design smart contracts for a specific purpose of collecting funds and distributing tokens. Consequently, in theory, smart contracts can substitute the traditional legal frameworks and embed consumer protection and securities regulation, while effectively managing agency risks and the information asymmetry between the contracting parties. However, this ideal construct does not reflect practical reality. Since 2013 (arguably when the first ICOs emerged), the ICO funding model has failed to deliver on these promises, and has instead introduced numerous investor risks.

<sup>78</sup> A whitepaper is a promotional document used by ICO issuers to describe the financing process and the blockchain product or service being developed, together with the functionality of the sold tokens in the blockchain product being developed. Shaanan Cohnen et al., *Coin-Operated Capitalism* (July 17, 2018), COLUM. L. REV. (forthcoming), <https://ssrn.com/abstract=3215345>.

<sup>79</sup> Indeed the motto "*buy on testnet and sell on mainnet*" is common among speculators. We are of course, way past all this and fully functional.

as of 2015, is statistically indistinguishable from zero.<sup>80</sup> In fundamental valuation, the fundamental value of an asset is usually defined as the discounted expected future cash flow that the asset delivers to its holder. While the market value of bitcoin is obviously far above zero, the study suggests that the price volatility of bitcoin implies that its “true”, fundamental value is zero.

- C7.7 Of course traditional market valuation techniques do not apply precisely because the analogy of crypto assets to securities does not work, as discussed in Part D. The appropriate valuation methodologies we suggest, may better explain the valuation of NuGenesis is discussed below in para [C 11].
- C7.8 For serious institutional investors the crypto capital markets are extremely volatile; ICO investors have little bargaining power to protect themselves contractually; there are no effective gatekeepers (such as auditors or credit rating agencies) in the ICO markets to ensure that only companies with legitimate prospects will be able to successfully complete the offer; the asymmetry of information together with lack of substantial tangible assets and operational track records; and lack of independent guidance for pricing and valuation; limit the growth of the market.
- C7.9 It may well be said that for all the business expertise traditional VC’s may bring to funding of a project, the cost does not justify it. Ethereum stands to demonstrate that many millionaires were created by those contributing to the project whereas those gains would have been absorbed by a limited number of VC firms had the traditional route been taken.
- C7.10 However, in order to capture the opportunity that mass adoption and the entry of mainstream investors into the crypto markets can create, we have been required to build an ecosphere that is much broader. One that will allow for self-regulation to mitigate these problems. As is discussed below in paras [B7.14-B7.18], we do this through our own fully fledged decentralised exchange, a venture capital launchpad “Vision to Reality” (‘V2R’), and the dedicated decentralised social media platform where projects are reviewed and vetted at a community level involving a rich diversity of expertise.

#### The Liquidity problems that starve efficient allocation of capital

- C7.11 There is a capital efficiency problem in getting the funding to the best tech project to perfect their work and effectively commercialise it as compared to the relative capital that goes to speculators. Project invariably understate the premiums, fee and liquidity demands required with Fully Fledged Exchanges<sup>81</sup>. Too often projects seeking listing face the outcome that the tokens are listed at unrealistically low prices (lacking as they do, a track record to prove otherwise) and the huge celebrated profits in the form of appreciation in value (‘mooning’) is realised by the exchanges themselves through their holdings in the liquidity pools and by some early speculators in the know. The skyrocketing token price, however, does nothing to raise capital for the project.

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<sup>80</sup> Cheah/Fry, ‘Speculative bubbles in Bitcoin markets? An empirical investigation into the fundamental value of Bitcoin’ (2015) 130 Economics Letters 32, 35; see also Yermack, ‘Is Bitcoin a Real Currency: An Economic Appraisal’ in Lee (ed) Handbook of Digital Currency (Elsevier, 2015) 31, 36; Athey et al., ‘Bitcoin Pricing, Adoption, and Usage: Theory and Evidence’, Stanford University Graduate School of Business Research Paper No. 16-42 (1 August, 2016), <https://ssrn.com/abstract=2826674> at 3.

<sup>81</sup> Exchanges having their own rather exorbitant costs and risks such as licencing, KYC/AML compliance, multi-wheel chains costs for large numbers of coins and of course, liquidity.

- C7.12 EVM compatibility from a developer's perspective can be determinative in choosing to use the Ethereum environment. This is influenced by the access to liquidity which the DEXs, AMMs and liquidity pools provide. Unfortunately, this influence is a market distortion away from the choice to use the best tech. Access to liquidity, as important as it is, should be solved by a better ecosphere such as NuGenesis with our decentralised fully fledged exchange and V2R launchpad. We believe capital must flow to the best tech.

#### Swaps, DEXs, Automated Market Makers, Launchpads

- C7.12 The relatively greater vulnerability of exchanges to regulatory intervention and volatility risk has seen ICOs losing ground to the explosion of para or quasi-capital raising methods. These are the swaps sites<sup>82</sup>, DEXs, automated money makers and even some wallets that provide a form of capital raising for projects *before* they emerge on the exchange.<sup>83</sup> This part of the 'Defi' market is even more opaque and even less capable of providing investor comfort. Some liquidity pool protocols rely on a bond curve between trading pairs which divert from the true market price unless realigned by arbitrage.<sup>84</sup> Others rely on prices determined by the liquidity providers where any lack of depth provide opportunity for collusion risks and monopolistic price setting.<sup>85</sup>
- C7.13 Whilst launchpads (IDO's and IEO's) have risen, they are often in the context of interoperability-driven smart contract blockchain ecosystems.<sup>86</sup> Through parachains and bridges, an industry of quasi-capital markets is developing by obtaining liquidity through linking with other projects. Projects need to raise capital to lease a slot on the parachain with a hope that the parachain operates as a quasi-exchange. Unfortunately, it also means that information needed to make sound investment decisions becomes even more opaque.<sup>87</sup> From the perspective of the mainstream investor, the overall process to navigate through swaps-DEXs and parachains is at best inefficient, expensive, cumbersome, and ultimately involves uncomfortable investor risk.

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<sup>82</sup> Bancor's model was popularised by Uniswap; others include Sushiswap, PancakeSwap, Curve, Battery Swap, Burger Swap. 1Inch covers the swap, DEX and aggregator role arbitraging from different exchanges.

<sup>83</sup> We would include platforms such as Polkastar and Superfarm DAO which provide angel-level funding to new start ups as another layer of these liquidity pools that feed off the inaccessibility to exchanges.

<sup>84</sup> See e.g. Uniswap, Balancer, Curve and Bancor

<sup>85</sup> See e.g. Kyber Network. See Luu, Loi and Velner, Yaron. "KyberNetwork: A Trustless Decentralized Exchange and Payment Service." 2017; <https://whitepaper.io/document/43/kyber-network-whitepaper>.

<sup>86</sup> Polkadot, Cosmos, Polygon, Blocknet, Aion, WanChain, Harmony, MantraDAO, Kylin, RampDeFi

<sup>87</sup> valuation, accounting, and auditing of the crypto projects becomes problematic. While there may be limited rating services available for cryptocurrencies (For example, Weiss Ratings: <https://www.weisscryptocurrencyratings.com>) there are currently no widely accepted valuation principles or models governing virtual assets across the industry. There are also no agreed standards on auditing the existence and ownership of virtual assets. Research analysts will have little choice but to rely on Slack channels, Telegraph and forums such as Reddit and Facebook groups or follow websites with undisclosed track records to obtain market intelligence.

## The NuGenesis Capital Markets Solutions

- C7.14 We have sought to solve the problem of inefficient capital allocation. Capital should flow to the best tech, always. Participants in the ecosystem should be able to differentiate the best tech and not be driven by FOMO.
- C7.15 The NuGenesis ecosystem developed to provide connections to the expectations of the capital markets and develop its technology to provide for better financing options. These solutions are:

### Fully Fledged Exchange: LedgerX

- (a) A Fully-Fledged licenced Cryptoasset European Exchange, LedgerX to provide a proper ICO and market for projects connected to the NuGenesis blockchain;

The simplicity of the Exchange's multichain system technology will provide a simple, transparent and investment into all Coins and their projects by contrast to the opaque informational asymmetry of the quasi-liquidity pools obsolete.

With the use of serialised coins and crypto assets, conditions can be imposed upon those assets that will result in custody remaining with the user and unnecessary to move onto an exchange.

### V2R Launchpad

- (b) A Venture Capital Launchpad, Vision to Reality ('V2R') where angel, venture capital and crowd sourcing may be funded, including avenues and communication channels for the collaboration, recruitment and participation in and between projects;

### 'Just Social' media

- (c) The above connected through a dedicated social media platform, "Just Social" where reviews, commentary and opinions can be exchanged regarding the projects and opportunities within the NuGenesis blockchain.

Furthermore, through NuGenesis technology innovations:

### Community self-regulated disclosure and disciplines

- (d) The NuGenesis's tech ability to put conditions, multisigs on wallets etc, allows the community may impose disciplines on the capital raises on launchpads such as:
- (i) the provision of non-financial value in mentorship, guidance, facilitation of business connections and assist projects build sound revenue models and efficient capital allocation strategies;
  - (ii) the provision of staged release of funds on the meeting of KPI's;
  - (iii) Lock-in periods for initial investors and founders;
  - (iv) the provision of rating services, auditing and valuation services through the community to guide potential investors; and,

- (v) the requirement of relevant information about the project, the revenue model and its relationship to the tokens to be used to raise funds.

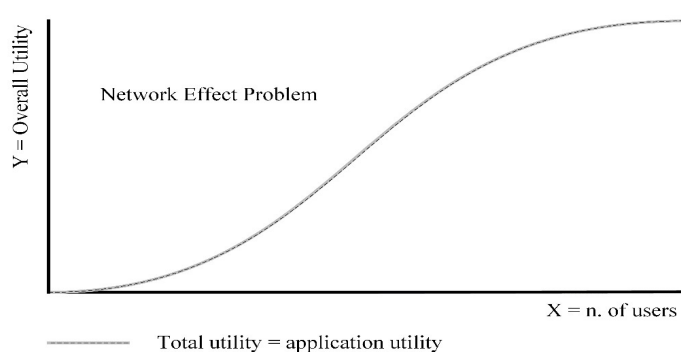
A full Proper Financial Debt System – real Defi, not “pawn shop”

- C7.16 The next phase in the evolution of the crypto-economy is the innovation into a fully fledged lending platform comparable to that in traditional capital markets. Currently, lending is little more than a pawn shop. It cannot advance beyond that with the current state of blockchain technology because recourse/security for lending is limited to those Coins and Tokens that are provided to the lender.
- C7.17 By contrast, NuGenesis blockchains involve innovations that include effective serialisation of each individual Coin into a Digital Notarised Contract (‘DNC’) that allows, inter alia:
- (a) each Coin to be effectively a new version of a NFT;
  - (b) conditions to be placed on each coin, such as a mortgage, charge, options etc;
  - (c) multi-signatory capacity for corporates, trusts and governments; and,
  - (d) comprehensive conditions on a coin that resemble those customary in traditional capital markets (rather than short smart contracts).
- C7.18 As a result for example:
- (a) projects can have options to access debt finance and achieve a more efficient debt/equity ratio to their projects’ funding. This can allow relatively more value to be realized in the development of the tech rather than a gain for speculators.
  - (b) There is capacity for the development of fully-fledged lending platform, where for example, mainstream corporate adoption would be attracted to lend crypto at, for example a 90% LVR, for the purchase of new crypto secured by the lending and thereby providing greater liquidity to crypto capital markets.
  - (c) For Islamic finance, equity investment in the form of partnerships, ventures or fees for services can be built into funding relationship attaching to and encumbering the collateralised instruments.

**C8. COMMUNITY – “JUST SOCIAL”**

- C8.1 The crypto community suffers from disparate sources of information with unclear quality and standards. The desire and expectation from mass adoption for forums to learn, collaborate and participation appears strong. Yet traditional social media is centralised, censored, and owns and exploits the private data of its users. With the NFT appreciation, user photos, videos owned by the major social media companies has potential commercial consequence. In the context of this demand, we established Just Social, a decentralised social media platform dedicated to crypto collaboration and innovation which serves as a one-stop shop to access information, opportunities, and services including the Ledger X exchange and V2R launchpad.

C8.2 As will be discussed in the valuation model, the “network effect” is the simplest reference that is often made to the importance of the community within a blockchain ecosphere. Widely accepted theories on network effects state that a network’s value or utility to a user is positively affected when another user joins and enlarges the network.<sup>88</sup> As such, start-ups wishing to build products that are dependent on network effects therefore have to overcome a ‘chicken-and-egg problem’. There is no utility for a seller on Ebay if the marketplace does not attract a decent number of buyers, while a marketplace is not attractive to buyers if there aren’t many products available. There is little to no value in a network like LinkedIn or Facebook if only a small amount of people use it, and a platform like Wikipedia is useless without contributors.



*Figure 1: The Network Effect Problem*

C8.3 Similarly, a protocol like Ethereum has no value if it is not broadly used and supported, or does not have any complementary products built on top of it. Whereas the challenges of early network growth are traditionally tackled by various growth hacks and marketing strategies aiming at optimization of visibility and adoption<sup>89</sup>, token sales inherently position a business to deal with the challenges presented by network effects. After all, the lack of utility faced by early adopters of token-based marketplaces and networks is compensated by an increased potential of financial upside through the appreciation of the value of tokens. If users are involved very early, there is still a lot of potential for appreciation of their tokens, which compensates for the smaller amount of provided utility.

C8.4 This simplistic analysis, useful in its introduction, does adequately explain the exponential features that comes when each new user is added to the blockchain ecosystem, not the qualitative effect that comes with a deep fiercely loyal community as the experience with the XRP, Doge and Cardano armies testify. In this regard, NuGenesis has included “Just Social” as part of its ecosystem. Just Social is a decentralised social media platform dedicated to crypto and technology startups that are associated with blockchain technologies. Just Social serves a number of immediate functions with the capacity for community projects to add further ones:

<sup>88</sup> For more on the amount by which networks increase in value as they grow, see B. Briscoa, A. Odlyzko and B. Tilly ‘Metcalfe’s law is wrong - communications networks increase in value as they add members-but by how much?’ (2006) 43 (7) IEEE J-SAC. Note however that in our discussion on valuation at para [B.11] we argue that the best evidence from studies so far is that Metcalfe’s law is the best fit for blockchain ecosystems such as NuGenesis, if not the model that values NuCoin as a currency in a developing country economy.

<sup>89</sup> Geoffrey Moore, ‘Crossing the Chasm’ (3<sup>rd</sup> edition, Harper Business Essentials, 2014) 105-129

### Immediate functions

- (a) to facilitate through information, easy to access, review and discuss crypto news generally and how NuGenesis relates to the broader ecosphere;
- (b) to facilitate easy, efficient and effective participation in the governance of the NuGenesis ecosphere;
- (c) to be conducive to learning and engaging in NuGenesis, the projects, initiatives and innovations being developed including in the cryptoverse more generally

### On-going longer term improvement examples:

- (d) The Campaign for Data Privacy : own you own data!

The rise of concern regarding personal data privacy is increasing and this is given a commercial edge with the recognition that all photos etc that people post on Facebook and other centralised and corporately owned social media platforms is owned by that social media platform. Data mining will be the new gold mining. Moreover, with the NFT awareness, user posts, memes, photos, audio and video recordings can have commercial value. As a result we have designed the community's social media platform to be decentralised and the ownership of you data to be owned by you and you alone.

- (e) Rewards for browsing, reading and participating

The next phase of the social media site development is the utilisation of the data, for those who opt to commercialise it, to earn rewards in the form of crypto payments, discounts and other benefits. The plan is that advertisers for example will pay for metadata (which cannot be identified to a particular individual) based targeted advertising and the viewer will receive their share of that advertising revenue.

- C8.5 A NuGenesis community member has a Just Social Account. They are simultaneously a member of the NuGenesis Tech Hub Co-operative Ltd, being the legal umbrella structure through which NuGenesis operates formally. This joining is free and voluntary, but the primary means of engaging in the NuGenesis ecosphere.
- C8.6 In establishing their Social Account the user establishes his/her profile, list their skills, connect with friends etc. Every community member is a staker-miner and they are mining via their laptop and/or smart phone by merely logging into their just social account. A user can therefore have
- C8.7 There is a dashboard, which can be customised, giving the user access to a range of widgets that are useful information links to the cryptocurrency industry. A 'one stop shop' for everything crypto: no logging in and out of various social media accounts, trawling reddit,



discourse and navigating the barrage of advertisement skills. It is a place for trustworthy perspective on the fast-moving multifarious innovations in the cryptospace.

- C8.8 There is of course the link to LegerX fully fledged decentralised open market exchange, where the user can trade their NuCoin or any other crypto currency. There is of course the link to the V2R, Venture Capital and Angel Capital projects. They can access, review, comment upon the various projects being discussed. Projects will require collaborative efforts and benefit from solutions developed by other projects. User can participate, 'hands-on', in those projects that can benefit from their skills. Skills of course necessary are not limited to technical ones, they extend to marketing, administration, and commercialisation broadly.
- C8.9 On-going learning at all levels is encouraged through other user explainer videos, tutorials and formal courses made available on the Just Social platform. A system of 'badges' is designed to give authority and credentials that can be recognised within the community for differing levels of expertise. These badges will be useful in considering the reviews and opinions preferred on the various projects discussed.
- C8.10 Ultimately, we believe the Just Social platform will be an easy to use and therefore effective means by which community participation can be made an everyday reality. We believe that it is an effective vehicle through which mass adoption can be affected.

## **c9. COMMUNITY IN THE PHYSICAL WORLD - THE NuGENESIS TECH HUBS and local meet ups**

- C9.1 A thriving community will maximise the opportunities for collaborative innovations often by physical interchange. Often a screen will not fully communicate all there is to learn. To that end, the NuGenesis community will commence with a prototype local meet up facility for regular meetings both with and without specific topics of discussion, and the streaming of presentations to international counterparts.
- C9.2 A prototype site in Farley, being 2 hours from Sydney, Australia, has been acquired for the sub-division into a 'NuGenesis Tech Hub', being an approximately 900 housing lot tech community that will feature common facilities for social, sporting, recreational use to compliment to campus style tech centre. Within the Tech Centre will be offices for invited VC companies, presentation halls, audio—visual labs and studios and workplaces designed for the residents to maximise their productivity and sense of community.
- C9.3 Should these initiatives prove successful, they will be roll-out internationally as those in the community with the initiative to take them to other regions do so.

## **c10. THE MONETARY POLICY OF NUGENESIS BLOCKCHAIN AND ECOSYSTEM**

- C10.1 Most cryptocurrencies/assets have a fixed and finite supply of their token/Coin with a formula as to how much of it is produced in block-time intervals.<sup>90</sup> Any value that it is to have is determined by those who agree to use it. The naked external market is therefore used to determine the price.
- C10.2 However there have been innovations in the crypto-monetary policy design since Bitcoin for various ecosystems, such as Sora on Polkaswap, which using various monetary policy theory of technocrats seeks to provide infinite supply of currency based on protocol curves and limit its exposure to the external markets<sup>91</sup>. At NuGenesis, we have reviewed the existing blockchains and determined the appropriate trust model is naked exposure to external markets as being the most neutral and transparent approach. However, those projects designing their own ecosphere using a customised version of the NuGenesis are free to add such modifications as appropriate to their circumstances.
- C10.3 Libertarians herald Bitcoin as an alternative monetary system, capable of bypassing most of the state-backed financial institutions with all of their shortcomings and vested interests which have become so obvious in the light of the financial crisis of 2008 (if not more obvious today)<sup>92</sup>. Indeed, as opposed to traditional centralised economies, Bitcoin's monetary supply is not controlled by any central authority but is rather defined (in advance) by the Bitcoin protocol which precisely stipulates the total amount of bitcoins that will ever come into being (21 million) and the rate at which they will be issued over time (currently 6.26 per ten minutes). They are assigned as a reward to those who lend their computational resources to the Bitcoin network in order to both operate and secure the network. In this sense, Bitcoin can be said to mimic the characteristics of gold.
- C10.4 Leaving aside the debate about whether controlling the money supply is a right (if not duty) of the State (or even private consortium of Banks posing as the State), a widespread concern about the integrity of fiat currency is the fractional-reserve banking. That is commercial banks acquired the ability to (temporarily) increase the money supply by giving out loans which are not backed up by actual funds<sup>93</sup>. The fractional-reserve banking system (and the tendency of commercial banks to create money at unsustainable rates) is believed to be one of the main factors leading to the global financial crisis of 2008 which has brought the issue of private money issuance back into the public debate<sup>94</sup> and is very much an even greater concern today explaining Bitcoin, if not all crypto, having an independent investment class category.
- C10.5 We do respect Sora for example, trying to limit the impact of 'pump and dumps' on the price of the currency in the ecosphere. One proposal for community vote in our governance model is the banning of 'pump and dumps' on the exchange. However, we do not believe that technocratic models of monetary policy should replace the brutal discipline and raw honesty of an open, unfettered as possible, market. Accordingly, the price of NuCoin will be

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<sup>90</sup> Solana, Cardano, Tezos, Zilliqa, Chainlink, Theta all have supply limits. Eth and Eos that don't, However by Eth Code change 1559, a max supply is expected.

