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Understanding the values enacted in the design of blockchain technologies by applying social semiotics and the walkthrough method

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Understanding the values enacted in the design of blockchain technologies by applying social semiotics and the walkthrough method

Olivia Inwood

A thesis submitted to the School of the Arts and Media

at the University of New South Wales

in partial fulfilment of the requirements

for the Honours degree of

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Abstract

Blockchain technology is a relatively new phenomenon that has informed many discourses regarding the future of governance, economics, and the internet. However, current research has tended to generalise the politics of blockchain technology and has not considered the ideologically diverse blockchain start-up companies that have recently emerged. This thesis aims to understand the values enacted in the design of blockchain technologies by applying social semiotic discourse analysis in combination with the walkthrough method to a dataset of blockchain apps/websites (*Steemit, Creativechain, Democracy Earth* and *Bitnation*) and their accompanying white papers. This mixed method analysis revealed that the blockchain start-ups held shared values around the concepts of decentralisation, trust in algorithms, and trust in individuals over institutions. The start-ups were ideologically diverse in their political orientations, expressing ideals around the digital commons, cyber-libertarianism and capitalism. These orientations are related to values typically associated with blockchain enthusiasts such as cyber-libertarianism, crypto-anarchy and communal ownership of technology. Although blockchain technologies may change in the future in terms of technical specification these key issues will remain. Overall, this thesis has shown how the values embedded in blockchain technologies can be understood empirically through close discourse analysis. It has also made a novel contribution to the field by offering a new augmented app walkthrough method that allows the analyst to consider the multimodal resources used in these technologies.

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*I would like to dedicate this thesis, in
loving memory, to my late Grandmother*

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List of Typographical Conventions

The following typographical conventions have been used regarding the Appraisal System:

Affect in bold

Judgement in bold underline

Appreciation in bold italics

Couplings of ideation and attitude are annotated as follows:

[ideation: <<>> / attitude: <<>>]

Text from the white papers is written in Century Gothic. The Appraisal system annotation is written in Calibri Light.

Chapter 1: Introduction

1.1. Background and Aims

Blockchain is a technology that has the potential to change many aspects of digital life. A blockchain is a digital ledger that records all transactions ever executed in a peer-to-peer network through cryptographic algorithms (Atzori, 2017; Nakamoto, 2009; Swan, 2015). Software applications that leverage the affordances of the blockchain capitalise on the way it creates a tamper-evident digital record. They also tend to be designed with particular values, such as the importance of decentralisation, in mind. This thesis aims to identify and unpack these values through close discourse analysis of a dataset of four blockchain technologies and their associated white papers from the start-ups: *Steemit*, *Creativechain*, *Democracy Earth* and *Bitnation*. A social semiotic approach will be undertaken incorporating Systemic Functional Linguistics (SFL) and Multimodal Discourse Analysis (MDA), together with an augmented version of the app Walkthrough Method (Light, Burgess, & Duguay, 2016). Thus, the thesis will both reveal the

values enacted by blockchain technologies and provide a new mixed-method methodology for understanding how these values are expressed.

1.2. What is the Blockchain?

The notion of a blockchain¹ protocol was first published in a white paper by the pseudonymous Satoshi Nakamoto², who proposed Bitcoin as the first decentralised electronic payment system, removing the need for intermediaries (Nakamoto, 2009). Bitcoin functions via a series of encrypted ‘chained’ blocks:

The network timestamps transactions by hashing them into an ongoing chain of hash-based proof-of-work, forming a record that

¹ In this thesis the term "blockchain" will be used to refer to the general discourse surrounding blockchain and "blockchain technologies" to refer to start-ups that utilise blockchain protocols. Originally, the term "block chain" was used by Nakamoto (2009) and is still used by those involved in Bitcoin and blockchain communities (Saewitz, 2014). Since 2016, when blockchain entered popular discourse, and became a “buzzword” (Gerard, 2017), it is now commonly referred to as "blockchain", so this thesis will retain the common spelling as referred to now in popular and academic discourse. However, there is no blockchain terminology standard currently in existence (Jeffries, 2018).

² The identity of Satoshi Nakamoto remains unknown. Thus, Nakamoto could refer to an individual or group of people who wrote the Bitcoin white paper. The most comprehensive explanations of the pseudonymity of Nakamoto and a history of failed attempts at uncovering Nakamoto’s identity is provided by *Bitconnect* (2016) and the *P2P Foundation* (n.d.).

cannot be changed without redoing the proof-of-work. (Nakamoto, 2009, p. 1).

The key aspect of this explanation is that the record cannot be changed. The cryptocurrencies and blockchain technologies that exist today still use this encryption process initially outlined in the Bitcoin white paper, thus its importance.

Blockchain, while often misinterpreted as being synonymous with the digital currency bitcoin, is rather “an application layer to run on the existing stack of Internet protocols” (Swan, 2015, p. x) and an algorithm that means anyone can create their own blockchain³. It has been described as “the World Wide Ledger of value” as anyone will be able to access blockchain technologies like the internet (Tapscott & Tapscott, 2016, p. 7), and a “disruptive innovation” with the “potential to redesign our interactions in business, politics and society at large” (Atzori, 2017, p. 45). Blockchain technologies have the potential to reshape our notions of

³ Thus, there can be a "Bitcoin blockchain", "Ethereum blockchain", "Ripple blockchain" etc. Therefore, "blockchain" will be used to discuss the general discourses around blockchain, rather than "a blockchain", or "the blockchain" which could be referring to specific blockchains, or the original Bitcoin blockchain (Scott, 2016).

computational trust, decentralised governance, and democratisation, and are thus worthy of close scrutiny of the kind that will be undertaken in this thesis.

2. Thesis Structure

Chapter 2 will critically survey current research into the values and ideologies manifest in blockchain technologies, from fields encompassing philosophy, politics and social sciences. This chapter will also introduce social semiotic research into analysing values as well as multimodal approaches to analysing websites. Overall, this chapter explains why a social semiotic approach is needed to understand blockchain technologies and how this will expand current literature focused on blockchain discourses.

Chapter 3 will introduce the dataset and mixed-method data analysis approach used in this thesis. This chapter will explain how the various approaches were integrated in order to explore both the linguistic values construed in the white papers and the meanings made multimodally in the websites. The Appraisal framework (a method of SFL analysis for exploring evaluative language,) used to analyse the white papers, and the ‘walkthrough method’, used to understand the websites and apps, will be explained in detail. Justification of why the walkthrough method needed to be augmented will also be provided.

Chapter 4 will explore the dominant discursive patterns that were revealed by the discourse analysis of the dataset of white papers and websites/apps. This will involve categorising the 3-grams discovered in the white papers, as well as the dominant results obtained from the Appraisal analysis and augmented walkthrough method. Overall, this chapter will highlight the initial key values discovered after applying this methodology.

Chapter 5 will provide a more detailed analysis by exploring the key values discovered from the combined analyses of the blockchain start-ups' white papers and the websites/apps. This chapter will be centred around the three key themes discovered across the entire dataset; trust, decentralisation and political ideologies. Thus, this chapter will show how the mixed-method approach can reveal greater insights about the values enacted in blockchain technologies.

Overall, this thesis will explore blockchain values using methods and examples that have not been previously considered in research on blockchain technologies. A new contribution will be made to understanding blockchain start-ups from empirical data, in contrast to previous research which has not individually analysed the values of blockchain start-ups, instead discussing blockchain technologies broadly. This thesis will also make a new contribution to developing a methodology that extends the current walkthrough method used for analysing apps, thus providing a way to semiotically interpret blockchain start-ups.

Chapter 2: Foundations

Introduction

This chapter begins by critically surveying current research into the values and ideologies manifest in blockchain technologies, from fields encompassing philosophy, politics, and social sciences. It identifies a number of key themes in this work: trust, decentralisation, digital labour and political ideologies shaped by sovereignty, economics and organising systems. The chapter then introduces semiotic research into analysing values, providing the theoretical background to the multimodal discourse analysis methods introduced in the next chapter, as well as introducing the case for adopting a social semiotic approach.

2.1. Key Features of Blockchain

This section will provide an overview of the key features of blockchain: consensus algorithms, the proof-of-work algorithmic process and decentralisation, and a

literature review of how these features have been explored in discourses about blockchain from fields encompassing philosophy, politics and social sciences. After focusing on these perspectives regarding the features and values of blockchain technologies, this section will show how current literature analysing blockchain has not yet provided an empirical approach to understanding present blockchain start-ups. It is this current gap in knowledge, that this thesis aims to address.

2.1.1. Algorithms and Trust

The notion of trust is key to understanding the impact of blockchain technology and how it is framed in the broader context of trust in algorithms, also known as computational trust, rather than trust in human intermediaries (Antonopoulos, 2014). In 2015, *The Economist* published an article on “the promise of the blockchain”, labelling the technology as “the trust machine”. This article has been cited by many authors, in order to document when discussion about blockchain entered mainstream news (Davidson, De Filippi, & Potts, 2016, p. 3; Heimans & Timms, 2018, p. 251; Herian, 2018; Keen, 2018, p. 82; Tapscott & Tapscott, 2016, p. 8).

The metaphor of “the trust machine” provides the simplest explanation for the potential of blockchain technology. According to *The Economist* article, “The real innovation is not the digital coins themselves, but the trust machine that mints

them...” (Economist, 2015). The proof-of-work algorithm ensures that “as long as good actors form the majority of the computation used for forming consensus, the bad actors cannot change the trusted ledger” (Antonopoulos, 2014). This networked structure of the blockchain is central to how the ledger maintains computational trust.

This notion of computational trust over human trust has also resulted in blockchain being described as “trustless” (Swan, 2015, p. x). For example, it can be questioned “whether this is not simply replacing one form of trust – that in other humans and their institutions – with another, based on the supposed infallibility of machine code” (Karlstrøm, 2014, p. 31). “Code is law”, in the sense that “the software and hardware that make cyberspace what it is *regulate* cyberspace as it is” (Lessig, 1999, p. 6). This can be dangerous as it means the code and the people who write the code must be trusted. The complexities of this can be realised with the Ethereum Decentralised Autonomous Organisation (DAO) attack⁴, where the DAO was attacked and drained of all its funds (see Siegel (2016) and Vickers (2017))

⁴ A ‘Decentralised Autonomous Organisation’ (referred to as a DAO) is software code running on the Ethereum blockchain, with the goal “to codify the rules and decision-making apparatus of an organisation, eliminating the need for documents and people in governing, creating a structure with decentralised control” (Siegel, 2016). The DAO functions by people initially writing out “smart contracts” – decentralised and automated programs (Buterin, 2014b), where people can then add funds to the DAO by purchasing tokens as part of a crowd sale, known as an Initial Coin Offering (ICO) (Siegel, 2016).

for detailed explanations).⁵ Since the Ethereum DAO attack, whether the blockchain will be broken again in the future and what rules dictate who has the right to change the blockchain has remained a question.

Open source culture is prone to many divergent ideas and disagreements arising within its communities. In some cases, a “benevolent dictator” has existed within these communities in order to prevent the forking of a project (Raymond, 1998). For example, Buterin, the founder of the Ethereum blockchain, has been referred to a “benevolent dictator” for preventing the complete collapse of the DAO⁶. In contrast, blockchain and its open source culture has also been considered as a “prefigurative politics” of anti-hierarchical values, as in the case of the users that defied Buterin and created their own revived DAO ‘Ethereum Classic’ (Vickers, 2017, p. 237). Thus, even Ethereum as a technology cannot describe itself as

⁵ After 21 days of the DAOs funds being frozen, the entire Ethereum system forked, meaning that all funds were returned, and a new version of the DAO was created (Vickers, 2017, p. 236). However, another group of people decided to bring the discarded fork back to life – making the old code workable again. Now the revived fork known as the “Ethereum Classic” and the new fork “Ethereum” both exist.

⁶ For a list of benevolent dictators in open source culture and a historical overview, see the Wikipedia article on “Benevolent Dictator For Life” (2018). The first mention of a “benevolent dictator” in open source culture was by Raymond (1998). Friebe (2017) discusses more specifically Buterin’s role as a benevolent dictator.

politically neutral, with the immutability of the blockchain being called into question when issues such as cyberattacks arise and there is a clash of ideologies.

Mainstream adoption of blockchain technology would mean a paradigm shift in how we conceptualise our trust in machine code and the immutability of records. In current internet culture, people are used to being able to delete their data and deregister from sites. Use of blockchain would mean users are only ever be able to add to the blockchain but not ‘delete’ evidence of their involvement online (Dodd, 2017, p. 16). The blockchain⁷ is involved in an entanglement of trust and regulatory issues inflecting the extent to which it can be seen as a neutral technology.

2.1.2. Proof-of-Work, Digital Labour and Digital Metallism

The ‘proof-of-work’ algorithm is the protocol that enables computational trust on the blockchain. Proof-of-work can be defined as the network nodes competing to

⁷ There are some key examples which illustrate this, including a study presented at a Financial Cryptocurrency conference, that found child pornography on the Bitcoin blockchain ” (Matzutt et al., 2018). Although this hasn’t been confirmed yet (Narayanan, Werbach, & Grimmelmann, 2018), issues like this show how the blockchain may need regulations and the tensions regarding technology and the law. The blockchain has also been used for ethical reasons. The Ethereum blockchain has been used to circulate a #MeToo student activist letter, that had been blocked on the “great firewall of China” (Shen, 2018). Huckle and White (2017) have also proposed another ethical potential for blockchain; an application called Provenator that can determine the origins of media sources and help combat fake news.

solve a difficult cryptographic problem, with the winning node being allowed to validate the blockchain (Huckle & White, 2016)⁸. The proof-of-work process is also known as ‘mining’ because a reward is given to the validator who creates the accepted block e.g. on the Bitcoin blockchain, the reward is ‘mined’ Bitcoin (Nakamoto, 2009, p. 3).

The language associated with the proof-of-work algorithm relates to concerns around materials and labour, such as the connection between Bitcoin and gold (Maurer, Nelms, & Swartz, 2013). As Nakamoto (2009, p. 4) writes: “The steady addition of a constant amount of new coins is analogous to gold miners expending resources to add gold to circulation.” In the case of the Bitcoin blockchain, there are only 21 million coins available, mimicking the gold-standard economy where there is a limit to the total amount of currency that can circulate (Maurer et al., 2013, p. 268). Maurer et al. (2013, p. 268) use the term “digital metallism” to refer to the symbols and metaphors associated with the underlying mining process of

⁸ In the Bitcoin white paper, Nakamoto (2009, p. 3) outlines the process as:

1. New transactions are broadcast to all nodes.
2. Each node collects new transactions into a block.
3. Each node works on finding a difficult proof-of-work for its block.
4. When a node finds a proof-of-work, it broadcasts the block to all nodes.
5. Nodes accept the block only if all transactions in it are valid and not already spent.
6. Nodes express their acceptance of the block by working on creating the next block in the chain, using the hash of the accepted block as the previous hash.

Bitcoin and how Bitcoin enthusiasts on forums mainly communicate about the amount of human labour it takes, to set-up the infrastructure to enable Bitcoin mining. There is a correlation between digital metallism and digital labour, where the process of “mining bitcoins” mimics the process of extracting minerals. Maurer et al. (2013) apply a theory of assemblage (Latour, 2005) to understanding Bitcoin – looking beyond the algorithms to also consider the materials needed to mine Bitcoin; computer hard-drives, video cards, and the human labour and electricity costs associated with mining Bitcoin. The framework of “digital metallism” therefore looks at the infrastructures and energies placed into Bitcoin mining, adding an extra dimension of analysis (Ferry, 2016; Maurer et al., 2013).

Other alternatives to the electricity-intensive ‘proof-of-work’ algorithm have been proposed. Such alternatives include “Proof-of-Cooperation”, “Proof-of-Stake” and “Proof-of-Capacity”⁹. In this sense, although “proof-of-work” has been considered central to blockchain technologies, the algorithms that constitute blockchain itself are still in a state of flux, therefore concepts such as “digital metallism” (Maurer et al., 2013) could also become outdated as more blockchains adapt to newer and less-

⁹ “Proof-of-Cooperation” is an algorithm by Faircoin that promotes cooperation over competition (König, Duran, Fessler, & Alton, 2018). “Proof-of-Stake” is an algorithm where blocks are validated according to who owns the most coins (Investopedia, 2018). “Proof-of-Capacity” is an algorithm where the person who has the most hard drive space will be allocated the next block (Sharma, 2018).

energy consuming algorithms. Therefore, semiotic approaches of the kind undertaken in this thesis that are specific to understanding present blockchain start-ups and differentiated from the original Bitcoin community, are needed.

2.1.3. Decentralisation

Decentralisation, one of the key notions behind blockchain, can be defined as all nodes of a network having equal importance, with no vertical hierarchy or centralised authority figures. The “rise of the network society” (Castells, 2011) with networks as its “nervous system” (Van Dijk, 2012) has meant that discussion of decentralised and centralised networks has become a key issue. The blockchain enables decentralisation to happen on a larger-scale, distinguishing it from other decentralised technologies¹⁰ (Swan, 2015).

Decentralisation is a key value lauded by blockchain enthusiasts as the “the blockchain dream” in contrast with “an almost moral disdain for mediation and the centralised infrastructures that enable it” (Swartz, 2017, p. 91). In this case,

¹⁰ Other decentralised technologies include InterPlanetary File System (a decentralised file system) and Open Bazaar (a decentralised marketplace) (Pon, 2016). The internet can also be seen as a decentralised technology, however the internet has only decentralised communication, and has not decentralised processing and data storage – two areas which blockchain technologies decentralise (Pon, 2016). See Raval (2016) and Pon (2016) for a detailed history of decentralised technologies.

there is a political and ethical dimension to decentralisation, with blockchain enthusiasts believing that decentralisation is a solution to many issues such as the monopolisation of the internet by companies such as Facebook and Google, and the authority of banks or online payment companies such as Paypal (Corbyn, 2018). However, as Atzori (2017, p. 45) remarks, “Decentralisation through algorithm-based consensus is an organisational theory, not a stand-alone political theory”. A completely decentralised blockchain applied to governance, could create a “technological dystopia” and a “gamification of public administration”, with detrimental effects on citizen rights (Atzori, 2017, p. 52).

Blockchain enthusiasts have been criticised for their promotion of the “valorisation of decentralisation” (Baldwin, 2018, p. 4; Golumbia, 2016, p. 65). In addition, the decentralised blockchain could be broken by “increasingly centralised mining farms” (Atzori, 2017). Currently, two Chinese companies control over 51 percent of Bitcoin’s mining power, meaning that “should they for whatever reason decide to collude with one another, they could execute a successful, and devastating attack at any time” (Greenfield, 2017). Hence, it can be questioned whether it is possible for any network to be completely decentralised and whether some form of regulation must always exist.

2.2. Political Ideologies Shaped by Sovereignty, Economics and Organising Systems

Blockchain technologies can be understood in relation to various political ideologies, shaped by theories regarding internet sovereignty, economics and organising systems. This section will outline how blockchain ideas have intersected with various political ideologies, providing a literature review of the work of key theorists on blockchain and politics. Overall, current research regarding the politics of blockchain technology has tended to take a utopian attitude towards blockchain or a critical attitude towards the feasibility of blockchain. Different frameworks have been previously applied to understanding the values of blockchain in terms of its future potentials (Manski & Manski, 2018; Swartz, 2017). Blockchain has either been depicted as a revolutionary technology with more positive than negative attributes (Al-Saqaf & Seidler, 2017; Hughes, 2017; Swan, 2015; Tapscott & Tapscott, 2016). Or conversely, blockchain has been depicted as a technological fad, and associated with extreme authoritarian or libertarian futures (Bogost, 2017; Gerard, 2017; Golumbia, 2016; Greenfield, 2017).

As Lukin (2017) writes, there are methodological difficulties in making ideology visible. Ideologies are pervasive, in the sense that “the act of analysing ideology is, therefore, ideological” (Lukin, 2017, p. 1). Consequently, rather than this becoming

a problem, by working with ideologies one can apply theoretical models which produce “robust and revealing descriptions of the ideologies that shape human experience and behaviour” (Lukin, 2017, p. 1).

2.2.1. Cyber-libertarianism, Crypto-anarchy and the Cypherpunk Movement

To understand the political ideologies surrounding blockchain, it is first important to consider the early origins of cyber-libertarianism that manifested in “The Declaration of the Independence of Cyberspace” (Barlow, 1996). In this work, Barlow writes that governments have “no sovereignty” in cyberspace, and that individuals should be left to form their own “social contracts” online (Barlow, 1996). There is a distinction between ‘libertarians in general’ and the views that Barlow perpetuates (Golumbia, 2016, p. 3). Barlow was purely interested in governments not regulating or interfering with the internet and in comparison, cyber-libertarians may not explicitly align themselves with right-wing parties, but nonetheless “accept definitions of certain fundamental terms that come from the political right, especially when digital technologies are at issue” (Golumbia, 2016, p. 4).

From the origins of cyber-libertarianism, emerged the cypherpunk and crypto-anarchist movements (Ludlow, 2001). “The Crypto-Anarchist Manifesto” proclaims

the belief in technology over politics (May, 1992). In considering the values of crypto-anarchy there are similarities to Barlow's cyber-libertarianism, however May's manifesto depicts crypto-anarchy in a more revolutionary manner, fighting against the possible dystopia of "state espionage and control" (Bartlett, 2018, p. 162). Other values promoted in the crypto-anarchist manifesto include altering "the nature of trust and reputation" through technology, impacting the ability for governments to regulate, tax and keep information secret (May, 1992). These ideas outlined in May's manifesto were adopted by the "cypherpunk movement" – a mailing list by May, Hughes and Gilmore, that shared ideologies around the notion of building technologies which would "make digital spaces ungovernable by law." (Bartlett, 2018, p. 165).

The cypherpunk movement is relevant to understanding how values regarding digital freedom and the removal of government regulation have shaped cryptocurrency and blockchain discourses. Nakamoto's Bitcoin white paper arose from the "cypherpunk movement" (Bartlett, 2018; Ludlow, 2001). In October 2008, under the pseudonym of Satoshi Nakamoto, the Bitcoin white paper was sent to the cypherpunk mailing list (Karlstrøm, 2014). The Bitcoin white paper makes reference to ideas by cypherpunks such as Dai's "b money" (Dai, 1998) and broader cyber-libertarian values such as criticising how: "Commerce on the Internet has come to rely almost exclusively on financial institutions serving as trusted third parties to process electronic payments." (Nakamoto, 2009, p. 1). Therefore, the

values expressed in the Bitcoin white paper originate from the aims of the cypherpunk movement and the broader concerns of cyber-libertarians.

2.2.2. Accelerationism

Blockchain technology can also be related to ideologies outside of its precursors in cyber-libertarianism and crypto-anarchy. ‘Accelerationism’ is an ideology that pushes for an alternative future to neoliberalism by creating radical technologies which will disrupt the current dominant economic and political orders (Williams & Srnicek, 2013). Accelerationists believe that “social and political upheaval has a value in itself”, and therefore by dramatically accelerating the speed at which technologies develop, current systems can be dismantled (Beckett, 2017).

Blockchain can be seen as an accelerationist technology because algorithms speed up interactions online, eliminating the need for human trust and instead automate trust, and disrupt current governance and monetary systems. This notion of automation in accelerationism, also aligns with the ideology of “fully automated luxury communism”, which proclaims the belief that everything should be automated and under common ownership (Merchant, 2015). In recognition of the role of capitalism in influencing the path of technological innovation,

accelerationists attempt to form new ways of situating technology around socialism and anarchism (Terranova, 2014). Therefore, blockchain technologies can provide a means to reimagine the concept of the commons, when considering how these key values of automation, speed and digital disruption are embedded into their algorithms.

2.2.3. Socialism and the Commons

The potential of blockchain technologies to enable socialist models of governance has been explored by several authors (Clippinger & Bollier, 2014; Huckle & White, 2016; O'Dwyer, 2015; Pazaitis, De Filippi, & Kostakis, 2017). Socialism is defined as having three major branches: "Marxism, Utopian Socialism and Anarchism" (Huckle & White, 2016, p. 7). Despite the differences between these ideologies, there are shared values around egalitarianism, non-hierarchical structures and shared community ownership (Huckle & White, 2016). In consideration of these values, blockchain technologies have the potential to form a digital commons.

In contrast, it has been argued that blockchain and DAOs cannot represent a digital commons, as they would need to drastically change structure so that original Owners would no longer exist and participants could organise without

automated “definitional control” (Greenfield, 2017, p. 174). In this sense, automation is seen to be incompatible with the original intentions of the commons. However, Lessig’s definition of the commons seems more compatible with a future blockchain-embedded commons:

The lack of ownership, the absence of property, the inability to direct how ideas will be used – in a word, the presence of a commons – is key to limiting, or checking, certain forms of government control. (Lessig, 1999, p. 7)

Therefore, blockchain values such as limiting governmental control and decentralisation can match the intentions of the commons as outlined by Lessig. In realising these different conceptions of the commons, this shows the considerable debate in politically aligning blockchain technologies.

2.2.4. The Banking Sector and Distributed Capitalism

Blockchain technologies have attracted interest from those in banking and business sectors. The World Economic Forum has classified the blockchain as part of the Fourth Industrial Revolution, heralding its potential to create opportunities

such as building new tax mechanisms¹¹ and its challenges in creating less control for countries over monetary policy (Schwab, 2016, p. 160). In *Blockchain Revolution* the term “distributed capitalism” is used to describe how blockchain technologies will lower the barriers to participation and ensure that the economy “will work for everyone” rather than just creating a “redistributed capitalism” (Tapscott & Tapscott, 2016, p. 49). Thus, blockchain technologies have already been framed within existing political systems, highlighting the potential of blockchain technologies but also ensuring that blockchain technologies are still marketable and accessible to those in business sectors.

2.2.5. Alternative Digital Democracies: Futarchy and Holacracy

Two other political ideologies have been discussed at length by blockchain enthusiasts, but have received minimal attention in academic literature. Buterin (2014a) has referred to Futarchy and Holacracy as new governance models that have taken advantage of DAOs. Futarchy was originally proposed by Hanson (2003) with the notion “vote on values, but bet on beliefs”. Hanson (2003) describes Futarchy as “politically neutral”, where prediction markets determine the success

¹¹ The World Economic Forum has stated that it is possible tax will be “collected for the first time by a government via a blockchain by 2025” (Schwab, 2016, p. 160).

of policies. Holacracy refers to a “self-management practice for running purpose-driven, responsive companies” (Holacracy, 2018). Rather than applying a technical approach to governance like Futarchy, Holacracy focuses on changing business-orientated values. For example, rather than “delegated authority” there is “distributed authority”, and rather than “job descriptions” there are “roles defined around work not people” (Robertson, 2015). As ideologies centred around markets and business, Futarchy and Holacracy show how the features of blockchain are being extended to broader political systems and ways of organising the future.