<sup>91</sup> XOR supply is elastically managed by a token bonding curve smart contract founded on the theories of Professor Werner.

<sup>92</sup> Reference is being made to all the Corporate Welfare in particular arising from the Covid 19 Pandemic that has seen an unprecedented rise in Government Debt and Helicopter money printing.

<sup>93</sup> Ferguson, N. (2008), *The Ascent of Money. A Financial History of the World*, London: Penguin.

<sup>94</sup> Quinn, B.J. (2009), "The failure of private ordering and the financial crisis of 2008", *New York University Journal of Law and Business* 5(2), pp. 549-615.

left to the market to determine the valuation which the formula 12 NuCoin per 3 second block, reducing linearly minus 1 every 10 years for 110 years when no more NuCoin can be minted.

- C10.6 Those projects seeking an alternative monetary policy for their ecosphere can, of course, customise the NuGenesis blockchain which they can run as self-governing para-network with NuGenesis and allowing such exposure to our LedgerX exchange as suits their objectives.
- C10.7 Of course, we remind the reader that the minting of NuCoin, the allocation to the various treasuries for the continued evolution and innovation of NuGenesis, and the rewards for the various tears of miner-stakers is set out in the tables at Para [ B13.9 - B13.10]

#### Deflationary Policy

- C10.8 Capacity is provided to adopt, through community governance voting, measures for deflationary policies and NuCoin burns. One measure is that the treasury wallets are used to trade and any profits make above the target 15% return (or some other figure voted upon) the excess coins are burned.

### **c11. VALUATION METHODS FOR NuGENESIS BLOCKCHAIN AND ECOSYSTEM**

- C11.1 The main utility of the NuCoin currency is not to generate future cash flow but to make functional use of the blockchain ecosystem. It is to participate in other investments – from staking, specific investments, to collaborative projects and para networks established as a result of them.
- C11.2 There are many models advocated for the valuation of crypto currencies based on a large number of econometric studies that have varying predictive success depending upon the assumptions used in the model and the nature of the crypto asset concerned.
- C11.3 For the purposes of NuGenesis, it is our view that potential valuation over the time may be best explained by approaching NuCoin as a currency in a developing economy. Alternatively, in the medium to long-run, Metcalfe's law may be helpful in evaluating NuCoin as the NuGenesis network grows. In the shorter term, because of the strong correlation between the size of the network and the market price expected, this can often be a sign for mimetic behaviour of investors who enter the market driven by expected returns which is where the potential for speculative exponential bubbles to occur.
- C11.4 Hayes (2016/7) found cryptocurrencies to have intrinsic value with attributes similar to commodities, such as labour value.<sup>95</sup> Mining for bitcoin requires the use of electricity to win bitcoins which can be viewed similarly to running an oil rig in search for oil. Hayes states that "instead of approaching bitcoin as a digital money or currency, it is perhaps more appropriate to consider it a virtual commodity with a competitive market against producers." Hayes argues that the more mining power employed the more acceptance of

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<sup>95</sup> See "What Factors Give Cryptocurrencies Their Value," Adam S. Hayes, March, 2015: "Cryptocurrency Value Formation: An Empirical analysis leading to a Cost of Production Model for valuing bitcoin," Hayes, Adam, May 2016; "Bitcoin price and its Marginal Cost of Production: supporting evidence," Adam S. Hayes, September 2017.

the Crypto Asset. A Crypto Asset with no acceptance or usage will have neither value nor computational power directed at it. Whilst the relationship between users and value may be accepted, computational mining power does not assist newer generation of crypto-assets that have moved beyond mining.

#### Valuing cryptocurrencies as an emerging economy's currency

- C11.5 In "Cryptoassets: The Innovative Investors Guide to Bitcoin and Beyond"<sup>96</sup>, co-authors Chris Burniske and Joel Monegro approach is valuing crypto assets as a currency, particularly of a small emerging market country. They propose valuing Crypto Assets using the Equation of Exchange formula, originally developed by Irving Fisher.<sup>97</sup> This equation was originally developed to predict the value of a currency based on the acceptance and speed of economic transactions in the macro-economy. This model is less useful for Bitcoin and Ether for example where fees are charged and the cost of production is not taken into account as a variable. The fees could exceed the value of the transaction. It would be more applicable to NuCoin analysis because fees and mining costs are eliminated and replaced with infrastructure costs of running nodes that are relatively insignificant.
- C11.6 The limitation of the approach is that the total size of the market can be of limited appeal utility where the crypto markets as a whole are experiencing mass adoption with new money flowing into them at an exponential rate.
- C11.7 Nevertheless there is some appeal in the Burniske and Monegro approach where the NuGenesis protocol is considered similar to the constitution of a country. The community is similar to a constituency of the country with the users being the demand side of the economy and the miner-stakers being the supply side. The 313 positions being similar to the executive branch with the core developers executing code on the approval of the community. NuCoin is the same as the Country's currency with investors buying and selling NuCoin in the same way they trade fiat currencies, based on how attractive the small emerging country economy is.
- C11.8 By this approach crypto currencies or fiat currencies involve investors looking for the same features such as productivity, a good degree of equality (particularly of opportunity), low corruption, good governance, and sound monetary policy.

#### Valuing Crypto Assets as a Network

- C11.9 In the 1980s, Robert Metcalfe, the co-inventor of Ethernet, stated what was called later the Metcalfe's law (Gilder 1993): the value of a network is proportional to the square of the size of the number of connected users. Whilst in the original formulation of the Metcalfe's law, the value of the network should be proportional to the squared number of network users; however, in the case of cryptocurrencies, the actual number of users is unknown and we need to use a proxy for it, i.e. the number of unique addresses.
- C11.10 Research conducted suggests that the relationship when applied to large social networks may be accurate. Metcalfe attempted to validate his findings in a 2013 paper using

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<sup>96</sup>"CryptoAssets: The Innovative Investor's Guide to Bitcoin and Beyond," Chris Burniske and Jack Tatar, -McGraw-Hill, 2018, pp. 174-179

<sup>97</sup> David Hume and Irving Fisher on the Quantity Theory of Money in the Long Run and the Short Run" Dimand, Robert W, (2013) European Journal of The History of Economic Thought 20, no. 2: 284-304.

Facebook as a proxy<sup>98</sup>. The theory is that a network has little or no value with just one or two users, however with each new user, the utility value of the network more than doubles.

- C11.11 In his paper *Digital Blockchain Networks Appear to be Following Metcalfe's Law*, Alabi suggests that the value of bitcoin can be measured by relying on Metcalfe's Law. Alabi uses three (3) different Crypto Assets as examples, Bitcoin, Ethereum, and Dash.<sup>99</sup> Alabi suggested using the number of unique addresses participating daily in the network as a proxy for the relative number of active users on the network. Alabi proposed a variation of Metcalfe's Law, based on the exponent of the root of the number of active users. Using past Crypto Asset data, Alabi shows that historical market prices do in fact follow the model.<sup>18</sup>
- C11.12 In addition to Alabi's research, FundStrat's co-founder Tom Lee (Lee), a former strategist at J.P. Morgan uses a similar method to confirm a 94% price movement explanation.<sup>100</sup> Metcalfe's law was validated in various contexts, by using social network data: Zhang et al. (2015) proved the validity of the law for Facebook and Tencent (Chinese social network). Other researchers (Madureira et al., 2013<sup>101</sup>, Van Hove, 2014, 2016,<sup>102</sup> Metcalfe, 2013) have shown the validity of the law, mostly regarding internet networks.
- C11.13 Peterson (2017)<sup>103</sup> showed that the Metcalfe's law can be used to explain the evolution of the Bitcoin transaction price, by using factors relating to supply (number of bitcoins) and demand (number of wallets). Wheatley et al. (2018)<sup>104</sup> estimated the Metcalfe's law for Bitcoin, proving the existence of a log-linear relationship between the market capitalization and a proxy for the number of network users (the number of unique addresses). In 2019 Pele et al.<sup>105</sup> and again recently by Alabi revisiting his 2017 thesis,<sup>106</sup> confirmed Metcalfe's law as the best predictive model in that there is a long-term dynamic between price and network size.
- C11.13 However, for more precise predictive capacity in the short term, modifications will be required. Pele et al (2019) can find a reverse causality where price causes user

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<sup>98</sup> Metcalfe, B. (2013). Metcalfe's Law after 40 Years of Ethernet. *Computer*, vol. 46, no. 12, pp. 2631, 2013.

<sup>99</sup> "Digital Blockchain Networks Appear to be following Metcalfe's Law" Alabi, Ken, 2017, pp.23-29.

<sup>100</sup> Lee stated in a recent interview with Business Insider that, "If you build a very simple model valuing bitcoin as the square function of the number of users multiplied by the average transaction value, 94% of the bitcoin movement over the past four years can be explained by that equation.": "Bigger than Bitcoin," Business Insider, <http://www.businessinsider.com/bitcoin-price-movementexplained-by-one-equation-fundstrat-tom-lee-metcalfe-law-network-effect-2017-10>.

<sup>101</sup> Madureira, A., Den Hartog, F., Bouwman, H. and Baken, N. (2013). Empirical validation of Metcalfe's law: how internet usage patterns have changed over time. *Information Economics and Policy*, Vol. 25, No. 4, pp.246–256.

<sup>102</sup> Van Hove, L. (2014). Metcalfe's law: not so wrong after all. *NETNOMICS: Economic Research and Electronic Networking*, Vol. 15, No. 1, pp.1–8.; Van Hove, L. (2016). Metcalfe's law and network quality: an extension of Zhang et al. *Journal of Computer Science and Technology*, Vol. 31, No. 1, pp.117–123

<sup>103</sup> Peterson, T. (2018). Metcalfe's Law as a Model for Bitcoin's Value. *Alternative Investment Analyst Review*, Q2 2018, Vol. 7, No. 2, 9-18. Available at SSRN: <https://ssrn.com/abstract=3078248> or <http://dx.doi.org/10.2139/ssrn.3078248>

<sup>104</sup> Wheatley, S., Sornette, D., Huber, T., Reppen, M. & Gantner, R. N. (2018). Are bitcoin bubbles predictable? Combining a generalized Metcalfe's law and the LPPLS model. *Swiss Finance Inst. Res. Pap.* No. 18-22. (2018).

<sup>105</sup> Pele, Daniel Traian; Mazurencu-Marinescu-Pele, Miruna (2019) : Metcalfe's law and herding behaviour in the cryptocurrencies market, *Economics Discussion Papers*, No. 2019-16, Kiel Institute for the World Economy (IfW), Kiel

<sup>106</sup> Ken Alabi; A 2020 perspective on "Digital blockchain networks appear to be following Metcalfe's Law" *Electronic Commerce Research and Applications* Vol. 40, No. CA 2020

growth.<sup>107</sup> The study uses Log-Periodic Power Law ('LPPL') models to explain bubble behaviour in cryptocurrencies.<sup>108</sup> They find that extended price increases are a driver to more users joining the network even to the point of super-exponential growth due to herding behaviours of investors. Accordingly for the short-period sub-window data analysis, LPPL models are useful.

- C11.14 There are other modifications to the Metcalfe's law that should be considered. De Meo and Young argue that the Hayes approach be integrated to consider the cost of production.<sup>109</sup> Similarly, Juhl<sup>110</sup>, in seeking to explain the price of Ethereum, suggests combining Metcalfe's law with the model proposed by Briscoe, Odlyzko and Tilly<sup>111</sup> to refine for the cost of computing power. For NuCoin, where mining computational power is insufficient, such a modification would be relatively inconsequential.

## **c12. THE SYNERGISTIC RELATIONSHIP WITH THE WORLD'S LEGAL SYSTEMS**

### Varying regulatory intersections and policy tensions

- C12.1 We do not believe that any cryptoecosystem can operate in a legal vacuum. Following the imbrication of blockchain technology with various forms of state action, the inherent tensions between enabling and constraining modes of law, and between libertarian and regulatory political narratives, become ever more apparent.
- C12.2 The emergent technocracy of FinTech experts, digital currency promoters, miners, and Big Data aggregators may demand new and imaginative legal tools as they sail the turbulent and still largely undiscovered seas of the digital revolution.
- C12.3 Blockchain, in this way, is replicating the regulatory curse of the Internet,<sup>112</sup> whose content is often ruled by a multitude of intersecting, partially contradicting national and supranational legal orders.

### Increasing attention of policy makers on the cryptospace

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<sup>107</sup> Pele, et al, supra.

<sup>108</sup> See Fry 2015 who used it to explain Bitcoin price bubbles.

<sup>109</sup> Valuing Crypto Assets, Luigi D'Onorio DeMeo, and Christopher Young

<sup>110</sup> Juhl, Morten Arrild "Can the value of Ether be explained or predicted?" (2018).

<sup>111</sup> Briscoe, B., Odlyzko, A. and Tilly, B. (2006). Metcalfe's Law Is Wrong. IEEE Spectrum, 43(7), pp.34-39.

<sup>112</sup> See, e.g., Jack Goldsmith and Tim Wu, Who Controls the Internet? Illusions of a Borderless World (Oxford University Press, 2006); Jacqueline D. Lipton, 'Law of the Intermediated Information Exchange' (2012) 64 Florida Law Review 1337, 1361-1367; Dan Svantesson, 'Digital Contracts in Global Surroundings' in Stefan Grundmann (ed) European Contract Law in the Digital Age (Intersentia 2018) 49.

C12.4 Regulators and Policy makers have become more interested in blockchain technology.<sup>113</sup> New York established its BitLicence Framework<sup>114</sup>. ICOs have increasingly become the focus of regulatory interest, with not only the U.S. Securities and Exchange Commission (SEC) offering its report on the DAO,<sup>115</sup> but also the European Securities and Markets Authority (ESMA)<sup>116</sup>, the UK Financial Conduct Authority (FCA)<sup>117</sup>, and regulators from other countries equally issuing warnings or guidelines on ICOs<sup>118</sup>, or even banning them entirely<sup>119</sup>. Despite significant enforcement activity of the SEC<sup>120</sup>, detailed legal guidance and broader analysis is dearly lacking. Except for regulators operating in the field of finance, government agencies ranging from tax authorities to commodities regulators<sup>121</sup> have also dealt with the

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<sup>113</sup> See, e.g., UK Government Office for Science, 'Distributed Ledger Technology: beyond block chain (2016); European Commission, 'Consumer Financial Services Action Plan: Better Products, More Choice' COM(2017)139 final, 12-13 (announcing, inter alia, the creation of a FinTech Task Force at the Commission, and a pilot project to reinforce capacities concerning distributed ledger technology); European Parliament, 'Virtual currencies. European Parliament resolution of 26 May 2016 on virtual currencies' 2016/2007(INI) (noting high volatility, "absence of traditional forms of regulatory supervision, safeguards and protection" as well as "legal uncertainty surrounding new applications of DLT"); World Economic Forum, 'The future of financial infrastructure. An ambitious look at how blockchain can reshape financial services' (2016) (exploring nine "case deep-dives" from payment systems via insurance to investment management and market provisioning); European Banking Association (EBA), Cryptotechnologies, a major IT innovation and catalyst for change, Report (May 11, 2015) (similarly documenting use cases in trade and finance); European Central Bank, 'Eurosystème's vision for the future of Europe's financial market infrastructure' (2016) 6 (announcing an assessment of the relevance of distributed ledger technology to European financial services and market structures); European Central Bank, 'Virtual Currency Schemes – A Further Analysis' (2015); Andrea Pinna and Wiebe Ruttenberg, 'Distributed ledger technologies in securities post-trading', European Central Bank Occasional Paper No 172/2016 (2016); European Central Bank, 'Distributed Ledger Technology' (2016) (1) In Focus; Bank of England, 'FinTech Accelerator Proof of Concept. Distributed Ledger Technology' (2016) (documenting an experimental transfer of assets using blockchain); Sead Muftic, 'Overview and Analysis of the Concept and Applications of Virtual Currencies' JRC Technical Report (2016); d'Artis Kancs et al., 'The Digital Agenda of Virtual Currencies' JRC Technical Report (2015).

<sup>114</sup> See 23 NYCRR Part 200 Virtual Currencies; see also Stan Higgins, 'New York Lawmakers Open to Revisiting the BitLicense' (CoinDesk, 23 February, 2018), <https://www.coindesk.com/bitcoin-crypto-nylawmaker-pledges-make-bitlicense-something-works>; Primavera De Filippi & Aaron Wright, *Blockchain and the Law* (Harvard Univ. Press, 2018), 179.

<sup>115</sup> SEC, 'Report of Investigation Pursuant to Section 21(a) of the Securities Exchange Act of 1934: The DAO', Release No. 81207 (25 July, 2017)

<sup>116</sup> ESMA, 'ESMA alerts firms involved in Initial Coin Offerings (ICOs) to the need to meet relevant regulatory requirements', Statement (13 November, 2017); ESMA, 'Report. The Distributed Ledger Technology Applied to Securities Markets' (February, 2017), at 2: "the presence of [distributed ledger technology] does not liberate users from the need to comply with the existing regulatory framework".

<sup>117</sup> FCA, 'Initial Coin Offerings' (12 September, 2017).

<sup>118</sup> See, e.g., German Federal Financial Supervisory Authority (BaFin), 'Initial coin offerings: High risks for consumers' (15 November, 2017); French Autorité des Marchés Financiers (AMF), 'Discussion Paper on Initial Coin Offerings (ICOs)', (26 October, 2017); FINMA, Guidelines for enquiries regarding the regulatory framework for initial coin offerings (ICOs) (16 February, 2018);

<sup>119</sup> See the ICO ban in China (The People's Bank of China, Central Office of the Ministry of Industry and Information Technology, Banking Regulatory Commission, and China Regulatory Commission, 'Notice on the Prevention of Tokens', (4 September, 2017), <http://www.circ.gov.cn/web/site0/tab6554/info4080736.htm>, translation: <https://www.coindesk.com/chinas-ico-ban-a-full-translation-of-regulator-remarks/>) and South Korea (O'Leary, 'South Korean Regulator Issues ICO Ban' (CoinDesk, 29 September, 2017), <https://www.coindesk.com/south-korean-regulator-issues-ico-ban/>) (all accessed on 2 November, 2017).

<sup>120</sup> SEC, In the Matter of Munchie Inc., Order (December 11, 2017); SEC complaint against LBRY filed 29<sup>th</sup> March 2021; SEC complaint Against Ripple Labs et al filed 22<sup>nd</sup> December 2020.

<sup>121</sup> In re Coinflip, Inc., d/b/a/ Derivabit, et al., (17 September 2015) Order Instituting Proceedings Pursuant to

applications of the blockchain technology. The European Commission has, in its FinTech Action Plan of March 2018, made the monitoring and analysis of ICOs, and blockchain applications more generally, a priority, without embracing regulatory action at this point or providing specific guidance<sup>122</sup>.

#### Growth of Cryptoeconomy a systemic risk for mainstream economy

- C12.5 The rate of innovation in economic activity, from fundraising to peer-to-peer lending challenges not only the traditional banking sector but also existing forms of regulation and monetary policy. Zimbabwe and Turkey are recent examples of the threat to their economic management.
- C12.6 Accordingly, there is not only regulatory interest in regulation to protect outsiders who enter the cryptomarkets from information and power asymmetries, but the negative externalities that cryptocurrencies might impose, via its volatility and systemic risk as it grows, on the mainstream financial system.<sup>123</sup> Surpassing \$US2.5 Trillion in market capitalisation and increasingly integrated into the mainstream economy as a means of payment<sup>124</sup>, crypto regulation becomes more pressing.

#### The Common Group favourable to crypto adoption

- C12.7 We have established relationships with numerous Co-operating governments arising from their desire to facilitate global access for infrastructure investments in their Countries, which Private Blockchains offers solutions. This interest in private blockchains gives rise to exploration of and development of blockchains for a range of government and corporate scale blockchain for the trade in commodities, supply chain management, transportation, cloud storage, government services, healthcare and power management<sup>125</sup>.

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Sections 6(c) and 6(d) of the Commodity Exchange Act, Making Findings and Imposing Remedial Sanctions ('Derivabit Order'), CFTC Docket No. 15-29, <<http://www.cftc.gov/ucm/groups/public/@lrenforcementactions/documents/legalpleading/enfcoinflprorder09172015.pdf>>.

<sup>122</sup> European Commission, FinTech Action plan: For a more competitive and innovative European financial sector, COM(2018) 109 final, at 4-7.

<sup>123</sup> See, e.g., Angela Walch, 'The Bitcoin Blockchain as Financial Market Infrastructure: A Consideration of Operational Risk' (2015) 18 NYU J Legislation and Public Policy 837.

<sup>124</sup> An early example is The Swiss region of Zug, for example, even accepts Bitcoin as legal tender to pay tax: Lutz Reiche, 'Steuern zahlen mit Bitcoins - die Schweiz prescht vor' (Manager Magazin, May 10, 2015), <http://www.manager-magazin.de/finanzen/artikel/bitcoin-zug-akzeptiert-das-cyber-geld-alszahlungsmittel-a-1091646.html>. More recent examples in 2021 is the Dude County, including Miami accepting Bitcoin to pay local taxes: <https://www.miaminewtimes.com/news/miami-dade-county-may-let-people-pay-taxes-with-bitcoin-12117680>, or Miami allowing employees to be paid by Crypto: <https://www.thestreet.com/crypto/bitcoin/miami-dade-to-accept-bitcoin-for-taxes#:~:text=On%20February%2011%2C%202021%2C%20the,to%20take%20payments%20in%20Bitcoin.>

<sup>125</sup> Some useful reading, see: Mike Orcutt, 'How Blockchain Could Give Us a Smarter Energy Grid', MIT Tech. Rev. (October 16, 2017), <https://www.technologyreview.com/s/609077/how-blockchain-could-give-us-a->



C12.8 The plan is that government private blockchains can be arranged in networks of blockchains separating sensitive data that remain in private blockchains and linking them through bridges to be ultimately interoperable with a NuGenesis public blockchain.<sup>126</sup> In working with these Governments, the NuGenesis blockchain was developed to cater for:

- (a) Security concerns, particularly regarding KYC/AML and as a result, we have built into the NuGenesis blockchain, the optional modular capital for the worlds' most advanced AI driven KYC/AML system; and,
- (b) Environmental responsibility, with the result that NuGenesis blockchain is near zero-carbon emitting and resource efficient.

Most Governments are not part of the elite financial establishment and can benefit from Blockchain

C12.9 Only a third of the world's Central Banks are part of the Bank of International Settlements. The two thirds are not. They do not have such vested interests in the current banking elite-fiat system with US Dollar Hegemony. Crypto technology allows most of the worlds' governments to open and neutral access global investment. These countries desire their own CBDCs and the use of smart contract technology to raise infrastructure bonds or resource-directed bonds for their own development. Their interests are in attracting skills and talent and building the technical infrastructure for the technical revolution that crypto markets can now financially power. Accordingly, they are willing to prove pro-crypto enabling laws and administrative infrastructure that allow the crypto economy to properly flourish.

Optimal Crypto-regulation in SDEZs

C12.10 In the special digital economic zones ('SDEZs) of the participating countries, regulation favourable for the development of crypto include:

- (a) legal recognition of digital citizenship and passports; instruments, wills/estates and organisations;
- (b) judicial arbitration for the resolution of the boundaries of code and law;
- (c) legal enforceable standards and voluntary codes for Crypto project Governance;
- (d) transparency disclosure rules for capital raising by Crypto projects;
- (e) recognition of privacy and ownership of personal data; and,
- (f) establishing a crypto valuation standard measure for the new economy as unit of measurement.

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smarter-energy-grid/; see also World Economic Forum, 'The Future of Financial Infrastructure. An Ambitious Look at how Blockchain Can Reshape Financial Services' (2016) (exploring nine 'case deep-dives' from payment systems via insurance to investment management and market provisioning); Future Thinkers, '19 Industries The Blockchain Will Disrupt', <http://futurethinkers.org/industries-blockchain-disrupt/>.

<sup>126</sup> Given the national security issues involved, there is a very high hurdle towards having sufficient decentralised security nodes to validate a 2way bridge.

legal recognition of digital citizenship and passports; instruments, wills/estates and organisations

C12.11 The Crypto legislation will give legal recognition and rights for a number of digital instruments including:

- (a) Digital Wills and Estates wherein, without human intervention, a DAO protocol will invest and distribute amongst the estates' beneficiaries;
- (b) Digital citizenship and passports. By virtue of the AI KYC/AML system the identity of a citizen, once verified, will be accepted throughout all participating countries. Furthermore, unless security reasons require otherwise in a particular case, 'zero-knowledge proof' transactions will be default preferences on public, private and hybrid blockchains protecting the verified persons, identity and privacy; and,
- (c) Digital DAOs whether involving 0 to 1 million directors/members will be recognised in a number of forms of collective organisation and combination for social and business purposes such as corporations, trusts, foundations, collective investment vehicles etc.

C12.12 Qualifications and competency standards will be recognised in various crypto related fields to provide some measure of trustworthy professional accreditation.

judicial arbitration for the resolution of the boundaries of code and law

C12.13 Lawrence Lessig has explored how in cyberspace, code complements or even substitutes law as a normative order.<sup>127</sup> Blockchain potentially reinforces and complicates this tendency as it enables code to run autonomously, with very limited third-party intervention, and to produce real effects in terms of value transfers.<sup>128</sup> In the crypto space, the relationship between code and the law has a factual, a legal, and a political dimension. On a factual level, it is true that it is difficult for the law (absent a regulatory intervention interface<sup>74</sup>) to directly alter the code of a smart contract, stop its execution, or reverse its effects if they were contrary to the law. This inflexibility not only impedes "legal overruling", but also creates, for the parties, significant costs for filling gaps in incomplete smart contracts.<sup>129</sup> Moreover, it may be difficult for parties to some smart contracts to enforce their legal rights if their

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<sup>127</sup> Lawrence Lessig, *Code: and Other Laws of Cyberspace* (Basic Books 1999).

<sup>128</sup> See de Filippi/Wright, Aaron Wright and Primavera De Filippi, 'Decentralized Blockchain Technology and the Rise of Lex Cryptographia', Working Paper (2016), [https://papers.ssrn.com/abstract\\_id=2580664](https://papers.ssrn.com/abstract_id=2580664), Chapter 12; Karen Yeung, "Regulation by Blockchain: The Emerging Battle for Supremacy between the Code of Law and Code as Law", *Modern Law Review* (forthcoming).

<sup>129</sup> Jeremy Sklaroff, 'Smart Contracts and the Cost of Inflexibility' (2017) 166 *University of Pennsylvania Law Review* 262; cf. also Usha Rodrigues, 'Law and the Blockchain' (2018) 104 *Iowa Law Review* (Forthcoming), <https://ssrn.com/abstract=3127782>, at 47-63; for a seminal treatment of incomplete contracting, see Ian Ayres and Robert Gertner, 'Filling Gaps in Incomplete Contracts: An Economic Theory of Default Rules' (1989) 99 *Yale Law Journal* 87.

counterparty is unknown (due to pseudonymity) or based in a country with a weak judicial system. If, for example, a person in the EU buys a mobile phone directly from an Asian merchant by means of a smart contract, the payment is executed after GPS-verified delivery, but the phone is not in conformity with the contract, the buyer may, depending on the applicable legal regime, have remedies against the merchant, irrespective of and in fact (partially) reversing the automated payment under the smart contract.<sup>130</sup> However, if the buyer fails to undertake due diligence before contract formation by seeking unambiguous identifying information, it may be factually difficult in practice to recover the payment or to enforce remedies. To this extent, code, which is *ex ante* specified, may trump the law that only offers remedies *ex post*. This merely shifts, however, contractual risks between parties and does not affect the general relationship between code and the law. It bears noting, however, that such risks, as well as the need to import offchain data (e.g., GPS localization; information on contractual conformity), does reinfuse a necessary and significant element of trust into blockchain transactions initially thought to dispense of it.<sup>131</sup>

C12.14 Accordingly, the SDEZs will give paramount presumption in favour of recognition to the finality of a blockchain payment, but will allow for that presumption to be displaced where appropriate cause has been shown to justify it. Precedents for this judicial system include codified rules that apply to Bills of Exchanges, Promissory Notes and Bearer Instruments and Instrument summary proceedings regimes.

#### legal enforceable standards and voluntary codes for Crypto project Governance

C12.15 Co-operating Jurisdictions adopt a Blockchain Governance Code in the Special Digital Economic Zones ('SDEZ's'). Using the European Union's development of the law on Corporate Governance as a model<sup>132</sup>, it began as largely voluntary,<sup>133</sup> self-regulation<sup>134</sup>, companies had to either adhere to the Code or explain to what extent and why they didn't.<sup>135</sup>

C12.16 There is every incentive for the Cooperating jurisdictions to embrace the development of a Blockchain Governance Code giving Crypto assets registering for the benefits of the SDEZ, to either:

- (a) voluntarily comply with the legislation or parts thereof; or
- (b) explain to the markets why they have opted not to comply to various components.

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<sup>130</sup>Elisa Mik, 'Smart Contracts: Terminology, Technical Limitations and Real World Complexity' (2017) 9 Law, Innovation and Technology 269, 287.

<sup>131</sup> Cf. Benito Arruñada, 'Blockchain's Struggle to Deliver Impersonal Exchange' (2018) 19 Minnesota Journal of Law, Science & Technology 55; Mik, *supra*, 277-278, 296-298.

<sup>132</sup> Patrick Leyens, 'Comply or Explain im Europäischen Privatrecht – Erfahrungen im Europäischen Gesellschaftsrecht und Entwicklungschancen des Regelungsansatzes' (2016) ZEuP 388, 419.

<sup>133</sup> John Roberts, 'Between the Letter and the Spirit: Defensive and Extensive Modes of Compliance with the UK Code of Corporate Governance' in Thomas Clarke and Douglas Branson (eds) *The SAGE Handbook of Corporate Governance* (SAGE 2012) 196.

<sup>134</sup> Cary Coglianese and Evan Mendelson, 'Meta-Regulation and Self-Regulation' in Robert Baldwin et al. (eds) *The Oxford Handbook of Regulation* (OUP 2010) 146.

<sup>135</sup> Klaus Hopt, 'Comparative Corporate Governance: The State of the Art and International Regulation' (2011) 59 *American Journal of Comparative Law* 1, 10-11; R I (Bob) Tricker, *The Evolution of Corporate Governance* in Thomas Clarke and Douglas Branson (eds) *The SAGE Handbook of Corporate Governance* (SAGE 2012) 45-46.

- C12.17 In February 2016, a group of high-level experts, including the Chief Economist of the Bank of England, recommended the use of complexity theory for the predictive modelling of behaviour and outcomes on financial markets.<sup>136</sup> The theory is helpful to crypto markets which have elements of both structural regularity by virtue of protocol, mixed with volatile market swings and the uncertainty that it brings. Complexity theory models system-environment relationships, with a focus on the interaction between system members and their spontaneous self-organization.<sup>137</sup> Therefore, the time dimension is of the essence. Complexity models are dynamic, describing the evolution of systems as iterative processes, where the outcome of one cycle is simultaneously the start of the next.<sup>138</sup>
- C12.18 Complexity theory was first introduced in the study of biological systems.<sup>139</sup> Since the 1990s, chaos and complexity theory have been increasingly applied to the social sciences as well.<sup>140</sup> Particularly, organizations were fruitfully modelled as complex institutions.<sup>141</sup> From there, it was but a small step to an application in economics.<sup>142</sup> After the stock market crash of October 19, 1987, academics began turning to non-linear models, found in non-linear dynamics and complexity theory, to explain the interaction of market participants, and of financial markets in particular.<sup>143</sup> Specifically, those theories are better able to model sudden changes of behaviour and stark movements, such as those witnessed during financial crashes, than conventional, linear models.<sup>144</sup> They may thus provide some much-needed structure for such seemingly random events. The contribution made by Stefano Battiston et al.<sup>145</sup> is, as far as can be seen, the first to apply the insights of complexity and chaos theory not only to the modelling of financial markets, but explicitly to financial regulation. The moment of its appearance is suggestive: the financial crisis has made it

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<sup>136</sup> Stefano Battiston et al., 'Complexity theory and financial regulation. Economic policy needs interdisciplinary network analysis and behavioral modeling', 351 *Science* 818 (2016).

<sup>137</sup> M Mitchell Waldrop, *Complexity. The Emerging Science at the Edge of Order and Chaos* (Simon & Schuster 1992) 11; Michael Strevens, *Bigger Than Chaos. Understanding Complexity through Probability* (Harvard University Press 2003), p 7.

<sup>138</sup> Tim Blackman, 'Complexity theory' in Gary Browning et al. (eds), *Understanding Contemporary Society: Theories of the Present* (SAGE 2000) 139, 145.

<sup>139</sup> Stuart Kauffman, *At Home in The Universe. The Search for Laws of Self-Organization and Complexity* (OUP 1995) Chapter 1.

<sup>140</sup> David Harvey and Michael Read, 'The Evolution of Dissipative Social Systems' (1994) 17 *Journal of Social and Evolutionary Systems* 371, 373.

<sup>141</sup> RA Thiétart and B Forgues, 'Chaos Theory and Organization' (1995) 6 *Organization Science* 19.

<sup>142</sup> William Baumol and Jess Benhabib, 'Chaos: Significance, Mechanism, and Economic Applications' (1989) 3 *Journal of Economic Perspectives* 77, 92; David Byrne, *Complexity Theory and the Social Sciences* (Routledge 1998)

<sup>143</sup> David A Hsieh, 'Chaos and Nonlinear Dynamics: Application to Financial Markets' (1991) 46 *Journal of Finance* 1839; Edgar E. Peters, *Fractal Market Analysis. Applying Chaos Theory to Investment and Economics* (Wiley 1994).

<sup>144</sup> Ying-Ying Hsieh et al., 'The Internal and External Governance of Blockchain-Based Organizations: Evidence from Cryptocurrencies' in: Campbell-Verduyn (ed.), *Bitcoin and Beyond: Blockchains and Global Governance* (Routledge, forthcoming), <https://ssrn.com/abstract=2966973>, p 1839.

<sup>145</sup> Stefano Battiston et al., 'Complexity theory and financial regulation. Economic policy needs interdisciplinary network analysis and behavioral modeling', 351 *Science* 818 (2016).

abundantly clear that the models used to inform financial regulation before were inadequate.<sup>146</sup>

C12.19 Cryptocurrencies are excellent candidates for complexity theory in so far as they are to a large extent self-organised. They are based on peer-to-peer systems which connect a set of nodes into a self-organising network that anyone can join at any time; and the network uses a protocol which is maintained and updated by participants. In the parlance of complexity theory, there is a high degree of interconnectedness of the different independent agents.<sup>147</sup>

#### Legal enforceable standards for blockchain governance

B12.20 At para [C 5] we explained that we have created a Governance system by code which has replaced, as tech can do, traditional corporate governance systems.<sup>148</sup> Unfortunately too few blockchains have internal governance systems. The case for suggesting that externally enforced legal standards are necessary, and as such, to form part of the Code are:

(a) Core developers and important miners wield powers that are comparable with those of management of publicly traded companies yet are not subject to comparable rules of scrutiny, transparency and accountability.

(b) There is no formal way to oust the core developer team by means of a 'takeover'.

C12.22 There is of course difficulty in seeking to apply principal and agent and hierarchical structural analysis to decentralised flat hierarchies. Moreover the Corporate Governance Code model has been criticised in itself as too focused on control and accountability<sup>149</sup>. Selling coins or initiating a hard fork however, however are not satisfactory redress mechanisms.

C12.23 A voluntary code can allow projects, particularly fledgling ones, to selectively opt out of all or parts of the Code provided they explain their reasons for doing so. It should not operate as a barrier to entry to new projects where less open participation may be required for its early phase of business cycle. An exception may be made for those cryptocurrencies that have reached such a critical mass as to be a systemic risk on the world's financial system.

C12.24 The driving incentive for undergoing adoption of the Code by registering a crypto project in SDEZ is competitive advantage, otherwise the compliance costs counsel against such adoption. With the mass adoption from the traditional capital markets, more traditional

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<sup>146</sup> See Stefano Battiston et al., 'Complexity theory and financial regulation. Economic policy needs interdisciplinary network analysis and behavioral modeling', 351 Science 818 (2016), at 819.

<sup>147</sup> Cf. also, for the financial system as such, Battiston et al., *supra*, 818.

<sup>148</sup> David Yermack, 'Corporate Governance and Blockchains' (2017) 21 Review of Finance 7; Wright and De Filippi, *supra*.

<sup>149</sup> Thomas Clarke and Douglas Branson, 'Introduction: Corporate Governance – And Emergent Discipline?' in *id.* (eds) The SAGE Handbook of Corporate Governance (SAGE 2012) 4-5, 11; John Roberts, 'Between the Letter and the Spirit: Defensive and Extensive Modes of Compliance with the UK Code of Corporate Governance' in Thomas Clarke and Douglas Branson (eds) The SAGE Handbook of Corporate Governance (SAGE 2012) 197; Eberhard Vetter, 'Der Deutsche Corporate Governance Kodex – nur ein Testballon für den Gesetzgeber?' (2004) ZIP 1527.

investors would expect to see greater transparency and accountability. The Tezos commercial success suggests that there is a demand for governance solutions.

#### The Blockchain Governance Code

C12.25 The Code would require, in the absence of an internal governance structure:

- (a) the imposition of fiduciary duties owed by core developers, including duty of loyalty and duty of care, duty to maintain the code and update the chain.<sup>150</sup>
- (b) allow core developers to take into account broader duties, beyond the users to systemic financial stability;
- (c) provide rules on hard forks;
- (d) provide rules for responsible use by mining operators particularly where fiduciary duties coming into play where any group can control more than 50% of computational power;
- (e) provide user rights to demand information<sup>151</sup>
- (f) provide rules enshrining that, for example the longest in conflicting chains is to be considered the authentic one and that information in the authentic chain cannot be retrospectively changed and the extreme circumstances such as a hack, where this can be modified; and,
- (g) provide rules requiring technical infrastructure to be designed by developers to allow for communication and conducting voting procedures.

C12.26 Ultimately the Code would be a means to embody the spirit of Satoshi Nakamoto's White Paper which introduced blockchain technology as means to overcome the problem of trusted parties precisely to allow for decentralised but secure interaction between diffused users.<sup>152</sup>

#### transparency disclosure rules for capital raising by Crypto projects

C12.27 The standard market practice has been that the issuer publishes a so-called "white paper" on its website.<sup>153</sup> Although some white papers are quite comprehensive, their level of detail cannot be compared with a prospectus required under securities regulation.<sup>154</sup>

C12.28 A tokenholder is not only exposed to higher asymmetries of information and likely more behavioural biases but also to various forms of opportunism by the founder. In some cases, founders might not pursue the promised projects.<sup>155</sup> In other circumstances, managers might not do so in an efficient manner, wasting tokenholders' resources. Several factors make these managerial (or 'vertical') agency problems particularly important in the context

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<sup>150</sup> Angela Walch, 'Call Blockchain Developers What They Are: Fiduciaries', American Banker (August 10, 2016)

<sup>151</sup> Ethereum must be complimented on its early move to publish transcripts of core developer calls showing that transparency does not have to be prohibitively burdensome: Don Tapscott and Alex Tapscott, *Blockchain Revolution* (Penguin, 2016) p. 102-3.

<sup>152</sup> Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System* (2008)

<sup>153</sup> Dirk A. Zetzsche, Ross P. Buckley, Douglas W. Arner and Linus Föhr. *The ICO Gold Rush: It's a scam, It's a bubble, It's a super challenge for regulators*. EUROPEAN BANKING INSTITUTE WORKING PAPER SERIES – NO. 18. (2018) at 10.

<sup>154</sup> See *id.*

<sup>155</sup> Corporate governance is, after all, about promises between managers and investors. See Jonathan Macey, *CORPORATE GOVERNANCE: PROMISES KEPT, PROMISES BROKEN* (Princeton University Press, 2008).

of ICOs. First, tokenholders do not usually have the ability to appoint, remove and remunerate the directors. Second, white papers may not cover how managers should behave in many cases in which the interests of the tokenholders may be at stake. Moreover, unlike what happens in a typical relationship between directors and shareholders where fiduciary duties may help fill some gaps, developers do not usually owe fiduciary duties to tokenholders. Therefore, white papers may become more incomplete than a typical corporate contract. Third, while managers in listed companies are subject to public scrutiny and the market for corporate control, and these market forces may encourage managers to behave in better and more efficient manner, the same market forces will unlikely take place in a private company issuing tokens.

C12.29 Accordingly, under the Code, the obligations in paragraph XX apply. Furthermore, the Code requires, for new ICO projects, conditions to be imposed on the release of Coins by founders/issuers/key developers staged in accordance with project deliverable targets.

C12.30 Under the code, there is a system of smart disclosure in the white paper. Through this approach, more attention should be paid to the way issuers provide the information rather than the amount of information itself. While this proposal has been developed by various securities regulators for the information provided in the prospectus, and some authors have criticized the effectiveness of this policy, this system of smarter disclosure may be more relevant and effective in a world of tokenholders.

#### Insolvency rules

C12.31 The participating SDEZ jurisdictions provide simple rules for crypto project insolvencies. Tokenholders are treated effectively as the functional equivalent, from an economic and finance perspective as shareholders would be traditional bankruptcies. They are therefore subordinated to creditors and as a result create greater financial opportunities to project to raise capital more efficiency on the debt market.

#### recognition of privacy and ownership of personal data

C12.32 The GDPR<sup>156</sup> in force since May 2018, the issue has gained prominence not only in the EU, but also internationally. Blockchain data processing may fall under the scope of the GDPR to the extent that the offering of blockchain-based transaction services extra-EU is envisaged to address data subjects in the EU (Art. 3(2) GDPR).<sup>157</sup>

C12.33 Data privacy has become an increasingly significant given the centralisation of data privacy and the recognition that most social media platforms own the intellectual property of user's posts. This has commercial dimensions in the wake of NFT's. As Data mining is the new gold mind, the 'own your own data' campaign is starting to be of concern.