2.3. Social Semiotics

Research into blockchain values, of the kind surveyed above, has tended to be theoretical in nature, however, this thesis argues that a complementary empirical approach to exploring how these values are realised in the texts associated with blockchain technologies and the nature of the blockchain technology design is vital. The proposed empirical approach needed is social semiotic discourse analysis.

Social semiotics is a perspective on communication developed by British Linguist Halliday (1978) that is interested in how language and other modes of meaning-making are used in social contexts. Systemic Functional Linguistics (SFL) and Multimodal Discourse Analysis (MDA) arose out of this perspective. SFL considers

language as a meaning-making resource which is also 'full of resources for negotiating community' (Bednarek & Martin, 2011, p. 24). MDA draws upon the strategies for analysing linguistic meaning to consider how other semiotic modes can be modelled (Kress & van Leeuwen, 2006). This thesis draws on the SFL Appraisal Framework (Martin & White, 2005) to explore the values construed in the evaluative language of the white papers and apps/websites in the dataset. Previous work exploring values in discourse using Appraisal has considered values in social media discourse (Zappavigna, 2012, 2018), social tagging (Chiluwa & Ifukor, 2015) and solidarity-building (Drasovean & Tagg, 2015). This thesis will combine Appraisal with an MDA approach drawn from Kress and van Leeuwen's work on images and website design to consider how the multimodal features of the blockchain start-ups' websites/apps can supplement the values discovered from the white papers and provide a unique perspective on the symbolic attributes associated with blockchain ideologies (Kress & van Leeuwen, 2006).

A key dimension of the SFL and MDA approach is to adopt a metafunctional perspective on meaning-making. The concept of metafunctions refer to the notion that language maps various ideational, interpersonal and textual meanings onto one another (Halliday & Matthiessen, 2008). The *ideational* is concerned with experience, in terms of "what's going on, including who's doing what to whom, where, when, why and how and the logical relation of one going-on to another" (Martin & White, 2005, p. 7). The *interpersonal* is concerned with how people

negotiate social relations, interact and share feelings, whilst the *textual* is concerned with the organisation of information and "the ways in which ideational and interpersonal meanings are distributed in waves of semiosis" (Martin & White, 2005, p. 7). These metafunctions have also been applied to multimodal resources, and extended to consider aspects such as information values, modality and conceptual representations (Kress & van Leeuwen, 2006). **Table 1** refers to how metafunctions and multimodality are linked, in terms of key research questions pertinent to this thesis.

Metafunction	Multimodal Explanation
Textual	How is the website/app organised?
Interpersonal	How do users negotiate social relations, interact or share feelings on the website/app?
Ideational	How is experience construed on the website/app? What are the logical relations of one-going on to another?

Table 1 – Examples of Metafunctions in relation to Multimodality

Social semiotic approaches to analysing apps and websites have been explored by many authors, however there have not been any studies of blockchain technologies using MDA to date. MDA studies have analysed website interactivity through 'systemic functional hypermedia discourse' (Djonov, 2007), explored meaning-making in online news galleries (Caple & Knox, 2015), traced the development of multimodal discourse and resemiotisation in computational texts (Iedema, 2003) and explored the culture of websites (Pauwels, 2012). Machin and Van Leeuwen (2016), Kvåle (2016) and Serafini (2010) have explored methodologies for

understanding the connections between multimodality and ideology in relation to websites, software and books. Ho and Suen (2017) have focused on the textual elements of websites, by applying appraisal theory as an analytical framework.

Conclusion

As this chapter has suggested, current approaches to understanding the values in blockchain technologies have tended to involve speculation on the future possibilities of the blockchain rather than taking an empirical approach to understanding the blockchain technologies that currently exist and are embedded in the design of websites, apps and white papers. This thesis will fill in this gap in knowledge, by applying an empirical and social semiotic approach to understanding the values inherent to blockchain technologies. We will now turn, in the chapter which follows, to the specific discourse analytical tools that will be used to explore blockchain technologies.

Chapter 3: Methodology

Introduction

This chapter introduces the mixed-method data analysis approach applied in this thesis and the dataset of four published white papers and corresponding websites by the blockchain start-ups, Steemit, Creativechain, Democracy Earth and Bitnation. The mixed-method approach incorporated discourse analysis, in order to analyse values associated with blockchain, and a 'walkthrough method' (Light et al., 2016) for exploring design choices in apps. The two approaches were integrated by comparing the linguistic values construed in the white papers with meanings made multimodally in the websites.

In terms of the discourse analysis undertaken, 'value' was defined as the 'coupling' of *ideational* and *attitudinal* meaning, in other words 'evaluations about things' (Martin, 2000, p. 164), where evaluations were annotated using the Appraisal Framework (Martin & White, 2005) introduced in Section 3.2. Due to its semiotic focus this thesis has augmented the walkthrough method, by developing a new

approach for understanding values and discourses expressed in websites and apps that incorporates the insights of Multimodal Discourse Analysis.

3.1. Data Collection and Sampling

The data analysed in this thesis was comprised of both white papers produced by blockchain start-ups (see **Appendix A**) and the associated websites that were ultimately released (see **Appendix B**). These examples were chosen on the basis that the websites and apps have already been released and have a community of users. They also each represented applications of blockchain in different communicative, cultural and political spheres, beyond the Bitcoin movement. These start-ups included: Steemit; a social network networking site modelled on Reddit, Creativechain; a site that allows artists to share their work online, Bitnation; which describes itself as the “world’s first Decentralised Borderless Voluntary Nation (DBVN)” (Tarkowski Tempelhof, Teissonniere, Fennell Tempelhof, & Edwards, 2017); and Democracy Earth; a blockchain voting platform that promotes a borderless peer-to-peer democracy. A more detailed overview of these start-ups and their corresponding websites and white papers is provided in **Table 2**. An overview of the amount of data analysed is also included in **Table 3**.

Title and Link	White paper Word Count	Key Headings in White paper	Number of Webpages and Site Architecture	Description
Steemit https://steemit.com/	11, 539 words	Ways to Contribute Consensus Algorithm Eliminating Transaction Fees The Power of Steem	5 main pages: home page, trending, new, hot and promoted. Every written article has its own link. Everything can be accessed via the website itself.	Steemit.com is a social networking and blogging site, modelled from Reddit. Users that write articles and vote on posts receive payment in the form of Steem-blockchain rewards.
Creativechain https://www.creativechain.org/project/	4, 465 words	Intellectual Property Smart Contracts Social Network The Community Currency Issue and Mining	5 main webpages: home page, papers, media kit, FAQs and downloads. Homepage contains a link to download the program onto a desktop.	Creativechain is a decentralised creative community that allows artists to share their art online and get paid by other users in CREA. Blockchain technology also allows users to ensure their work will always be attributed to them.
Democracy Earth https://www.democracy.earth/	20, 123 words	Manifesto Voting and Smart Contracts Security Proof of Identity Universal Basic Income	4 main webpages: home page, papers, blog and donation page. Homepage contains a link to test out the beta-version of the voting platform.	Democracy Earth is a blockchain voting platform that promotes a borderless peer-to-peer democracy. Users are able to vote on issues they care about and delegate votes to those they already trust.
Bitnation https://tse.bitnation.co/#social	12, 140 words	The Internet of Sovereignty Pangea Technology Pangea Arbitration Token Organisation and Token Distribution	5 main webpages: Home page, documents, research, proposal and FAQ. Users must download the app from the Apple store or Google Play to access Bitnation services.	Bitnation describes itself as the world's first "Decentralised Borderless Voluntary Nation" (DBVN). Bitnation is an online community that has hosted the world's first blockchain birth certificate and blockchain refugee emergency ID. Users can download an app called "Pangea" where they can create their own nation, code of law and constitution using blockchain technology.

Table 2 – Description of Blockchain Start-ups

Type of Analysis	Details of Dataset	Numbered Units
3-Grams and Appraisal (Appendix A)	50 3-grams analysed, sampled from four white papers	500 sentences
Walkthrough Method (Appendix B)	Websites and apps from four start-ups analysed	9000 words

Table 3 – Overview of Dataset

3.1.1. N-Grams Analysis

In order to obtain an overview of some of the main communicative patterns in the dataset, concordance lines from the collection of white papers of the four blockchain start-ups (*Steemit*, *CreativeChain*, *Democracy Earth* and *Bitnation*) were inspected using *AntConc*, a software program used for undertaking concordance analysis of a corpus (Anthony, 2014). The first step was to consider the most frequent words and n-grams (sets of co-occurring words) in the dataset. The AntConc software ranks the n-grams and records how frequently the n-grams appeared. An example of this is shown in **Table 4** with the top 10 3-grams of the Steemit white paper. An example of each 3-gram displayed in concordance lines, can also be seen in **Table 5** with the most frequent Steemit 3-gram “the value of”.

Rank	Frequency	N-Gram
1	18	the value of
2	10	debt to ownership
3	9	the debt to
4	8	to ownership ratio
5	7	in the future
6	7	transactions per second
7	6	all of the
8	6	the steem network
9	6	this means that
10	5	for less than

Table 4 – Top 10 3-grams in the Steemit White paper

L1	3-Gram	L2
All debt carries risk to the lender. Someone who holds SBD without redeeming it is effectively lending the community	the value of	a dollar.
The concept of forcing users to maintain a minimum balance flows naturally from	the value of	a user.
	The value of	a share is derived from how much time it can potentially grant its owner.
If those unused timeshares were sold to people who would use them then	the value of	A timeshare would fall by 50%.
The Power of Steem: Steem recognizes that	the value of	all user contributions (posts and votes) is greater than the sum of the parts.
Taking popularity as a rough measure of value, then	the value of	each individual item is given by law.
For instance, it is easy to think that a copy of today's newspapers costs \$1, but readers face much more difficulty and anxiety in deciding on	the value of	each article or word.
One could argue that most of	the value of	Reddit is the near-real-time discussions that have occurred within the past week which would dramatically increase the value of new activity.
One could argue that most of the value of Reddit is the near-real-time discussions that have occurred within the past week which would dramatically increase	the value of	new activity.
Reddit is valued between \$500 million 18 and \$4 billion 19 which means that each and every upvote and post is worth between \$0.06 and \$0.50 assuming	the value of	Reddit is mostly within the past years' worth of activity.

Table 5 – Steemit 3-gram “the value of” displayed in concordance lines

This approach was adopted in order to determine where to focus the more closer discourse analysis (described below in 3.2), since manual analysis of the entire corpus is beyond the scope of the study. Therefore, the n-grams were to assist with the sampling of the white papers and are considered as part of the data collection process. The top ten 3-grams (sets of the 3 most common occurring words) were then selected as an initial, high level way into establishing the most prominent concerns and themes both within individual white papers and across the set of white papers.

3.2. Appraisal Framework

The manual analysis of the top 10 3-grams was undertaken using the Appraisal framework (Martin & White, 2005), a method for exploring how opinion and sentiment are realised in discourse. The Appraisal system consists of three key dimensions; attitude (feelings and judgements of behaviour), graduation (judging how strong a feeling is), and engagement (the voices around opinions in discourse). This thesis will focus on ‘attitude’ and the three discursive regions of attitudinal meaning – affect (emotions and reactions to behaviour), judgement (attitudes around people and their behaviours), and appreciation (evaluation of things) (Martin & White, 2005). The attitudinal part of the Appraisal system is shown in **Figure 1**.

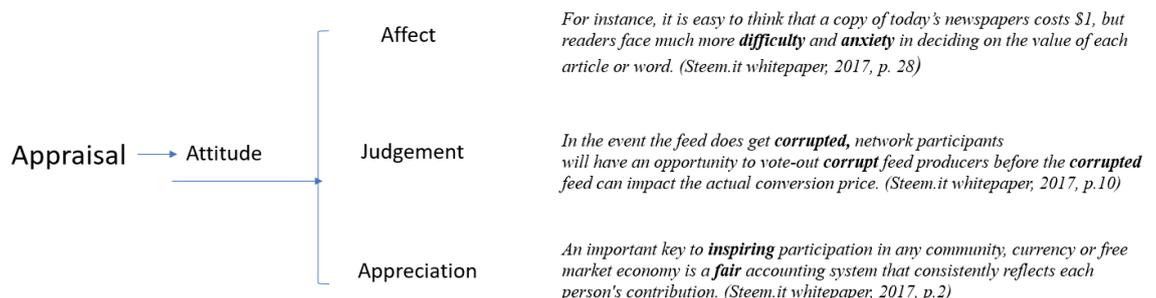


Figure 1 - The attitude system (adapted from Martin & White (2005, p.38) with example instances from the white paper dataset)

Each of these three discursive regions have further subsets which will be explored. For affect, these subsets are: “desire, un/happiness, in/security and dis/satisfaction”. Judgement is divided into “social esteem” and “social sanction”. “Social esteem” refers to attitudes based around the formation of social networks and consists of “ ‘normality’ (how unusual someone is), ‘capacity’ (how capable they are) and ‘tenacity’ (how resolute they are) ” (Martin & White, 2005). In comparison, “social sanction” refers to attitudes around rules, regulations and laws, and consists of ‘veracity’ (how truthful someone is) and ‘propriety’ (how ethical someone is) (Martin & White, 2005). Appreciation also consists of further subsets: ‘reaction’ (referring to the quality and impact of things), ‘composition’ (the balance and complexity of things) and ‘value’ (if something was worthwhile, authentic etc.) (Martin & White, 2005). For this study, the discursive regions of ‘judgement’ and ‘appreciation’ and their further subsets, are the main focus. Examples of the subsets of ‘judgement’ and ‘appreciation’ can be seen in **Table 6** and **Table 7**.

Judgement	Subset	Example
Social esteem	Normality	This means that SP is an access token that grants its holders exclusive powers within the Steem platform. (Steemit whitepaper)
	Capacity	Since in a liquid democracy a user can have one or more delegated votes, having a constant reminder of the balance helps the user understand his or her current power within the system. (Democracy Earth whitepaper)
	Tenacity	In this way Pangea mimics current Nation State jurisdictions where contracts are kept securely until needed, or where confidential documents are held securely by lawyers or in bank vaults. (Bitnation whitepaper)
Social sanction	Veracity	They are trusting that at some point in the future someone will be willing to buy the SBD from them for a dollar or that there will be speculators and investors willing to buy the STEEM they convert it into. (Steemit whitepaper)
	Propriety	This way, creative communities can be liberated and empowered juridically and economically at the same time that the ecosystem eliminates from the equation all the intermediaries that make the processes of creation and cultural distribution more expensive. (Creativechain whitepaper)

Table 6 - The regions of judgement (adapted from Martin & White (2005, p.53) with examples from the white paper dataset

Appreciation	Subset	Example
	Reaction	Marketers that operate the Facebook advertising machine price likes in a range that can go from \$0.10 to as high as \$25 based on the reputation and popularity of the account being used to capture user attention. (Bitnation whitepaper)
	Composition	Creativechain uses blockchain technology and its power of attorney to solve this problem by creating an incorruptible and inalterable time stamp that allows to certify the authorship and license of use or distribution of any work or digital creation. (Creativechain whitepaper)
	Valuation	We take three approaches to define the value of the vote token: Status-Quo: Social media offers a clear reference on how likes get valued online . Work & Time: A Universal Basic Income perspective offers useful insights on how labour time is being valued . Nation-States: Traditional elections offer useful insights on how votes are valued today . (Democracy Earth whitepaper)

Table 7 - The regions of appreciation (adapted from Martin & White (2005, p.56) with examples from the white paper dataset

3.3. The Walkthrough Method

The four selected websites and apps will be analysed through the walkthrough method, focusing on the multimodal features of the websites in terms of interactivity and usability. The walkthrough method entails systematically analysing a website or app, step-by-step, starting with its environment of expected use, governance, various stages of registration and entry, everyday use, and discontinuation of use (Light et al., 2016, p. 2). Altogether, these different factors account for a website or app's "intended purpose, embedded cultural meanings and implied ideal users" (Light et al., 2016, p. 1). The walkthrough method also requires some additional data, in terms of reading the privacy policy of the website, understanding governance structures of the start-up companies and any previous commentary or media press releases that may reveal the website's vision with more clarity.

The walkthrough method shares similar principles to Actor Network Theory (Latour, 2005), where "sociocultural and technical processes are mutually shaping" (Light et al., 2016, p. 6). Thus, it involves understanding the selected apps and websites from multiple dimensions and perspectives. **Figure 2** provides a breakdown of the different components that the walkthrough method covers.

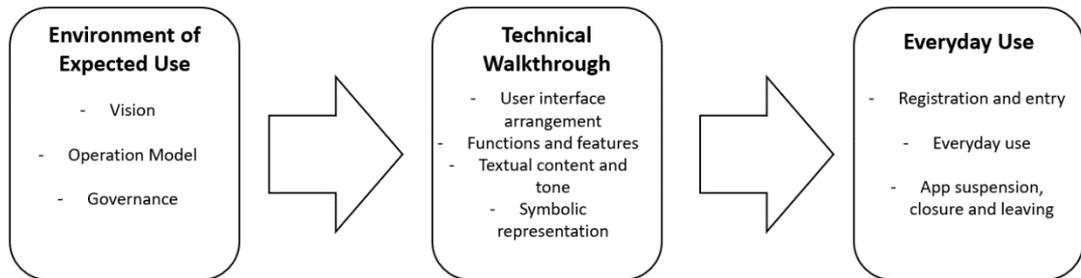


Figure 2: Flowchart of The Walkthrough Method (adapted from Light et al, 2016)

3.4 A Multimodal Approach to the Technical Walkthrough

The ‘technical walkthrough’ component of the Walkthrough Method needed to be augmented in order to account for the aims of this thesis which required a more thorough consideration of the semiotic and discursive practices regarding the design of the websites and apps. Light et al. (2016, p. 3) base the technical walkthrough around the four categories of ‘user interface arrangement’, ‘functions and features’, ‘textual content and tone’ and ‘symbolic representation’. Despite these categories being useful to determine the core features of apps, there is little detail regarding how to systematically understand the semiotic features of apps, drawing on multimodality and metafunctions (see the previous chapter for an explanation of the SFL perspective on metafunctions).

Therefore, this thesis extended upon the four key questions outlined in the walkthrough method, to provide a more detailed method for determining the technical features of apps from a semiotic perspective. This involved applying multimodal discourse analysis methods such as non-linear models, information values, interactive meanings in images, modality and symbolic structures. Similar to Poulsen's (2018) linking of the technical and semiotic functions of Instagram, this thesis has connected the technical walkthrough to specific semiotic functions which will be detailed in the following sections.

3.4.1. Using Non-Linear Models to Understand Website Structures

When analysing the websites and apps, the "user interface arrangement" was interpreted via the textual metafunction (Light et al., 2016, p. 11). In addition, 'simple non-linear models', were applied to further understand the arrangements of the websites and apps. Martinec and van Leeuwen (2009: 15) refer to "simple non-linear models" as "diagrams that can be used to map out the conceptual structures of texts or domains and that make explicit how such texts or domains are generally understood". Thus, the non-linear model structure was used to understand how the textual features of the websites and apps were constructed. The non-linear models of the 'star', 'network', 'matrix' and 'tree' structures are illustrated in **Table 8**.

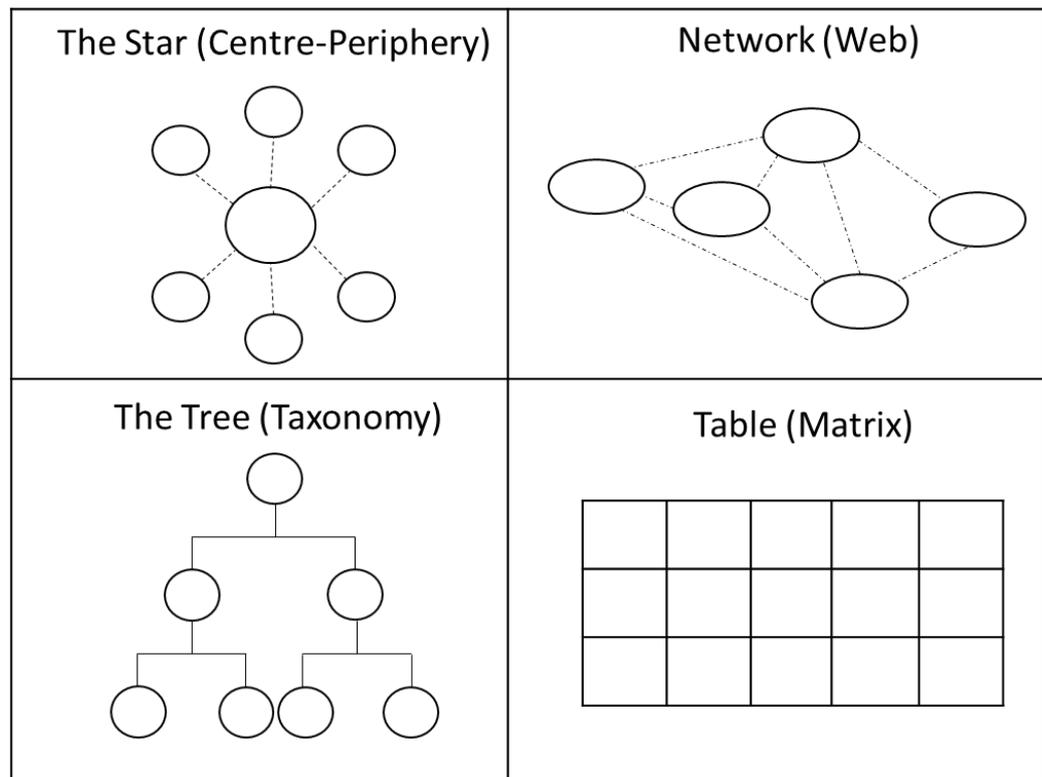


Table 8 – Examples of Simple Non-Linear Models (adapted from Martinec & van Leeuwen, 2009, p. 25-39)

3.4.2. Information Values

"Functions and features" can be interpreted via the textual and interpersonal metafunctions (Light et al., 2016, p. 11). For this study, the information values of the websites and apps were analysed through the textual metafunction. Information values refer to " the placement of elements" and the "specific informational values

attached to the various 'zones of an image' “ (Kress & van Leeuwen, 2006, p. 177). Thus, information values can show the importance of the layout of a website or app. These zones are illustrated in **Figure 3** with the corresponding systems network of information values is shown in **Figure 4**.

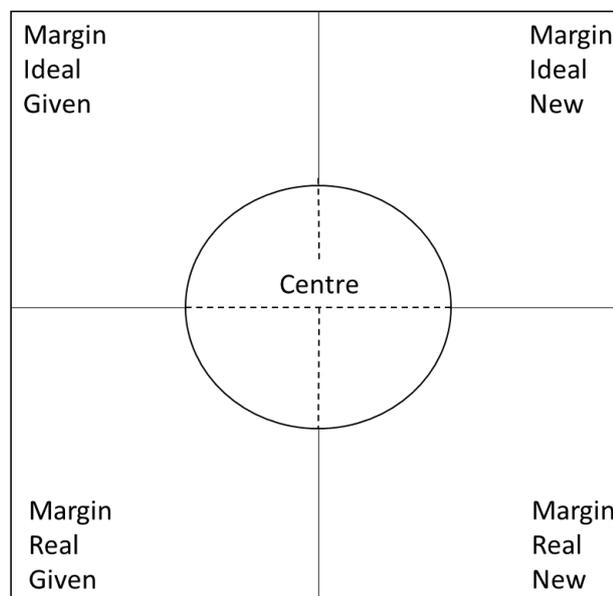


Figure 3 - Information Values (adapted from Kress and van Leeuwen, 2006, p.197)

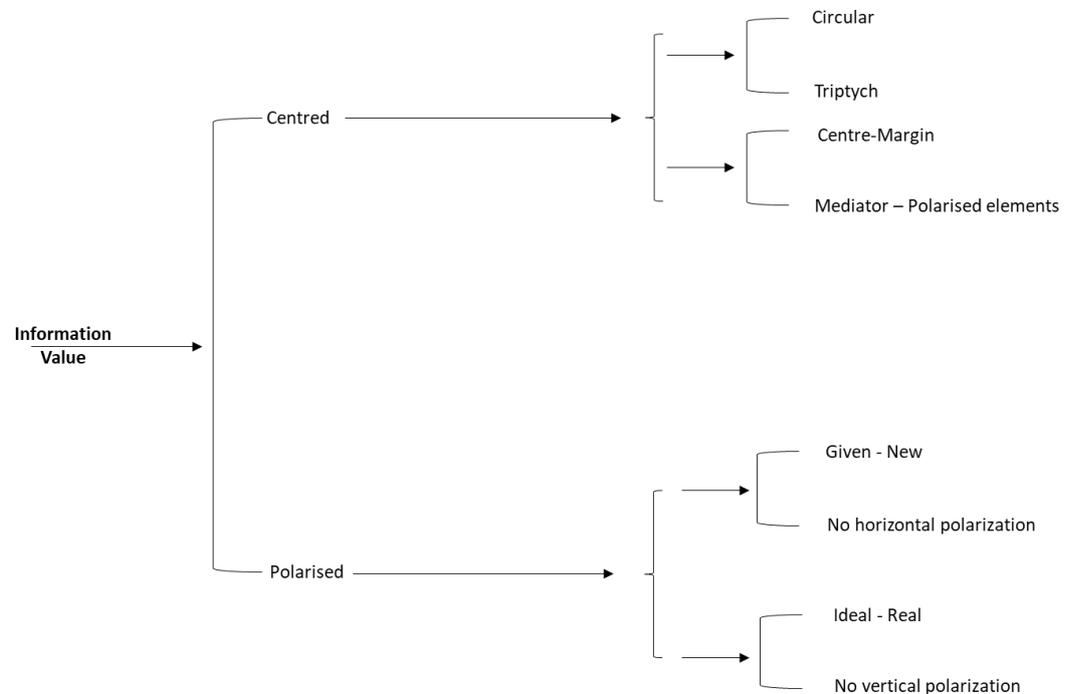


Figure 4 - Information Values Systems Network (adapted from Kress and van Leeuwen, 2006, p.210)

3.4.3. Interactive Meanings of Images

From the perspective of the interpersonal metafunction, the interactive meanings of images in the apps/websites were examined. Interactive meanings in images, refer to the representations of the producer and viewer of a text (Kress & van Leeuwen, 2006, p. 114). For example, a text could represent a 'demand' (a gaze at the viewer) or an 'offer' (the absence of gaze). The social distance of an image can range from 'intimate/personal', 'social' or 'impersonal'. In addition, the attitudes

shown in an image can be 'subjective' and involve the viewer, or conversely 'objective', showing either an 'action orientation' involving active participants in an image or a 'knowledge orientation' absent of active participants (Kress & van Leeuwen, 2006, p. 145). The systems network of interactive meanings is shown in **Figure 5**.

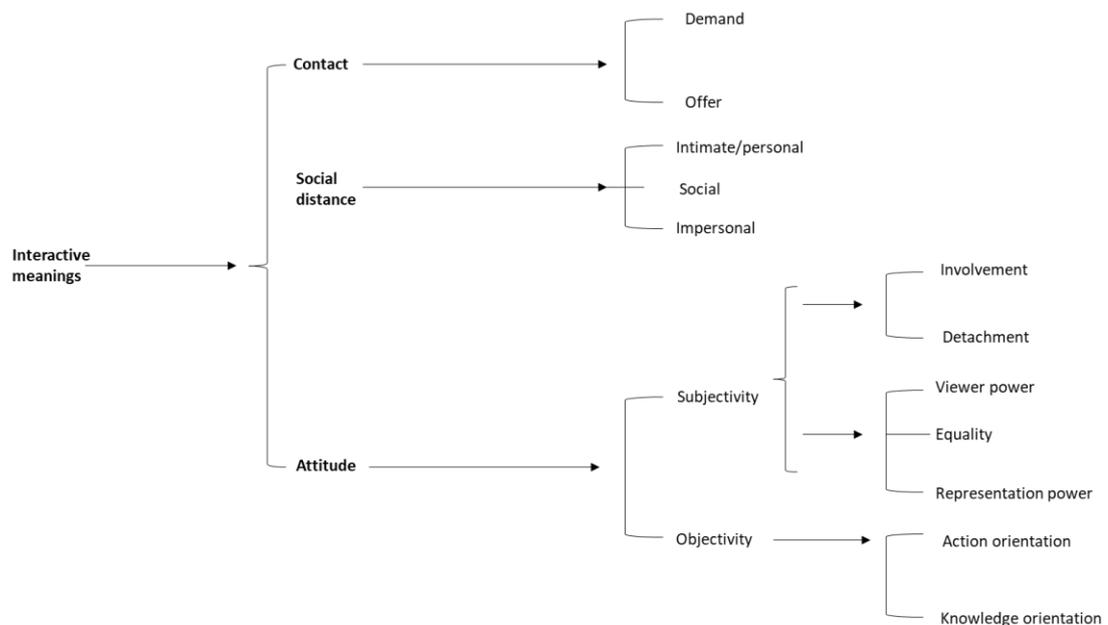


Figure 5 - Systems Network of Interactive Meanings (adapted from Kress and van Leeuwen, 2006, p.149)

3.4.4. Appraisal and Modality Analysis

"Textual content and tone" were examined via the interpersonal metafunction (Light et al., 2016, p. 11). Similar to the methodology used to analyse the white

papers, an Appraisal analysis was conducted of the selected textual elements featured in the websites of the start-up companies. This was conducted in order to see if there were any similarities in the text of the white papers and websites and was then accompanied by an analysis of the visual modality of the websites.

As Kress and van Leeuwen (2006, p. 155) note, modality is interpersonal rather than ideational because "it does not express absolute truths or falsehoods; it produces shared truths aligning readers or listeners with some statements and distancing them from others". The modality of the websites and apps was explored by aligning each example with a "coding orientation" - "a set of abstract principles which inform the way in which texts are coded by specific social groups, or within specific institutional contexts" (Kress & van Leeuwen, 2006, p. 165). For example, a high modality "technological coding orientation" is associated with a black and white colour scheme, whilst a high modality "sensory coding orientation" is associated with full colour saturation (Kress & van Leeuwen, 2006, p. 165). For the scope of this thesis, modality was only analysed according to colour modality cues and their respective coding orientations as this was the most prominent aspect that could be analysed across all the sites. The modality scale used is shown in **Figure 6**.

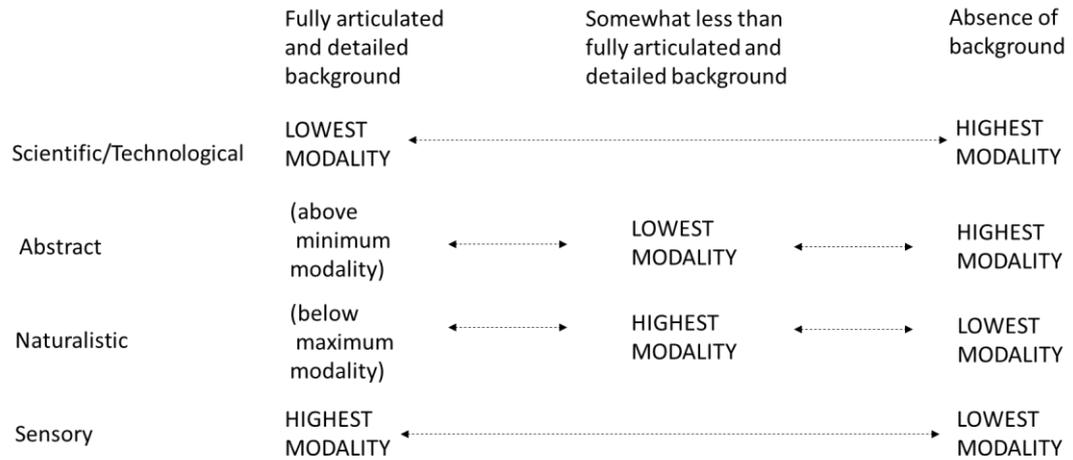


Figure 6 - Modality Scale (adapted from Kress and van Leeuwen, 2006, p. 166)

3.4.5. Conceptual Representations Expressed as Symbolic

Structures

"Symbolic representations" were examined via the ideational metafunction (Light et al., 2016, p. 12). This involved examining the conceptual representations displayed in the apps and websites. Conceptual representations encapsulate "symbolic attributes" where "meaning and identity as coming from within, as deriving from qualities of the Carrier themselves" or "symbolic suggestives" where meaning and identity are projected onto the object or carrier" (Kress & van Leeuwen, 2006, p. 106). The systems network for symbolic structures is shown in

Figure 7.

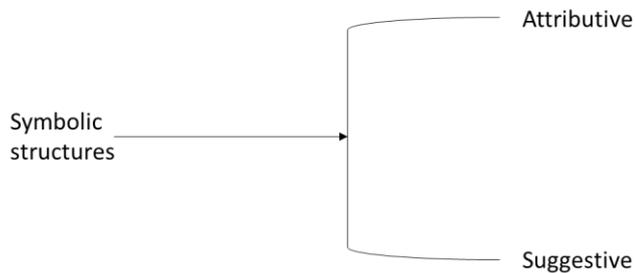


Figure 7 - Systems Network for Symbolic Structures (adapted from Kress and van Leeuwen, 2006, p.105)

3.4.6. Technical and Semiotic Representations Summary Table

Overall, the various technical and semiotic functions explored are summarised in **Table 9**. Although this does not provide an exhaustive account of how a website or app can be analysed, due to the scope of the thesis, the analysis conducted has provided a greater understanding of how a framework can be developed that provides a semiotic interpretation for how values are enacted in websites and apps. Thus, by considering all of these different dimensions, this thesis will extend the current walkthrough method.

Technical Walkthrough	Technical Representation	Metafunction	Semiotic Representation
<u>User-interface arrangement</u> How does the app guide users through activities via the placement of buttons and menus? (Light, Burgess, & Duguay, 2016)	Description of technical features and screenshots	Textual	Non-linear Models
<u>Functions and features</u> What are the groups of arrangements that mandate or enable an activity? (Light, Burgess, & Duguay, 2016)	Description of technical features and screenshots	Textual Interpersonal	Information Values Interactive Meanings in Images
<u>Textual content and tone</u> What is the text embedded in the user interfaces and their discursive power to shape use? (Light, Burgess, & Duguay, 2016)	Description of technical features and screenshots	Interpersonal	Appraisal Analysis Modality
<u>Symbolic representations</u> What are the semiotic, and likely connotations and cultural associations with respect to the imagined user and ideal scenarios of use? (Light, Burgess, & Duguay, 2016)	Description of technical features and screenshots	Ideational	Symbolic Structures

Table 9 – Technical Walkthrough with Semiotic Representations (adapted from

Light et al, 2016)

Conclusion

After completing these two analyses, the data obtained from the appraisal analysis of the white papers and the walkthrough analysis of the websites and apps was collectively considered in terms of key patterns shown across the four blockchain start-ups, in order to further understand the values enacted by blockchain technologies. The following chapters will present these results in terms of the key patterns and thematic concerns revealed by applying this methodology.

Chapter 4:

Dominant Patterns in Blockchain Discourse

Introduction

This chapter explores the dominant discursive patterns that were revealed by the discourse analysis of the dataset of white papers and websites/apps. The aim is to show the values enacted by blockchain technologies. The chapter begins by showing the discursive patterns discovered from the analysis of 3-grams in each of the white papers. These 3-grams are then used to conduct an Appraisal analysis of the dominant values manifest in the white papers. The walkthrough method of the corresponding websites and apps is also applied to discover the key values displayed across the blockchain start-ups.

4.1. Dominant Patterns Displayed in 3-grams

Analysing the top 3-grams provided insight into the key concepts and concerns in the white papers. The top 3-grams for each individual white paper were analysed,

as well as the top 3-grams shown across all the white papers. The results of each of these analyses, will be discussed separately.

4.1.1. Individual White papers

The top 10 3-grams in each of the white papers is shown in **Table 10**. These 3-grams initially suggest that describing networks and explaining the distribution of cryptocurrencies and digital assets, are important values shared across all the white papers.

Steemit	Creativechain	Democracy Earth	Bitnation
The value of	In this way	Proof of identity	Peer to peer
Debt to Ownership	And distribution of	The vote token	The pangea jurisdiction
The debt to	Of the network	In order to	Pangea arbitration token
To ownership ratio	The use of	In the network	Arbitration token pat
In the future	Of the work	Be able to	Non tradable reputation
For less than	License of any	Democracy earth foundation	The nation state
Transactions per second	Power of attorney	As long as	Tokens will be
All of the	This way the	That can be	Created on pangea
The steem network	And distribute digital	The right to	Internet of sovereignty
This means that	At the same	A liquid democracy	The internet of

Table 10 – Top 10 3-Grams Displayed Across the White papers

The top 25 3-grams were categorised into broad ‘themes’ in order to provide a better understanding of the key values depicted by the 3-grams. Although not all of the top 25 3-grams were analysed with Appraisal, as this is beyond the scope of the thesis, the top 10 3-grams that were analysed with Appraisal, represent a wide selection of the multiple themes covered in the white papers. This can be seen in the following tables, with the **top 10 3-grams in bold**.

The Steemit 3-grams in Table 11 were mainly concentrated around discussion of the ‘debt-to-ownership’ ratio; a key component of the STEEM cryptocurrency structure which promotes short-term debt but consists of a safety net, so that the debt never becomes uncontrollable (Steemit, 2017, p. 10). The 3-grams concerning ‘value’ and ‘amount’ can also be tied to a focus on cryptocurrencies and the benefits of the STEEM platform.

Value The monetary worth of STEEM	Debt/ownership Describing the key component of the STEEM platform: the debt-to-ownership ratio	Temporal Aspects which broadly relate to time	Networks and Organisation Aspects that relate to networks and organisation (either technological or people-based)	Explanations Phrases that were used to explain concepts and/or illustrate the uses of something	Amounts Aspects that relate to measuring the amount/value of something
The value of	Debt to ownership	In the future	The steem network	This means that	For less than
Value of a	The debt to	Transactions per second	Of the community	Is able to	All of the
Value of steem	To ownership ratio	Once per week	Proof of work	Is designed to	The amount of
		Period of time		It is possible	A minimum balance
				It is the	At the expense
				Be viewed as	Greater than the

Table 11 – Steemit Top 20 3-grams

Democracy Earth’s 3-grams were spread out across the categories of “rights”, “concepts”, “voting” and “explanations”. In particular, there was a focus on terms which related to individual rights and self-sovereignty. Concepts surrounding Democracy Earth’s adaptations to blockchain technologies such as “Proof-of-Identity”, vote tokens and smart contracts were also frequently used.

Rights Terms which relate to rights of individuals	Concepts Concepts surrounding blockchain technologies and politics	Voting Terms regarding voting	Explanations Phrases that were used to explain concepts and/or illustrate the uses of something
In order to	Proof of identity	The vote token	In the network
Be able to	Democracy Earth Foundation	Amount of votes	As long as
That can be	A liquid democracy	Of the vote	A proof of
The right to	The bitcoin blockchain		For this reason
His or her	Universal basic income		In the same
Must be able	Self sovereign identity		In terms of
Are able to	A self sovereign		
	Constitutional smart contract		
	The constitutional smart		

Table 12 – Democracy Earth Top 20 3-grams

Bitnation’s 3-grams focused on technical explanations of blockchain, the Pangea app and the nation state. 3-grams about ‘Pangea’ focused on descriptions of the app, the cryptocurrency of Pangea Arbitration tokens and the Pangea Jurisdiction;

Bitnation’s vision for an “internet of sovereignty” based on decentralised nations that can be “created, joined and lived-in” (Tarkowski Tempelhof et al., 2017, p. 6).

Concepts Concepts surrounding blockchain technologies and politics	Pangea and tokens Concepts surrounding the organisational elements of the Pangea app and cryptocurrency – ‘pangea tokens’	Nations/ voluntary nations Discussion regarding the nation state or Bitnation’s so-called ‘voluntary nations’	Temporal/ Explanations Aspects which broadly relate to time or explanations of concepts	Rules and legal aspects Terms which broadly relate to rules and legal aspects of blockchain technologies
Peer to peer	The pangea jurisdiction	The nation state	In order to	Set of rules
Internet of sovereignty	Pangea arbitration token	Borderless voluntary nation	In the future	Proof of nomic
The internet of	Arbitration token pat	Decentralised borderless voluntary	Such as the	Laws and legal
On the platform	Non tradable reputation			Smart contracts and
Tokens will be				
Created on pangea				
In the pangea				
Pat master tokens				
On pangea and				
Services on pangea				
The pangea software				

Table 13 – Bitnation Top 20 3-grams

Creativechain’s 3-grams were focused on providing explanations, acts of distribution and registration in relation to digital content, and the uses of various ideas and objects. In particular, there was a focus on explaining the Creativechain network and the intersections between power of attorney and blockchain technology.

Explanations Phrases that were used to explain concepts and/or illustrate the uses of something	Acts of distribution and registration Terms discussing distribution and registration in relation to digital content	Uses of Terms which relate to what something is apart of/how it is used	Rights/actions Terms which relate to rights of individuals and actions that can be undertaken	Temporal aspects Aspects which broadly relate to time
In this way	And distribution of	Of the network	The right to	The first time
This way the	And distribute digital	Of the work	That can be	The same time
In most cases	Digital content distribution	License of any	That are generated	At the same
Creative is a	Distribute digital content	Power of attorney		
	For the registration	The use of		
	Registration and distribution	Of any work		
		Of the platform		
		The data of		
		Of any digital		

Table 14 – Creativechain Top 20 3-grams

4.1.2. Comparison of White papers

The 3-grams that were present in all the white papers were also analysed. **Table 15** shows the 16 3-grams and their frequencies across all four white papers. The most frequent 3-grams are focused on explanations (in order to, in this way) and rights (be able to, the right to).

Rank	Frequency	Range	3-Gram
1	30	4	in order to
2	21	4	be able to
3	20	4	the right to
4	12	4	in this way
5	12	4	of the network
6	12	4	the use of
7	12	4	this means that
8	10	4	as well as
9	10	4	based on the
10	8	4	is designed to
11	7	4	can be used
12	7	4	in a decentralised
13	7	4	to have a
14	6	4	one of the
15	6	4	the creation of
16	4	4	this is a

Table 15 – 3-Grams found in all four white papers

The most frequent 3-grams across all the white papers, are focused on rights, explanations and describing compositional aspects of blockchain technologies (Table 16). This matches the similar themes discovered when analysing the individual white papers separately, as previously shown.

Rights/explanations	Networks	Composition	Other
Terms which relate to rights of individuals, explanations of concepts and/or illustrate the uses of something	Terms that relate to networks	Terms that relate to the composition of the app/start-up/technology	Other terms that couldn't be classified
In order to	Of the network	Is designed to	As well as
Be able to	In a decentralised	The use of	To have a
The right to		Based on the	One of the
In this way		Can be used	
This means that		The creation of	
This is a			

Table 16 – Top 16 3-grams featured in all four white papers

4.2. Dominant Patterns Revealed by Appraisal Analysis

After collating the 3-grams, manual analysis of the top 10 3-grams was conducted using Appraisal to understand the evaluative language used. Each instance of the top 10 3-grams in one sentence of co-text were analysed for attitude and polarity (positivity or negativity). The complete Appraisal analysis undertaken on the dataset is shown in **Appendix A**.

4.2.1. Positive and Negative Polarities

In order to provide an initial overview of the attitudes expressed in the white papers, the most common positive and negative evaluations were analysed. By mapping out the positive and negative appraised items for each of the white papers (as seen in the following tables) the key opinions and beliefs expressed in the white papers were able to be explored.

For example, Bitnation explicitly creates a division between ‘the nation state’, ‘borders’ and ‘state monopolies’ as negative entities, and in comparison, ‘voluntary nations’, ‘decentralisation’ and ‘new rules/systems’ as positive ideals that individuals should strive for (Table 17).

Positively Appraised Items	Negatively Appraised Items
<p><u>Bitnation systems</u> - Reputation/awards, pangea arbitration tokens, nomic laws</p> <p><u>New legal systems</u> - Legal union, new rules/systems, peer-to-peer technologies, broad stakeholder community, smart contracts, assets</p> <p><u>Decentralised Nations</u> - Citizens, decentralised jurisdiction, voluntary nations, decentralisation</p>	<p><u>Cyberattacks</u> - Sybil attacks</p> <p><u>Traditional systems</u> - state monopolies, borders, tyranny of the majority, imperial wars, the nation state, bureaucracy, global oligopoly</p> <p><u>Intermediaries</u> - Public notaries, lawyers and regulators</p>

Table 17 – Bitnation Appraised Items

Creativechain focused more on describing positive aspects of its platform, such as the potential of blockchain technology to transform culture online. However, there

was also some focus on the negatives of the current copyright industry and intermediaries (Table 18).

Positively Appraised Items	Negatively Appraised Items
<p><u>Creators/Users/Communities</u> - creator of the work, miners, specialised copyright lawyers, creative communities, microinverters , audiovisual companies,</p> <p><u>Commons movement</u>– creative commons, P2P content</p> <p><u>Creative chain/Blockchain technology</u>– creative coin, algorithms, platform, networks, payments/donations, tools, power of attorney</p> <p><u>Culture</u> – free culture, purchase of works, digital creations</p>	<p><u>Intermediaries</u> – copyright industry, credit card systems, banks</p> <p><u>Current content issues</u> - cultural participation gap, difficult to prove original creations, unsealed work</p>

Table 18 - Creativechain Appraised Items

Similarly, Steemit focused more on positive evaluations of the qualities of the platform, in terms of concepts relating to cryptocurrencies, such as promoting STEEM as a positive alternative to Bitcoin and the importance of vesting ownership. This was contrasted with negative evaluations of traditional platforms and the instability of the dollar (Table 19).

Positively Appraised Items	Negatively Appraised Items
<p>Cryptocurrencies – alternative implements to bitcoin, commodity hardware, vesting ownership, small fees, interest, indexing, speculators/investors, successful economies, LMAX exchange, shares, convertible notes, token, money/currency</p> <p>Community – content creators, traders, reddit’s near-real time discussions</p> <p>Blockchain technology – algorithms, network, STEEM, blockchain, interface, blockchain-based attribution</p> <p>Involvement – long-term interest, popularity, information/content</p>	<p>Traditional finances – high debt-to-ownership ratio, CEO, value of the dollar, debt, unstable currency, traditional micropayment and tipping platforms</p> <p>Users – forcing users, current readers, market participants, stakeholders who vote less frequently</p>

Table 19 - Steemit Appraised Items

Democracy Earth provided a more balanced consideration of positive and negative evaluations, paying similar attention in the white paper to the positive qualities of Democracy Earth (such as decentralisation, the notion of a commons and self-sovereignty) and the negative evaluations of the current political and media landscape (such as intermediaries, concentrated power and disenfranchised individuals) (Table 20).

Positively Appraised Items	Negatively Appraised Items
<p>Political systems - a liquid democracy, democracy, sovereign, self-sovereign, liquidity, votes, identity, attention, likes</p> <p>Blockchain technology – blockbirths, attention mining, bitcoin, initial rights offerings, network, innovation, smart contracts, financial cryptocurrencies, decentralised protocol</p> <p>Commons - open source software, common language, universal basic income</p> <p>Users/Key figures – little brothers, citizens, Satoshi Nakamoto, users, coders, applicant members, validators</p> <p>Organisations – Silicon Valley</p>	<p>Traditional voting/financial systems – quadratic voting, electoral votes, debts, inflation rates</p> <p>Lack of trust – alternative facts, disenfranchised individual, coercion</p> <p>Cyberattacks – sybil nodes, replicants</p> <p>Politicians - Donald Trump, Vladimir Putin</p> <p>Monopolies – Microsoft Windows, banks, Facebook, companies</p> <p>Traditional systems of power – governments, central power, elite, emperors, soldiers, central authority, intermediation, single operator, Big brother, pollsters and rudimentary simulations, a direct democracy</p>

Table 20 - Democracy Earth Appraised Items

Thus, each of these white papers follow a similar pattern of setting-up a dichotomy between negative evaluations of current financial, political and cultural systems and positive evaluations of systems that provide alternative future visions, such as those based around cryptocurrencies, decentralisation and self-sovereignty.

4.2.2. Using Appraisal to Discover Key Values

The Appraisal analysis conducted, involved analysing the key subsets discovered throughout the white papers. White papers exist as fact-based marketing material,

outlining the vision of the product being sold (Stelzner, 2007; Willerton, 2013)¹². In comparison to more emotive marketing, white papers tend to be written with more reference to the technical and ideological aspects of the product than emotive sentiments, thus existing as a “persuasive essay” (Gordon & Graham, 2003; Stelzner, 2007).

The white papers analysed predominantly display ‘inscribed’ rather than ‘invoked’ attitude. Inscribed attitude is realised via “explicit evaluative choices” in comparison to invoked attitude which is “suggested via ideational choices that imply evaluation” (Zappavigna, 2018). This may also explain why there are minimal examples of affect in the white papers. Instead, white papers can be seen as focusing on ‘institutionalised affect’, with the blockchain discourses either representing ‘rules and regulations’ (judgment) or propositions of ‘aesthetics and value’ (appreciation). These ideas are illustrated in **Figure 8**.

¹² Currently, there is minimal academic literature discussing white papers. As Willerton (2002, p. 33) writes in *The White Paper: Prominent in Industry, Neglected in Academia* “One reason for the dearth of academic resources for writing white papers might be that the definition of “white paper” is so broad”.

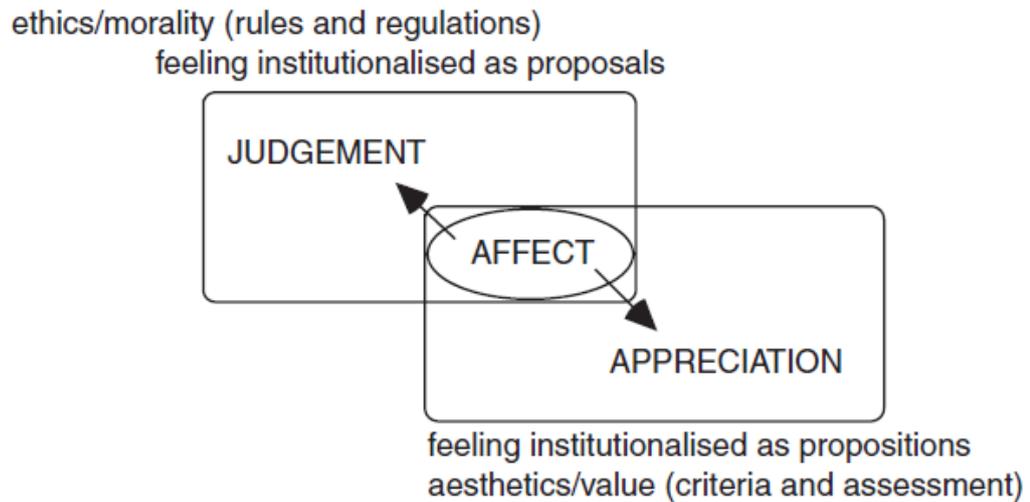


Figure 2.1 Judgement and appreciation as institutionalised affect

Figure 8 – Judgement and Appreciation as Institutionalised Affect (adapted from Martin and White, 2005, p.45)

Across all the white papers, positive valuation was the most common occurrence, followed by positive composition. If considering appreciation as reworking "feelings as propositions about the value of things" (Martin & White, 2005) it can be seen that the white papers focused on persuading the reader about the value of the blockchain start-ups, in terms of benefiting users. For example, with Steemit, Steem Dollars are positively valued and correlated with stability:

Because **stability** is an **important** feature of **successful** economies, Steem Dollars were designed as an attempt to bring **stability** to the world of cryptocurrency and to the individuals who use **the Steem network**.

[ideation: Economies/attitude: +valuation]¹³
 [ideation: Steem Dollars/attitude: +valuation]

The Democracy Earth white paper also focuses on the value of money. In this case, money is associated with power and votes, with Democracy Earth proposing an alternative democracy without coercion:

Although politics and economics are often perceived as different realms, history teaches that money means **power** and **power** means votes. **In order to effectively promote** democracy it is **essential** to address both.

[ideation: Money, power and democracy/attitude: +valuation]

The Creativechain white paper, positively values Creativechain and the notion of 'common creation'. Value is correlated with being of benefit to an individual, in this case the 'public benefit of free culture'.

Creativechain is a bet for the **public benefit of free culture** and common creation as a **collaborative method** of growing and guaranteeing **the right to** culture.

[ideation: Creativechain/attitude: +valuation]
 [ideation: Common creation/attitude: +valuation]

¹³ As flagged in the convention section at the beginning of the thesis couplings are annotated with square brackets to indicate the fusion of ideation and attitude to form a value (see Zappavigna (2018) for further examples of this annotation strategy).