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<sup>156</sup> REGULATION (EU) 2016/679 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 April 2016

<sup>157</sup> On the GDPR's international reach and impact, see Ira Rubinstein and Bilyana Petkova, 'The International Impact of the General Data Protection Regulation' in Marc Cole and Franziska Boehm (eds), Commentary on the General Data Protection Regulation (Edward Elgar forthcoming), <https://ssrn.com/abstract=3167389>; Bart Slood and Frederik Zuiderveen Borgesius, 'The EU General Data Protection Regulation: A New Global Standard for Information Privacy', Working Paper (2018), <https://ssrn.com/abstract=3162987>.

C12.34 The participating SDEZ jurisdictions provide clear and helpful data ownership restoration to users and encourage the use by blockchain projects to use 'zero-knowledge proofs' for the storage and transmission of data wherever possible.<sup>158</sup>

establishing a crypto valuation standard measure for the new economy as unit of measurement

C12.35 The NuGenesis blockchain is designed to optimise the ability to give recognition to and exchange value, including in virtual reality, beyond tokenisation. Value and a monetary measure representing it, becomes increasingly more abstract. As a result, in the new economy traditional 'measures', in the form of dollar values, are increasingly less relevant. How much is a crypto, when the crypto is the measure? How long is a metre when the metre is the measure? Yet in allocating jurisdiction for things like taxation, how and where and by whom value was created and relatively as between them remains important to nation states. We are working on a 'basket' of assets including fiat currencies, land, commodities and resources which can appropriately proxy for and measure the relative contribution of resources and energy to the creation of value, to be measure of value in the new economy.

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<sup>158</sup> Subject of course to AML/KYC requirements of each SEDZ jurisdiction.



## FINAL PART D

# THE LEGAL ISSUES INVOLVED IN CRYPTOECONOMICS AND THE NUGENESIS ECOSPHERE

### D1 Introduction

The Traditional legal concepts do not properly apply

- D1.1 Regulators have been critical that some 83% Whitepapers pay no regard to the legal issues involved with the technology they seek to explain<sup>1</sup>.
- D1.2 We hope to provide the reader with a comprehensive review of the legal issues as they affect the cryptoverse, at least at it concerns the Nu Genesis ecosystem. We can only do so at a generic global level that deals with the common legal and policy themes that regulators are concerned with.
- D1.3 For the reasons detailed below, securities regulations tend to focus on “issuers” and “investors” as terms of their regulatory terms of reference. These are concepts that do not apply properly to blockchain technology and even less so with regard to Nu Genesis.
- D1.4 The “issuer” is a decentralised DAO that is lead by a New Zealand Charity, First Peoples Advancement Charitable Trust. It was established in 2015 for the purpose of advancing, through efficient trade, the peoples of the South Pacific. The DAO included a range of Australian and International companies and individuals that were interested in developing, through blockchain, financial assets that would include interests in property and infrastructure projects. Therefore the “issuer” is quite an inapplicable concept applied to Nu Genesis in circumstances where there is no ICO. Rather, all that is happening is that NuCoin is being released on publicly traded licenced exchanges around the world opening the ease of access to buy and use it.
- D1.5 Nu Coin is the currency of the Nu Genesis ecosystem. It is the means of exchange to access services and opportunities provided by and in the ecosphere. It is also the right to participate in the facilitation of consensus of the blockchain which recognises the digital representation of value (whether in the form of rights<sup>2</sup> or otherwise) which is reliant on cryptography and distributed ledger technology for its accounting and security. It’s functionality is wholly incompatible with securities regulation.
- D1.6 If we were forced to identify an “issuer”, that would be rather complex: ranging from all parties involved in the development of blockchain, its ecosphere, the miners and the AI - all of which will be providing access to NuCoin on the international exchanges. There is no contractual relationship sought to be established by any ‘managers’; there are merely

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<sup>1</sup> FCA Cryptoassets Taskforce: Final Report (October 2018)

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/752070/cryptoassets\\_taskforce\\_final\\_report\\_final\\_web.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/752070/cryptoassets_taskforce_final_report_final_web.pdf) accessed 12 December 2018

<sup>2</sup> rights to receive a benefit or perform specific functions such as receiving new coins from staker-mining, facilitating consensus, participating in governance and taking part in opportunities.

unknown people who may buy and/or sell with other strangers. Likewise, “investors”, are not investing in a potential future promised blockchain as described in a ‘white paper’ seeking to raise capital to build it.

- D1.7 Traditionally, non-functional tokens have the sole function of acting as a fundraising mechanism and are offered to the public when the platform or the network has not been developed. Non-functional tokens do not contain any features that are intrinsically linked to a blockchain project; thus their value is driven only by speculation<sup>3</sup>. The pre-sales of tokens are not unusual. Around 70% of ICOs had been previously offered in a presale to a private investor group prior to the crowdsale.<sup>4</sup>
- D1.8 With respect to NuCoin, a prospective participant is not ‘investing’ in a pre-sale or ICO by an issuer establishing a contractual relationship to build a blockchain. Rather they are a potential participant in a global ecosphere that is complete and fully functional and whose future they, and unknown others, will determine. They are acquiring NuCoin on an international exchange with no contractual relationship between any buyer and seller.
- D1.9 The problem is that regulators do not discern regulation on the basis of technology. This means that the same set of statutory rules apply to financial services and transactions, regardless of the type of technology used.<sup>5</sup> Accordingly we must apply the legal concepts as best we can and be guided in that application by the underlying policy of securities regulation to the cryptomarket as it has evolved over the last 12 years, and noting where NuGenesis, and NuCoin in particular, stand.

## **D2 Securities regulation applied to Blockchain technology**

- D2.1 The main role of the securities regulator is providing information to the market, mainly through the vehicle of disclosure requirements which, in turn helps the market assign the right price tag to the products sold.<sup>6</sup> For example, any information about the quality of the management of the firm is expected to be included in the price of the firm’s securities as long as the information is public. If the information is positive the price of the ‘security’ is expected to increase as investors rush to purchase it. In other words, there is a hypothesis that as long as the market receives the correct and full information about a firm the market will be efficient.<sup>7</sup>

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<sup>3</sup> Alfonso Delgado et al. *Towards a Sustainable ICO Process: Community Guidelines on Regulation and Best Practices* (2016), pp. 33

<sup>4</sup> This percentage is based on a sample of 450 ICOs. See Dirk A. Zetzsche, Ross P. Buckley, Douglas W. Arner and Linus Föhr. *The ICO Gold Rush: It’s a scam, It’s a bubble, It’s a super challenge for regulators*. EUROPEAN BANKING INSTITUTE WORKING PAPER SERIES 2018 – NO. 18. (2018) pp. 11.

<sup>5</sup> See, for example, Eur. Comm’n, Directorate General Financial Stability, *FinTech: A More Competitive and Innovative European Financial Sector* 4, 5, 15 (Consultation Document), <http://perma.cc/2JRFHDBM> (regarding financial technology regulation in general). According to OICV-IOSCO, most regulators follow the neutrality approach. OICV-IOSCO, *UPDATE TO THE REPORT ON THE IOSCO AUTOMATED ADVICE TOOLS SURVEY – FINAL REPORT 4* (File No. FR15/2016, Dec. 2016), <http://perma.cc/KS6V-DKUT> (regarding the regulation of automated advice tools, specifically).

<sup>6</sup> HADAR Y. JABOTINSKY, *FINANCIAL REGULATION* in *ENCYCLOPEDIA OF LAW AND ECONOMICS* (2017)

<sup>7</sup> Burton G. Malkiel, *The Efficient Market Hypothesis and its Critics*, 17 J. ECON. PERSPECTIVES 59, 60 (2003). Note however that this hypothesis has been criticized in many ways, as markets seem to over or under react to new pieces of information and to take into account irrelevant or plausible information

- D2.2 Investors are deemed to require protection against issuers on the basis that the offeror has more information about what is being offered than the buyer. This is compounded by the fact that the value and quality of the security lies primarily in the future, and in the issuer's control.<sup>8</sup> The informational asymmetry between buyer and issuer, in addition to a general lack of factual information, is so extensive that the law deems it inappropriate to place the onus of inquiry and investigation solely on the purchaser.<sup>9</sup>
- D2.3 This policy rationale does **not** apply to blockchain technology. To the contrary, blockchain technology on which ICOs are based, intrinsically limits any asymmetries of information.<sup>10</sup> Data stored on a blockchain is decentralised, open-source, and updated by consensus mechanisms. It could be possible that these attributes provide more transparency and availability of information in comparison to traditional companies. In contrast to companies that do not store their financials on a blockchain and only report once per year, in decentralised networks the storage and movement of funds can be viewed in real time. Because token holders can see how their contribution is being used, the structure arguably lends itself to enhanced peer-to-peer governance.<sup>11</sup> Further, the code (which often contains everything from the way funds can be directed, to the bylaws and governance of the issuer) is publicly available and accessible to all participants, enhancing its transparency.<sup>12</sup>
- D2.4 The standard market practice has been that the issuer publishes a so-called "white paper" on its website.<sup>13</sup> Although some white papers are quite comprehensive, their level of detail cannot be compared with a prospectus required under securities regulation.<sup>14</sup> For example, while under securities regulation it is required that the prospectus contains detailed information about the issuer, this element is very often missing from white papers.<sup>15</sup>
- D2.5 The implicit assumption is that information about the issuer and its financial history are somehow relevant. It assumes that it is in the issuer that the 'investor' is investing or relying upon to manage their investment. How that thinking can apply to an ICO for which funds are raised to build the blockchain, it certainly does not apply to NuGenesis. The participant is participating in an ecosystem where the issuer's role (in so far as contributing to the building of the blockchain) has finished and a complex governance system applies as to how that ecosystem is to progress and evolve.

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JOHN ARMOUR, DAN AWREY, PAUL DAVIES, LUCA ENRIQUES, JEFFREY GORDON, COLIN MAYER & JENNIFER PAYNE, *PRINCIPLES OF FINANCIAL REGULATION* 101 (2016) at 105.

<sup>8</sup> Ross Grantham and C. E. F. Rickett *Company and Securities Law: Commentary and Materials* (Brookers, Wellington, 2002) at 876.; and generally, A. C Page, R.B Ferguson *Investor Protection* (London, Weidenfeld and Nicholson, 1992) at 36-38.

<sup>9</sup> At 876.

<sup>10</sup> See for example Alex Tarrock and Tyler Cower "The End of Asymmetric Information" (6 April 2015) <<https://www.cato-unbound.org/2015/04/06/alex-tabarrok-tyler-cower/end-asymmetric-information>>.

<sup>11</sup> Note the immediate weakness in this argument – only aggregated data reveals the health of a company.

<sup>12</sup> Lior Zysman "DAOs and Securities Regulation" (30 September 2016) Smith and Crown <[www.smithandcrown.com/daos-securities-regulation/](http://www.smithandcrown.com/daos-securities-regulation/)>.

<sup>13</sup> Dirk A. Zetsche, Ross P. Buckley, Douglas W. Arner and Linus Föhr. *The ICO Gold Rush: It's a scam, It's a bubble, It's a super challenge for regulators*. EUROPEAN BANKING INSTITUTE WORKING PAPER SERIES – NO. 18. (2018) at 10.

<sup>14</sup> See *id.*

<sup>15</sup> See *id.* at 11.

- D2.6 Significantly, the relationship structure and interest dynamics conceptualised by traditional securities law do not apply. The NuGenesis network is designed to manage the minting and distribution of NuCoin such that the incentives of all stakeholders are aligned<sup>16</sup>. Indeed the participant is 'signing up' to a set of rules whereby the minting of coins is a functional of complex relational system of other participants developing an ecosystem. There are not even 'gas' fees or something that could equate to 'dividends'. There are no profits as such, but a hope by all concerned, for the appreciation of Coin value as more people acquire the Coin to access services. Traditional distinctions between investor/shareholder/customer don't seem to apply.

### The core concept: security and the Howey test

- D2.7 While it is not surprising that various national securities law frameworks apply different terminology, the structures are highly comparable. As NuCoin does not involve any rights to equity in, dividends from or right to vote in, an issuer, the relevant securities law inquiry to consider is whether there is some sort of collective investment vehicle that is managed by someone who can be called an issuer. The U.S SEC's investigations and enforcement orders have set the tone for the debate on tokens under securities laws. The pivotal term "investment contract" is a subcategory of the general term "security." Singapore, Australia, and New Zealand follow a two-tier approach, distinguishing between tokens as securities and tokens as collective investment agreements. Ultimately the focus of whether there is some sort of collective investment contract or scheme amounts to a 'security'.
- D2.8 The E.U. framework focuses on the tradability of tokens on the secondary capital market, and therefore apparently differs from the investment-based approach taken by the other jurisdictions. However, where this framework is applied to NuCoin, there is a great similarity of the issues that arise for consideration.
- D2.9 Furthermore, generally there appears to be a common approach by leading developing countries seeking to enforce existing rules by testing crypto currency assets as against a 'securities' classification. Whatever the language used to determine the putative 'security'<sup>17</sup>, the case law concerning the application of the famed *Howey test* is helpful for all jurisdictions concerned. It is that designation which gives local Securities Enforcement Regulators the jurisdiction to regulate, firstly by requiring prospectus type registration. Accordingly, we will use the US heading of "securities" as the common point of analysis by jurisdictions and identify any material differences in the discussion.
- D2.10 'Security' is the is the gateway concept test for the application of the full array of securities regulation (including, but not limited to, the obligation to publish a prospectus, the creation

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<sup>16</sup> See Chriss Dixon, 'Crypto Tokens: A Breakthrough in Open Network Design' (1 June 2017)

<https://medium.com/@cdixon/crypto-tokens-a-breakthrough-in-open-network-design-e600975be2ef>

<sup>17</sup> In the US an 'investment contract' is considered a 'security' see para D4.4. In Canada is Section 35 of *The Securities Act*, prohibits anyone trading in a security in the absence of a prospectus and section 1(1)(22)xiii defines security as including "any investment contract, other than an investment contract within the meaning of The Investment Contracts Act". The Supreme Court of Canada's decision in *Pacific Coast Coin Exchange v. Ontario (Securities Commission)*, [1978] 2 S.C.R. 112 applied the US *Howey* test: see para D15.1. In Australia and New Zealand, it is the concept of 'managed investment' which encapsulate similar concepts.

of prospectus liability, the prohibition of insider trading, and the authorisation of financial intermediaries involved in token sales by national regulators).

#### Not exhaustive list of legal issues

- D2.11 There are of course an almost inexhaustible list of other legal issues such as regarding the jurisdictional tests and exemptions in each jurisdiction, and regarding the exemption for sophisticated investors. As to how each Country asserts jurisdiction in the global marketplace diverges in the extreme.<sup>18</sup> Some national regulators would find it particularly difficult to take action against token offers managed by entities based in a foreign country. For example, the U.K. Financial Conduct Authority (FCA) seems to be painfully aware of its limited powers, stating laconically that ICOs “might be based overseas.”<sup>19</sup>
- D2.12 At the other extreme, the US has vast and long-standing experience in seeking to apply national securities laws extraterritorially.<sup>20</sup> As there is no wrongful behaviour having harm on US citizens, we leave the mention of this issue under para [D9].

### **D3. The Classification of Coins and Tokens**

- D3.1 Common practice is to use classifications like “security” token, “utility” token or “payment token” or some combinations thereof<sup>21</sup>, as a way to help condense the nature of the analysis.
- D3.2 NuCoin would generally be primarily a payment Coin. It is intended to function primarily as a means of payment, which can be freely transferred in a peer-to-peer fashion on a distributed ledger technology or related technology, without usage of an intermediary or geographic limitation. This category of tokens aims to resemble money in its functions, as a means of exchange, a unit of account and as a store of value.<sup>22</sup>

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<sup>18</sup> In Australia for example, the “offer of securities” must be “received in Australia”: sec 700(4) of the *Corporations Act* 2001.

<sup>19</sup> U.K. FIN. CONDUCT AUTHORITY, *Distributed Ledger Technology – Feedback Statement on Discussion Paper 17/03*, at 15 (Dec. 2017), <http://perma.cc/U92Q-VVJZ>.

FCA highlights its limited competencies when stating that ICOs “might be based overseas.”

<sup>20</sup> See the Dodd-Frank Wall Street & Consumer Protection Act, H.R. 4173, 111th Cong. §§ 929P(b), 929Y (2010) (enacted) [hereinafter Dodd-Frank Act]. See also: *Schoenbaum v. Firstbrook*, 405 F.2d 200 (2d Cir. 1968), *abrogated by Morrison v. Nat'l Austl. Bank Ltd.*, 130 S. Ct. 2869 (2010); *Leasco Data Processing Equip. Corp. v. Maxwell*, 468 F.2d 1326 (2d Cir. 1972), *abrogated by Morrison*, 130 S. Ct. 2869.

<sup>21</sup> Utility-security hybrids are tokens such as NEO and BNB, which are designed to have elements of both utility tokens and security tokens. Utility-security token is the most common form of security tokens. They are interesting as they combine elements of more traditional financial instruments with characteristics of utility tokens.

<sup>22</sup> See for example, the frameworks of Finma, the European Securities and Markets Authority, ‘Own Initiative Report on Initial Coin Offerings and Crypto-Assets’ (19 October 2018)

[https://www.esma.europa.eu/sites/default/files/library/esma22-106-1338\\_msg\\_advice\\_-\\_report\\_on\\_icos\\_and\\_cryptoassets.pdf](https://www.esma.europa.eu/sites/default/files/library/esma22-106-1338_msg_advice_-_report_on_icos_and_cryptoassets.pdf), Zetsche, European Banking Authority, ‘Report with advice for the

European Commission’ (9 January 2019)

<https://eba.europa.eu/documents/10180/2545547/EBA+Report+on+crypto+assets.pdf>, Thomas Euler,

- D3.3 However it is also a utility token in that the Coin is necessary for access to services, opportunities and investments in the ecosphere and to applications build upon NuGenesis, parachains or Para-Networks. What it is **not**, is a 'security' token that provides economic rights taking any shape comparable to equity ownership in the issuing entity, dividend rights or rights to any transaction fees on the Network<sup>23</sup>.
- D3.4 This broad classification may be useful, but the focus is the exact rights and benefits that are being offered, viewed in economic reality unconstrained by form<sup>24</sup>, when the public come to purchase NuCoin on an exchange.

#### The Key Features of Nu Genesis' Nu Coin

- D3.5 The Key features of NuCoin in this analysis are as follows:
- (a) The NuGenesis blockchain system is fully operational and decentralised with staker-miners minting and producing NuCoin as the currency of the NuGenesis ecosystem;
  - (b) That is, the public is not being offered (as is typically the case) to invest in a prospective or hoped for blockchain idea where the money raised will be used to build the blockchain;
  - (c) NuCoins are not pre-mined and are not offered by any issuer or founder. They are the subject of allocation from the Treasury wallets created by the blockchain through the miner-staker and AI system validators and are released to provide sufficient liquidity for the ecosphere to function according to the pre-set tokenomics formula reducing in number over the next 110 years;
  - (d) Having built the blockchain, the Founder's role has been exhausted. No "investor" is looking to them to build it. The ecosystem thereafter derives its functionality by the

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'The Token Classification Framework: A multi-dimensional tool for understanding and classifying crypto tokens.' (18 January 2018) <http://www.untitled-inc.com/the-token-classification-framework-a-multi-dimensional-tool-forunderstanding-and-classifying-crypto-tokens/> Monetary Authority of Singapore, 'A guide to Digital Token Offerings' <http://www.mas.gov.sg/~media/MAS/News%20and%20Publications/Monographs%20and%20Information%20Papers/Guide%20to%20Digital%20Token%20Offerings%20last%20updated%20on%2030%20Nov.pdf> FINMA, 'Guidelines for enquiries regarding the regulatory framework for initial coin offerings (ICOs)' <https://www.finma.ch/en/~media/finma/dokumente/dokumentcenter/myfinma/1bewilligung/fintech/weleitungungico.pdf?la=en> Philipp Hacker and Dr. Chris Thomale, LL.M. 'Crypto-Securities Regulation: ICOs, Token Sales and Cryptocurrencies under EU Financial Law' (2017) eCFR (forthcoming) available at: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3075820](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3075820)

<sup>23</sup> Cf for example NEO provides its token holders dividends in the form of another token by the name of GAS, while Binance uses a percentage of the transaction costs paid in BNB to buy back coins and 'burn' or destroy them. Although Binance's model is more comparable to a share repurchase than a dividend, the economic reality is de-facto quite similar, as a decrease in supply should lead to an increase in the value of BNB tokens.

<sup>24</sup> many token issuers have opted to self-classify their token as a utility token (even when, aside from the provided utility, economic rights are provided to the token holder) can be explained by the systemic misunderstanding of applicable securities laws in the eyes of issuers. For some reason, many token issuers seem to have been under the impression that mere classification as a utility token would protect them from the grasp of securities regimes.

roles provided for in the ecosystem: the consensus protocols, the miners and the 313 elected executive positions for governance. Moreover, in the specific case of NuCoin, the contribution is by each and every community member in the ecosystem.

- (e) NuCoin does not entitle any right to 'gas fees'; there are no gas fees. Whether or not NuCoin has any value (profit expectation) is entirely a function of all the parts of the ecosystem working together – and the measure of success is a measure of how both independent and interdependent business actors pursuing their individual interests, collaborate and attract new projects work together to contribute to the whole.
- (f) To the extent that the founders, or the entity they used as the vehicle to fund the creation and establishment of the NuGenesis blockchain to the point of release, can be considered "issuers" of the offer, they do not and cannot be expected to have any on-going role in the success of the project which any participant can reasonably rely.
- (g) Therefore from a policy perspective, it is not disclosure that could possibly be required about the issuers or founders or their vehicle that is important. It is not in their company or them that people are investing. It is to the blockchain, its protocols, governance system and the contribution of unknown people who may come to use and form the community that gives it growth, that a prospective participant must look.
- (h) NuCoin is the currency of the NuGenesis blockchain ecosystem. NuCoins do not give an interest, share or any rights in any issuer or founders' company. It is used to acquire services, to participate in projects, to make investments in venture capital projects, to stake in order to ensure the integrity of the blockchain consensus, and to be used for a range of Government services in SDEZ's jurisdictions of participating countries.
- (i) NuCoin is a Government recognised form of payment, as a currency in the SDEZ's.
- (j) As the prospective community member must look to the ecosystem outlined in this white paper to assess how they may benefit from participating and to what extent they may wish the purchase and utilise NuCoin beyond that which they receive for free on simply becoming a member, the financials and history of the founders are irrelevant.

### The essential distinction

- D3.6 The best analysis of the test for a security applied to a blockchain protocol is that Offered by Director Hinman the SEC's Director of the Division of Corporate Finance in September 2018 about the legal nature of Ethereum tokens. In his speech, Director Hinman stated that<sup>25</sup>:

*"If a network on which the token or coin is to function is sufficiently decentralized — where purchasers would no longer reasonably expect a person or group to carry out essential managerial or entrepreneurial efforts — the assets may not represent an investment contract. Moreover, when the efforts of the third party are no longer a key factor for determining the enterprise's success, material information asymmetries recede. As a*

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<sup>25</sup> William Hinman, 'Digital Asset Transactions: When Howey Met Gary (Plastic)' (SEC transcribed speech, 14 June 2018) <https://www.sec.gov/news/speech/speech-hinman-061418>.

*network becomes truly decentralized, the ability to identify an issuer or promoter to make the requisite disclosures becomes difficult, and less meaningful.”<sup>185</sup>*

- D3.7 This “sufficiency of decentralisation test”, as it is sometimes referred to, highlights at the core, the difficulty of applying traditional jurisprudence to Distributed Ledger Technologies. The purpose of securities legislation to cure the asymmetry of information that a promoter has over the prospective investor either in the promoter company or an investment pool that the promoter is managing. By contrast, blockchain technology is about creating a trust-less system based on mathematical protocols that are immutable and cannot be corrupted. The Promoter cannot change these. Hence why Satoshi Nakamoto is rightly a pseudonym. He does not control Bitcoin. His identity, financial record is completely irrelevant.
- D3.8 Why would an investor need information disclosures about a party, such as the First Peoples Advancement Charitable Trust, that no longer has any influence on the investment which is acquired? When an investor no longer relies on the efforts of the issuer, it makes sense to say that the Coin or Token is not part of an investment scheme managed by an issuer-promoter.
- D3.9 The “sufficiently of decentralisation test” should not become an alternative test, without realising that it is a gradual scale. Decentralization is not binary, but instead a multidimensional concept that is a function of many factors, each of which has its own gradual scale of decentralization. NuGenesis is expressly designed to be user-friendly and cost efficient for multiple existing and new blockchain projects to use it, build apps and become para-networks with it.
- D3.10 In relation to protocol tokens such as NuCoin, the value of a protocol is derived from the usage thereof, from the applications built thereon, and para networks running off it. We look at the valuation issues at para [B 11] which suggests that the applicable valuation model that fits is valuing NuCoin as:
- (a) a currency of an emerging country’s economy; or,
  - (b) a user network following Metcalf’s law,
- both reliant upon the shift of value created by participants

#### **D4. A Deep Dive into US law and the Howey Test**

- D4.1 The most prominent parts of U.S. securities legislation are the *Exchange Act* of 1934 and the *Securities Act* of 1933. The former established the Securities and Exchange Commission (SEC) and focuses mainly on secondary transactions and the regulation of intermediaries, whereas the latter is comprised of legislation being directed towards issuers.
- D4.2 The applicability of the quite onerous provisions found in these Acts for the issuers is dependent on whether the financial instrument is considered to fall under the definition of ‘security’ or not. If yes, issuers have to comply with a number of regulatory requirements, such as the approval and registration of a prospectus with the SEC, annual reporting requirements and other disclosure requirements regarding insider trading and other financial misconduct.



- D4.3 The US Congress has always encourage a broad reading of the definition of securities in the US *Securities Act* of 1933 and *Securities Exchange Act* of 1934, and long lists of categories are found in the Acts, including stocks, notes, bonds, futures, swaps, participation in profit-sharing agreements, derivatives.<sup>26</sup> If a Coin or token closely resembles any of the defined financial instruments, there is no doubt that an ICO will be a sale of securities. Therefore, many security tokens, or hybrid tokens that provide token holders with economic rights such as dividend rights or a right to the ownership of equity, will be caught by these provisions. While the definition in these acts include well-defined instruments, it also includes ‘securities’ of a more variable character, such as the broad catch-all category of ‘investment contracts’.
- D4.4 The definition of an ‘investment contract’ has been defined in the classic *SEC v. Howey Co* case<sup>27</sup>. In its judgment, the U.S Supreme Court decided to put forward a four-pronged test. The ‘*Howey test*’ focuses on the economic reality of any ‘contract, transaction or scheme’ to determine whether an investment contract is deemed to fall under the definition of securities. The judgment held that at the core of an investment contract “is the presence of an investment in a common venture premised on a reasonable expectation of profits to be derived from the entrepreneurial or managerial efforts of others”.<sup>28</sup>
- D4.5 As such, a court-applied test emerged that investigates the existence of the four elements of this judgment:
- i. *A person invests his/her money*
  - ii. *in a common enterprise and*
  - iii. *is led to expect profits*
  - iv. *resulting solely from the efforts of the promoter or a third party.*

#### Is there a commonality of enterprise?

- D4.6 US Case-law has illustrated two distinct approaches towards the establishment of vertical commonality by courts. *Broad* vertical commonality requires that the investor’s fortunes are tied to the efficacy of the manager’s efforts.<sup>29</sup> *Narrow* vertical commonality requires the same but adds the additional requirement that the investor’s profits are tied to the issuer’s profits; meaning that they should rise and fall together.<sup>30</sup>
- D4.7 In the case of NuCoin, the ‘narrow commonality test’ of the common enterprise would not apply as the issuer does not own and will never own any NuCoin. The Issuer plays no part in the future of project at all.

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<sup>26</sup> US *Securities Act* of 1933 § 2(a)(1) and the US *Securities Exchange Act* of 1934 § 3(a)(10)

<sup>27</sup> *Securities and Exchange Commission v. W. J. Howey Co.* [1946] 328 U.S. 293

<sup>28</sup> *Ibid* 298-299

<sup>29</sup> see e.g. *SEC v. Unique Fin. Concepts, Inc.* [1999] 196 F.3d at 1199–1200; *Eberhardt v. Waters* [1990] 901 F.2d 1578, *SEC v. Continental Commodities Corp.* [1974] 497 F.2d 516 (5th Cir.), *SEC v. Pinckney* [1996] 923 F. Supp. 76, 82 (E.D.N.C.),

<sup>30</sup> see e.g. *SEC v. Glenn W. Turner Enterprises, Inc.*, [1973] 474 F.2d 476, 482 n.7 (9th Cir); *SEC v. SG Ltd.* [2001] 265 F.3d 42, 49 (1st Cir.)

D4.8 Those NuCoins that will become available as liquidity to the exchange are the result of decentralised efforts of a number of parties including miners. As noted by by Coincenter's<sup>31</sup> researchers as follows:

*"If there are many unaffiliated miners, transaction validations, and businesses on the network then there is, effectively, no singular promoter with which investors could have vertical commonality. All of these participants will have individuated profits and losses based on their unique business models and decoupled from the price of the token held by typical users. If, on the other hand, there is little decentralization in the development and maintenance of an altcoin network (i.e. all developers are employed by the same for-profit company and/or there are few and highly centralized transaction validators on the network), then there is a stronger case for vertical commonality"*<sup>32</sup>

D4.9 There is therefore great difficulty in applying the 'commonality' test where, in a complex ecosystem created by NuGenesis, there are multiple actors pursuing their own interests in the business they embark when participating in the ecosystem. The only function of an intersecting 'commonality' is limited to preserving the integrity of the blockchain. It is not for the pooling of money for making an investment.

Is there the requisite expectation of profits from that common enterprise?

D4.10 An increase in value of the initial investment counts as satisfying the expectation of profits test<sup>33</sup>. However, many entities own large amounts of commodities for both use and the enjoyment of value maximisation. Exxon holds large quantities of Oil and De Beers owns large quantities of diamonds. The complexity arises where investment and speculation is but one of multiple purposes, such as in NuGenesis, where the NuCoin is essential for its multiple utility in the payment of services and in the participation in opportunities, such as collaborations with other projects (internal and external), seeking of funding or specific launching of projects.

D4.11 In *SEC v. Life Partners* for example, it was held that "for there to be an expectation of profits, the purchaser's motivation must be securing 'a financial return,' not consumption or use."<sup>34</sup> Thus the Howey test is difficult to apply to the multi-motivational incentives that exist in the complex economy created by NuGenesis in which NuCoin is the base currency.

D4.12 The first time such a dual-motivation case resulted in a judgment was in *United Housing Foundation, Inc. v. Forman*.<sup>35</sup> In this case, United Housing required tenants of their affordable apartments to buy shares of what United Housing called 'stock' which acted as representations of the requested rooms. After a dispute about a raise in the monthly rental charges, it was argued that the structure used by United Housing constituted a sale of securities. After all, it could be argued that there was an investment element to the motivation of potential tenants. An investigation of facts and circumstances however

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<sup>31</sup> Coin Center is the leading non-profit research and advocacy centre focused on the public policy issues facing cryptocurrency and decentralized computing technologies like Bitcoin and Ethereum. See <https://coincenter.org/>

<sup>32</sup> Peter van Valkeburgh, 'Framework for Securities Regulation of Cryptocurrencies' (Coin Center Report, January) <https://coincenter.org/wp-content/uploads/2016/01/SECFramework2.5.pdf>

<sup>33</sup> *SEC v. Edwards* [2004] 540 U.S. 389, 390

<sup>34</sup> *SEC v. Life Partners, Inc* [1996] 87 F.3d 536, 547 (D.C. Cir.)

<sup>35</sup> *United Housing Foundation, Inc. v. Forman* [1975] 421 U.S. 837

showed that the purchase of the apartments in question, arguably based on the dual motivation of utility and investment, was in fact not an investment contract.

D4.13 The court in *Forman* held that “when a purchaser is motivated by a desire to use or consume the item purchase (...) the securities laws do not apply”.<sup>36</sup> In relation to utility token sales, this precedent is often used to argue that utility tokens are not securities.<sup>37</sup> There were however restrictions in resale in this case which limit its utility as a legal precedent.<sup>38</sup>

D4.14 In *Rice v. Branigar*, the eleventh circuit concluded that a sale of housing lots did not pass the *Howey* test because purchasers bought them primarily to use them, rather than to derive profits. The court’s reasoning was based on the prior *Forman* case, and the believe of the court that “people buy houses and lots in a beach-club development primarily to use them, not to derive profits from the entrepreneurial efforts of the developers.”<sup>39</sup>

#### Is there reliance on the efforts of others?

D4.15 It has been held that a ‘possible enhancement in value at resale is not within the Securities Act, where the essential element of reliance on the managerial, operational or developmental efforts of others is not present.’<sup>40</sup> This approach satisfies the policy concern regarding the asymmetry of information and expertise, and the beholden an investor is to the promoter carrying out what is promised for the value of their investment to appreciate.

D4.16 By well settled US case law, the word ‘solely’ is not to be taken literally.<sup>41</sup> In fact, the term is also interpreted to include ‘significant or essential managerial or other efforts necessary to the success of the investment’.<sup>42</sup> In both *Glenn Turner* and in *Aldrich*, the test was whether the efforts made by those other than the investor are the undeniably significant ones; the essential managerial efforts which affect the failure or success of the enterprise.<sup>43</sup> Although courts employ a variety of formulations, the core of the fourth prong of *Howey* is the degree of reliance of the investor on the efforts of others.

D4.17 In *SEC v. Life Partners, Inc.* the D.C. Circuit Court of Appeal held that the need for securities regulation is greatly diminished where “the value of the promoter’s efforts has already been impounded into the promoter’s fees or into the purchase price of the investment, and if neither the promoter nor anyone else is expected to make further efforts that will affect the

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<sup>36</sup> Ibid 852

<sup>37</sup>Marco Santori, Juan Batiz-Benet and Jesse Clayburgh, ‘The SAFT Project: Toward a Compliant Token Sale Framework’ p. 9 (SAFT Whitepaper, 2 October 2017) <https://saftproject.com/static/SAFT-Project-Whitepaper.pdf> p, 9 8

<sup>38</sup> In *Forman*, apartments and their representative ‘stock’ were subject to a number of strict resale limitations and did not provide residents with any dividends. In fact, residents were required to offer the apartments and stock back to the seller for a fixed price. The court defined profit here as “capital appreciation” or a “participation in earnings resulting from the use of investors’ funds.” Due to the resale limitations imposed on tenants, both were not deemed to exist in this case.

<sup>39</sup> *Rice v. Branigar Organization Inc* [1991] 922 F. 2d 788 (11th Cir.)

<sup>40</sup> Held in *McConathy v Dal Mac Commercial Real Estate, Inc.* [1977] 545 S.W.2d 871 based upon earlier case law, such as *Polk v. Chandler* [1936] 276 Mich. 527, 268 N.W. 732; *Wardowski v. Guardian Trust Co.*, [1933] 262 Mich. 422, N.W. 908 ; *Busch v. Noerenberg* [1938] 278 N.W. 34

<sup>41</sup> *SEC v. The International Mining Exchange, Inc.* [1981] 515 F.Supp 1062, 1067 (D. Colo.); see also *Crowley v. Montgomery Ward & Co.* [1978] 570 F.2d 877 (10th Cir.); *Hector v. Wiens* [1976] 533 F.2d 429, 433 (9th Cir.);

<sup>42</sup> *SEC v. Koscot Interplanetary, Inc.* [1974] 497 F.2d 473 (5th Cir.)

<sup>43</sup> *Glenn Turner SEC v. Glenn W. Turner Enterprises Inc.* [1973], 474 F.2d 476 (9th Cir.) p. 478 and *Aldrich v. McCulloch Properties, Inc.*, [1980] 627 F.2d 1036 at p. 1038

outcome of the investment”.<sup>44</sup> If a blockchain’s utility is, after an ICO, no longer developed in any way, then the value seems to not be dependent on the managerial efforts of the issuer.

- D4.18 The US case law on circumstances where limited partnership interests can amount to securities is based on whether limited partners exercise effective control over the enterprise.<sup>45</sup> General partnership interests on the other hand are clearly not investment contracts as the general partner takes an active part in the managerial efforts of the partnership.<sup>46</sup> This is difficult to sensibly apply to the NuGenesis blockchain where every NuCoin holder is miner-staker and participates in the network; they cannot be passive.
- D4.19 In *Williamson v. Tucker* it was decided that a general partnership interest is presumed not to be an investment contract because of the control exercised by the general partner, therefore constituting a lack of reliance on the efforts of others.<sup>47</sup> This is particularly instructive case law that would be relevant to Australia’s and New Zealand’s managed investment scheme characterisation that looks to effective day to day control by the participants.
- D4.20 Within the NuGenesis ecosystem, it seems futile to inquiry into relative ‘voting power’ where possessed by amount of system validators associated with particular individuals when the entire system is underscored by AI. Any concentration of voting power that impinges on the integrity of the NuGenesis blockchain which a participant is considering joining, is neutralised by the AI.
- D4.21 The individual participant does not have to ‘invest’ or acquire NuCoin at all. They can receive and generate free NuCoin (commonly referred to as Airdrops) by mere activation of their social media NuGenesis account and the small effort mining automatically therein on their smartphone or laptop. They can stop there. They do not have to participate any further. They control whether to participate in any of the multiple opportunities available to them in the ecosystem.
- D4.22 If participants wish to purchase NuCoin, they do so on the exchange. If this is not because they want to utilise NuCoin to undertake a particular business activity in the ecosystem that they choose to undertake and the extent to which they choose to undertake it, it is because they believe the ecosystem will have value that increases over time. Even then any expectation of value increase of NuCoin can only be because of the functionality it enables for infinite unknown others to collaborate, develop applications and create opportunities.
- D4.23 The important distinction is that any “issuers” are not in the same/common enterprise with a participant who merely purchases NuCoin. The NuGenesis blockchain ecosystem is an infrastructure for which to undertake enterprises. Whatever enterprise the individual may choose to participate in amongst the opportunities and collaborations that present are unknown.
- D4.24 What will increase the value of NuCoin, is not the system in itself, but use which both the community of participants and the individual participant make of the system. The Social

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<sup>44</sup> *SEC v. Life Partners, Inc* [1996] 87 F.3d 536 (D.C. Cir.) at p. 547

<sup>45</sup> Stephen Jung Choi and Adam C. Pritchard, *Securities Regulation Cases and Analysis* (Fourth edition, University Casebook Series 2015) 30

<sup>46</sup> *Williamson v. Tucker* [1981] 645 F.2d 404, 422 (5<sup>th</sup> Cir.) *United States v. Herr* [1964] 338 F.2d 607 (7<sup>th</sup> Cir.)

<sup>47</sup> *Williamson v. Tucker* [1981] 645 F.2d 404, 422 (5<sup>th</sup> Cir.)

Media dashboard is live with trading data about the entire crypto space, videos, forums and chats about opportunities. It is live with collaborative opportunities, services that can be acquired including educational opportunities.

- D4.25 The control over the participant's NuCoin is primarily with the participant. It is an active environment, not a passive one. If the participant chooses to take a passive role, it is because he makes the active choice to do that.
- D4.26 A participant knows that the issuer will not take any future role in the development of the blockchain. The governance, including management process has been laid out. Even the role of marketing, traditionally associated with the 'promoter' or 'issuer', has been replaced with a complex affiliate marketing system rewarding referrals and comprehensive marketing efforts provided for in the treasuries created by the minting system. There is an incentive system created for maximising the network effort by creating a greater number of users. An investor must look to the infinite unknown players and its own efforts for any appreciation of value of their NuCoin. See further the discussion on valuation at para [C 11]

How does the voting/governance system impact on relative control?

- D4.27 The governance system is referred to in para [C 5] and reward system in para [B 13].
- D4.28 An example of an issue that prioritised for community vote is whether to ban 'pump and dump' schemes on the exchange. The case is put forward based on the studies that demonstrate that evidence that 'pump and dump' schemes profit only the promoters and to a lesser extent those that manage to get out within the first 40 secs, but adversely impact on the project being pumped. Identified reading material is provided. A participant has as much voting power as the founder to accept or reject the proposal.
- D4.29 Another example is whether the permissioned blockchain will go fully open-sourced. All NuCoin holders have the same voting rights as each other.
- D4.30 Executive and Managers can be replaced. There are 200 elected positions in the 313 executives. The new participant has as much voting power as any other participant, including the founders or issuers, as to who to vote for. There is no particular unique expertise or ability that is beyond the participants' reach that could be identified to deny that the actual control the participant has is less than its theoretical control by virtue of some lack of expertise.

Reliance on others in respect of particular enterprises

- D4.31 It is difficult to think in terms of a participant having a common enterprise with issuer in terms of the entirety of the NuGenesis platform- such an analysis is too vague, when the point of the platform is to facilitate the blossoming of infinite enterprises. We believe it makes better sense to talk in terms of what kind of "enterprise" within the NuGenesis ecosystem can be identified as being one in common between the participant and issuer. At its most basic, a participant NuCoin gives access to projects that become available on the platform. The participant uses their NuCoin to go into particular projects and therefore it is rules of *that* particular collaboration become relevant. It is likely that their effective control within the common enterprise is greater than that arising from the general functioning of the blockchain as a whole. Participants may wish to collaborate in a VC project and set conditions upon which when funds will be made available to the managers of that

collaborative project. This can include, for example, requiring signature application on a multi-signature wallet.

#### No reliance upon the funds of the issuer

D4.31 Another useful indicator may be the extent to which the issuer's foundation and funds are necessary for the success of the project. The NuGenesis ecosystem is designed for example:

- (a) for other persons to develop customised NuGenesis blockchains to run their own Para-networks and para-chains;
- (b) for other person to build dApps and use cases using the NuGenesis blockchain; and,
- (c) for investment, collaborative, and technical solution opportunities to be created by others.