With the Bitnation white paper, 'opt-in governance' is positively valued as enabling peace, stressing the future benefits of individualised technologies. The Pangea software is positively valued as being able to make this happen:

The **Internet of Sovereignty**: explains why opt-in governance is necessary to **enable** humankind to **peacefully prosper** and how Bitnation makes this **possible** with the Pangea software.

[ideation: Opt-in Governance/attitude: +valuation]

[ideation: Bitnation/attitude: +valuation]

Thus, the strong focus on positive valuation in each of the white papers shows a concern with proving the value of blockchain for future society. With these examples, 'value' can also hold a dual meaning - value in monetary terms and value in terms of usefulness and benefit to society. The second most occurring subset 'positive composition' continues with the notion of the white papers focusing on reworking "the value of things". A common pattern across all the white papers, was a focus on networks and their positive attributes. In the Steemit white paper, blockchain and decentralised networks are positively correlated:

Blockchains are **decentralized** networks where all transactions are broadcast to all peers.

[ideation: blockchain/attitude: +composition]

In the white papers, networks are associated with equal opportunity; equality in a technical sense that all nodes of a network are equal, but also the white papers associate the technical affordances of networks as creating equality for all humans. This can be seen with the Democracy Earth white paper on the value of the network:

The value **of the network** does not reside on the **simulated scarcity** but on its **ability to register uncoerced decisions** among self-sovereigns on the basis of equality.

[ideation: network/attitude: +composition]

Similarly, with Bitnation, the human and technological benefits of networks are merged:

Human nodes should **be able to reorganize** themselves in **resilient** nodes no matter what part of the network comes under attack - be it human or other technological factors.

[ideation: Human nodes/attitude: +composition]

In the Creativechain white paper, there is also a focus on the work of humans and networks combined, creating better potentials:

This percentage ensures a **good** reward for the miners which in turn will **motivate** the increase of nodes and with it a **greater security of the network**.

[ideation: reward/attitude: +valuation]

[ideation: network/attitude: +composition]

Therefore, the focus on positive composition represents a continuation of these start-ups associating blockchain as a worthwhile technology, with a positive impact on humans. 'Positive capacity' was the most featured subset in the Bitnation, Democracy Earth and Creativechain white papers. Each of these white papers associated positive capacity with the potential users of their products. In the case of Bitnation, positive capacity was associated with 'Citizens' and their ability to proactively use the Bitnation app and have control over their own governance:

In the Pangea Jurisdiction, Citizens are able to make **peer-to-peer** agreements, **resolve** disputes, and **access** governance services from DBVNs using the legal code of their **preference**.

[ideation: Citizens/attitude: +capacity]

With Creativechain, people have the capability to access information of the network without the current monopolising and centralised landscape of the internet. Similar to the positive composition of networks, positive capacity is also linked to the benefits of networks:

In this way and unlike the other centralized platforms like Google or Amazon in Creativechain all the people have the same **power of access** to the information **of the network** without generating positions of **privileges** between users and distributors.

[ideation: Citizens/attitude: +capacity]

In the Democracy Earth white paper, 'human attention' is seen as positive capacity and is associated with the 'Proof of Identity' algorithm; Democracy Earth's alternative to the more energy-intensive 'Proof of Work' algorithm:

In a democracy without central governments instead of verifying encrypted blocks, human attention **serves the purpose of voting** on self-generated identities **in order to grant them votes** which can eventually be used for new verifications.

[ideation: Human attention/attitude: +capacity]

Thus, throughout all the white papers positive capacity can be associated with the users of the platforms and how they can be empowered by blockchain technologies, rather than controlled by traditional institutions.

With the Steemit white paper, there was more of a focus on negative valuation than positive capacity. For example, throughout the white paper there was a lot of discussion regarding what can harm the value of the STEEM currency:

Abuse of this power can **harm the value of** STEEM so SP holders are **wise** to vote for witnesses that can be counted on to adjust the price feed and interest rates according to the rules outlined above.

[ideation: Abuse of power/attitude: -valuation]

[ideation: STEEM/attitude: -valuation]

[ideation: SP holders/attitude: +tenacity]

This focus on negative valuation rather than positive capacity, may be due to the more technical nature of the Steemit white paper, as it focuses less on explaining what users can do on the platform and more on explaining the economics of the Steem currency and why users should invest in the platform.

Positive propriety was a common pattern in the Democracy Earth white paper. This is due to the white paper focusing on citizen rights and the comparison between 'little brothers' versus 'big brothers'. The 'little brothers' are defined as validators that ensure the Democracy Earth network votes are legitimate and free from corruption. They are depicted with positive propriety:

Little brothers can **outperform** centralized identity providers in terms of **accuracy** as they are **constantly incentivized** to **maintain legitimacy** within the network in order to keep votes as a **valuable** asset: the **success** of the network on detecting replicants (duplicated identities) determines the **scarcity** of **the vote token**.

[ideation: Little Brothers/attitude: +propriety]

The focus on positive propriety in the Democracy Earth white paper, can also be attributed to the language of 'rights' used.

Everyone has the right to freedom of opinion and expression; this right includes **freedom to hold opinions** without interference and to seek, **receive and impart information and ideas** through any media and regardless of frontiers.

[ideation: Everyone/attitude: +propriety]

In considering judgement as focused on ethics and morality, it is understandable how there would be a strong showing of propriety in the Democracy Earth white paper, which focuses on rules and regulations.

Therefore, the top five subsets of 'positive valuation', 'positive composition', 'positive capacity', 'negative valuation' and 'positive propriety' have been analysed regarding how they contribute to the main themes depicted in the white papers. A mapping of these sub-set and their most common appraised items is shown in **Table 21**. In the next chapter, a more thematic understanding of the values depicted in the white papers will be explored.

	Steemit	Democracy Earth	Bitnation	Creativechain
Positive valuation	Economies Steem Dollars	Money, power and democracy	Opt-in Governance Bitnation	Creativechain Common creation
Positive composition	Blockchain	Networks	Human nodes	Rewards Networks
Positive capacity		Human attention	Citizens	Citizens
Negative valuation	Abuse of power			
Positive propriety		Little brothers		

Table 21 - Most Common Appraised Items

4.3. Using the Walkthrough Method to Discover Key

Values

By applying the walkthrough method to each of the websites and apps, we can begin to understand how the blockchain start-ups have tried to realise their visions outlined in the white papers and provide an empirical method for understanding recent blockchain start-ups. Nonetheless, it is important to realise that what is outlined in the white papers cannot be directly compared to the websites and apps, as many of the sites are still a work in progress or are in beta-testing mode. Therefore, the walkthrough method of the websites and apps serves as a framework

for understanding the key features and values expressed in blockchain start-up websites, rather than a fixed description of these websites and apps in relation to the white papers. All documentation showing the complete walkthrough method undertaken is shown in **Appendix B**.

4.3.1. Environment of Expected Use and Blockchain Start-up

Visions

The 'environment of expected use' considers the vision of the website/app, its operating model and governance structures (Light et al, 2016). Each of the start-ups analysed, provided a website where users can read about the start-up's vision and access the white paper. The connection between the 'vision' of each site and its values, could also be realised by combining the walkthrough method with Appraisal analysis. A summary of these results is shown in **Table 22**.

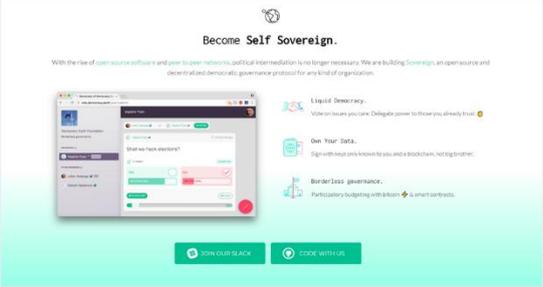
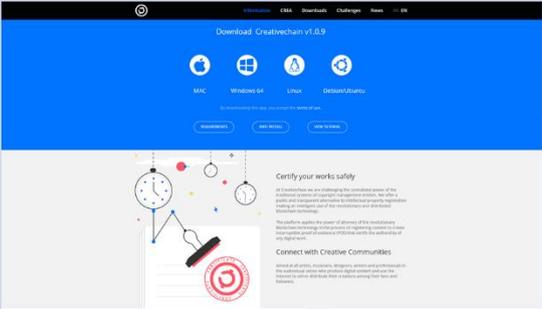
Sample of Results from Appraisal Analysis of Webpage Text	Example Webpage
<p>Steem is a blockchain-based rewards platform for publishers to monetize content and grow community.</p> <p>[ideation: publishers/ attitude: +cap]</p>	
<p>We are building Sovereign, an open source and decentralized democratic governance protocol for any kind of organization.</p> <p>[ideation: Democracy Earth/ attitude: +cap] [ideation: Sovereign/ attitude: +comp]</p>	
<p>The platform applies the power of attorney of the revolutionary Blockchain technology in the process of registering content to create incorruptible proof of existence (POE) that certify the authorship of any digital work.</p> <p>[ideation: blockchain technology/ attitude: +comp] [ideation: proof of existence/ attitude: +comp]</p>	
<p>Bitnation is the world's first Decentralised Borderless Voluntary Nation (DBVN).</p> <p>[ideation: Bitnation/ attitude: +comp]</p>	

Table 22 - Appraisal Analysis of Webpages

Each start-up displays itself as a better alternative to what already exists; Steemit as a new alternative to social networking sites, Democracy Earth and Bitnation both align themselves as alternatives to the current nation state and Creativechain as an alternative to current copyright laws and centralised creative communities. Stressing the positive compositional qualities of the platforms and blockchain technology, as well as the positive capacity of users to usurp traditional systems, were key values discovered across all the start-up homepages, matching the results from the white papers.

Each of the start-ups are at different stages of development. Steemit already exists as an easily accessible site, with active users, and a similar design to Reddit. Democracy Earth doesn't have a fully functional voting platform, but rather a beta-mode version adapted from the open source community of Github, where a community of mainly coders interact with the site and provide suggestions on the voting forum for how Democracy Earth can be improved. A functional version of Creativechain has already been released and must be downloaded onto a desktop. Bitnation exists as an app that can be downloaded from Google Play or the Apple store. Therefore, in terms of operating models there are many variances and stages of progression among the start-ups.

The governance structures of the start-ups also differ. Democracy Earth is a non-profit organisation, comprised of a team of “hackers, thinkers and makers

distributed around the globe” (Foundation, 2018). Steemit works according to an Initial Coin Offering (ICO) model where the site seeks people to buy its cryptocurrency. Creativechain consists of a team of developers, with its terms of use document stating that it is a non-for-profit organisation (Team, 2017). Bitnation was founded by Susanne Tarkowski Tempelhof to promote radical libertarian ideas. The organisation has partnerships with the E-Estonian residency program, Liberland and Bitcoin Suisse (Tarkowski Tempelhof et al., 2017)¹⁴. Thus, analysing governance structures also reveals the diversity of motivations behind the creation of these start-ups.

4.3.2. Applying a Social Semiotic Approach to the Technical

Walkthrough

The technical part of the walkthrough method consisted of analysing the technical and semiotic aspects of the websites and apps. Understanding the visual layout of the platforms as information values (Kress & van Leeuwen, 2006), as well as the associated symbol elements of the platforms, revealed how values are expressed

¹⁴ In *Radicals: Outsiders Changing the World* Bartlett (2017) writes about radical libertarians and the formation of Liberland – a nation founded by the Czech political activist Vit Jedlicka. Bartlett also mentions Bitnation founder Susanne Tarkowski Tempelhof, an attendee at the Liberland conference. Liberland and Bitnation are linked in their political philosophies of radical libertarianism and anarcho-capitalism (Bartlett, 2017, p. 280).

multimodally. The complete technical walkthrough considering the semiotic values expressed in the start-ups is shown in **Appendix B**.

The overall design of Steemit mimicked Reddit, with a triptych structure and the organisation of the site around tagging. There are four main categories to initially select “Trending”, “New”, “Hot” and “Promoted”. As shown in **Figure 9**, the left-hand column provided the most popular tags to choose from, the centre column provided the feed of posts and the right-hand column provided account settings and the ability to write a new blog post. Symbolically, Steemit's icons resembled conventional icons used on blogging platforms. Cryptocurrency elements do not stand out but are integrated into the platform instead.

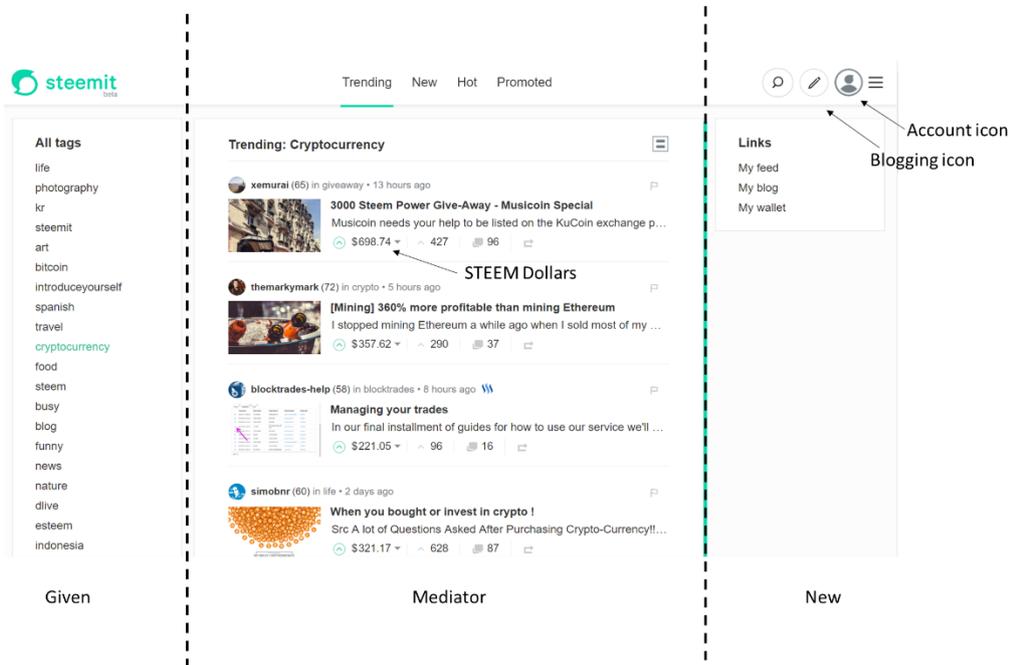


Figure 9 - Steemit Platform

With Creativechain, the 'blocks' of images and data, are the salient features, with the tabs at the top and the left-hand column existing as the margin features, as shown in **Figure 10**. The platform most closely resembles a circular layout, with the 'blocks' existing as the centre. The most prominent symbols are the illustrated CREA coin logos (mimicking the creative commons logo), spaceships and network nodes. Thus, the design of the platform depicts Creativechain as a futuristic project, based on creativity and decentralisation.

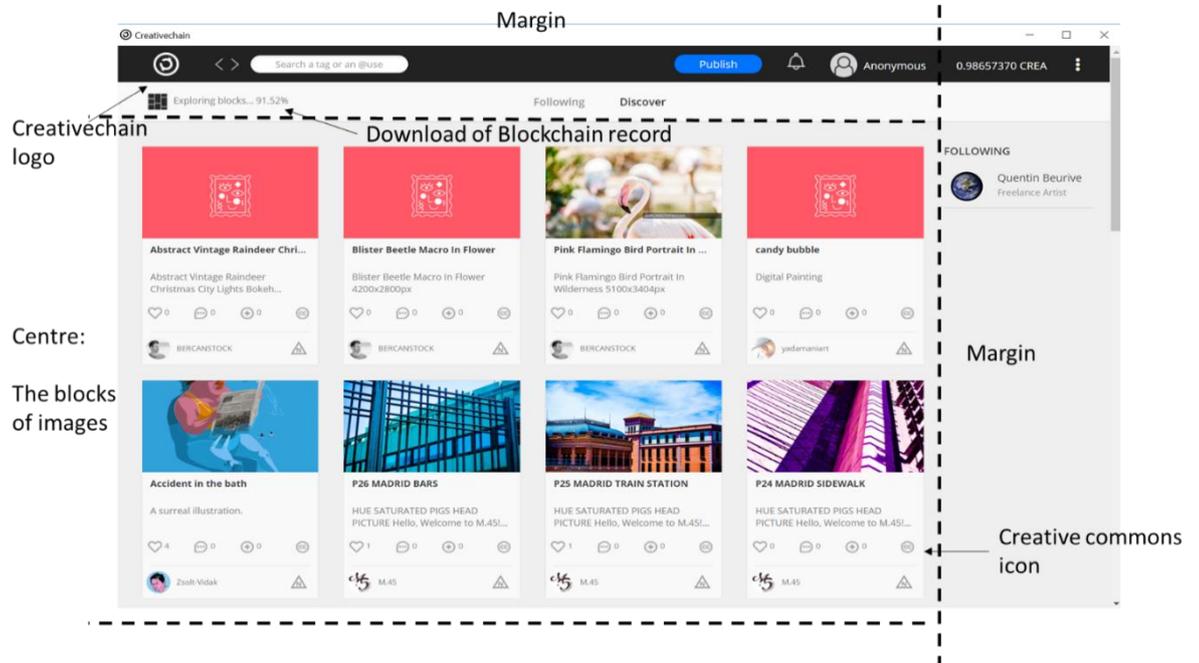


Figure 10 - Creativechain Platform

Democracy Earth's platform features a triptych structure as shown in **Figure 11**. The left-hand column represents 'given' information with the names of users who were recently active as well as the Democracy Earth logo - a flag of the Earth, without any geopolitical features. The middle column 'the mediator' is the interactive aspect of the platform and shows the discussion unfolding. The right-hand column 'the new' shows any recent activity and where all the votes have been directed, essentially functioning as the immutable blockchain record of the platform.

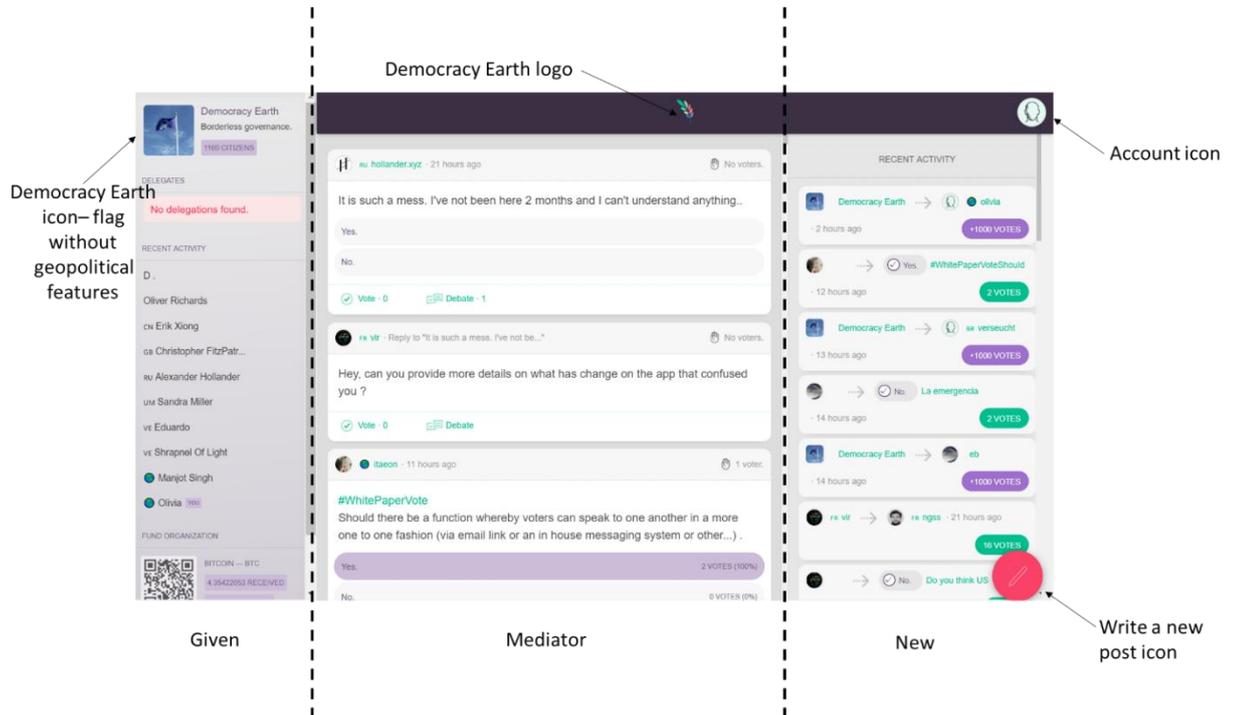


Figure 11 - Democracy Earth Platform

Bitnation's app consists of an ideal/real structure as shown in **Figure 12**. The 'ideal' refers to the categories of 'activity', 'wallet', 'nations' and 'private key' which can't be clicked on but can only be read by the user. The grey tab 'the real' always remains at the bottom of the app. The icons each have symbolic attributes. The 'wallet' for example, represents cryptocurrencies. Similar to Democracy Earth, Bitnation also focuses on geographical rather than geopolitical features. The image of a globe is shown without any 'nations' or 'borders'. This idea also fits with the symbolism of Bitnation naming its app after "Pangea", originally defined as a

prehistoric supercontinent¹⁵. Overall, the multimodal analysis of the platforms reveals how discursive and visual features collectively contribute to the expression of values and ideologies.

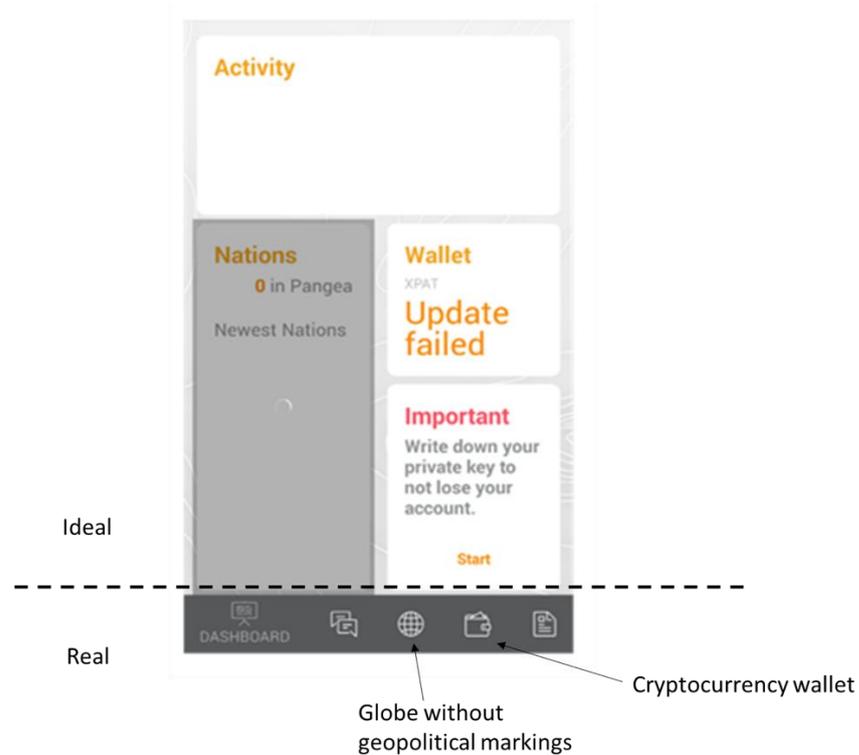


Figure 12 - Bitnation Platform

¹⁵ Pangea (or Pangaea) is: "A vast continental area or supercontinent comprising all the continental crust of the earth, which is postulated to have existed in late Palaeozoic and Mesozoic times before breaking up into Gondwana and Laurasia" (Oxford, 2018a).

4.3.3. Everyday Use

The everyday use section of the walkthrough method considers registration and entry, everyday use and app suspension. For the purposes of this thesis, app suspension was the main focus, as the everyday use of many of these apps is difficult to form a complete picture of, as some of the websites and apps still exist in beta mode and do not have active communities of users. In particular, Bitnation and Democracy Earth seemed to exist more as business propositions or outlines of a political ideology, than as applications with current pragmatic uses for individual users.

In terms of registration and entry, there were some incongruities in the aims of the white papers and the actual designs of the websites and apps. Each of the sites offered different methods of registration, connecting blockchain and traditional platforms (details of these different methods can be seen in **Appendix B**). For example, Democracy Earth gave users the option to register with their facebook accounts "called Big Brother" (symbolised with negativity) or create a new account from scratch (symbolised as the more ethical option). Other sites such as Steemit, which promoted itself as an alternative to Reddit, similarly went against its values and still offered external links to Reddit. Thus, these start-ups, despite the radicalness of their ideas expressed in the white papers still exist between two

contradictory spheres - the current internet monopoly and their own notions of decentralisation.

The app suspension of the blockchain start-ups was of particular interest due to concepts surrounding the immutability of the blockchain record. Steemit clearly outlines that users are responsible for storing a backup of their password. There is no password retrieval, so if you lose your password, you lose all your STEEM currency. According to the Steemit Privacy Policy, even if you delete your account, the posts, comments and messages submitted on the site might still be viewable or available on steemit.com's servers (Steemit, 2017). With Creativechain, the software can be deleted from a computer. However, the record of creating the account itself and all transactions by the user, cannot be deleted as everything exists as an incorruptible record on the blockchain. There is no 'log out' button for the Bitnation app. If users want to leave the app, they can delete it from their device, however if they have registered for a 'public key' this will remain on the blockchain, thus users are unable to completely delete their presence from the database. In a similar sense to Democracy Earth, users can log out of the system, but have no option to completely erase their account on the platform, keeping with the notion that the blockchain record is immutable. Thus, these aspects of the blockchain start-ups differ from conventional online platforms, showing how some blockchain values have been embedded in the designs of the websites and apps.

Conclusion

This chapter has discussed the individual results discovered from the methodology encompassing corpus linguistics, Appraisal and the walkthrough method. Overall, this analysis has revealed that key values were established regarding positive evaluations and trust in blockchain technology over distrust and negative evaluations of current institutions, and the strong correlation of technology and individual sovereignty. The next chapter will explore these values further and show thematic concerns across the white papers and websites/apps.

Chapter 5: Decentralisation, Trust and Political Ideologies

This chapter will explore the key values discovered from the combined analyses of the white papers and the websites/apps. From this research, it was discovered that the key values expressed are based on themes of decentralisation and trust. Another important area of consideration is the attention paid to constructing political ideologies by the blockchain start-ups in their white papers, and how this is later manifested in the design and function of their websites and apps. Therefore, these three key dimensions of decentralisation, trust and the focus on political ideologies will be explored.

5.1. Decentralisation

Decentralisation was a key quality discovered across all the blockchain start-ups. Blockchain technology represents a new model for the internet based on decentralisation, and that even if the blockchain industry recedes, it will leave behind a legacy as “the blockchain industry is one of the first identifiable large-scale implementations of decentralisation models, conceived and executed at a

new and more complex level of human activity.” (Swan, 2015, p. 81). Thus, understanding the value of decentralisation can provide a greater understanding of the concepts driving new models of the internet.

5.1.1. The Promotion of Decentralisation

In each of the white papers, the main descriptor for blockchain technology is ‘decentralised’. Similarly, there is a focus on promoting the benefits of decentralisation in the websites and apps. Thus, in understanding how the positive compositional values evident from the appraisal analysis relate to the design of the actualised start-up websites and apps, decentralisation is shown to be a defining feature across all the blockchain start-ups.

From the appraisal analysis, ‘decentralised’ was a key word used in the white papers and marketing material of the websites. In the Steemit white paper, blockchains are described as “decentralised networks” with a positive compositional value. On the Steemit website (**Figure 13**), there is a focus on promoting Steemit as a “social networking” site that “pays it community”, again establishing the positive compositional qualities of the Steemit platform and distinguishing Steemit from other social networking sites, due to its “decentralised” qualities, where users can share in the profits made from social networking sites rather than being exploited from their time spent online.

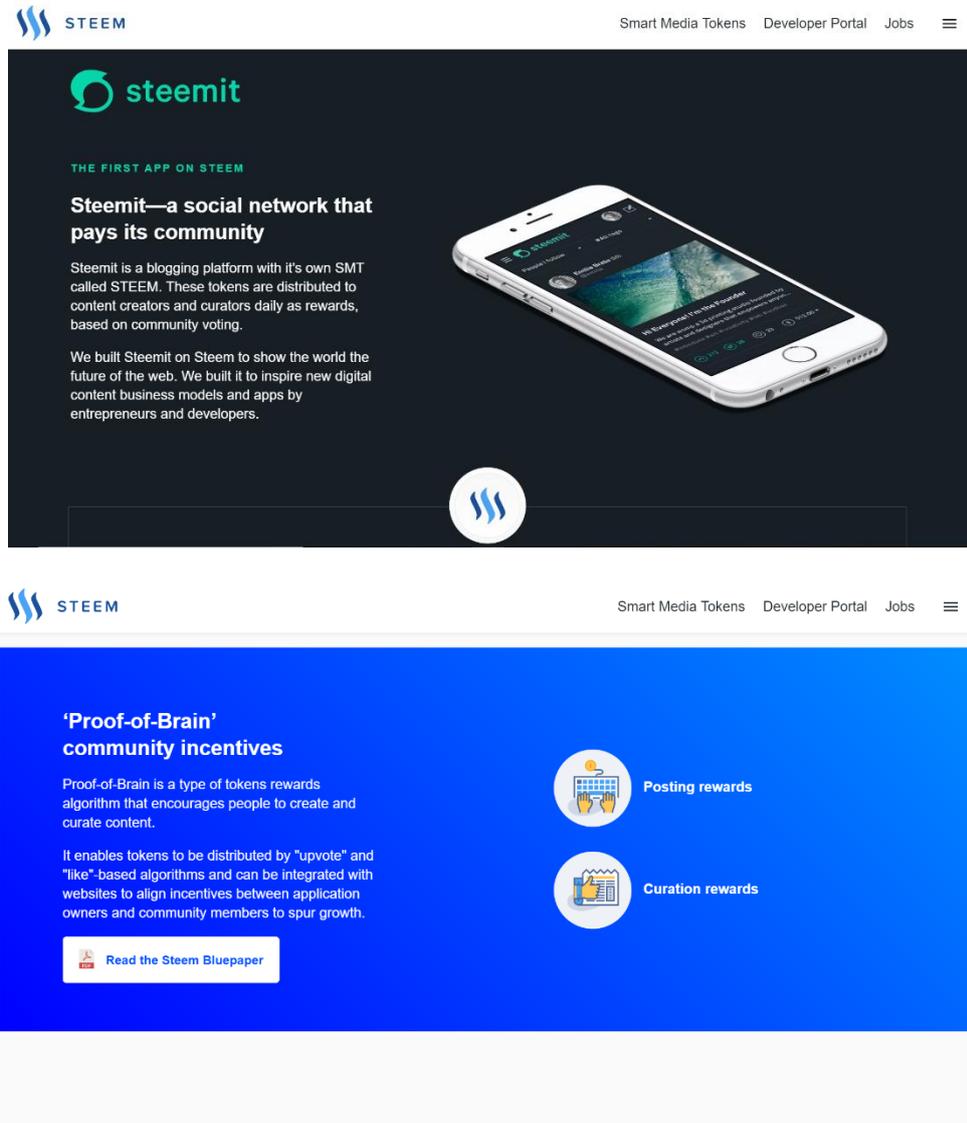


Figure 13 – Steemit Webpages

In the Creativechain white paper, ‘decentralised’ is a major focal point for advertising the platform, as seen by these examples:

...a platform that applies the blockchain technology to create a complete and autonomous and **decentralised** system of registration and distribution of contents...

[ideation: system/attitude: + comp]

The power of attorney along with the **decentralised** distribution of digital P2P content articulate a new paradigm shift in the era of digital culture...

[ideation: digital P2P content/attitude: + comp]

In each of these examples, 'decentralised' is associated with positive compositional qualities; enhancing platforms, systems of registration and digital peer-to-peer content. Democracy Earth also associates its main algorithm "Proof of Identity" with the positive compositional quality of 'decentralised':

"Hence, the overall challenge for a successful **decentralised** Proof of Identity dynamic..."

[ideation: Proof of Identity dynamic/attitude: + comp]

With Bitnation, the Pangea Jurisdiction app's creation of DBVN's (decentralised borderless voluntary nations) is associated with positive compositional qualities:

In the realm of a DBVN, **decentralisation** translates into both technological and human **decentralisation** through the use of P2P (Peer-to-Peer) technology, modular interfaces, API (Applications Programming Interface) layers, and forkable (duplicated) code.

[ideation: DBVN/attitude: + comp]

[ideation: Decentralisation/attitude: + val]

In another instance, the negative values of the Nation State are contrasted with the affordances of decentralised governance. Historically, there has also been a connection between the creation of networks and “geopolitical antagonism”, aligning with current concerns in blockchain discourses (Baldwin, 2018).

Through this process the Nation State will become **increasingly irrelevant** to our everyday lives. The time is right for every one of us to reclaim our sovereignty and build a **positive** future through **decentralised** governance. Enter Pangea.

[ideation: Nation state/attitude: -val]

[ideation: Decentralisation/attitude: +val]

Therefore, the promotion of decentralisation is achieved by establishing decentralisation as a positive alternative to current existing models. Decentralisation functions as a technological and political theory, with decentralised networks appearing as a “natural progression over centralised networks” (Baldwin, 2018). In this sense decentralisation is promoted as a solution to problems of governance and authority.

5.1.2. Visualising the Composition of Networks

The positive composition of networks is visually shown in the websites and apps. In referring to Martin and White’s suggestion that the appreciation framework can be interpreted metafunctionally (see **Table 13**); the sub-type of appreciation, composition can be linked to the textual metafiction (Martin & White, 2005, p. 57). Therefore, we can associate the positive compositional qualities of decentralisation and networks discussed from the appraisal analysis, to the realisation of the positive qualities of networks and decentralisation shown in the websites and apps.

Table 2.9 Sub-types of appreciation

appreciation	mental process type	metafunction
reaction	affection	interpersonal
composition	perception	textual
valuation	cognition	ideational

Table 23 - Sub-types of Appreciation (Martin & White, 2003: 57)

By constructing non-linear models of each of the apps, the Creativechain platform most resembled a network structure. As shown in **Figure 14**, the grid of images resembles a network structure, as each image is of equal importance, forming a series of networked relations to one another. On the 'discover' tab the grid of images is constantly updated in real-time and new images (also referred to as blocks) appear each time on the screen. In this sense, the frontpage of the Creativechain platform is a visual manifestation of the 'blockchain' process, with the bar above the images reading 'exploring blocks' as it updates in real-time.

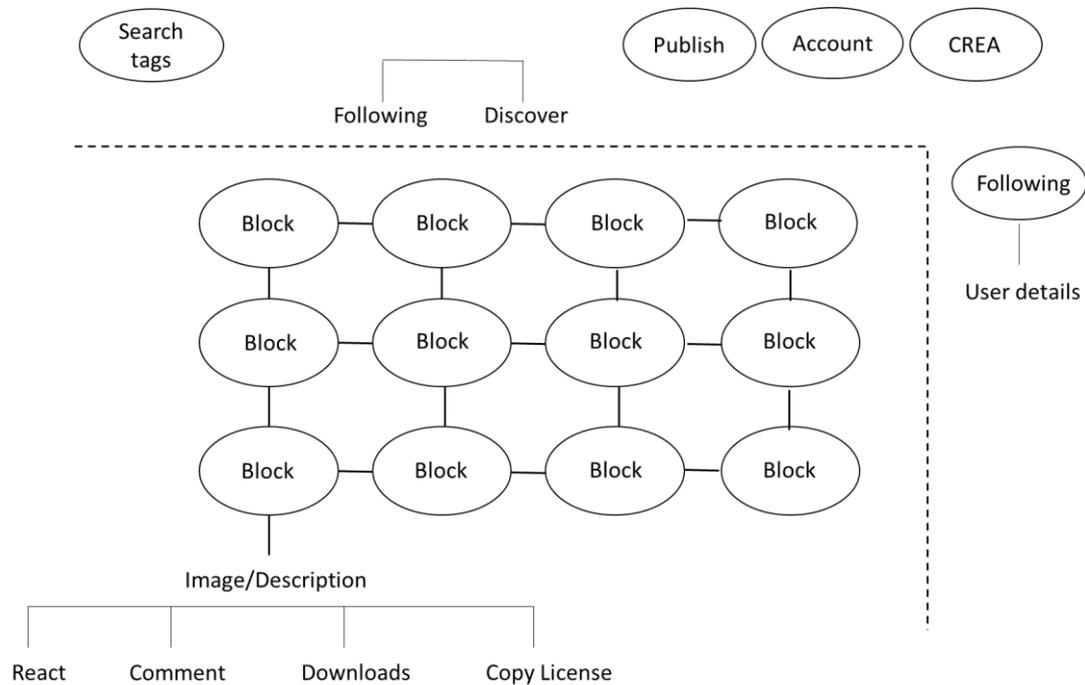


Figure 14 - Non-Linear Model of Creativechain

These similar values are displayed throughout the Creativechain website – the main marketing point for the platform. Illustrated network nodes feature throughout the website as seen in **Figure 15** and **Figure 16**. These illustrations of networks focus on decentralisation, security and highlighting the creative commons. Similarly, on the Bitnation site illustrated network nodes feature as shown in **Figure 17**. Regarding the non-linear model created of the Bitnation app (shown in **Figure 18**), there is a predominant network structure with the positioning of ‘activity’, ‘wallet’, ‘nations’ and ‘private key’ as these options are all of equal importance and interconnected with the grid-like structure of the app, in similar to the grid structure of Creativechain.



Figure 15 - Network Nodes Creativechain site

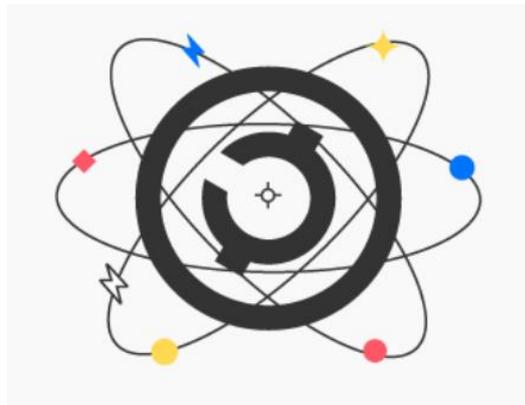


Figure 16 - Network Nodes Creativechain site

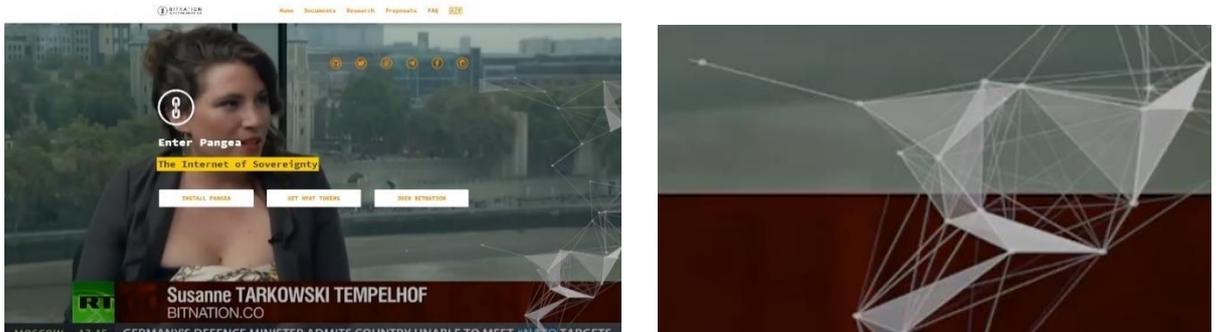


Figure 17 -Network nodes featured on the Bitnation site

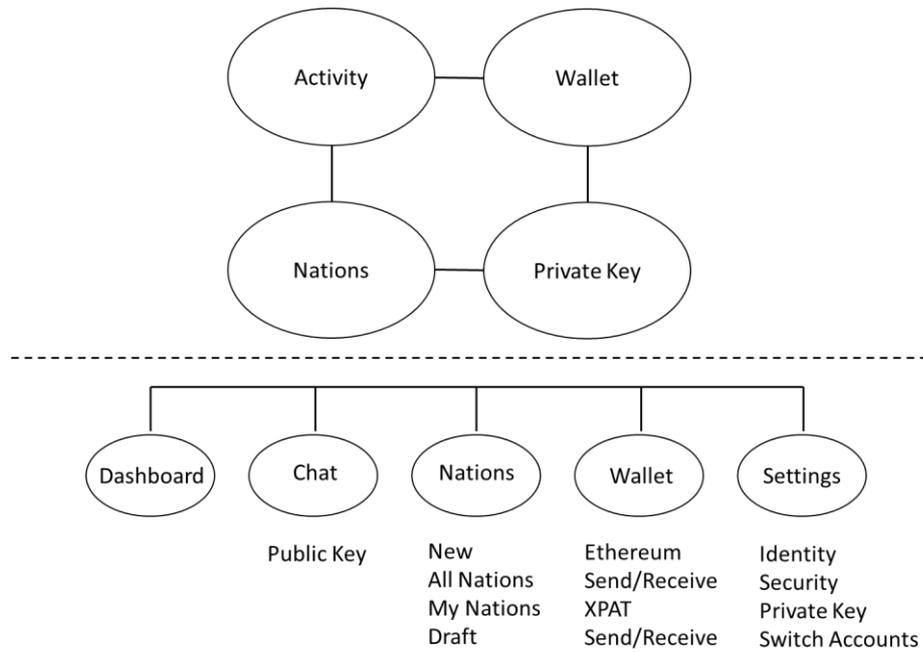


Figure 18 - Non-Linear Model of Bitnation site

In contrast, Steemit follows a conventional platform design, modelled on Reddit (as shown in Figure 19 comparing the design of the two sites). Thus, the site resembles a more taxonomic structure, with categories extending to sub-categories. In addition, the symbolic attributes associated with Steemit do not explicitly illustrate the decentralised nature of the platform. Instead as shown in

Figure 20 and Figure 21 there is more of a focus on the ‘speech bubble’ symbol and the STEEM currency shown as a centralised feature. Nonetheless, Steemit promotes itself as a ‘social networking’ site with an emphasis on “paying its community”. Thus, networking exists through more textual means such as tags and interactive elements such as the ability to give STEEM currency to posts and earn STEEM currency from writing posts.

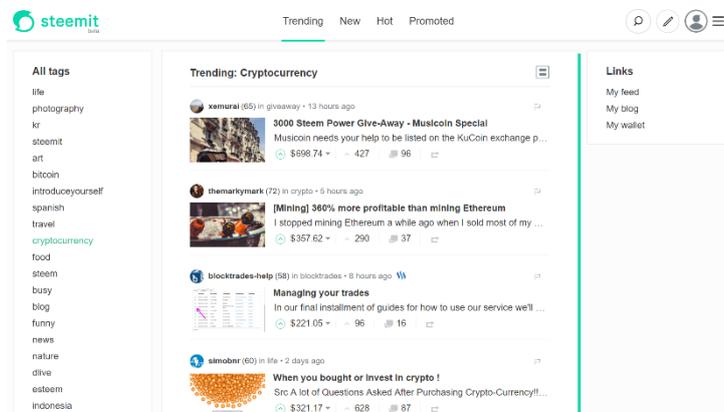
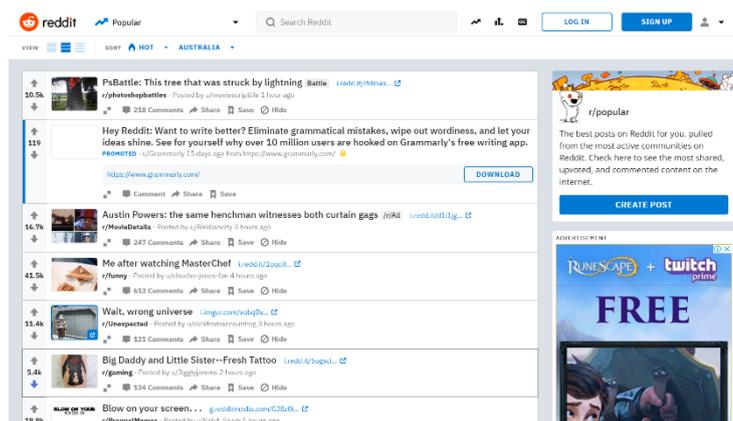


Figure 19 - Reddit vs. Steemit Websites



Figure 20 - Steemit Logo

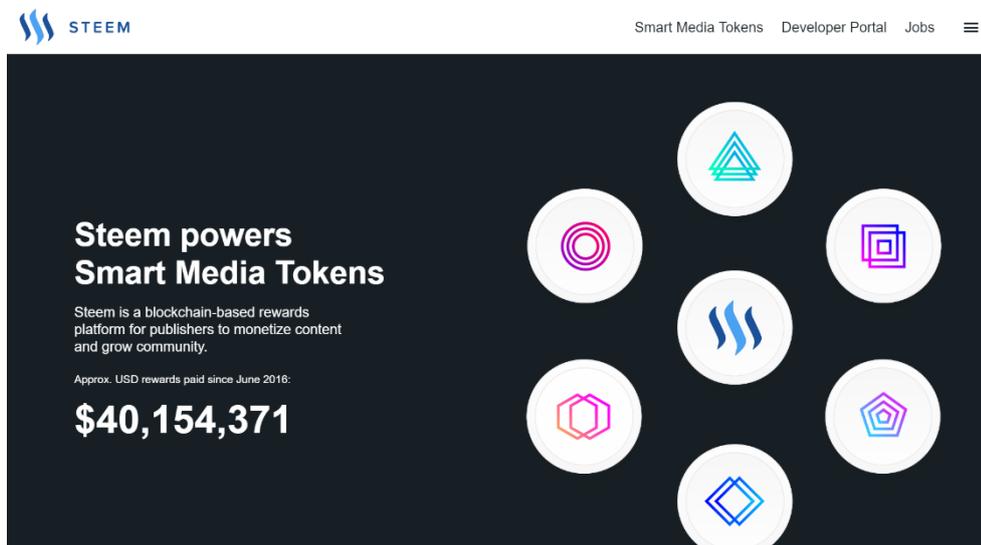


Figure 21 - STEEM Smart Media Tokens webpage

A non-linear model of Democracy Earth, shown in **Figure 22** follows a more conventional website organisation of a taxonomic structure. The right-hand column 'the feed' functions as the blockchain record of the platform, showing all recent activity and where votes have been directed. The marketing website for Democracy Earth provides a clearer visualisation of the networked structure of the site (as shown in **Figure 23**) with the illustration for 'crypto politics' – again associating cryptocurrencies with the positive value of 'decentralisation'.

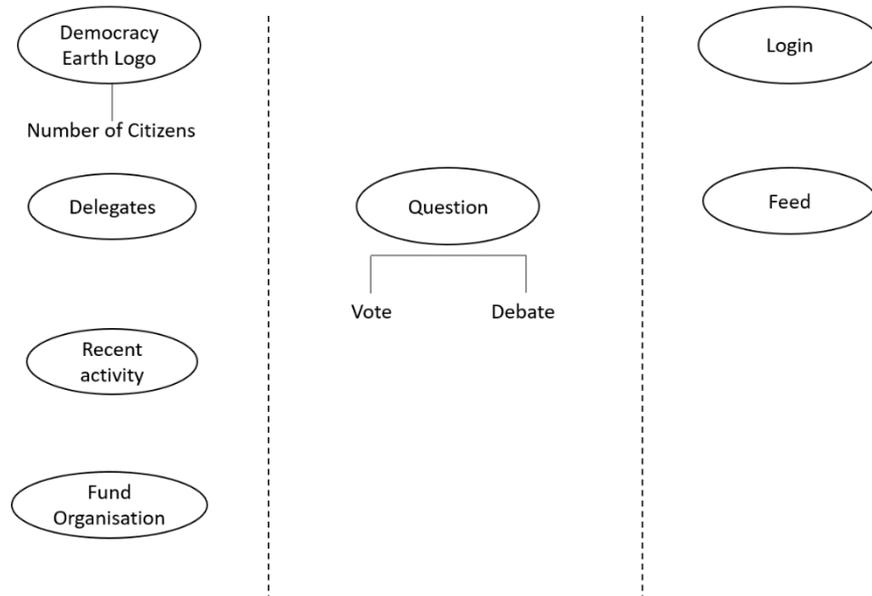


Figure 22 - Democracy Earth Non-Linear Model

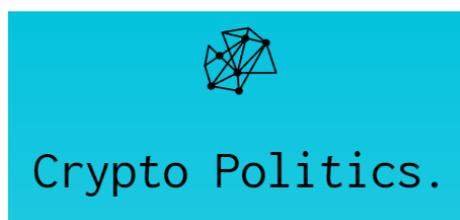


Figure 23 - Democracy Earth Screenshot from Website

Therefore, decentralisation can be realised as the one of the core values of these selected blockchain start-ups. A focus on the technical affordances of blockchain technology in terms of decentralisation was prominent both in text and visually. Overall, decentralisation as a key value across all the start-ups, reveals the desire

for new ways of restructuring the internet and challenging current systems of organisation.

5.2. Trust

Another core value discovered across all the blockchain start-ups was based around the notion of ‘trust’. This sense of trust was established by contrasting the future positive potentials of blockchain technology, with the failure of current politics and media in providing transparency of information and individual sovereignty. Thus, the positive compositional qualities of blockchain technologies are again stressed in order to effectively market these values. By dividing the core value of trust into two themes; how trust in algorithms and how trust in individuals is established in the white papers and websites/apps, the various complexities of trust will be examined.

5.2.1. Trust in Algorithms

In continuation from the focus on positive compositional values expressed in the appraisal analysis, it can be seen that focusing on the positive aspects of blockchain technology creates a sense of trust in the technology. Blockchain is distinguished by its “algorithmic self-policing”, meaning that algorithms ensure that users do not need to trust each other in order to interact and conduct transactions (Swan, 2015,

p. vii). Taking this into consideration, in the white papers of these blockchain start-ups, there is a focus on highlighting the technologies behind blockchain as being incorruptible and trustworthy, as seen in these examples:

“Creativechain uses blockchain technology and its power of attorney to solve this problem by creating an **incorruptible** and **inalterable** time stamp that allows to certify the authorship and license of use or distribution of any work or digital creation.”

[ideation: timestamp/attitude: + comp]

Democracy Earth highlights trust in blockchain algorithms, by depicting blockchain as an alternative to current organisations like Facebook which exploit user data, as described in this instance:

“And while Facebook **mines user attention for profit**, the Democracy Earth network will use the same resource to **strengthen the trust** of the vote token with its Proof of Identity process.”

[ideation: Facebook/attitude: - val]

[ideation: Democracy Earth Network/attitude: + val]

With Democracy Earth, attention is also placed on current affairs, again establishing trust in blockchain technology by providing solutions to current dilemmas. As seen in this example, Trump and Putin are depicted with negative propriety, showing the lack of trust in political leaders and the current predicament of fake news:

This is the playbook behind Donald Trump and **his fight against** the CNN & New York Times tandem; or the reason Vladimir Putin **invested significant resources** to create Russia Today in order to have a way of **presenting** alternative facts. Controlling the message tends to ***matter more*** than truth itself.

[ideation: Donald Trump and Vladimir Putin/attitude: - prop]

[ideation: alternative facts/attitude: - val]

[ideation: truth/attitude: + val]

With Bitnation, an emphasis is placed on criticising the current state of the world and establishing how blockchain can be a solution to current crises. For instance, the nation state is seen as exploiting technology and people's lives:

...the Nation State is becoming ***increasingly intrusive*** and using technology and regulation ***punitively*** in a ***desperate*** attempt to

regain the initiative from globalization and **take control** of every moment in our lives.

[ideation: nation state/attitude: - val]

The Steemit white paper focuses less on current politics, instead situating its platform as an easier to use and more beneficial platform:

This means that people are given a **familiar** and **widely used** interface and no longer face the cognitive, financial, and opportunity costs associated with traditional micropayment and tipping platforms.

[ideation: interface/attitude: + val]

Trust in Steemit is established by depicting the platform as having less problems than 'traditional micropayment and tipping platforms'. Again, focusing on the negatives of the present to highlight the potential solutions that blockchain technology offers.

In understanding how trust is established visually it is worth considering how Kress and van Leeuwen (2006, p. 154) link modality to "a social semiotic theory of truth". Modality in this sense is defined as the credibility of images we are shown. Based

on the walkthrough analyses of the apps and websites, the Steemit, Democracy Earth and Bitnation apps all existed within a scientific/technological coding orientation – using minimal colours and rather focusing on the ‘blueprint’ of the apps (see **Figure 24**) (Kress & van Leeuwen, 2006, p. 166). In contrast, the Creativechain website and app, existed within an abstract coding orientation, with more illustrations and generalised rather than technical features (see **Figure 25**). These differences could be attributed to Bitnation, Democracy Earth and Steemit focusing on political and social networking spheres, with Creativechain instead appealing to a more niche audience of creators. Thus, an analysis of the coding orientations of the app designs, reflects how trust in the apps is established by appealing to target audiences.