D4.32 The apparent offering by NuGenesis is the capability to create opportunities by others. An illustration is the booming market for NFTs and Defi. The NuGenesis blockchain offers not application, but the capability through their version of these, being the "Digital Notarised Contracts ('DNC's') and "Serialised Notarised Digital Assets ('SNDAs')", for others to design and build applications and use cases in respect of.

#### **D5. The Life-cycle and evolution of legal character**

D5.1 A quite challenging conception for the way we traditionally think of securities, but one that also been recognized by Brian Quintenz, commissioner of the U.S. Commodities and Futures Trading Commission (CFTC):

*"[ICOs or tokens] may start their life as a security from a capital-raising perspective but then at some point -- maybe possibly quickly or even immediately -- turn into a commodity."*<sup>48</sup>

D5.2 We quite agree that the legal character of the digital asset crypto currency changes during its economic life-cycle evolution. For this reason, NuCoin was not made available for purchase by participants until *after* there was fully functional blockchain operational, NuCoin was being minted, the governance and consensus framework was working and the broader elements for an ecosystem were in place.

#### **D6 The impact of marketing on the legal character**

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<sup>48</sup> Jerry Brito, 'CFTC commissioner: tokens that start as securities may "transform" into commodities.' (20 October 2017) <https://coincenter.org/link/cftc-commissioner-tokens-that-start-as-securities-may-transform-into-commodities>

- D6.1 Even in scenarios where a cryptocurrency or utility token does not borrow any characteristics of a security token, it might still be deemed a security in some jurisdictions, due to, for example the marketing and/or monetary and fiscal policy of the issuer and the method of issuance.
- D6.2 In *Teague v. Bakker*, a case where individuals could purchase ‘Lifetime Partnerships’ from an entity known as PTL. By doing so, they were entitled to a short stay annually in a hotel at a vacation retreat constructed by PTL. However, there was also a profit element resulting from the efforts of a third party. Interestingly, it was held by the court that, because the “promotional materials allow[ed] the reader to infer that the value of the [lifetime partnerships] was enhanced by virtue of the commercial activities of the PTL facilities in catering to patrons paying full price,” there was an expectation of profits. In fact, it was deemed that the profit that was expected from this financing product was deemed to outweigh the utility aspects of the lifetime partnerships in the eyes of the investor, and for this reason, it was a security.<sup>49</sup>
- D6.3 Aside from the motivation of the investor, the promotional materials from the issuer are of importance for determination of whether there is an expectation of profits in the eyes of the investor under the third prong of the *Howey* test. In *Warfield v. Alanzis*, investors were given the opportunity to participate in charitable giving while being promised financial gain. There was again a dual motivation, but here the court concluded that “consideration of the Foundation’s promotional literature, as well as the annuity contracts themselves, demonstrates that the Foundation presented the gift annuity as an opportunity for financial gain.” In appeal, the 9th Circuit court of Appeals affirmed that courts conduct an inquiry on basis of what the purchasers were ‘led to expect.’<sup>50</sup>
- D6.4 Indeed, courts have frequently examined the promotional materials associated with an instrument or transaction in determining whether an investment contract is present.<sup>51</sup> In *SEC v. C.M. Joiner Leasing Corp*, it was even held that while “the test rather is what character the instrument is given in commerce by the terms of the offer, the plan of distribution, and the economic inducements held out to the prospect, it “is not inappropriate that promoters’ offerings be judged as being what they were represented to be”.<sup>52</sup> This suggests that, even if the utility-element of a token clearly outweighs the token’s investment element, an expectation of profits can still be deemed to exist based on the promotional strategy and representation of the token by the issuer. Many, if not all, self-proclaimed utility-tokens target their online promotions directly at websites with audiences that mainly consist of retail investors. Often, an expectation of financial gain is also created. This is not to say that a token is much safer from the reach of securities legislation if the whitepaper says that the token is ‘definitely not

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<sup>49</sup> *Teague v. Bakker* [2002] 213 F. Supp. 2d 571 (W.D.N.C.), upheld in *Teague II*, Similarly, concerning investments in aircraft interests, the deciding factor is whether or not the expectation of profits involved outweigh the expectation that the aircraft interests were being purchased for use solely as a means of transportation: *Kenneth P. Krohn, ‘Fractional Ownership and Timeshare Programs: Are They Subject to the Securities Act of 1933 and Securities Exchange Act of 1934?’* [1999] 54 (3) TBL 1209

<sup>50</sup> *Warfield v. Alanzis*, [2009] 569 F.3d 1018 (9th Cir.)

<sup>51</sup> *E.g. Teague v. Bakker* [2002] 213 F. Supp. 2d 571 (W.D.N.C.) at 990; *SEC v. Edwards* [2004] 540 U.S. 389 at 392; *Rice v. Branigar Organization Inc* [1991] 922 F. 2d 788 (11th Cir.); and *Aldrich v. McCulloch Properties, Inc.*, [1980] 627 F.2d 1036, 1039-40

<sup>52</sup> *SEC v. Joiner Leasing Corporation* [1943] 320 U.S. 344, 352-353

a security', as in such a case, the economic reality of the instrument and the subjective motivation of investors prevails.<sup>53</sup>

- D6.5 In *Aldrich v. McCulloch* it was moreover held that an expectation of profits exists when the issuer represents future development plans in a manner calculated to induce investments in the project, essentially making a contractual promise to carry through development plans to augment the value of the investment.<sup>54</sup> Of importance is whether the issuer makes a 'contractual promise' of continuous development (which logically results in an appreciated valuation).<sup>55</sup>

Is there anything in the marketing that would change the legal character of NuCoin?

- D6.6 Tokens that are sold to the public in so-called 'pre-sales', where investors can acquire tokens before the actual ICO for a discount, are more likely to be deemed a security than tokens that are sold in an ICO. These issues do not apply to NuCoin. The NuCoin price was established in a public auction in February 2021. Miners had a limited miners release in June 2021. The prices therefore are a function of the open global market where both the buyers and sellers are unknown. There is no promise to sell at discount to realise a profit.
- D6.7 The white paper comprehensively sets out the infrastructure for an ecosystem where it is apparent that the system is designed to:
- (a) maximise user adoption with:
    - (i) user-friendly cost effective and easy to use tools;
    - (ii) the ability to sell and acquire services and expertise;
    - (iii) legal recognition of the digital assets created and protected in the ecosphere;
  - (b) to encourage inter-user collaboration and participation in projects to be launched or attracted to the system;
  - (c) encourage governance with maximum participation;
  - (d) NuCoin minting is governed by a protocol with system validators and underscored by AI, not by the efforts of issuers/promoters;
  - (e) has a complex reward and incentive system to maximise the exponential network effect from attracting further users.
- D6.8 The valuation methodology contemplates that growth and value appreciation is dependent upon user adoption, the project, collaborations and applications that are built upon the NuGenesis ecosphere infrastructure. These include the attractiveness of the legal instruments recognised by the Special Digital Economic Zones ('SDEZ's') that are participating.
- D6.9 As a result, we contend that the NuGenesis digital economic infrastructure is sufficiently matured that the future value does not depend on the efforts of any issuer/promoter.

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<sup>53</sup> Any other conclusion would be incompatible with *Howey*, p. 298

<sup>54</sup> *Aldrich v. McCulloch Properties, Inc.*, [1980] 627 F.2d 1036Aldrich at 1039; see also *Plaskin v. Bruno* [1993] 838 F. Supp. 658, 667

<sup>55</sup> *McCown v. Heidler* [1975] 527 F.2d at 208-09



Further that this white paper makes clear that value appreciation of NuCoin, like currency in a developing Country, depends upon the success of its economic actors that use the economic infrastructure.

## **D7. The Currency Exemption**

- D7.1 The definition of security under section 2(a)(1) of the *Exchange Act*, explicitly provides “shall not include currency”. Whilst usually issued by Governments, it certainly does not have to be such as the case with Banks issuing Hong Kong currency. The issue then arises that because NuCoin is accepted and endorsed as a currency for payment, including for Government services in the Special Digital Economic Zones (‘SDEZ’s’) of participating Countries, the exemption from the definition is triggered. There seems no reason why NuCoin should not be exempt from the definition of security.

## **D8. The SEC v Ripple litigation**

- D8.1 As the above-captioned litigation is before the courts, the comments should be limited.<sup>56</sup> This litigation has had a major impact on the crypto market and in particular to those who acquired XRP on the open market, up to 7 years from when Ripple commenced the offering and sales of XRP.
- D8.2 The difficulty with the litigation as guide is that the impact of the litigation has not been properly understood by the market, including the U.S. exchanges that de-listed XRP in December 2020 when the SEC filed suit against Ripple and two of its officers. What is significant to point out is that:
- (a) the SEC did not seek any declaratory judgement that XRP is now a security;
  - (b) there was no reason therefore, why the U.S. exchanges de-listed XRP;
  - (c) the action was limited to the conduct of the defendants during the formative years where the transactions with respect to particular sales are viewed by the SEC to be the sale of securities;
  - (d) the concern relates to the billions of pre-minted XRP held by the Defendants who had a particularly significant impact on the market price as both dominant buyer and seller and extreme informational asymmetry they have with the investors;
  - (e) the proceeds of sales were necessary to fund the operations of the promoters; and,
  - (f) XRP is a pure payment Coin, not a system upon which other projects are built upon or connected to.
- D8.3 The approach of the SEC is instructive. The so-called ‘technologically neutral’ approach of Securities regulation does not apply generally to blockchain technology. Blockchain technology is designed to eliminate reliance upon trust between parties; the very anti-thesis of a fiduciary-type relationship contemplated in a managed scheme in is an investment

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<sup>56</sup> We have to assume for the purposes of this Paper that the facts alleged by the SEC are provable. This implicitly disfavours Ripple unfairly. We have no reason to do this. Indeed, Ripple is to be congratulated on its successful evolution of XRP into a solid and respected global payment system founded on superior blockchain technology. However, it is irresponsible in a paper purport to address these very issues, not to take notice of the concerns raised by the SEC and to ensure that we are in compliance.

contract. Little regard was paid by the SEC to the fact that Ripple did not rely upon an ICO to raise the funds to build its blockchain; or to the economic cycle involved in the necessary function of building, and role of, liquidity and depth of market as part of establishing the utility of its payment system.

- D8.4 What dominates the SEC's complaint is a more generalised concern arising from when a large volume of pre-minted cryptocurrency that has no functional utility (at that point), is sold by the promoter-issuers to persons had no use for it (at that point) beyond pure speculative investment and in respect to which there is informational asymmetry and dependence on the Defendants. More precisely where, absence of utility being established, there is a vulnerability to price manipulation on behalf of the issuer promoters. The concern was the inherent conflict considered in using the proceeds of those sales to fund the operations of Ripple.
- D8.5 NuCoin has not been released to the public in a pre-minted form without utility being established in order to fund the development of the blockchain. There is no dependence that can be expected of any issuer-promoter for any non-functional (pre-utility) coins to have a value who have, as consequence, informational asymmetry with any speculator. The blockchain and the ecosystem has been built and is functional. The reliance any participant has is in the protocols, the staker-miners, the governance bodies for the integrity of the system and most importantly for economic success, on the use to which new participants make of it.

## **D9. US. Extraterritoriality**

- D9.1 Prior to the *Morrison v. National Australia Bank Ltd* decision handed down by the Supreme Court on June 24, 2010, the Second Circuit Court paved the way for the extraterritoriality of the securities regulation's anti-fraud provisions by using mainly two tests: a) the effects test, which examined whether the wrongful conduct had a substantial and foreseeable negative effect on the US or its citizens;<sup>57</sup> and b) the conduct test, which by contrast, requires the wrongful conduct to take place within the US.<sup>58</sup>
- D9.2 Courts disagreed regarding the degree to which the behaviour in question had to have an effect on the US or its citizens.<sup>59</sup> This question of degree has only become more difficult to answer with the development of the internet and other new technologies.<sup>60</sup> US legal scholars and practitioners felt a growing unease when considering the possibility that these tests might breach another country's sovereignty and lead to a deterioration in foreign relations.<sup>61</sup>

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<sup>57</sup> Kun Young Chang, *Multinational Enforcement of U.S. Securities Laws: The Need for the Clear and Restrained Scope of Extraterritorial Subject-Matter Jurisdiction*, 9 FORDHAM J. CORP. & FIN. L. 89, 95 (2003); Junsun Park, *Global Expansion of National Securities Laws: Extraterritoriality and Jurisdictional Conflicts*, 12 U.N.H. L. Rev. 69, 70 (2014); Berger, 322 F.3d at 192-93; Morrison, 130 S. Ct. at 2879.

<sup>58</sup> Park, supra n57, at 71; Berger, 322 F.3d at 192-93; Morrison, 130 S. Ct. at 2879.

<sup>59</sup> Park, supra n57 at 73.

<sup>60</sup> George Nnona, *International Insider Trading: Reassessing the Propriety and Feasibility of the U.S. Regulatory Approach*, 27 N.C. J. INT'L L. & COM. REG. 185, 198 (2001); Park, supra n57, at 73.

<sup>61</sup> Park, supra n57, at 73.

- D9.3 In 2010, the *Morrison v. National Australia Bank Ltd*<sup>62</sup> case cancelled the conduct and the effect tests. According to the court the main test that should be used in order to determine the reach of Section 10(b) of the Securities Exchange Act, which deals with fraudulent behaviour, is the transactional test.<sup>63</sup> The court held that in order to qualify for the test, the fraudulent behaviour must accompany the purchase or the sale of a security, whether or not it is a registered security on a national securities exchange.
- D9.4 In view of the reliance by prospective participants on the blockchain operating globally, the express declarations that value depends upon the adoption by users and economic activity created by the ecosphere, that all main actors are outside the US, we believe there cannot be transaction which can be linked with any cause or harm to a US citizen to enliven extraterritorial reach.

## D10. European Securities Law

### Is NuCoin a transferable security?

- D10.1 The general environment of services related to capital markets is one of the vast areas covered by the new EU Directive on markets in financial instruments (henceforth: MiFID II).<sup>64</sup> The basic thrust of MiFID II is “to establish a comprehensive regulatory regime governing the execution of transactions in financial instruments irrespective of the trading methods used.”<sup>65</sup> In general, EU law employs three rather formal criteria and one more substantive criterion define a security. The formal ones are transferability; standardization; and negotiability on capital markets (with negotiability, however, being a subcase of transferability<sup>66</sup>).
- D10.2 An alternative argument could be made that many utility tokens might be deemed to fall under the category of ‘other forms of securitized debt’ under Art. 4(1)(44), indent (b). While this might sound counterintuitive at first glance, as tokens are virtually never structured to resemble bonds, it is true that a substantial amount of utility tokens confer a right to claim services from the issuer in return for the token. In this sense, the token can be seen as a sort of liability towards the token holder, and it could arguably be deemed a form of securitized debt. No such relationship with the issuer exists with NuCoin.
- D10.3 ‘Capital markets’ require the ongoing relationship between the issuer and the investor based on the traded instrument. If the Coin/token does not provide any such equity-membership rights, comparable rights, or monetary streams, it is not a ‘transferable security’. If the possible return on investment can only stem from an increased value of the tokens in the secondary market, the respective token is not an investment token and *a priori* cannot be considered a “transferable security.”

### **The Payment Instrument Exemption**

- D10.4 According to Article 4(1)(44) MiFID2, “payment instruments” are expressly excluded and therefore **not** transferable securities. The reason for this exclusion is that instruments of

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<sup>62</sup> *Morrison*, 130 S. Ct. 2869.

<sup>63</sup> *Id.* at 2884.

<sup>64</sup> Directive 2014/65/EU of 15 May 2014 on markets in financial instruments.

<sup>65</sup> Recital 13 MiFID II.

<sup>66</sup> Assmann/Schneider, *Wertpapierhandelsgesetz Kommentar* (6th ed. 2012), § 2 para. 10.

payment fall under a related, but separate regime under EU financial law: banking and payment services regulation.<sup>67</sup> While securities regulation is mainly concerned with the integrity of markets and the protection of investors, the oversight of payment instruments is aimed at ensuring the soundness and efficiency of payments made with such instruments.<sup>68</sup>

- D10.5 Similar to “capital markets,” the term “payment instrument” is not defined by MiFiD<sup>69</sup> and needs to be interpreted according to the general understanding in the markets. The definition encompasses classical means of payment such as cash and checks.<sup>70</sup> It also applies to non-cash payment mediums such as debit or credit cards, credit transfers, direct debits, and e-money.<sup>71</sup> Currency tokens fall within this category because they are designed to function as a means of payment, which means that they are payment instruments and thus not transferable securities. They exhibit strong similarities to e-money,<sup>72</sup> which is classified as a payment instrument.<sup>73</sup> This view is in line with the famous *Hedqvist* decision in which the CJEU held that Bitcoins are contractual payment instruments.<sup>74</sup> U.S. Magistrate Judge Mazzant expressed a similar view in SEC litigation against a Ponzi scheme based on a Bitcoin operation.<sup>75</sup>
- D10.6 The consensus of legal opinion is that cryptocurrencies fall outside of the scope of EU securities legislation, due to the exclusion of instruments of payment from the definition of transferable securities. The 2015 landmark *Hedqvist* case, the Court of Justice of the European Union (CJEU) gave a ruling in relation to the classification of Bitcoin.<sup>76</sup> The CJEU explicitly stated that bitcoin is “neither a security conferring a property right nor a security of a comparable nature”.<sup>77</sup>
- D10.7 *Hedqvist* was a VAT case however, not a securities law case.<sup>78</sup> A definition of ‘payment instrument’ is found in the EU’s second Payment Services Directive (PSD2), which defines

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<sup>67</sup> For an overview of Directives and Regulations of EU banking and financial services law, see [https://ec.europa.eu/info/law/law-topic/eu-banking-and-financial-services-law\\_en](https://ec.europa.eu/info/law/law-topic/eu-banking-and-financial-services-law_en)

<sup>68</sup> European Central Bank, ‘Harmonised Oversight Approach and Oversight Standards for Payment Instruments [February 2009]’ <https://www.ecb.europa.eu/pub/pdf/other/harmonisedoversightpaymentinstruments2009en.pdf?5d726b97e5ece0bb35366632d6e828b6> accessed 15 January 2019

<sup>69</sup> The definition in Article 4(14) of Directive (EU) 2015/2366 (Second Payment Services Directive) referring to “personalised devices” cannot be applied because it is used in a non-capital markets context.

<sup>70</sup> Gregor Roth in KÖLNER KOMMENTAR ZUM WpHG § 2 ¶ 37 (Heribert Hirte & Thomas Möllers eds., 2d ed. 2014); at § 2 ¶ 41; Assmann, *supra* note 66, at § 2 ¶ 12.

<sup>71</sup> See *Payment Instruments*, EUROPEAN CENTRAL BANK, <http://perma.cc/YS4B-BKFJ>.

<sup>72</sup> *Id.*

<sup>73</sup> Philipp Hacker & Chris Thomale, *Crypto-Securities Regulation: ICOs, Token Sales and Cryptocurrencies under EU Financial Law* 33–37 (last revised May 2, 2018), <http://perma.cc/5HAL-Z3KG>, at 31.

<sup>74</sup> Case C-264/14, *Skatteverket v. David Hedqvist*, 2015 E.C.R. 718. In this case, a Swedish national wanted to offer a service enabling customers to change money into Bitcoin and vice versa. Traditional currency exchanges are exempt from value added tax under Article 135(1) of Directive 2006/112/EC (VAT Directive). Thus, the issue was whether Bitcoin could be considered equivalent to a legal tender within the meaning of the Directive. Although the CJEU affirmed the application of the exemption, it is unclear if this can also apply to securities regulation because the structure and purpose differs from tax law.

<sup>75</sup> *SEC v. Shavers*, No. 4:13-CV-416, 2013 WL 4028182, at \*2 (E.D. Tex. Aug. 6, 2013) (“It is clear that Bitcoin can be used as money”).

<sup>76</sup> Case C-264/14 *Skatteverket v David Hedqvist* [2015]

<sup>77</sup> *Ibid.* para. 55

<sup>78</sup> Art. 135(1)(f) VAT Directive, which the CJEU interpreted, differs from the one in MiFID: Council Directive 2006/112/EC of 28 November 2006 on the common system of value added tax, OJ 2006 L 347/1.

‘payment instrument’ as ‘a personalised device(s) and/or set of procedures agreed between the payment service user and the payment service provider and used in order to initiate a payment order.’<sup>79</sup> However, in the field of (pure) cryptocurrencies (i.e. cryptocurrencies with no central issuer, issued solely through staking or mining, without a token sale), this definition is not very relevant, as there is no payment service provider<sup>80</sup>. At the same time, stable coin issuers classifying as a payment service provider could potentially argue that their coins are excluded from MiFID’s definition of transferable securities due to classification under PSD2’s definition of payment instruments.

- D10.7 A more common sense-based approach consistent with the policy structure of the Directives would suggest that there is no need for information disclosure to gap information asymmetries when it concerns pure cryptocurrencies, as cryptocurrencies in general share far more similarities to cash than to a security.