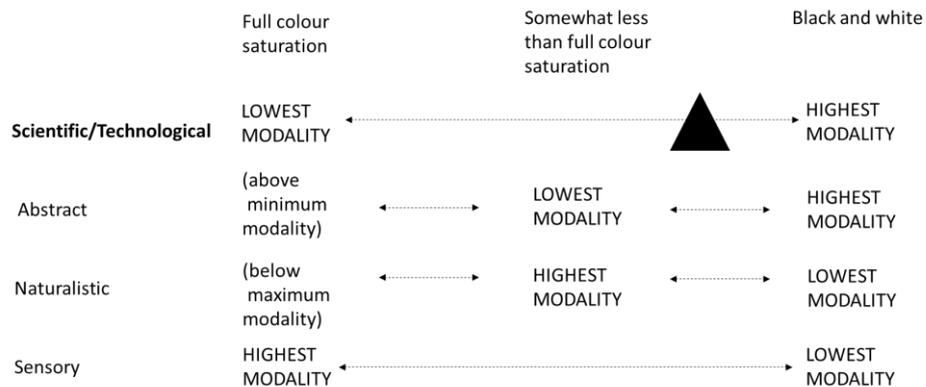
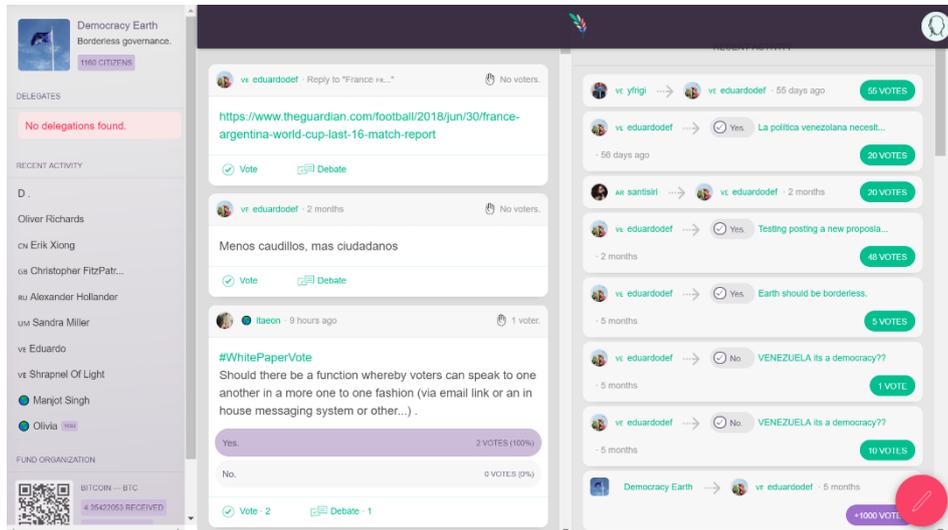
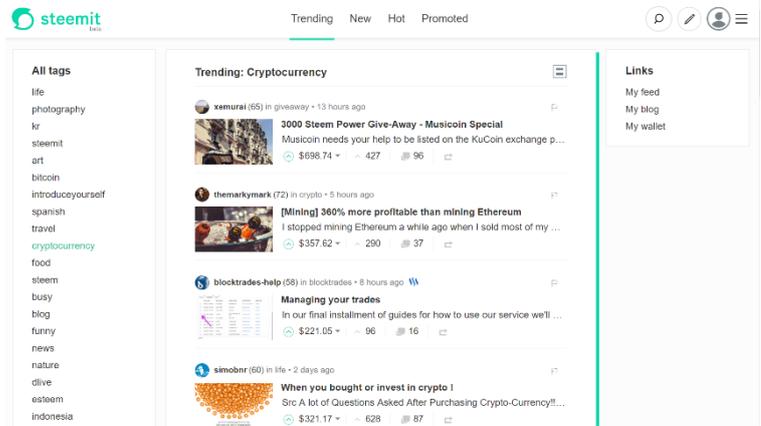
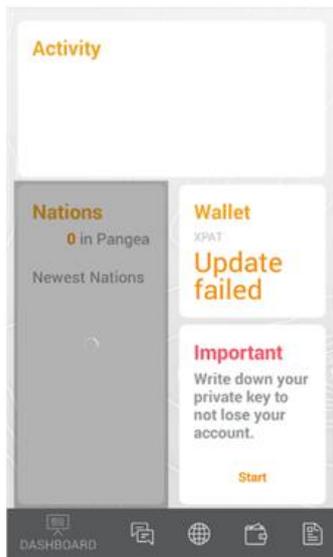


Figure 24 - Modality of Bitnation, Democracy Earth and Steemit (adapted from Kress and van Leeuwen, 2006, p.166)

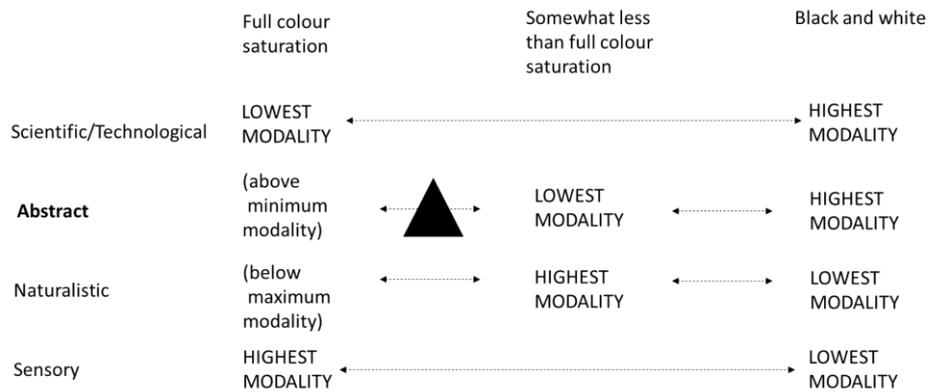
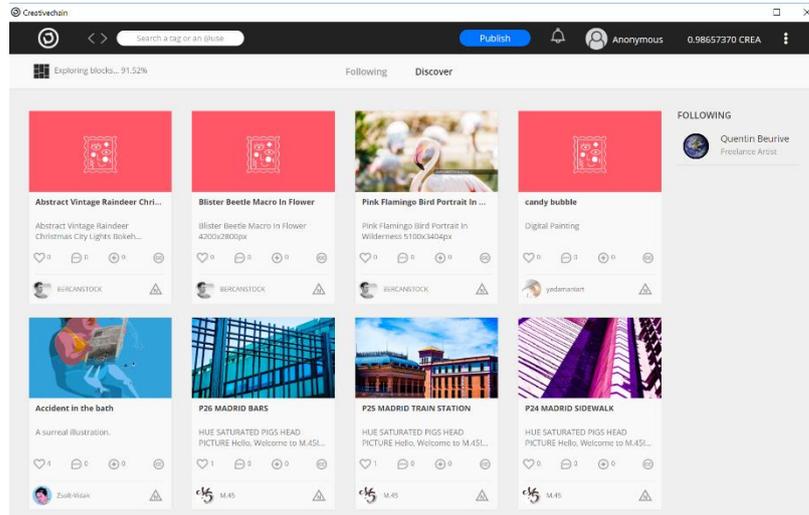


Figure 25 - Modality of Creativechain (adapted from Kress and van Leeuwen, 2006, p.166)

5.2.2. Trust in Individuals

Although the white papers and apps promote blockchain technology as maintaining and automating trust, this does not mean that human trust has been completely erased. There is currently a “cognitive dissonance” felt by users who are accustomed to “centralised trust systems” (Antonopoulos, 2014). Thus, in order to generate trust in blockchain technology, these start-ups ensure that the positive capacity of users is stressed, as shown in the Steemit white paper:

“In the future, blockchain-based attribution could come to be recognised by governments by its **authenticity** and could hold weight in court, which would give content creators **greater powers** to control their work.”

[ideation: blockchain-based attribution/attitude: + val]

[ideation: content creators/attitude: + cap]

In the case of Steemit, blockchain-based attribution is still associated with traditional governments and courts, thus Steemit is appealing to a much more mainstream audience and normalising blockchain technology. Rather than focusing on the power of blockchain technology, instead content creators are shown to have positive capacity, with “greater powers to control their work”.

With Creativechain, artists and creative people are seen as being ‘empowered’ by the technology, with the ability to “produce, share and distribute digital content”, in contrast to the technology controlling their abilities:

“A tool for the **empowerment** of artists and all kinds of creative people who **produce, share and distribute** digital content.”

[ideation: artists and creative people/attitude: + cap]

Democracy Earth also focuses on enhancing the abilities of its users rather than the technology controlling the users:

“By ***harnessing distributed*** attention across multiple Organisations instead of an ***all-observing central power***, validators **are in effect** an army of little brothers who can **collaboratively** score a self-sovereign identity in the network.”

[ideation: attention/attitude: + comp]

[ideation: central power/attitude: - comp]

[ideation: validators/attitude: + cap]

In the Bitnation white paper, trust is established in individuals by ensuring that users are aware of their rights and how blockchain technology provides individuals with a sense of liberation:

“Every citizen is **sovereign** and **has the right to self-determination** and is **at liberty to choose** any form of expression or way to be human or posthuman and with whom to **associate and cooperate.**”

[ideation: every citizen/attitude: + cap, + prop]

Whilst the white papers show how users are empowered by blockchain technology, it could be argued that the design of the websites and apps does not completely show these visions of empowerment. By looking for instances of interactive meanings across the websites and apps, there were no explicit interactions shown between the viewer and producer of the site (see **Figure 26**). Therefore, all the websites and apps could be classified as belonging to the knowledge orientation – with an objective and impersonal stance. On the Democracy Earth platform, despite the lack of personalised images, there were opportunities to interact via options such as ‘debating’. Creativechain and Steemit did provide the opportunity for users to share images and social bonding around tags. The Bitnation app, provided the least opportunities for engagement, with a single chat function where

the user needed to know another user's public key before they could interact, thus users without this technical knowledge would be unable to enjoy the app.

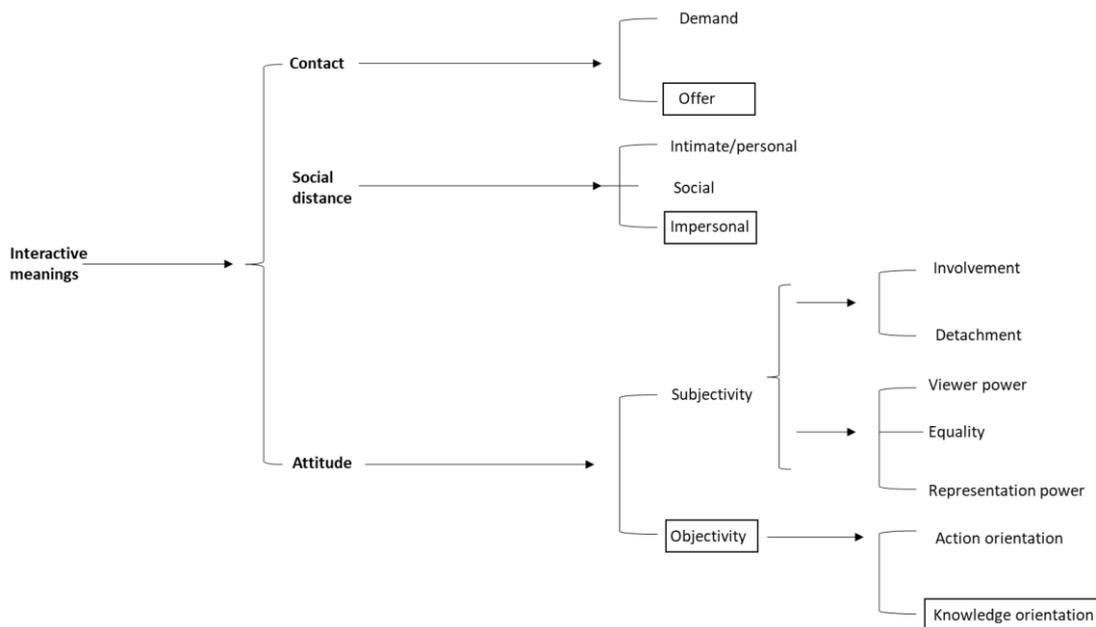


Figure 26 - Interactive Meanings in Images - Systems Network (adapted from Kress and van Leeuwen, 2006, p. 149)

5.3. Political Ideologies

In the case of this study, political ideologies were most explicitly portrayed in the white papers. As previously discussed, the main function of a white paper is to outline the vision for a product or organisation, therefore the link between ideologies and white papers is coherent. Visually, it is much more difficult to trace the ideologies of images, however “we see images of whatever kind as entirely within the realm of the realisations and instantiations of ideology” (Kress & van

Leeuwen, 2006, p. 14). As it will be shown, a combined approach that considers text alongside the visual, can reveal the political ideologies of these blockchain start-ups.

5.3.1. Ideologies around the Commons vs. Cyber-Libertarianism

From the appraisal analysis of the white papers, the key values discovered can determine the varying political ideologies behind the blockchain start-ups. For example, a socialist ideology would be associated with values such as ‘the commons’, sharing assets and an emphasis on the ‘public’ as opposed to the ‘private’ (Huckle & White, 2016). In considering these values in relation to the white papers, a political ideology can therefore be determined. For instance, in the Democracy Earth white paper there is a focus on the notion of a “global commons”:

“Ultimately, any process dependant on decentralised identity is part of a **global** commons since the principle of a **self-sovereign identity** renders any Big Brother **irrelevant**.”

[ideation: commons/attitude: + val]

[ideation: identity/attitude: + val]

[ideation: Big Brother/attitude: - cap]

The ‘commons’ is associated with positive values, alongside ‘self-sovereign identity’. ‘Big Brother’¹⁶, is associated with negative capacity. On the Democracy Earth platform (see **Figure 27**) Facebook is referred to as “Big Brother”, with this labelling revealing Democracy Earth’s values; self-sovereignty over data mining.

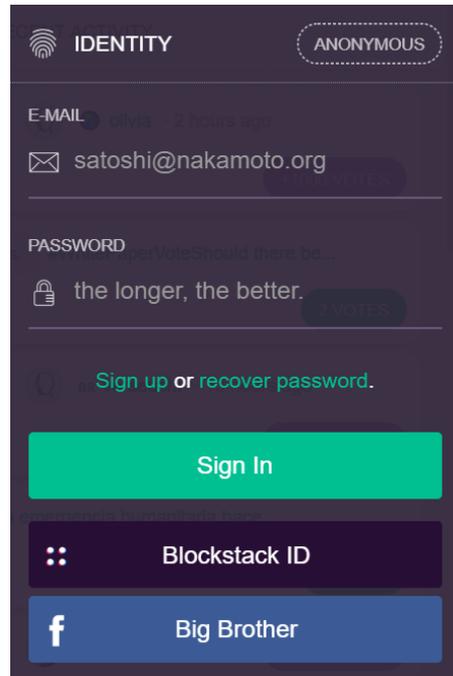


Figure 27 - Democracy Earth Login Function

¹⁶ Big Brother is a term associated with “a person or organisation exercising total control over people’s lives” (Oxford, 2018b). The term originated from George Orwell’s novel *Nineteen Eighty-Four* (1949).

The Democracy Earth white paper also states that it is a “non-profit” organisation, distinguishing itself from Initial Coin Offering (ICO) blockchain start-ups. In the white paper, there is a focus on “cryptographically induced equality”, where the votes on the Democracy Earth platform would be granted like a Universal Basic Income¹⁷ (UBI) scheme (Foundation, 2018, p. 21) This emphasis on UBI and sharing votes, reveals a socialist ideology, or one concerned with the digital commons movement.

Similarly, Creativechain has an emphasis on the “digital commons”, describing its platform as an extension of the Lessig’s “creative commons” movement (Lessig, 1999). In the terms of use document, Creativechain states that it is a non-profit organisation “whose sole purpose is to develop and disseminate projects related to the main development of the CREA CORE” (Team, 2017). In relation to the commons, the white paper outlines the target audience for Creativechain:

¹⁷ Universal Basic Income (UBI) broadly refers to a “periodic cash payment unconditionally delivered to all on an individual basis, without means-test or work requirement”, although there are multiple proposals for UBI in existence (Network, 2018). In the context of the Democracy Earth white paper, their proposed UBI scheme is linked to the creation of a “global commons”, this is why UBI is being linked to a socialist ideology (Foundation, 2018). However, as authors such as Bregman (2017) and Heller (2018) have written, UBI is an idea that has been supported by people from across the political spectrum, therefore it is not purely a right-wing or left-wing idea.

“Organisations or institutions committed to the commons that seek a **technological** way to **democratise** their **digital heritage**”

[ideation: organisations and institutions/attitude: + cap]

[ideation: digital heritage/attitude: + val]

In this sense, the commons is a core value of the Creativechain platform. As the main slogan of the platform states, Creativechain is:

“A tool for the **empowerment** of artists and all kinds of creative people who **produce, share and distribute** digital content”

[ideation: artists and creative people/attitude: + cap]

This emphasis on sharing and distributing content, again aligns Creativechain with ideologies around the digital commons and socialism.

In contrast, the ideologies of Bitnation and Steemit are quite different. Bitnation is more explicit in its ideological tones in the white papers, aligning itself with libertarian values – that is, values associated with free markets, self-sovereignty and individualism (Huckle & White, 2016). Although Bitnation shares common values with Democracy Earth in the sense that both start-ups aim to abolish the nation state and form ‘borderless governance’, Bitnation is not concerned with

establishing a ‘global commons’, but rather “a post-nation state world of Voluntary Nations, City States and Autonomous Communities”, where these various nations will compete for Citizens, thus establishing “a global free market for governance services” (Tarkowski Tempelhof et al., 2017, p. 4). As the Bitnation white paper states:

“Free market arbitration paves the way for humanity to reclaim personal sovereignty and return to peer-to-peer transactions”

[ideation: humanity/attitude: + prop]

Thus, free markets are associated with “reclaiming personal sovereignty”, with ‘humanity’ having positive propriety in this regard.

The Steemit white paper similarly focuses on markets. However, rather than focus on sovereignty as the Bitnation white paper does, the Steemit white paper is more concerned with cryptocurrencies and the current profitability of the platform. The Steemit white paper compares its platform to the performance of Facebook and Reddit and reads like a manual for potential investors. A frequent concern was with the “debt-to-ownership” ratio and creating stability within the cryptocurrency sphere. A fear expressed in the white paper was “one individual profiting at the expense of everyone else” and the currency becoming unstable” (Steemit, 2017).

Thus, in comparison to the other white papers which discuss future visions of the world, the Steemit white paper is more grounded in concerns for recruiting current investors for the platform. Therefore, Steemit resembles a capitalist ideology, in line with current monopolising internet platforms like Reddit and Facebook.

5.3.2. Ideologies around Alternative Media and Digital

Democracies

Another shared concern across the start-ups was a focus on creating forms of 'alternative media' and enhancing 'digital democracies'. Regarding alternative media, each of the start-ups envisioned itself as an 'alternative' to another platform. For instance, Steemit depicts itself as an alternative to Reddit, Democracy Earth an alternative to traditional voting, Creativechain as an alternative to traditional copyright laws and Bitnation as an alternative to current forms of governance and bureaucracy. Thus, this focus on the 'alternative' drives the ideologies behind the creation of the white papers and websites. Nonetheless, as the analysis of the information values showed (see **Appendix B**), not every start-up sought to completely alter the design of their websites. The Steemit site for example mimics the Reddit site, with only some additional buttons regarding the built-in cryptocurrency features. Bitnation and Democracy Earth also follow conventional structures for apps, again with the only difference being added buttons to distribute and earn cryptocurrencies. Creativechain is the only platform that

focuses more on showing the ‘networked’ aspect of the platform and blockchain record.

The concern for ‘digital democracies’ is another feature that is evident across all the sites. Steemit sets itself up as community where users vote on and comment on each other’s posts, thus resembling an online deliberative democracy. Similarly, Democracy Earth exists as a platform where users debate and vote on each other’s posts, aligning itself with the ‘liquid democracy’ movement. The Creativechain white paper, stresses the importance of ‘democratic ownership’ and again the process of engaging and commenting on each other’s work. Bitnation, is concerned with establishing multiple forms of governance, where users can decide on their own preferred form of government. As the Bitnation app shows, this can range from ‘democracy’, ‘holocracy’, ‘meritocracy’ or ‘autocracy’. In all, a concern for digital democracies is reflected in the white papers and how users can engage with the respective sites and apps.

5.3.3. Ideologies around Cryptocurrencies and the Future

A final core value across the start-ups was based around cryptocurrencies and visions for the future. As discussed in the previous results chapter, an initial consideration of the key 3-grams from the white papers, revealed that there was a focus on the temporal – ‘in the future’ and ‘transactions per second’ being some of

the more prominent 3-grams. There was also a focus on ‘value’ in terms of currency, with some of these more prominent 3-grams being ‘the value of’ and ‘the use of’.

Considering this combination of cryptocurrencies and the future is important, as the white papers all establish that blockchain technology is the future, and that users are somewhat investing in the future rather than the present. Thus, cryptocurrencies are depicted as getting better with time. The symbolic attributes analysed across all the websites and apps tell a similar story. With Steemit, “smart media tokens” are depicted as the future, with the ‘steem’ logo placed in the centre of the image and the surrounding icons existing as periphery icons (see **Figure 28**). With Democracy Earth, the main symbolic attribute is a globe without geopolitical markings, and this features throughout, as the site imagines people as citizens of the Earth rather than of nations (see **Figure 29**). The white paper’s emphasis on UBI and cryptocurrencies, represents this mixed vision for the future.

Creativechain is more explicit in its symbolic attributes, with its website illustrations mainly depicting the CREA coin, network nodes and planetary imagery, thus giving the platform a futuristic tone (see **Figure 30**). Bitnation also has its own currency the XPAT token but it does not feature currently as a strong symbolic attribute. Instead, the Bitnation site features the logo most prominently – resembling a chain link, which can have associations with security and connectedness (see **Figure 31**). In addition, topographical lines feature across the

website and app, again showing a concern for geographical rather than geopolitical markings (see **Figure 32**). Overall, these start-ups are all concerned with linking future visions of the world to the realm of cryptocurrencies, with each white paper, website and app contributing to this vision and the notion that these start-ups are an investment, and thus will improve with time.



Figure 28 - STEEM Smart Media Tokens image



Figure 29 - Democracy Earth Image from Platform

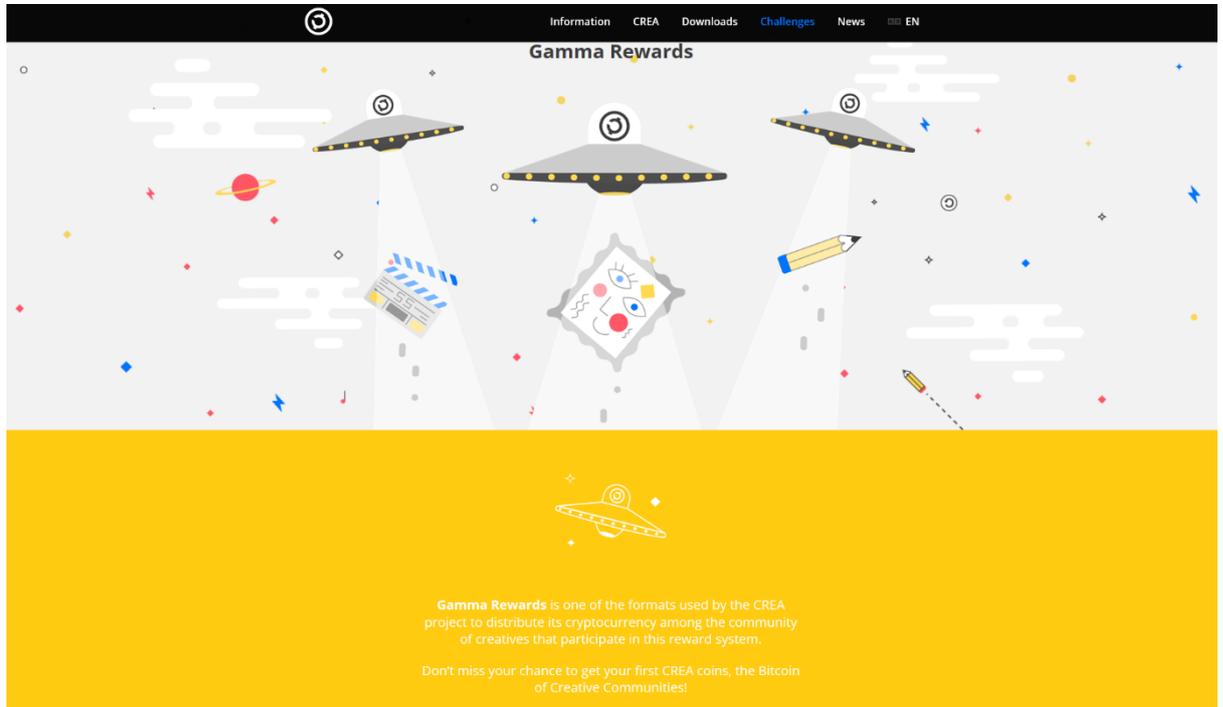


Figure 30 - Creativechain Website



Figure 31 - Bitnation Logo

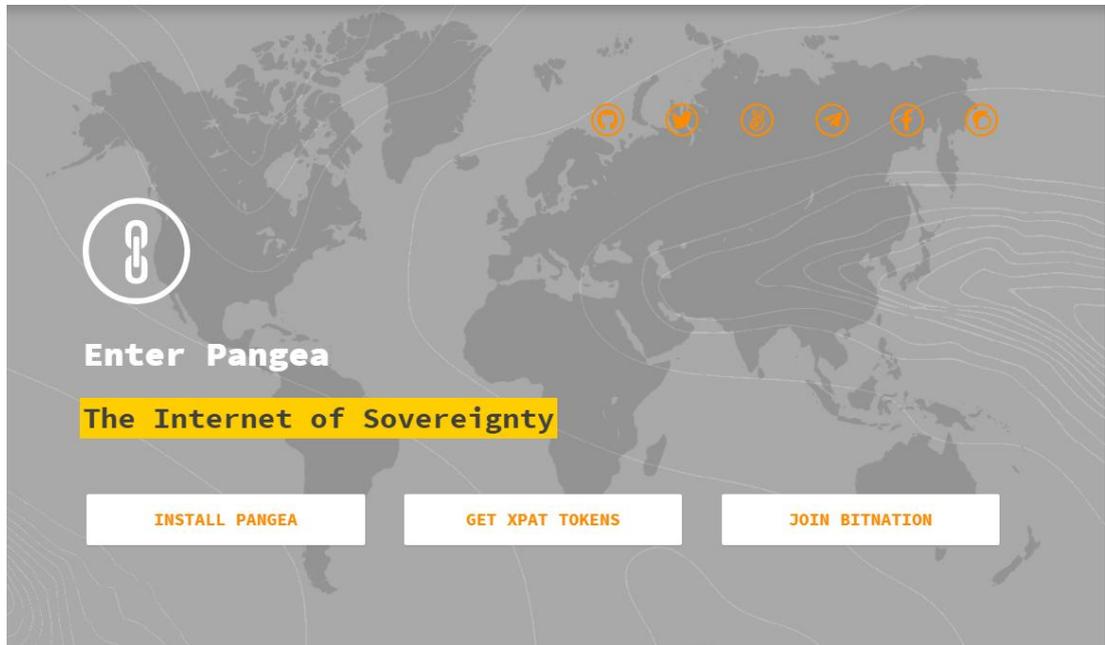


Figure 32 - Bitnation Website

Conclusion

This chapter has collectively considered the data revealed by the appraisal analysis of the white papers and the walkthrough method of the websites/apps, in relation to themes based on decentralisation, trust and political ideologies. These results have shown that there were similarities among the start-ups regarding key values of trust in algorithms and individuals over institutions, and the importance of decentralisation. However, the start-ups had divergent ideologies regarding their political values and own governance structures.

Chapter 6: Conclusion

This thesis has used methods drawing on social semiotics and multimodality to understand the values enacted in the design of blockchain technologies. A new contribution has been made to the walkthrough method, by adding a social semiotic approach to the analysis of websites and apps. In addition, this thesis has contributed an approach to understanding how blockchain start-ups can be empirically studied, rather than simply generalising apparent political and cultural blockchain values and ignoring ideological diversity.

Based on the initial analysis of the 3-grams found in the white paper concordances, key values regarding explanations of cryptocurrencies, networks and digital assets, and the importance of individual rights were identified. The Appraisal framework was used to analyse in more detail the co-text that accompanied the most frequent 3-grams. This analysis provided a greater understanding of values as the coupling of ideational and attitudinal meaning. From this, the most common values discovered highlighted the positive compositional qualities of networks, positive valuations of blockchain and the respective start-up companies, and the positive

capacity of the users who decide to use these apps and become a part of the blockchain community.

The corresponding initial walkthrough analysis established how the multimodal features of the websites and apps could further extend understandings of the values of blockchain technologies. The visions of the websites and apps were realised in the prominent positioning of the white papers and text featured on the homepages of the sites. The technical walkthrough revealed how semiotically interpreting the prominent symbols and affordances of the website layouts illustrates the ideas and motivations central to the blockchain start-ups. An analysis of the everyday use of the websites and apps also revealed how the ideologies of blockchain are embedded in the design of the websites and apps, such as how the immutability of the blockchain is established by users being unable to deregister from a site or retrieve forgotten passwords.

The combined analyses of all these datasets, further revealed values enacted in blockchain technologies based around the concepts of decentralisation, trust and political ideologies. Decentralisation was a prominent shared theme across all four start-ups, revealed by the non-linear models and symbolism of the sites, and positive compositional values in the white papers. Trust in algorithms was also established by the positive compositional values in the white papers, in addition to analysing the modality of the platforms. These modality cues could be linked to

the website/app designs of the blockchain start-ups mimicking the conventional designs of other traditional platforms, in order to normalise blockchain technologies and avoid the “cognitive dissonance” that users feel when introduced to new platforms (Antonopoulos, 2014). Another aspect of trust was considered; trust in individuals over institutions, again stressed by the white papers revealing the positive capacity of users and the sites highlighting user emancipation.

Whilst the blockchain start-ups revealed shared notions regarding the positive impact of blockchain technology and the removal of intermediaries, the start-ups were ideologically diverse in their political theories, representing ideals around the digital commons, cyber-libertarianism and capitalism. Some of these theories could be linked to those explored in the foundations chapter, which established the histories of the diverse political ideologies adopted by blockchain enthusiasts such as cyber-libertarianism, crypto-anarchy and the digital commons. Therefore, it was important to consider blockchain start-ups individually, with their own unique and at times, contradictory value systems, by developing a rigorous methodology that can be repeated on different start-ups.

In terms of further research, a broader dataset of blockchain start-ups could be sampled to see determine if diversity in ideological values and similarities in the promotion of decentralisation and trust in individuals over institutions remains consistent. Methodologically, this thesis could not account for all the various

dimensions of multimodality and Appraisal that could be explored. Therefore, it should not be seen as an exhaustive account of how to analyse websites, apps or white papers. In addition, due to the limited time frame of this thesis, the dataset only exists as a snapshot of how these websites and white papers currently appear and cannot account for how these websites and apps will change overtime.

With the rise of start-up cultures, more publicly available white papers will be released online, as start-ups attempt to induce users and customers with their visions. Whilst current literature has focused on the futuristic qualities of blockchain start-ups, this thesis has shown that more empirically-based research is needed to show what blockchain start-ups are currently doing rather than just what they will do in the future. As shown in this thesis, blockchain start-ups are currently working on establishing communities and political interest groups, and releasing apps that anyone can download, rather than purely speculating on the future. Therefore, it is important to understand that this thesis has analysed blockchain discourses, rather than mapping out the technical specifications of blockchain technologies. Although blockchain technologies may change in the future regarding their technical specifications as blockchain itself is a developing technology, these key debates regarding decentralisation, establishing trust in algorithms, trust in individuals over institutions and the battle between different political ideologies influenced by technological developments will remain.

Overall, this thesis has shown how these values can be understood semiotically, contributing to a timely and empirical interpretation of blockchain technologies.

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Appendix A

Text	Affect	Judgement	Appreciation	Appraised
All debt <i>carries risk</i> to the lender. Someone who holds SBD without redeeming it is effectively lending the community the value of a dollar.		- cap	- reac	Debt Someone who holds SBD without redeeming it
The concept of <i>forcing</i> users to maintain a minimum balance flows naturally from the value of a user.		- cap	- val	The concept Forcing users
The value of a share is derived from how much time it can <i>potentially grant</i> its owner.			+ val	Share
If those <i>unused</i> timeshares were sold to people who would use them			- val	Timeshares

then the value of a timeshare would fall by 50%.				
The Power of Steem: Steem recognizes that the value of all user contributions (posts and votes) is greater than the sum of the parts.			+ comp	Steem
Taking popularity as a rough measure of value, then the value of each individual item is given by law .			+ val + reac	Popularity Individual item
For instance, it is easy to think that a copy of today's newspapers costs \$1, but readers face much more difficulty and anxiety in deciding on the value of each article or word.	- sec			Readers
One could argue that most of the value of Reddit is the near-real-time discussions that have occurred within the past week which would dramatically increase the value of new activity.			+ comp + val	Reddit New activity
Reddit is valued between \$500 million 18 and \$4 billion 19 which means that each and every upvote			+ val	Reddit

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and post is worth between \$0.06 and \$0.50 assuming the value of Reddit is mostly within the past years' worth of activity.				
(STEEM) Steem is the fundamental unit of account on the Steem blockchain. All other tokens derive their value from the value of STEEM.			+ val	STEEM
A rapid change in the value of STEEM can dramatically change the debt-to-ownership ratio.			+ reac + reac	STEEM Debt-to-ownership ratio
Assuming the value of STEEM is growing faster than Steem is creating new SBD, the debt-to-ownership ratio should remain under the target ratio and the interest offered benefits everyone.			+ val + reac	STEEM Interest
Abuse of this power can harm the value of STEEM so SP holders are wise to vote for witnesses that can be counted on to adjust the price feed and interest rates according to the rules outlined above.		+ prop	- val - val	Power STEEM SP holders

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<p>If the value of the network is flat or falling, then any interest offered will only make the debt-to-ownership ratio worse.</p>			<p>- val</p> <p>- val</p>	<p>Network</p> <p>Debt-to-ownership ratio</p>
<p>In the world of financial payments, small fees are acceptable because the value of the transaction is extremely high relative to the fee charged, and the buyer has already made a decision to buy.</p>		<p>+ ten</p>	<p>+ val</p> <p>+ val</p>	<p>Small fees</p> <p>Transaction</p> <p>Buyer</p>
<p>Changing Fees: Over time a network must adjust fees. This can happen either due to an increase in the value of the token or due to a surge in capacity.</p>			<p>+ comp</p> <p>+ val</p>	<p>Network</p> <p>Token</p>
<p>During that same time, the value of the dollar relative to goods and services has fallen less than 10% according to the government's price index.</p>			<p>+ val</p> <p>- val</p>	<p>Dollar</p>

STEEMIT APPRAISAL ANALYSIS

Text	Affect	Judgement	Appreciation	Appraised
The higher the debt to ownership ratio becomes the less willing new investors are to bring capital to the table.		- cap	- val	Debt-to-ownership ratio Investors
The blockchain prevents the debt-to-ownership ratio from getting too high , by reducing the amount of STEEM awarded through SBD conversions if the debt level were to exceed 10%.			+ comp + comp	Blockchain Debt-to-ownership ratio
A rapid change in the value of STEEM can dramatically change the debt-to-ownership ratio.			+ reac + reac	STEEM Debt-to-ownership ratio
This ensures that the blockchain will never have higher than a 10% debt-to-ownership ratio.			+ val	Blockchain

STEEMIT APPRAISAL ANALYSIS

<p>If the debt-to-ownership ratio is low and SBD is trading for less than \$1.00, then the interest rate should be increased.</p>			<p>- val</p> <p>+ val</p>	<p>Debt-to-ownership ratio</p> <p>Interest rate</p>
<p>If SBD trades for less than \$1.00 USD and the debt-to-ownership ratio is high, then the feeds should be adjusted upward give more STEEM per SBD. This will increase demand for SBD while also reducing the debt-to-ownership ratio and returning SBD to parity with USD.</p>			<p>+ val</p> <p>+ val</p>	<p>Debt-to-ownership ratio</p> <p>SBD</p>
<p>Assuming the value of STEEM is growing faster than Steem is creating new SBD, the debt-to-ownership ratio should remain under the target ratio and the interest offered benefits everyone.</p>			<p>+ comp</p> <p>+ val</p>	<p>STEEM</p> <p>Interest</p>
<p>If the debt-to-ownership ratio gets dangerously high and market participants choose to avoid conversion requests, then the feed should be adjusted to increase the rate at which STEEM paid for converting SBD.</p>		<p>- ten</p>	<p>- reac</p> <p>+ comp</p>	<p>Debt-to-ownership ratio</p> <p>Market participants</p> <p>Feed</p>

STEEMIT APPRAISAL ANALYSIS

<p>If the debt to ownership ratio gets too high the entire currency can become unstable.</p>			<p>- comp - val</p>	<p>Debt-to-ownership ratio Currency</p>
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Text	Affect	Judgement	Appreciation	Appraised
<p>The higher the debt to ownership ratio becomes the less willing new investors are to bring capital to the table.</p>		<p>- cap</p>	<p>- val</p>	<p>Debt-to-ownership ratio Investors</p>
<p>The blockchain prevents the debt-to-ownership ratio from getting too high, by reducing the amount of STEEM awarded through SBD conversions if the debt level were to exceed 10%.</p>			<p>+ comp + comp</p>	<p>Blockchain Debt-to-ownership ratio</p>

<p>A rapid change in the value of STEEM can dramatically change the debt-to-ownership ratio.</p>			<p>+ reac + reac</p>	<p>STEEM Debt-to-ownership ratio</p>
<p>If the debt-to-ownership ratio is low and SBD is trading for less than \$1.00, then the interest rate should be increased.</p>			<p>- val + val</p>	<p>Debt-to-ownership ratio Interest rate</p>
<p>If SBD trades for less than \$1.00 USD and the debt-to-ownership ratio is high, then the feeds should be adjusted upward give more STEEM per SBD. This will increase demand for SBD while also reducing the debt-to-ownership ratio and returning SBD to parity with USD.</p>			<p>+ val + val</p>	<p>Debt-to-ownership ratio SBD</p>
<p>Assuming the value of STEEM is growing faster than Steem is creating new SBD, the debt-to-ownership ratio should remain under the target ratio and the interest offered benefits everyone.</p>			<p>+ comp + val</p>	<p>STEEM Interest</p>
<p>If the debt-to-ownership ratio gets dangerously high and market participants choose to avoid conversion requests, then the feed should be</p>			<p>- reac</p>	<p>Debt-to-ownership ratio</p>

STEEMIT APPRAISAL ANALYSIS

<p>adjusted to increase the rate at which STEEM paid for converting SBD.</p>		<p>- ten</p>	<p>+ comp</p>	<p>Market participants Feed</p>
<p>If the debt to ownership ratio gets too high the entire currency can become unstable.</p>			<p>- comp - val</p>	<p>Debt-to-ownership ratio Currency</p>

Text	Affect	Judgement	Appreciation	Appraised
<p>The higher the debt to ownership ratio becomes the less willing new investors are to bring capital to the table.</p>		<p>-cap</p>	<p>- val</p>	<p>Debt-to-ownership ratio Investors</p>
<p>The blockchain prevents the debt-to-ownership ratio from getting too high, by reducing the amount of STEEM awarded through SBD conversions if the debt level were to exceed 10%.</p>			<p>+ comp + comp</p>	<p>Blockchain Debt-to-ownership ratio</p>

STEEMIT APPRAISAL ANALYSIS

<p>A rapid change in the value of STEEM can dramatically change the debt-to-ownership ratio.</p>			<p>+ reac + reac</p>	<p>STEEM Debt-to-ownership ratio</p>
<p>This ensures that the blockchain will never have higher than a 10% debt-to-ownership ratio.</p>			<p>+ val</p>	<p>Blockchain</p>
<p>If the debt-to-ownership ratio is low and SBD is trading for less than \$1.00, then the interest rate should be increased.</p>			<p>- val</p>	<p>Debt-to-ownership ratio</p>
<p>If SBD trades for less than \$1.00 USD and the debt-to-ownership ratio is high, then the feeds should be adjusted upward give more STEEM per SBD. This will increase demand for SBD while also reducing the debt-to-ownership ratio and returning SBD to parity with USD.</p>			<p>+ val + val</p>	<p>Debt-to-ownership ratio SBD</p>
<p>Assuming the value of STEEM is growing faster than Steem is creating new SBD, the debt-to-ownership ratio should remain under the target ratio and the interest offered benefits everyone.</p>			<p>+ comp + val</p>	<p>STEEM Interest</p>

STEEMIT APPRAISAL ANALYSIS

<p>If the debt-to-ownership ratio gets dangerously high and market participants choose to avoid conversion requests, then the feed should be adjusted to increase the rate at which STEEM paid for converting SBD.</p>		<p>- ten</p>	<p>- reac + comp</p>	<p>Debt-to-ownership ratio Market participants Feed</p>
<p>If the debt to ownership ratio gets too high the entire currency can become unstable.</p>			<p>- comp - val</p>	<p>Debt-to-ownership ratio Currency</p>

Text	Affect	Judgement	Appreciation	Appraised
<p>On the other hand, someone who owns 50% of the house is speculating that demand for the house will increase in the future and they will be able to sell their stake for more.</p>		<p>+ norm</p>	<p>+ val</p>	<p>Someone who owns 50% of the house Demand for the house</p>

STEEMIT APPRAISAL ANALYSIS

<p>In the future, blockchain-based attribution could come to be recognized by governments for its authenticity and could hold weight in court, which would give content creators greater powers to control their work.</p>		+ cap	+ val	<p>Blockchain-based attribution</p> <p>Content creators</p>
<p>They are trusting that at some point in the future someone will be willing to buy the SBD from them for a dollar or that there will be speculators and investors willing to buy the STEEM they convert it into.</p>		<p>+ ver</p> <p>+ ten</p> <p>+ ten</p>		<p>They</p> <p>Someone</p> <p>Speculators/investors</p>
<p>Like Bitcoin, all work must be done prior-to payout and nothing should be paid speculatively on the promise to do work in the future.</p>			- val	All work
<p>In the startup world, convertible notes are short-term debt instruments that can be converted to ownership at a rate determined in the future, typically during a future funding round.</p>			+ val	Convertible notes

STEEMIT APPRAISAL ANALYSIS

<p>Voting on Distribution of Currency: Assume there is a fixed amount of money to distribute, and that those who have a long-term vested interest in the future value and utility of the currency are the ones who must decide how to allocate it.</p>		<p>+ norm</p>	<p>+ val</p> <p>+ val</p>	<p>Money</p> <p>Those who have a long-term vested interest</p> <p>Currency</p>
<p>People with a vested interest in the future value of Steem vote to select individuals responsible for including testimony in the public record.</p>		<p>+ norm</p> <p>+ cap</p>		<p>People</p> <p>Individuals</p>

Text	Affect	Judgement	Appreciation	Appraised
<p>All blockchains must find a solution to prevent malicious users from consuming all of the available network capacity with worthless transactions. These worthless transactions can prevent other valuable transactions from being</p>		<p>- ver</p>	<p>+ reac</p> <p>- comp</p>	<p>All blockchains</p> <p>Users</p> <p>Transactions</p>

STEEMIT APPRAISAL ANALYSIS

processed and ultimately destroy the network.			+ comp	Transactions
It should be possible for commodity hardware to handle all of the business logic associated with Steem in a single thread with all posts kept in memory for rapid indexing.			+ reac + comp	Commodity hardware Indexing
Full Reserve vs Fractional Reserve: Let's view a blockchain like an Internet Service Provider (ISP) co-op which owns all of the cables in the town and has a maximum amount of bandwidth that it can provide at anytime.			+ val	Internet Service Provider (ISP) co-op
Blockchain technology currently depends upon transaction fees to prevent spam. These fees suffer all of the known problems with micro transactions and prevent blockchains from being used for low-value transactions.			- val - reac - val	Blockchain technology Fees Transactions
Blockchains are decentralized networks where all transactions are broadcast to all peers. Every so often a block is produced that includes			+ comp + comp	Blockchains Transactions

STEEMIT APPRAISAL ANALYSIS

some or all of the pending transactions.				
It would be like the CEO of a company deciding to stop paying salaries so he could pocket all of the profits.		- ver		CEO

Text	Affect	Judgement	Appreciation	Appraised
Vesting ownership makes a long-term commitment and cannot be sold for a minimum period of time. The Steem network calls these different asset classes Steem (STEEM), Steem Power (SP), and Steem Dollars (SBD).			+ val + comp	Vesting ownership Asset classes
The Steem network is designed to tolerate short-term corruption of the median price feed while the community actively works to correct the issue.		+ cap	+ val	Steem network Community

STEEMIT APPRAISAL ANALYSIS

<p>The Steem network is built upon Graphene, the same technology that powers BitShares.</p>			+ comp	Steem network
<p>By incentivising curation the Steem network is able to use automated algorithms to extract the most valuable information from a massive amount of content.</p>			+ val + comp + comp	Steem network Algorithms Information/ content
<p>The Steem network started with a currency supply of 0 and allocated STEEM via proof of work at a rate of approximately 40 STEEM per minute to miners, with an additional 40 STEEM per minute being created to seed the content and curation reward pools (for a total of 80 STEEM per minute).</p>			+ comp + comp	Steem network Content
<p>Because stability is an important feature of successful economies, Steem Dollars were designed as an attempt to bring stability to the world of cryptocurrency and to the individuals who use the Steem network.</p>			+ val + val	Economies Steem dollars

STEEMIT APPRAISAL ANALYSIS

Text	Affect	Judgement	Appreciation	Appraised
<p>This means that neither the traders nor the blockchain has any information advantage regarding the price at the time the conversion is executed.</p>		+ cap	+ val	Traders Blockchain
<p>This means that people are given a familiar and widely used interface and no longer face the cognitive, financial, and opportunity costs associated with traditional micropayment and tipping platforms.</p>			+ val - val	Interface Micropayment and tipping platforms
<p>This means that SP cannot be easily traded on cryptocurrency exchanges.</p>			+ comp	SP
<p>This means that SP is an access token that grants its holders exclusive powers within the Steem platform.</p>		+ norm		Holders

STEEMIT APPRAISAL ANALYSIS

<p>This means that their bandwidth over a short period of time may appear much higher than if viewed over a longer period of time.</p>			+ comp	Bandwidth
<p>This means that those who contribute their scarce time and attention toward producing and curating content for others are just as valuable as those who contribute their scarce cash.</p>		+ cap		Users

Text	Affect	Judgement	Appreciation	Appraised
<p>As long as the price feed corruption lasts for less than half the moving median time window it will have minimal impact on the conversion price.</p>			- comp + comp	Price feed Conversion price
<p>Under the rate limiting approach, someone who holds 1% of all coins with an intent to flood the network</p>		+ cap		Someone who holds 1% of all coins

STEEMIT APPRAISAL ANALYSIS

would achieve their goal for less than 30 seconds.				
Through rate limiting, stakeholders who vote more frequently have each vote count for less than stakeholders who vote less frequently .		+ cap - cap		Stakeholders who vote more frequently Stakeholders who vote less frequently
If the debt-to-ownership ratio is low and SBD is trading for less than \$1.00, then the interest rate should be increased .			- val + comp	Debt-to-ownership ratio Interest rate
If SBD trades for less than \$1.00 USD and the debt-to-ownership ratio is high , then the feeds should be adjusted upward give more STEEM per SBD.			- val + comp	Debt-to-ownership Feeds

Text	Affect	Judgement	Appreciation	Appraised
<p>While Bitcoin currently supports about 3 transactions per second, alternative implementations are capable of over 1000 transactions per second.</p>			<p>- comp</p> <p>+ comp</p>	<p>Bitcoin</p> <p>Alternative implementations</p>
<p>To achieve this industry-leading performance, Steem has borrowed lessons learned from the LMAX exchange, which is able to process 6 million transactions per second.</p>			<p>+ val</p> <p>+ val</p> <p>+ comp</p>	<p>Performance</p> <p>Steem</p> <p>LMAX exchange</p>
<p>Graphene has been publicly demonstrated sustaining over 1000 transactions per second on a distributed test network.</p>			<p>+ val</p> <p>+ val</p>	<p>Graphene</p> <p>Test network</p>
<p>All told, if Reddit were operating on a blockchain it would require an average of 250 transactions per second.</p>			<p>+ val</p>	<p>Reddit</p>

<p>Graphene can easily scale to 10,000 or more transactions per second with relatively straightforward improvements to server capacity and communication protocols.</p>			+ comp	Graphene
<p>By following these simple rules, Steem is able to process 10,000 transactions per second without any significant effort devoted to optimisation.</p>			+ val + comp	Rules Steem

Text	Affect	Judgement	Appreciation	Appraised
<p>In this way and unlike the other centralized platforms like Google or Amazon in Creativechain all the people have the same power of access to the information of the network without generating positions of privileges between users and distributors.</p>		<p>+ cap + norm</p>		<p>People Users and distributors</p>
<p>In this way, any user can use the network's statistics to improve their content offer on equal terms with other users.</p>		<p>+ cap + norm</p>		<p>Any user</p>
<p>In this way each era has a golden proportionality where each change of era is 1.6 times greater than the previous one.</p>			<p>+ comp + val</p>	<p>Each era</p>
<p>In this way the payment or donation is extended in an "automagic" way to all the derivative works that have participated giving away part of its content.</p>			<p>+ comp</p>	<p>Payment and donation</p>

CREATIVE CHAIN APPRAISAL ANALYSIS

<p>In this way the platform becomes a kind of book of public records that can be consulted and verified by anyone at all times.</p>			<p>+ comp + val</p>	<p>Platform</p>
<p>In this way the content that we upload remains opaque in the hands of intermediaries and their private interests, being able to be manipulated by the lack of transparency.</p>		<p>- cap - ver</p>		<p>Content upload people Intermediaries</p>
<p>In this way the benefits of distribution of the work are distributed automatically among all the microinverters.</p>			<p>+ val + comp</p>	<p>The work Microinverter</p>
<p>In this way, without the need to restrictions traditionally imposed by the copyright industry on use bank accounts, purchases, micropayments or donations the distribution and development of knowledge can be made to the authors of the registered contents.</p>		<p>- prop + cap</p>		<p>Copyright industry Authors</p>

CREATIVE CHAIN APPRAISAL ANALYSIS

Text	Affect	Judgement	Appreciation	Appraised
<p>Decentralized platform for the registration and distribution of content that certifies the authorship and license of any digital creation making them indelible.</p>			+ comp + val	Platform Digital Creation
<p>Creativechain is a decentralized platform for the registration and distribution of content that certifies the authorship and license of any work or creation making them indelible.</p>			+ comp + val	Creative chain
<p>This document describes a platform that applies the blockchain technology to create a complete autonomous and decentralized system of registration and distribution of contents, to indelibly certify the intellectual property and the license of any digital content.</p>			+ comp + val	Platform Digital content
<p>The recent irruption of blockchain technology gives many possibilities for the registration and distribution of intellectual property without intermediaries.</p>			+ reac + val	Blockchain technology Intellectual property

CREATIVE CHAIN APPRAISAL ANALYSIS

<p>This means that the platform not only bets on the defense, protection and distribution of copyleft content, but also gives "fintech" solutions for the economic emancipation of People who produce it.</p>		<p>+ prop</p>	<p>+ comp</p>	<p>Platform People</p>
<p>Creativechain uses the Blockchain protocol modified and adapted to the needs that are required for a platform of registration and distribution of contents as a greater OPRETURN data allowed.</p>			<p>+ comp</p>	<p>Blockchain protocol</p>

Text	Affect	Judgement	Appreciation	Appraised
<p>In this way and unlike the other centralized platforms like Google or Amazon in Creativechain all the people have the same power of access to the information of the network without generating positions of privileges between users and distributors.</p>		<p>+ cap + norm</p>		<p>People Users and distributors</p>

CREATIVE CHAIN APPRAISAL ANALYSIS

<p>For the fair distribution of these funds an algorithm that values the quality of the content is used crossing all the data of interaction of the network.</p>			<p>+ val + val</p>	<p>Funds Algorithm</p>
<p>The consensus of the network can vary and regulate the algorithm indicators.</p>			<p>+ comp</p>	<p>The network</p>
<p>This price is the same for all contents and goes entirely for the miners of the network.</p>		<p>+ ver</p>	<p>+ comp</p>	<p>Content Miners</p>
<p>Taking into account that we are talking about a content platform, the volume of records will be one of the largest percentages with respect to the total volume of transactions of the network.</p>			<p>+ comp</p>	<p>Records</p>
<p>This percentage ensures a good reward for the miners which in turn will motivate the increase of nodes and with it a greater security of the network.</p>		<p>+ prop</p>	<p>+ val + val + comp</p>	<p>Miners Reward Nodes/network</p>