## D11 The United Kingdom

- D11.1 An activity is a “regulated” activity if, amongst other things, it relates to a “specified investment”. Furthermore, communicating in the course of a business an invitation or inducement to engage in investment activity is also generally prohibited, unless the relevant person is authorised. Again, an activity is an investment activity for this purpose if, amongst other things, it relates to “specified investments”.<sup>81</sup>

- D11.2 The Financial Conduct Authority (FCA) statement referred to “utility tokens” (which are neither transferable securities nor regulated products and only allow access to a network or product with no other legal rights attached) as generally falling outside the FCA’s regulatory perimeter.<sup>82</sup>

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It lacks, for example, the reference to equivalents of shares in other entities, and to other forms of securitised debt. Therefore, some uncertainty persists as to whether the court would reach a similar conclusion under EU securities regulation. It seems likely, however, that it would, in the end, qualify pure currency tokens as exempt from prospectus regulation.

<sup>79</sup> Council Directive 2015/2366/EU on payment services in the internal market OJ L 3337 Art. 4(14)

<sup>80</sup> Ibid Art. 4(11)

<sup>81</sup> The concepts of “specified investments” and “specified activities” are defined in the *Financial Services and Markets Act 2000 (Regulated Activities) Order 2001* (SI 2001/544).

<sup>82</sup> Financial Markets Law Committee Paper of 2019 published by the Financial Markets Law Committee (FMLC) made the standard distinction between the classes of Coins/Tokens as follows:

### Utility Tokens

- 2.8. Utility tokens are typically offered whilst the issuer is developing a platform. The issuer uses the funds received from the sale of the tokens towards the development of the platform. Utility tokens do not generally entitle the holder to any rights in the business. Utility tokens can be structured in a number of different ways, but generally grant the holder (early) access to the platform or the ability to redeem the token for goods or services (or as a discount for such goods or services). In this sense, utility tokens resemble rewards-based crowdfunding, whereby the holder of the utility token retains no ownership rights in the issue.
- 2.9. These cryptoassets are likely to fall outside the regulatory perimeter, although owing to their ability to be exchanged for goods or services, utility tokens could potentially be considered E-Money and therefore be subject to the E-Money Regulations. Given the limited spending potential of utility tokens, which are only intended to be used within a platform created by the issuer, however, this may be less likely. In 2017, Binance issued a utility token by way of an ICO which enabled the prospective holder to swap a range of cryptocurrencies, including Bitcoin, in return for BNB coins.

## D12 Germany

D12.1 According to the German Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungs-aufsicht, BaFin), tokens in an ICO qualify typically as financial instruments in the form of units of accounts (Rechnungseinheiten) within the meaning of Sec. 1 para. 11 no. 7 of the German Banking Act (Kreditwesengesetz, KWG). However, the BaFin has determined that the German Stock Corporation Act (Aktiengesetz, AktG) would not apply to ICOs.

## D13 France

D13.1 The French Autorité des Marchés Financiers (AMF) published a discussion paper on ICOs.<sup>83</sup> The AMF remarked that tokens may be classified “as equity securities if they bestow the same economic and governance rights as those traditionally attached to shares or preference shares.”<sup>84</sup> However, the AMF concluded the tokens issued in France would not be classified as securities and thus would not fall under French regulations.<sup>85</sup>

## D14 Singapore

D14.1 Securities are defined by section 2(1) of *Securities and Futures Act* (SFA). Typical examples are shares, debentures, and units in a collective investment scheme.<sup>86</sup> The offer of digital tokens that offer securities or shares in a collective investment scheme must be published in a prospectus approved by the SFA and registered by the Monetary Authority of Singapore (‘MAS’). According to the MAS units in a collective investment scheme (CIS) can also include digital tokens if they constitute a right or a participation in a CIS or an option to acquire a right or participation in a CIS.

D14.2 The MAS included six case studies in its release, providing guidance for typical and non-typical token sales.<sup>87</sup> The case studies give an excellent idea of the MAS’s views. For example, tokens comparable to shares would be considered securities (Case 2), while tokens granting access to company services would not (Case 1). The MAS did not go into detail regarding the classification of hybrid tokens. Thus, some commentators presume that the MUN token, which only granted limited investment rights, would most likely not have been classified as a security.<sup>88</sup>

## D15 Canada

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<sup>83</sup> *Discussion Paper on Initial Coin Offerings*, AUTORITÉ DES MARCHÉS FINANCIERS (Oct. 26, 2017), <http://perma.cc/4BHQ-KHP7>.

<sup>84</sup> *Id.* at 7.

<sup>85</sup> *Id.* at 8.

<sup>86</sup> *Id.* at § 2.3.

<sup>87</sup> *MAS clarifies regulatory position on the offer of digital tokens in Singapore*, MONETARY AUTHORITY OF SINGAPORE (Aug. 1, 2017), <http://perma.cc/49KV-3EZK>; *A Guide to Digital Token Offerings*, MONETARY AUTHORITY OF SINGAPORE (Nov. 14, 2017), <http://perma.cc/3Z6E-BB3C>.

<sup>88</sup> See Jonathan Rohr & Aaron Wright, *Blockchain-Based Token Sales, Initial Coin Offerings, and the Democratization of Public Capital Markets* 6 (U. Tenn. Legal Stud. Res. Paper No. 338, Cardozo Legal Stud. Res. Paper No. 527, 2018) at 94.

- D15.1 As foreshadowed in para D2.9 above, The Supreme Court of Canada has adopted the Howey test<sup>89</sup> and for the same policy rationale in determining what is “any investment contract” defined in section 1(1) (22)xiii in the definition of ‘security’ for the purposes the prohibition of trading in a security in the absence of a prospectus by Section 35 of the *Securities Act*: *Pacific Coast Coin Exchange v. Ontario (Securities Commission)*, [1978] 2 S.C.R. 112.<sup>90</sup>
- D15.2 Therefore the considerations discussed above regarding why NuCoin is not a security, apply to Canada equally. Significantly, the Supreme Court referred to the case of *Turner*<sup>91</sup>, to define the expression “common enterprise” (p. 482) as “one in which the fortunes of the investor are interwoven with and dependent upon the efforts and success of those seeking the investment or of third parties”. The reasoning helpfully delineates, where in the case of a platform for enterprises to take effect such as NuGenesis, those enterprises are not common between each other or with the platform itself. The delineation of the common enterprise is where the issuer-promoter’s fortunes are intertwined with the investor. That is, the economic responsiveness to the investors efforts are substantially that of the issuer-promoter rather than other enterprises that the investor gets involved in.

## D 16 Australia

- D16.1 In Australia, whilst the Australian Taxation Office (‘ATO’) considered digital currencies to be ‘intangible assets’, The Australian Securities and Investments Commission (‘ASIC’) does not discuss digital currency’s inclusion in regimes as an ‘intangible asset’, but focuses on whether it can constitute a financial product for the purposes of regulation<sup>92</sup>.
- D16.2 ASIC has stated that ‘digital currencies themselves do not fit within the current legal definitions of a “financial product”’.<sup>93</sup> A financial product is, broadly, a facility through which a person makes a financial investment, manages financial risk or makes a non-cash payment.<sup>83</sup> For the purposes of regulation, ASIC finds that digital currency does not fall within the scope of that definition, stating that ‘the definition of “making a financial investment” does not include real property or bullion and we consider that it would similarly not include digital currencies’.<sup>94</sup> Digital currencies are also generally not a facility through which a person manages risk, or makes a non-cash payment.<sup>95</sup>

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<sup>89</sup> The Chief Justice noted: “the policy behind the legislation in the two countries is exactly the same, so that considering the dearth of Canadian authorities, it is a wise course to look at the decisions reached by the U.S. Courts.”

<sup>90</sup> The policy of the Securities legislation is: “the protection of the investing public through full, true and plain disclosure of all material facts relating to securities being issued.

<sup>91</sup> *SEC v. Glenn W. Turner Enterprises Inc.* [1973], 474 F.2d 476 (9th Cir.)

<sup>92</sup> Securities are broadly regulated pursuant to various provisions of the Corporations Act 2001 (Corporations Act) and the Australian Securities and Investments Commission Act 2001 (ASIC Act). ASIC is the responsible body for the regulation of Australian companies, financial markets, and financial services organisations and professionals.

<sup>93</sup> Australian Securities and Investments Commission, ‘Senate inquiry into digital currency - Submission by the Australian Securities and Investments Commission’, Submission 44 (December 2014) [5].

<sup>94</sup> *Ibid* [47].

<sup>95</sup> *Ibid* [48], [49].

D16.3 Comparable to the position of the ATO, ASIC considers that digital currency is not ‘currency’ or money. Relevantly, ASIC states:<sup>96</sup>

...digital currencies are not a currency or money for the purposes of the Corporations Act. Digital currencies such as bitcoins are more akin to a commodity. We note that this view is consistent with the views expressed by the Australian Taxation Office (ATO) that digital currencies are not a ‘currency’. For this reason, we consider that contracts for the exchange of digital currency with a national currency are not foreign exchange contracts.

D16.4 In providing some guidance on an appropriate definitional framework for digital currencies, ASIC notes that they could be treated in a similar manner to national currencies. This point was not discussed in great detail, concluding that it would need further consideration as such a definition could create ‘a more significant issue for other Australian regulators, and so broader consideration of the impact of such a change is appropriate’.<sup>97</sup>

D16.5 If an ICO constitutes a managed investment scheme (‘MIS’) then there will be obligations under the Corporations Act with respect to reporting and disclosure.<sup>98</sup> This would be relevant where the value of the Coin is a function of the management of the scheme arrangement<sup>99</sup>.

D16.6 However, as ASIC notes:<sup>100</sup>

...many of the obligations under the legislation ASIC administers apply to the issuers of financial products, who are responsible for the obligations to product holders under the terms of the product. On the other hand, digital currencies do not have an identifiable ‘issuer’, as there is no centralised authority responsible for their creation or any obligations owed to digital currency holders.

D16.7 Hence where there is no pre-sale or ICO there is no relationship created between any issuer and prospective purchaser of NuCoin who can only purchase on an international exchange where both the seller and purchaser are unknown strangers. The “issuer” undertakes no management of any ‘scheme’. The infrastructure provided by the NuGenesis blockchain that produces NuCoin is decentralised protocol involving a globally dispersed network of validators and staker-miners. Information about the ‘issuer’ who takes no further part is not relevant and does not offend any policy concerning the financial disclosure of the issuer.

D16.8 It is an important distinction that the NuGenesis blockchain and platform is fully built and functional. The prospective acquirer of NuCoin from an unknown seller on an exchange does not fund the development of the NuGenesis blockchain or the platform. Rather they can only acquire NuCoin to use the platform and take such further business and collaborate opportunities available to them. What these ventures the participant undertakes are not a common scheme with original establishment of the blockchain.

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<sup>96</sup> Ibid [50].

<sup>97</sup> Ibid [12].

<sup>98</sup> A managed investment scheme is defined in section 9 of the *Corporations Act 2001* and those schemes that need to be registered with ASIC are defined in Ch 5C section 601EB of the Act.

<sup>99</sup> Initial coin offerings, AUSTRALIAN SECURITIES & INVESTMENT COMMISSION (Oct. 11, 2017), <http://perma.cc/L8Z9-BNDA>. See also INFO 225

<sup>100</sup> Australian Securities and Investments Commission, ‘Senate inquiry into digital currency - Submission by the Australian Securities and Investments Commission’, above n 93, [43].



## **D17 New Zealand**

- D17.1 A cryptoasset can be a ‘financial product’ in New Zealand under *the Financial Markets Conduct Act 2013* (FMC Act) based on the traditional criteria as to whether it is a security token. Utility and payment tokens could be caught as a managed investment product if they are an interest in a Managed investment scheme, where (a) the purpose or effect is for people to contribute money to a scheme where they acquire interest therein, (b) the interest/rights acquired from the efforts of another person under the scheme and (c) the investor does not have day to day control of the scheme.
- D17.2 The language is comparable to the Australian regime and in substance aligns with the considerations in the case law concerning the Howey test. Without derogating from what is said above, there cannot be the same ‘scheme’ for an investor to acquire from an exchange from unknown persons with anything involving an issuer who has a completed and fully functional blockchain. The investor acquires no rights over any person to receive in the benefits from that other person’s efforts, but from the general economic growth of the ecosphere. Accordingly, it is not surprising that a close analysis of many tokens often reveals that they look more like a software or a commodity, which do not historically trigger securities regulations.<sup>101</sup>

## **D 18 Conclusion**

- D18.1 There are conceptual difficulties in seeking to apply securities regulation which relies on horizontal contractual relationships between parties to a software protocol whose purpose is to allow transactions by parties on a peer-to-peer basis on a trust less basis. Securities regulation is founded upon the premise that an investor has to trust the issuer who has an asymmetry of information and power and upon whom the investor relies for the management of their investment. There is no such relationship in decentralised technology as the fundamental purpose of it is flat decentralised interaction.
- D18.2 Nevertheless, depending upon the type of crypto asset, some are more liable to be resemble and consequently fall within the concept of ‘security’ than others. If there are pre-created or pre-minted non-functional coins, with large amounts reserved for the founders issued as part of ICO promising to build a blockchain technology with the proceeds of the ICO, they are likely to be considered securities.
- D18.3 In the case of the NuGenesis blockchain, NuCoin is not a security. The blockchain is fully operational. No investment is sought by any founders to build a blockchain through the issue of non-functional tokens. The blockchain is designed to mint coins pursuant to a tokenomics protocol designed to be self-evolving in funding through rewards, its on-going development. The role of any ‘issuers’ in the classical understanding has been spent.
- D18.4 NuCoin holders acquire and sell NuCoins on international licenced exchanges from persons they have no legal relationship with. NuCoins do not entitle gas fees. The platform does not charge it. It is designed to be attractive to build economic activity upon it. Therefore, NuCoin is the currency of NuGenesis ecosystem paying for services by a community offering

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<sup>101</sup> Thomas Gibbons “Purpose and Principles of Securities Regulation” in Stace (ed) *Financial Markets Conduct Regulation a Practitioner’s Guide* (LexisNexis, Wellington, 2014) 3 at 4-5.; *R v Moses* [2011] NZHC 646 at [35].

their services and providing access to opportunities for economic activity that may be created by parties unknown to each other.

- D18.5 It is unremarkable to conclude that NuCoin is **not** a security in the jurisdictions reviewed. The participant relies on decentralised protocols to enter an ecosphere that this protocol provides precisely because there is no need for trust in a central authority. There is no issuer with whom a prospective purchaser is forming a legal relationship where they rely upon them to manage their investment such as building the blockchain. The blockchain is built and functional. Whatever price a participant acquires NuCoin from an international exchange, its expectation of value will be from the self-evolution by the protocol and from the economic activity that unknown persons will create upon it.

## PART E RISK AND LEGAL DISCLAIMERS

### DISCLAIMERS

- E1.1 The information provided on this whitepaper does not constitute investment advice, financial advice, trading advice, or any other sort of advice and you should not treat any of the website's content as such.
- E1.2 The NuGenesis team ( expressly defined as including any 'issuer', 'founder', 'miner', 'core developer' or any team member or seller of NuCoin to you) does not recommend that any cryptocurrency should be bought, sold, or held by you. Do conduct your own due diligence and consult your financial advisor before making any investment decisions. By purchasing NuCoin, you agree that:
- (a) you are not purchasing a security or investment and you agree to hold the team harmless and not liable for any losses or taxes you may incur.
  - (b) the team is presenting the native Coin "as is" and is not required to provide any support or services. You should have no expectation of any form from NuGenesis and its team. Although NuCoin is an EXPERIMENTAL Coin for social experiment and not a digital currency, the team strongly recommends that United States persons do not purchase it because the team cannot ensure compliance with United states regulations. Always make sure that you are in compliance with your local laws and regulations before you make any purchase.
- E1.3 Please note that there are risks associated with smart contracts. Please use at your own risk any NuGenesis technology. The NuGenesis team and any company groups are not registered financial advisers. Everything provided therein is for informational and educational purposes and we rely upon you using this material to seek and obtain such professional advice as you require. We expect that all information herein contained will be independently verified and confirmed. The NuGenesis teams and persons associated are not responsible for any losses or damages that may be suffered whatsoever or howsoever arising from any reliance on information herein contained. Any trading that you may do involves risks in any financial markets – the crypto markets are particularly immature, lack liquidity that you may be used to in traditional markets and involve a layer of additional technical risk. Do not invest or speculate and certainly not with money that you cannot afford to lose.
- E1.4 For the purposes of the forgoing discussion summarising and expanding on particular aspects of risks, "we" and "our" is used in the collective sense. That is, "our" platform means:
- (a) all participants in the platform including major component entities within it; and,
  - (b) the platform which you, as a prospective user of NuCoin, are a part and one which we are assuming and relying, to be an active participant therein.

Likewise, “We” means all the community members and includes major component entities within it.

- E1.5 We note again that no reader should be looking to any NuGenesis company as some sort of manager, promoter or controller for the success or otherwise of the platform. That will always be a function of the entirety of the collective community that adopts it, contributes to it and uses it.

#### **FURTHER DISCLAIMERS AND REITERATIONS REGARDING WHAT IS NuCOIN**

- E2.1 It cannot be over-emphasised that the nature of the NuGenesis blockchain ecosystem is protocol based social experiment. Within this ecosystem, NuCoin may be considered the equivalent of the Oil that runs system of organisation of business, social and personal relationships that given the infrastructure upon which to develop activity with open participation. The activity is not limited economic activity but is rather a digital, virtual society with all its facets.
- E2.2 The value of any NuCoin is a function of how it is adopted and utilised in the ecosphere of this virtual society including such collaborations and applications built upon and/or para-chained or networked with NuGenesis, and with increased emphasis on virtual relationships and means of expression and exchange that will occur in virtual reality may be increasingly token-less.
- E2.3 NuCoin is not a security in that, on any acquisition of NuCoin or derivative thereof, you do not:
- (a) acquire or can expect to ever acquire a shareholding, legal, beneficial or membership stake in any equity of any investment vehicle expressly including any ‘issuer’, ‘founder’, ‘miner’, ‘core developer’ or any team member or seller of NuCoin to you whether separately or collectively (“the NuGenesis Team”) howsoever and in any way;
  - (b) acquire or can expect to ever acquire any right to fees, income, dividends, bonus issues in a NuGenesis team person;
  - (c) acquire or can expect to ever acquire any to vote, direct, control or influence a NuGenesis team person;
  - (d) become an object or purpose of any foundation, trust or investment vehicle related to a NuGenesis team person; and,
  - (e) have any rights to payment in money or kind or compel the performance of work or provision of services by any NuGenesis team person.
- E2.4 If you acquire or utilise any NuCoin, you declare and any issuer’, ‘founder’, ‘miner’, ‘core developer’ or any persons referred to as a NuGenesis team member or seller of NuCoin to you whether separately or collectively rely(ies) upon you acknowledging, declaring and understanding that by the act of acquisition or utilisation, that you:
- (a) do so for your own business and social use;

- (b) do so fully cognisant that you do not rely upon the management or efforts of any counterparty howsoever but entirely your own active participation and efforts;
  - (c) do not consider nor rely upon any representations express or through omission the financial or other history of any NuGenesis team member or associated entities to be relevant howsoever to your decision-making;
  - (d) that the evolution of the NuGenesis ecosphere is a function of the participation of yourself and persons yet unknown to you that cannot be predicted or foreseen; and,
  - (e) that a NuGenesis team member changes their position in reliance upon your acknowledgement, declaration and understanding.
- E2.5 NuCoin will not be the exclusive cryptoasset used throughout the NuGenesis ecosystem. Separate tokens or Coins or digital assets may be created for 'Just Social', the NuGenesis Ledger X exchange, the V2R Launchpad or for any protocol that may be necessary or convenient in the development of the ecosphere including for example any 'rebase protocol' to adjust the liquidity and supply of NuCoin.

### **E3 SUMMARY OF RISK FACTORS**

- E3.1 Any blockchain technology is subject to numerous risks and uncertainties. Some of these risks include:
- (a) price for NuCoin can significantly fluctuate due to the highly volatile nature of crypto.
  - (b) the NuCoin price is substantially dependent on the prices of crypto assets generally and volume of transactions conducted on the platform.
  - (c) A major indicator of market sentiment is derived from transactions in Bitcoin and Ethereum. If demand for these crypto assets declines and is not replaced by new crypto asset demand, the overall financial condition could be adversely affected.
  - (d) The future development and growth of crypto is subject to a variety of factors that are difficult to predict and evaluate. If crypto does not grow as we expect, the financial condition could be adversely affected.
  - (e) Cyberattacks and security breaches of the platform, or those impacting our customers or third parties, could adversely impact the brand and reputation and consequently financial condition.
  - (f) We are subject to an extensive and highly-evolving regulatory landscape and any adverse changes to, or our failure to comply with, any laws and regulations could adversely affect the platforms' brand, reputation and financial condition.

- (g) We operate in a highly competitive industry and we compete against unregulated companies and companies with greater financial and other resources, and the platform may be adversely affected if we, as a community, are unable to respond to our competitors effectively.
- (h) As we continue to expand and localize our international activities, our obligations to comply with the laws, rules, regulations, and policies of a variety of jurisdictions will increase and we may be subject to investigations and enforcement actions by regulators and governmental authorities.
- (i) We may continue be subject to material litigation, including individual and class action lawsuits, as well as investigations and enforcement actions by regulators and governmental authorities, which may adversely affect our financial condition.
- (j) If we cannot keep pace with rapid industry changes to provide new and innovative products and services, the use of our products and services and, consequently, our financial condition could be adversely impacted.
- (k) A particular crypto asset's status as a "security" in any relevant jurisdiction is subject to a high degree of uncertainty and if we are unable to properly characterize a crypto asset, we may be subject to regulatory scrutiny, investigations, fines, and other penalties, and our financial condition may be adversely affected.
- (l) We currently rely on third-party service providers for certain aspects of our operations, and any interruptions in services provided by these third parties may impair our community's ability to support our community members.
- (m) Loss of a critical banking or insurance relationships could adversely impact our financial condition.
- (n) Any significant disruption in our products and services, in our information technology systems, or in any of the blockchain networks we support, could adversely impact our brand and reputation and financial condition.
- (o) Our failure to safeguard and manage our customers' fiat currencies and crypto assets could adversely impact our financial condition.
- (p) The loss or destruction of private keys required to access any crypto asset held in custody for our own account or for our community users may be irreversible. If we are unable to access our private keys or if we experience a hack or other data loss relating to our ability to access any crypto assets, it could cause regulatory scrutiny, reputational harm, and other losses.
- (q) None of our founders are party to any contractual lock-up agreement or other contractual restrictions on transfer. Following our listing, the sales or distribution of substantial amounts of NuCoin, or the perception that such sales or distributions might occur, could cause the market price of NuCoin to decline.

E3.2 Other risks that many of which are unpredictable and in certain instances are outside of our collective community control, include:

- (a) our dependence on projects that are dependent on crypto asset trading activity, including trading volume and the prevailing trading prices for crypto assets, whose trading prices and volume can be highly volatile;
- (b) our ability to attract, maintain, and grow our community base and engage our community members;
- (c) changes in the legislative or regulatory environment, or actions by governments or regulators, including fines, orders, or consent decrees;
- (d) regulatory changes that impact our ability to offer certain products or services;
- (e) our ability to diversify and grow our subscription and services;
- (f) pricing for our collectively offered products and services;
- (g) investments we make in the development of products and services as well as technology offered to our ecosystem partners, international expansion, and sales and marketing;
- (h) adding and removing of crypto assets on our platform;
- (i) macroeconomic conditions;
- (j) adverse legal proceedings or regulatory enforcement actions, judgments, settlements, or other legal proceeding and enforcement-related costs;
- (k) the development and introduction of existing and new products and services by our collective community or our competitors;
- (l) increases in operating expenses that we expect to incur to grow and expand our operations and to remain competitive;
- (m) system failure or outages, including with respect to our crypto platform and third-party crypto networks;
- (n) breaches of security or privacy;
- (o) inaccessibility of our platform due to our or third-party actions;
- (p) our ability to attract and retain talent;
- (q) our ability to compete with our competitors;
- (r) unpredictable social media coverage or “trending” of crypto assets;

- (s) the ability for crypto assets to meet user and investor demands;
- (t) the functionality and utility of crypto assets and their associated ecosystems and networks, including crypto assets designed for use in various applications;
- (u) consumer preferences and perceived value of crypto assets and crypto asset markets;
- (v) increased competition from other payment services or other crypto assets that exhibit better speed, security, scalability, or other characteristics;
- (w) regulatory or legislative changes and updates affecting the cryptoeconomy;
- (x) the characterisation of crypto assets under the laws of various jurisdictions around the world;
- (y) the maintenance, troubleshooting, and development of the blockchain networks underlying crypto assets, including by miners-stakers-validators, and developers worldwide;
- (z) the ability for crypto networks in our ecosystem to attract and retain miners or validators to secure and confirm transactions accurately and efficiently;
- (aa) ongoing technological viability and security of crypto assets and their associated smart contracts, applications and networks, including vulnerabilities against hacks and scalability;
- (bb) fees and speed associated with processing crypto asset transactions, including on the underlying blockchain networks and on crypto platforms;
- (cc) financial strength of market participants;
- (dd) the availability and cost of funding and capital;
- (ee) the liquidity of crypto platforms;
- (ff) interruptions in service from or failures of major crypto platforms;
- (gg) availability of an active derivatives market for various crypto assets, particularly in the traditional capital markets;
- (hh) availability of banking and payment services to support crypto-related projects;
- (ii) level of interest rates and inflation;
- (jj) monetary policies of governments, trade restrictions, and fiat currency devaluations; and,
- (kk) national and international economic and political conditions.



E3.3 in addition to the factors impacting the broader cryptoeconomy, NuCoin may be adversely affected if the markets for Bitcoin and Ethereum deteriorate or if their prices decline, including as a result of the following factors:

- (a) the reduction in mining rewards of Bitcoin, including block reward halving events, which are events that occur after a specific period of time which reduces the block reward earned by miners;
- (b) the development and launch timeline of Ethereum 2.0, including the potential migration of Ethereum to a proof-of-stake model;
- (c) disruptions, hacks, splits in the underlying network in our ecosystem also known as “forks”, attacks by malicious actors who control a significant portion of the networks’ hash rate such as double spend or 51% attacks, or other similar incidents affecting the Bitcoin or Ethereum blockchain networks;
- (d) hard “forks” resulting in the creation of and divergence into multiple separate networks, such as Bitcoin Cash and Ethereum Classic in our ecosystem;
- (e) informal governance led by Bitcoin and Ethereum’s core developers that lead to revisions to the underlying source code or inactions that prevent network scaling, and which evolve over time largely based on self-determined participation, which may result in new changes or updates that affect their speed, security, usability, or value;
- (f) the ability for Bitcoin and Ethereum blockchain networks to resolve significant scaling challenges and increase the volume and speed of transactions;
- (g) the ability to attract and retain developers and customers to use Bitcoin and Ethereum for payment, store of value, unit of accounting, and other intended uses;
- (h) transaction congestion and fees associated with processing transactions on the Bitcoin and Ethereum networks;
- (i) the identification of Satoshi Nakamoto, the pseudonymous person or persons who developed Bitcoin, or the transfer of Satoshi’s Bitcoins;
- (j) negative perception of Bitcoin or Ethereum;
- (k) development in mathematics, technology, including in digital computing, algebraic geometry, and quantum computing that could result in the cryptography being used by Bitcoin and Ethereum becoming insecure or ineffective; and
- (l) laws and regulations affecting the Bitcoin and Ethereum networks or access to these networks, including a determination that either Bitcoin or Ethereum constitutes a security or other regulated financial instrument under the laws of any jurisdiction.

- E3.4 The future development and growth of crypto is subject to a variety of factors that are difficult to predict and evaluate. If crypto does not grow as we expect, our financial condition could be adversely affected.
- E3.5 Crypto assets built on blockchain technology were only introduced in 2009 and remain in the early stages of development. In addition, different crypto assets are designed for different purposes. Bitcoin, for instance, was designed to serve as a peer-to-peer electronic cash system, while Ethereum was designed to be a smart contract and decentralised application platform. Many other crypto networks—ranging from cloud computing to tokenized securities networks—have only recently been established. The further growth and development of any crypto assets and their underlying networks and other cryptographic and algorithmic protocols governing the creation, transfer, and usage of crypto assets represent a new and evolving paradigm that is subject to a variety of factors that are difficult to evaluate, including:
- (a) Many crypto networks have limited operating histories, have not been validated in production, and are still in the process of developing and making significant decisions that will affect the design, supply, issuance, functionality, and governance of their respective crypto assets and underlying blockchain networks, any of which could adversely affect their respective crypto assets.
  - (b) Many crypto networks are in the process of implementing software upgrades and other changes to their protocols, which could introduce bugs, security risks, or adversely affect the respective crypto networks.
  - (c) Several large networks, including Bitcoin and Ethereum, are developing new features to address fundamental speed, scalability, and energy usage issues. If these issues are not successfully addressed, or are unable to receive widespread adoption, it could adversely affect the underlying crypto assets.
  - (d) Security issues, bugs, and software errors have been identified with many crypto assets and their underlying blockchain networks, some of which have been exploited by malicious actors. There are also inherent security weaknesses in some crypto assets, such as when creators of certain crypto networks use procedures that could allow hackers to counterfeit tokens. Any weaknesses identified with a crypto assets could adversely affect its price, security, liquidity, and adoption. If a malicious actor or botnet (a volunteer or hacked collection of computers controlled by networked software coordinating the actions of the computers) obtains a majority of the compute or staking power on a crypto network, as has happened in the past, it may be able to manipulate transactions, which could cause financial losses to holders, damage the network's reputation and security, and adversely affect its value.
  - (e) The development of new technologies for mining, such as improved application-specific integrated circuits (commonly referred to as ASICs), or changes in industry patterns, such as the consolidation of mining power in a small number of large mining farms, could reduce the security of blockchain networks, lead to increased liquid supply of crypto assets, and reduce a crypto's price and attractiveness.

- (f) If rewards and transaction fees for miners or validators on any particular crypto network are not sufficiently high to attract and retain miners, a crypto network's security and speed may be adversely affected, increasing the likelihood of a malicious attack.
  - (g) Many crypto assets have concentrated ownership or an "admin key", allowing a small group of holders to have significant unilateral control and influence over key decisions relating to their crypto networks, such as governance decisions and protocol changes, as well as the market price of such crypto assets.
  - (h) The governance of many decentralized blockchain networks is by voluntary consensus and open competition, and many developers are not directly compensated for their contributions. As a result, there may be a lack of consensus or clarity on the governance of any particular crypto network, a lack of incentives for developers to maintain or develop the network, and other unforeseen issues, any of which could result in unexpected or undesirable errors, bugs, or changes, or stymie such network's utility and ability to respond to challenges and grow.
  - (i) Many crypto networks are in the early stages of developing partnerships and collaborations, all of which may not succeed and adversely affect the usability and adoption of the respective crypto assets.
- E3.6 Various other technical issues have also been uncovered from time to time that resulted in disabled functionalities, exposure of certain users' personal information, theft of users' assets, and other negative consequences, and which required resolution with the attention and efforts of their global miner, user, and development communities. If any such risks or other risks materialise, and in particular if they are not resolved, the development and growth of crypto may be significantly affected and, as a result, our business, operating results, and financial condition could be adversely affected.
- E3.7 Cyberattacks and security breaches of our platform, or those impacting our customers or third parties, could adversely impact our brand and reputation and our business, operating results, and financial condition.
- E3.8 Our collective Platform involves the collection, storage, processing, and transmission of confidential information, customer, employee, service provider, and other personal data, as well as information required to access customer assets. Indeed it is a legal requirement for KYC/AML purposes. The platform's reputation will be built on the premise that our platform offers customers a secure way to purchase, store, and transact in crypto assets. As a result, any actual or perceived security breach of us or our third-party partners may:
- (a) harm our reputation and brand;
  - (b) result in our systems or services being unavailable and interrupt our operations;
  - (c) result in improper disclosure of data and violations of applicable privacy and other laws;
  - (d) result in significant regulatory scrutiny, investigations, fines, penalties, and other legal, regulatory, and financial exposure;
  - (e) cause us to incur significant remediation costs;

- (f) lead to theft or irretrievable loss of our or our customers' fiat currencies or crypto assets;
- (g) reduce customer confidence in, or decreased use of, our products and services;
- (h) divert the attention of management from the operation of our business;
- (i) result in significant compensation or contractual penalties from us to our customers or third parties as a result of losses to them or claims by them; and
- (j) adversely affect our business and operating results.

E3.9 Further, any actual or perceived breach or cybersecurity attack directed at other financial institutions or crypto companies, whether or not we are directly impacted, could lead to a general loss of customer confidence in the cryptoeconomy or in the use of technology to conduct financial transactions, which could negatively impact us, including the market perception of the effectiveness of our security measures and technology infrastructure.

E3.10 An increasing number of organisations, including large merchants, businesses, technology companies, and financial institutions, as well as government institutions, have disclosed breaches of their information security systems, some of which have involved sophisticated and highly targeted attacks, including on their websites, mobile applications, and infrastructure.

E3.11 Attacks upon systems across a variety of industries, including the crypto industry, are increasing in their frequency, persistence, and sophistication, and, in many cases, are being conducted by sophisticated, well-funded, and organised groups and individuals, including state actors. The techniques used to obtain unauthorized, improper, or illegal access to systems and information (including customers' personal data and crypto assets), disable or degrade services, or sabotage systems are constantly evolving, may be difficult to detect quickly, and often are not recognized or detected until after they have been launched against a target. These attacks may occur on our systems or those of our third-party service providers or partners. Certain types of cyberattacks could harm us even if our systems are left undisturbed. For example, attacks may be designed to deceive employees and service providers into releasing control of our systems to a hacker, while others may aim to introduce computer viruses or malware into our systems with a view to stealing confidential or proprietary data. Additionally, certain threats are designed to remain dormant or undetectable until launched against a target and we may not be able to implement adequate preventative measures.

E3.12 Although we have developed systems and processes designed to protect the data we manage, prevent data loss and other security breaches, effectively respond to known and potential risks, and expect to continue to expend significant resources to bolster these protections, there can be no assurance that these security measures will provide absolute security or prevent breaches or attacks. We have experienced from time to time, and may experience in the future, breaches of our security measures due to human error, malfeasance, insider threats, system errors or vulnerabilities, or other irregularities. Unauthorised parties may attempt to gain access to our systems and facilities, as well as those of our customers, partners, and third-party service providers, through various means, including hacking, social engineering, phishing, and attempting to fraudulently induce individuals (including employees, service providers, and our customers) into disclosing

usernames, passwords, payment card information, or other sensitive information, which may in turn be used to access our information technology systems and community members' crypto assets. Threats can come from a variety of sources, including criminal hackers, hacktivists, state-sponsored intrusions, industrial espionage, and insiders. Certain threat actors may be supported by significant financial and technological resources, making them even more sophisticated and difficult to detect. Further, there has been an increase in such activities as a result of the novel coronavirus, or COVID-19, pandemic. As a result, our costs and the resources we devote to protecting against these advanced threats and their consequences may continue to increase over time.

- E3.13 If we cannot keep pace with rapid industry changes to provide new and innovative products and services, the use of our products and services, and consequently could adversely impact our financial condition.
- E3.14 Our industry has been characterised by many rapid, significant, and disruptive products and services in recent years. These include decentralised applications, DeFi, yield farming, staking, token wrapping, governance tokens, innovative programs to attract customers such as transaction fee mining programs, initiatives to attract traders such as trading competitions, airdrops and giveaways, staking reward programs, and novel cryptocurrency fundraising and distribution schemes, such as "initial exchange offerings." We expect new services and technologies to continue to emerge and evolve, which may be superior to, or render obsolete, the products and services that we, collectively, can provide. We cannot predict the effects of new services and technologies on our community platform. However, our ability to grow our member base and net revenue will depend heavily on our ability to innovate and create successful new products and services, both independently and in conjunction with third-party developers. In particular, developing and incorporating new products and services into our business may require substantial expenditures, take considerable time, and ultimately may not be successful. Any new products or services could fail to attract customers, generate revenue, or perform or integrate well with third-party applications and platforms. In addition, our ability to adapt and compete with new products and services may be inhibited by regulatory requirements and general uncertainty in the law, constraints by our banking partners and payment processors, third-party intellectual property rights, or other factors. Moreover, we must continue to enhance our technical infrastructure and other technology offerings to remain competitive and maintain a platform that has the required functionality, performance, capacity, security, and speed to attract and retain customers, including large, institutional, high-frequency and high-volume traders. As a result, we expect to expend significant costs and expenses to develop and upgrade our technical infrastructure to meet the evolving needs of the industry. Our success will depend on our ability to develop and incorporate new offerings and adapt to technological changes and evolving industry practices. If we are unable to do so in a timely or cost-effective manner, our platform and our ability to successfully compete, to retain members, and to attract new members may be adversely affected.

**Unfavourable media coverage could negatively affect our business.**

- E5: We can expect to receive a high degree of media coverage in the cryptoeconomy and around the world. Unfavourable publicity regarding, for example, our product changes, product quality, litigation or regulatory activity, privacy practices, terms of service, employment matters, the use of our products, services, or supported crypto assets for illicit or objectionable ends, the actions of our customers, or the actions of other companies that provide similar services to ours, has in the past, and could in the future, adversely affect our

reputation. We have stress-tested our blockchain, its on-ramps and off-ramps with a number of 'black hats' and those expert in identifying hacks, loopholes and defects generally. Any of these people may find themselves in the media and an association may be drawn with our platform. Further, we may in the future, be the target of social media campaigns criticizing actual or perceived actions or inactions that are disfavoured by our customers, employees, or society at-large, which campaigns could materially impact our customers' decisions to trade on our platform. Any such negative publicity could have an adverse effect on the size, activity, and loyalty of our customers and result in a decrease in net revenue, which could adversely affect our business, operating results, and financial condition.

**E6: SPECIFIC RISK FACTORS EXPANDED UPON**

**E6.1 *Our intellectual property rights are valuable, and any inability to protect them could adversely impact our business, operating results, and financial condition.***

E6.2 Our platform's business activity depends in large part on our collective proprietary technology and our brand. We expect to rely on, a combination of trademark, domain name, copyright, and trade secret and laws, as well as confidentiality and licence agreements with our employees, contractors, consultants, and third parties with whom we have relationships, to establish and protect our brand and other intellectual property rights. However, our efforts to protect our intellectual property rights may not be sufficient or effective. Our proprietary technology and trade secrets could be lost through misappropriation or breach of our confidentiality and licence agreements, and any of our intellectual property rights may be challenged, which could result in them being narrowed in scope or declared invalid or unenforceable. There can be no assurance that our intellectual property rights will be sufficient to protect against others offering products, services, or technologies that are substantially similar to ours and that compete with our platform.

E6.3 Subject to consensus change, the current view is that the platform does not intend to monetise our intellectual property rights or attempt to block third parties from competing with the platform by asserting our patents offensively against third parties, but our ability to successfully defend intellectual property challenges from competitors and other parties may depend, in part, on our ability to counter-assert our patents defensively. Effective protection of patents, trademarks, and domain names is expensive and difficult to maintain, both in terms of application and registration costs as well as the costs of defending and enforcing those rights. Further, intellectual property protection may not be available to us in every country in which our products and services are available. For example, some foreign countries have compulsory licensing laws under which a patent owner must grant licences to third parties. In addition, many countries limit the enforceability of patents against certain third parties, including government agencies or government contractors. In these countries, patents may provide limited or no benefit. We may also agree to license our patents to third parties as part of various patent pools and open patent projects. Those licenses may diminish our ability, though, to counter-assert our patents against certain parties that may bring claims against us.

E6.4 We may be, sued by third parties for alleged infringement of their proprietary rights however unfounded.

E6.5 In recent years, there has been considerable patent, copyright, trademark, domain name, trade secret and other intellectual property development activity in the cryptoeconomy, as well as litigation, based on allegations of infringement or other violations of intellectual

property, including by large financial institutions. Furthermore, individuals and groups can purchase patents and other intellectual property assets for the purpose of making claims of infringement to extract settlements and some important parts of our network may be attacked. Our use of third-party intellectual property rights also may be subject to claims of infringement or misappropriation. Whilst we predominantly use our own developed software, we cannot guarantee that our internally developed or acquired technologies and content do not or will not infringe the intellectual property rights of others. From time to time, our competitors or other third parties may claim that we are infringing upon or misappropriating their intellectual property rights, and some parts of our network may be found to be infringing upon such rights. Any claims or litigation could cause us to incur significant expenses and, if successfully asserted against major parts of our network, could require that we pay substantial damages or ongoing royalty payments, prevent us from offering our products or services or using certain technologies, force us to implement expensive work-arounds, or impose other unfavourable terms. We expect that the occurrence of infringement claims is likely to grow as the crypto assets market grows and matures. Accordingly, our exposure to damages resulting from infringement claims could increase and this could further exhaust our financial and management resources.

- E6.6 We may be adversely affected by natural disasters, pandemics, and other catastrophic events, and by man-made problems such as terrorism, that could disrupt our platforms' business operations, and our business continuity and disaster recovery plans may not adequately protect us from a serious disaster.
- E6.7 Natural disasters or other catastrophic events may also cause damage or disruption to our operations, international commerce, and the global economy, and could have an adverse effect on our business, operating results, and financial condition. Our platform's operations are subject to interruption by natural disasters, fire, power shortages, and other events beyond our control. In addition, our global operations expose us to risks associated with public health crises, such as pandemics and epidemics, which could harm our business and cause our operating results to suffer. For example, the ongoing effects of the COVID-19 pandemic and/or the precautionary measures that we have adopted have resulted, and could continue to result, in difficulties or changes to our customer support, or create operational or other challenges, any of which could adversely impact our platforms' business activity. Further, acts of terrorism, labour activism or unrest, and other geo-political unrest could cause disruptions in our platform's business or the businesses of our partners or the economy as a whole. In the event of a natural disaster, including a major earthquake, blizzard, or hurricane, or a catastrophic event such as a fire, power loss, or telecommunications failure, we may be unable to continue our operations and may endure system interruptions, reputational harm, delays in development of our platform, lengthy interruptions in service, breaches of data security, and loss of critical data, all of which could have an adverse effect on the business activity done on our platform.