CREATIVE CHAIN APPRAISAL ANALYSIS

Text	Affect	Judgement	Appreciation	Appraised
<p>Each user can remain anonymous or provide as many proofs about their identity as they want to be consulted by a third party or organization that wants to give him access for any purpose that is required through the use of his public and private keys.</p>		<p>+ norm + ten</p>		<p>Each user</p>
<p>That is why we encourage, protect and give priority to the use of free licenses as a means of helping to reduce the cultural participation gap and facilitate the construction of a free culture necessary for the exercise of the right of access to the culture of all societies.</p>			<p>+ val - val + val + val</p>	<p>Use of free licenses Cultural participation gap Free culture Culture of all societies</p>
<p>Problem: Since the creation of Creative Commons licenses in 2002 to date, the use of these licenses in works has grown to more than 1100 million in 2015.</p>			<p>- val - comp</p>	<p>Creative commons Licenses</p>

CREATIVE CHAIN APPRAISAL ANALYSIS

In order to encourage the use of free licenses, the platform rewards with Creativecoin the works licensed with CC that have obtained a better evaluation by the community.			+ reac + reac	Free licenses CC
There are many benefits attributed to the use of virtual currencies.			+ val	Virtual currencies
The use of Creativecoin entails lower costs per transaction than any traditional credit card system or payment gateways such as Paypal.			+ val - val	Creative coin Credit card system

Text	Affect	Judgement	Appreciation	Appraised
The creator of the work offers a percentage of participation for investors.		+ cap + cap		Creator of the work Investors

CREATIVE CHAIN APPRAISAL ANALYSIS

In this way the benefits of distribution of the work are distributed automatically among all the microinverters.			+ val + comp	The work Microinverter
The purchase of works directly supports the creator of the work and its creative chain.			+ val	Purchase of works
Purchases directly support the creator of the work.			+ val	Purchases
This way the benefits of distribution of the work are distributed automatically among all the microinverters.			+ val + comp	The work Microinverter

Text	Affect	Judgement	Appreciation	Appraised
Decentralized platform for the registration and distribution of content that certifies the authorship and license of any digital creation making them indelible .			+ comp + val	Platform Digital Creation

CREATIVE CHAIN APPRAISAL ANALYSIS

<p>This document describes a platform that applies the blockchain technology to create a complete autonomous and decentralized system of registration and distribution of contents, to indelibly certify the intellectual property and the license of any digital content.</p>			<p>+ comp</p> <p>+ val</p>	<p>Contents</p> <p>Digital content</p>
<p>Creativechain is a decentralized platform for the registration and distribution of content that certifies the authorship and license of any work or creation making them indelible.</p>			<p>+ comp</p> <p>+ val</p>	<p>Platform</p> <p>Work or creation</p>
<p>This feature often makes it very difficult to prove the authenticity, authorship or distribution license of any original creation.</p>			<p>- val</p>	<p>Original creation</p>

CREATIVE CHAIN APPRAISAL ANALYSIS

Text	Affect	Judgement	Appreciation	Appraised
<p>Currently even if a <i>certain</i> work is announced, tagged or linked with a Creative Commons license does not mean that it is sealed under a power of attorney.</p>			<p>- comp + comp</p>	<p>Work Power of attorney</p>
<p>Creativechain uses blockchain technology and its power of attorney to solve this problem by creating an incorruptible and inalterable time stamp that allows to certify the authorship and license of use or distribution of any work or digital creation.</p>			<p>+ comp + comp</p>	<p>Time stamp Digital creation</p>
<p>The platform applies the power of attorney of the revolutionary Blockchain technology in the process of registering content to create incorruptible time stamps that certify the intellectual property of any digital work.</p>			<p>+ reac + comp</p>	<p>Blockchain technology Time stamps</p>
<p>The power of attorney along with the decentralized distribution of digital P2P content articulate a new paradigm shift in the era of digital culture.</p>			<p>+ comp + val</p>	<p>Power of attorney P2P content</p>

CREATIVE CHAIN APPRAISAL ANALYSIS

Text	Affect	Judgement	Appreciation	Appraised
In this way the payment or donation is extended in an " automagic " way to all the derivative works that have participated giving away part of its content.			+ comp	Payment and donation
In this way the platform becomes a kind of book of public records that can be consulted and verified by anyone at all times.			+ comp + val	Platform
In this way the content that we upload remains opaque in the hands of intermediaries and their private interests, being able to be manipulated by the lack of transparency .		- ver	- cap	Content people upload Intermediaries
In this way the benefits of distribution of the work are distributed automatically among all the microinverters.			+ val + comp	The work Microinverter

CREATIVE CHAIN APPRAISAL ANALYSIS

In this way the benefits of distribution of the work are distributed automatically among all the microinverters.			+ val	The work
			+ comp	Microinverter

Text	Affect	Judgement	Appreciation	Appraised
A tool for the empowerment of artists and all kinds of creative people who produce, share and distribute digital content.		+ cap	+ reac	Tool Artists/creative people
That is why the platform offers the service of management of collections, payments or donations with Creativecoin, the first cryptocurrency created and designed to meet the needs of all creative communities that produce and distribute digital content.			+ val + val	Platform Creativecoin
Audiovisual production companies, social networks or content platforms that publish			+ val	Audiovisual production companies, social network and content platforms

CREATIVE CHAIN APPRAISAL ANALYSIS

Text	Affect	Judgement	Appreciation	Appraised
<p>Proof of Identity. A self-sovereign identity must be voluntarily generated by a user claiming it.</p>			+ val	Identity
<p>In the same way that physical identities are checked by comparing picture to person, users will need to re-create their Proof of Identity and broadcast it for verification in order to authenticate their legitimacy.</p>		+ cap + prop	+ comp	Identities Users
<p>Sovereign permits to fund an Organization with Bitcoin and in its Constitution define a criteria on how these assets get distributed among Members: Percentage for Proof of Identity: Applicant Members can submit their Proof of Identity evidence to get membership approval to an Organization.</p>		+ prop	+ comp	Sovereign Applicant members
<p>Drip: Once a Proof of Identity becomes valid, votes begin to drip into the user's wallet over time.</p>			+ val + comp	Proof of identity Votes

DEMOCRACY EARTH APPRAISAL ANALYSIS

<p>The Proof of Identity block containing its <i>corresponding</i> hash for a <i>given</i> identity.</p>			+ comp	Proof of identity
<p>If a third participant Charlie generates a <i>valid Proof of Identity</i> 1000 blocks later, he will begin with the equivalent amount of votes that Alice and Bob each currently have by then as well (i.e. a total of 10 votes each).</p>		+ cap	+ val	Charlie Proof of Identity
<p>Expensive Security: Nation-State's Proof of Identity demands several resources to <i>identify</i> citizens during many stages of their life.</p>		+ norm	+ val	Proof of Identity Citizens
<p>Hence, the overall challenge for a successful decentralized Proof of Identity dynamic is to simply focus on using the <i>available attention</i> in the network to check for replicants that are requesting a share of votes.</p>		- cap	+ comp + reac + comp	Proof of Identity Network Replicants
<p>Percentage for Proof of Identity: Applicant Members can submit their Proof of Identity evidence to get</p>		+ cap + prop		Applicant members

membership approval to an Organization.				
A Proof of Identity expires after a given period of time in order to prevent Sybil attacks and ensure that only living users are participating in the network.		+ ten + cap	+ comp	Proof of identity Users
In decentralized environments sybil attacks are the most common threat and for this reason we consider it indispensable that for votes to be granted they must get validated through a protocol (social and algorithmic) that works as Proof of Identity .			+ comp - reac + val + val	Environments Sybil attacks Votes Proof of Identity
As long as the Proof of Identity has been validated by the community and a smart contract is synced with an active blockchain node, then the value of V. will either be a number that defines the total amount of votes a self-sovereign has as a right to use on a hosted wallet or, if the POI is rejected (i.e. S. = false), then the participant's available votes becomes zero.		+ prop	+ val + comp	Proof of identity Smart contract Self-sovereign

<p>Proof of Identity. 3.2.3 Hashing. Once the digital file with the self-sovereign proof has been generated, a cryptographic hash function applied to it is calculated.</p>			+ val	Proof
<p>By allowing 4 decimal positions in the token, a revolution gets dripped to a valid Proof of Identity in the network every 15 seconds.</p>			+ val	Proof of identity
<p>The interest on effectively validating a Proof of Identity is among Organizations that must deal with applicant identities willing to become Members able to use their votes for the decisions related to the entity.</p>		+ cap	+ val	Proof of identity Applicant identities
<p>Therefore in order to consolidate the political and financial logic able to establish a borderless democracy, once a Proof of Identity is validated by peers the distribution mechanism triggered for votes will be based on time as a UBI.</p>			+ val + val + val	Political and financial logic Democracy Proof of identity
<p>By establishing a reference network that guarantees an egalitarian distribution of its token based on a Proof of Identity mechanism designed</p>			+ val	Reference network

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<p>to prevent replicants, this brings in a new perspective that can help increase the resolution of the Nakamoto Coefficient by means of discernible equal access.</p>			<p>+ comp</p> <p>+ comp</p>	<p>Proof of identity</p> <p>Nakamoto Coefficient</p>
<p>If votes approve the new member, it strengthens the reputation of a self-sovereign identity in the open network by rewarding her or him a fixed amount of Bitcoin to permit hashing the Proof of Identity on a blockchain.</p>			<p>+ val</p> <p>+ val</p> <p>+ comp</p> <p>+ val</p>	<p>Votes</p> <p>Self-sovereign identity</p> <p>Network</p> <p>Bitcoin</p>
<p>Anyone able to demonstrate his or her own identity under a decentralized protocol referred to as Proof of Identity (POI) can operate with a corresponding share of votes.</p>		<p>+ ten</p>	<p>+ comp</p>	<p>Anyone</p> <p>Protocol</p>
<p>We define a Proof of Identity process that avoids central authority by introducing the concept of attention mining which incentivizes participants to strengthen the trust of votes by performing simple tests aimed at detecting replicants.</p>		<p>+ ten</p>	<p>- comp</p> <p>+ val</p>	<p>Authority</p> <p>Attention mining</p> <p>Participants</p>

<p>All Organizations who take the responsibility to approve or disapprove Members, contribute with this task to the Proof of Identity process described on Section 3.3.</p>		<p>+ prop + cap</p>		<p>Organisations</p>
<p>This is detailed in the Proof of Identity process.</p>			<p>+ comp</p>	<p>Proof of identity process</p>
<p>On the Proof of Identity process (see Section 3), users are able to natively generate their own votes as long as their individuality gets endorsed by other identities.</p>		<p>+ cap</p>		<p>Users</p>
<p>For this reason, Democracy Earth Foundation will generate an Initial Rights Offering of vote tokens designed to reach everyone on Earth under a process that will offer two mechanisms: crypto funding for anyone willing to allocate resources that strengthen the development of a global democracy with the vote token; and a rights mechanism as a native way of getting vote tokens by anyone able to mine his or her corresponding share of votes through a Proof of Identity process.</p>		<p>+ cap + cap</p>	<p>+ comp + val + val</p>	<p>Democracy Earth Foundation Initial Rights Offering Anyone Resources Rights mechanism</p>

<p>And while Facebook mines user attention for profit, the Democracy Earth network will use the same resource to strengthen the trust of the vote token with its Proof of Identity process.</p>		<p>- ten + ten</p>		<p>Facebook Democracy Earth Foundation</p>
<p>We refer to the Genesis Identity as the very first Proof of Identity that gets approved by the network. With this information the next validated identity won't begin in disadvantage: it will have a wallet with the same amount of votes than the first participant in the network currently has.</p>			<p>+ comp + comp</p>	<p>Genesis Identity Next validated identity</p>
<p>If sufficient votes validate the evidence used for the Proof of Identity, the wallet will unfreeze a corresponding amount of votes following the rules of a Universal Basic Income dynamic that allocates tokens throughout time using the Bitcoin blockchain as a universal clock.</p>			<p>+ val + comp + comp + val</p>	<p>Votes Wallet Universal Basic Income dynamic Bitcoin blockchain</p>
<p>Attention mining requires validators to observe certain aspects of Proof of Identity videos that only a person can recognize.</p>		<p>+ ten</p>		<p>Validators</p>

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There is a precedent that <i>helps</i> to illustrate how a Proof of Identity works.			+ comp	Precedent
This demo <i>serves</i> as an example for the steps that <i>need to be followed</i> for a decentralized Proof of Identity .			+ comp + comp	Demo Proof of identity

Text	Affect	Judgement	Appreciation	Appraised
Also since the vote token operates in a blockchain, delegations <i>don't need to necessarily happen</i> within the Sovereign application: messaging applications, tweets and e-mails can be sent with vote addresses or QR codes attached to them making the vote token able to be <i>broadcasted</i> across multiple networks.			+ comp + comp	Delegations Vote token
The vote token aims to be a <i>standard</i> for digital democracy able <i>to interoperate</i> with other tokens, setting a <i>common</i> language for the			+ comp + val	The vote token Language

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governance of blockchain based organizations.				
<p>Democracy Earth Foundation will <i>generate</i> an Initial Rights Offering of vote tokens designed to reach everyone on Earth under a process that will offer two mechanisms: crypto funding for anyone willing to allocate resources that strengthen the development of a global democracy with the vote token; and a rights mechanism as a native way of getting vote tokens by anyone able to mine his or her corresponding share of votes through a Proof of Identity process.</p>		<p>+ cap</p> <p>+ cap</p>	<p>+ comp</p> <p>+ val</p> <p>+ val</p>	<p>Democracy Earth Foundation</p> <p>Initial Rights Offering</p> <p>Anyone</p> <p>Resources</p> <p>Rights mechanism</p>
<p>With those references, we then discuss the divisibility of the vote token and its implementation to govern a Democracy Support Fund.</p>			<p>+ val</p>	<p>Vote token</p>
<p>Ultimately, any process dependent on decentralized identity is part of a global commons since the principle of a self-sovereign identity renders any Big Brother irrelevant. Therefore, the key to sustain the value of the vote token as a means for a borderless democracy is to effectively validate all participating identities through a decentralized</p>		<p>- cap</p>	<p>+ val</p> <p>+ val</p> <p>+ val</p>	<p>Identity</p> <p>Commons</p> <p>Big Brother</p> <p>Vote token</p>

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process that can create, update or revoke keys.		+ cap	+ val + comp	Democracy Participating identities Process
By being backed with a decentralized identity index using an incorruptible blockchain that gets maintained with distributed attention (i.e. an open face book), the vote token becomes a trusted device for a digital democracy to emerge anywhere.			+ comp + comp + comp + val	Identity index Blockchain Attention Vote token
The vote token can be implemented using smart contract code across a variety of blockchains that permit Turing Complete scripts, including Bitcoin.			+ comp	The vote token
In this way, the vote token can work as a device fit to foster a wave of entrepreneurship even among today's disenfranchised individuals left out by the legacy financial and political systems.		- cap	+ val	The vote token Disenfranchised individuals
A comparative benchmark for the value of the vote token can be found			+ val	Vote token

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on the Facebook network currently valuing 2 billion users with a market capitalization of ~\$500 billion averaging an estimate of \$250 per user.			+ val	Facebook
Hence, a simple calculation can price the vote token issued by the US government for this electoral process at \$ 17.18 per vote.			+ comp + val	Calculation Vote token
Initially the vote token might be able to compete with pollsters and any other rudimentary simulations that aim to predict elections, but eventually it can become a sovereign system on its own right as citizenship migrates online.			+ comp - comp	Vote token Pollsters and simulations
A simple comparison shows the strict limitations electoral votes have in comparison with the vote token proposed on this paper.			- comp + comp	Electoral votes Vote token
For the purpose of guaranteeing a feasible divisibility of the vote token so it can be dripped every few seconds (while it also becomes easier for human and machine interpretation), we set the dripping rate at, 1 vote = 250 blocks So every			+ comp	Vote token

valid POI gets granted a total of: 210 votes per year				
Little brothers can outperform centralized identity providers in terms of accuracy as they are constantly incentivized to maintain legitimacy within the network in order to keep votes as a valuable asset: the success of the network on detecting replicants (duplicated identities) determines the scarcity of the vote token .		+ cap + prop	+ val + comp + val	Little brothers Votes Network Vote token
For the vote token to effectively become a useful network able to index UBI on a global scale, an expectation regarding its pricing dynamic must be set at 1 vote unit as equivalent to 1 hour of work.			+ val	Vote token
This constraint is set in order to tie the economic logic of the vote token to its capacity of indexing all the successful Proof of Identities to a Universal Basic Income dripping dynamic.			+ val + val	Vote token Proof of identities
Our design is blockchain agnostic in recognition of a computer science field still in its infancy where			+ comp	Blockchain

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<p>significant innovations remain to be invented. Nonetheless we are working on implementing the vote token under these smart contract environments.</p>			+ val	Vote token
<p>But with the vote token we are building a network of a different nature that aims to be complementary to financial cryptocurrencies by having governance as a goal.</p>			+ val + val	Vote token Financial cryptocurrencies
<p>The vote token will be distributed as a Right opposing the historical association of Debt and morals, generating a new breeding ground for transactions that are not based on the possibility of coercion.</p>			+ val - val + val - val	Vote token Debt and morals Transactions Coercion
<p>And while Facebook mines user attention for profit, the Democracy Earth network will use the same resource to strengthen the trust of the vote token with its Proof of Identity process.</p>			- ten + ten	Facebook Democracy Earth Foundation
<p>We take three approaches to define the value of the vote token: Status-Quo: Social media offers a clear</p>			+ val	Vote token

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<p>reference on how likes get valued online. Work & Time: A Universal Basic Income perspective offers useful insights on how labour time is being valued. Nation-States: Traditional elections offer useful insights on how votes are valued today.</p>			<p>+ val + val + val</p>	<p>Likes Universal Basic Income/ Labour time Traditional elections/votes</p>
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Text	Affect	Judgement	Appreciation	Appraised
<p>In the same way congressmen votes are public, on liquid democracies competing delegates on any given tag have an incentive to build a public reputation based on their voting record in order to attract more delegations.</p>		<p>+ cap</p>		<p>Delegates</p>
<p>In the same way that physical identities are checked by comparing picture to person, users will need to re-create their Proof of Identity and broadcast it for verification in order to authenticate their legitimacy.</p>		<p>+ cap + prop</p>		<p>Users</p>

<p>Martin Haase was in charge of translating all uploaded propositions in the system to a neutral language in order to avoid any ideological bias, making him grasp 167 delegations from other members.</p>		- ver		Martin Haase
<p>According to Facebook's seed investor Peter Thiel, a rule of thumb for technological innovation is that in order to beat a precedent paradigm, an innovation must outperform the task of the previous way of doing things by at least a factor of 10 in terms of cost and utility.</p>			+ comp	Innovation
<p>Therefore in order to consolidate the political and financial logic able to establish a borderless democracy, once a Proof of Identity is validated by peers the distribution mechanism triggered for votes will be based on time as a UBI.</p>			+ val + val + val	Political and financial logic Democracy Proof of identity
<p>Liquidity is a requirement for any democracy that aims to avoid coercion: voices must be able to be heard in order to count and by granting votes as a UBI we are tapping on delivering a human right that can effectively empower individuals that will have to face the coming challenges of automation.</p>			+ comp - comp + val	Liquidity Coercion Votes as a UBI

		+ cap	- reac	Individuals Automation
Soldiers could loot silver and gold from conquered cities and then exchange it afterwards as the emperors minted coins with the precious metals in order to create markets.		- prop - prop		Soldiers Emperors
Although politics and economics are often perceived as different realms, history teaches that money means power and power means votes. In order to effectively promote democracy it is essential to address both. The association of debt, morality and wars remains at the root of the economic mental models of society.			+ val + val + val - val	Money Power Democracy Economic mental models of society
In this sense, we believe this price reference is relevant for end-users in order to empower them with a token that can be competitive with leading social media platforms.		+ cap	+ val + val	Price reference End-users Token

<p>In order to enable the information processing of votes, ballots carry boolean values expressed in their options.</p>			+ val	Boolean values
<p>In a democracy without central governments instead of verifying encrypted blocks, human attention serves the purpose of voting on self-generated identities in order to grant them votes which can eventually be used for new verifications.</p>		+ cap	+ val	Democracy Human attention
<p>This is the playbook behind Donald Trump and his fight against the CNN & New York Times tandem; or the reason Vladimir Putin invested significant resources to create Russia Today in order to have a way of presenting alternative facts. Controlling the message tends to matter more than truth itself.</p>		- prop - prop	- val - val + val	Donald Trump Vladimir Putin Alternative facts Message Truth
<p>In order to have a mechanism that prevents bots, the system can generate modified videos to induce attackers to error.</p>			+ comp + val	Mechanism System

<p>In it the user must follow a series of scripted steps in order to help validators judge with their attention.</p>		<p>+ cap + prop</p>		<p>User Validators</p>
<p>Little brothers can outperform centralized identity providers in terms of accuracy as they are constantly incentivized to maintain legitimacy within the network in order to keep votes as a valuable asset: the success of the network on detecting replicants (duplicated identities) determines the scarcity of the vote token.</p>		<p>+ cap + prop</p>	<p>+ val + comp + val</p>	<p>Little brothers Votes Network Vote token</p>
<p>In order to maintain the reference price set at the minimum wage in the US while being able to be at least ~10X more efficient than any traditional election, vote utility must be extended by making the token divisible.</p>			<p>- comp + comp</p>	<p>Traditional election Token</p>
<p>A Proof of Identity expires after a given period of time in order to prevent Sybil attacks and ensure that only living users are participating in the network.</p>		<p>+ ten</p>	<p>+ comp</p>	<p>Proof of identity Living users</p>

<p>Following the example of Satoshi Nakamoto, prior to sharing our ideas in written form we have undertaken to write code first, in order to properly understand what can be done.</p>		<p>+ cap + cap</p>		<p>Satoshi Nakamoto Coders</p>
<p>Anyone on the network can participate to verify new self-sovereigns in order to secure a global democracy against the threat of a Big Brother.</p>		<p>+ ten</p>	<p>+ val - reac</p>	<p>Anyone on the network Democracy Big Brother</p>
<p>It is in their corporate interest to gather as much information as possible to profile people in order to stay competitive in the attention market, and both companies filter information fed to users with algorithms accountable to no one but their own board.</p>		<p>- prop</p>		<p>Companies</p>
<p>This constraint is set in order to tie the economic logic of the vote token to its capacity of indexing all the successful Proof of Identities to a Universal Basic Income dripping dynamic.</p>			<p>+ val + val</p>	<p>Vote token Proof of Identities</p>

Text	Affect	Judgement	Appreciation	Appraised
<p>If 51% of the nodes in the network <i>accept the verified</i> block, it gets chained to the blockchain and the miner starts working on the next transaction block using the <i>accepted</i> block as the previous hash.</p>		+ cap	+ comp	Block Miner
<p>Even though the inflation rate might initially seem <i>too aggressive</i>, the total supply of votes is still fixed to a <i>maximum</i> cap based on the quantity of participants in the network.</p>		+ cap	- comp + comp	Inflation rate Votes Participants
<p>The memberships <i>connected</i> to an identity in the network can be <i>interpreted</i> by future validators on other Organizations in any desired way.</p>	+ des		+ val	Memberships Validators
<p>Organizations in the network can be as <i>small</i> as a family or as <i>large</i> as a multi-national corporation, but <i>ultimately</i> they are domains in a network that can <i>resemble</i> Tags <i>describing the attributes</i> of an identity.</p>			+ comp + val	Organisations

<p>With this information the next validated identity won't begin in disadvantage: it will have a wallet with the same amount of votes than the first participant in the network currently has.</p>			<p>+ val + comp</p>	<p>Identity Wallet</p>
<p>The Criteria used for the Singularity score is also subject for voting by every validated POI participating in the network.</p>		<p>+ cap</p>	<p>+ val</p>	<p>Criteria POI</p>
<p>In other words: Organizations that fail on the Singularity score used to value the individuality of participants in the network, end up being less trustworthy than those able to effectively include sovereign individuals.</p>		<p>- prop + ver</p>		<p>Organisations that fail Organisations that include sovereign individuals</p>
<p>By allowing 4 decimal positions in the token, a revolution gets dripped to a valid Proof of Identity in the network every 15 seconds.</p>			<p>+ comp</p>	<p>A revolution</p>
<p>The proposed Equality variable is simply a rule for establishing a starting point and by no means a permanent imposition: at any time, any self-sovereign is allowed to either delegate votes to someone</p>			<p>+ comp</p>	<p>Equality variable</p>

else or use them to start an Organization in the network .				
By <i>harnessing distributed</i> attention across multiple Organizations instead of an <i>all-observing central power</i> , validators <u>are in effect</u> an army of little brothers who can <u>collaboratively</u> score a self-sovereign identity in the network .		+ cap	+ comp - comp	Attention Central power Validators
Singular: The proof shall <i>validate</i> a single identity without allowing <u>duplicated</u> participants in the network (replicants).		- ten	+ val	Proof Replicants
A Proof of Identity expires after a <i>given</i> period of time in order to prevent Sybil attacks and ensure that only <u>living</u> users are <u>participating</u> in the network.		+ cap	+ comp	Proof of identity Users
Hence, the overall challenge for a <i>successful decentralized</i> Proof of Identity dynamic is to <i>simply</i> focus on using the <i>available attention in the network</i> to <i>check</i> for replicants that are <u>requesting</u> a share of votes.		- norm	+ val + comp	Proof of Identity Network Replicants

<p>Our proposal introduces cryptographically induced equality: as long as any person is able to validate his or her self-sovereign identity, they will receive a corresponding share of votes that is equal to the share of every active participant in the network.</p>		<p>+ ver + cap</p>	<p>+ val</p>	<p>Proposal Any person Participants in the network</p>
<p>Sybil nodes are those that identify themselves as independent actors in the network while they all are under the control of a single operator.</p>		<p>- prop</p>	<p>- comp</p>	<p>Sybil nodes Single operator</p>
<p>Self-sovereign identities can be valued on two key aspects that help define their right to participate in the network.</p>		<p>+ cap</p>		<p>Self-sovereign identities</p>

Text	Affect	Judgement	Appreciation	Appraised
<p><i>Liquidity is a requirement</i> for any democracy that aims to <i>avoid coercion</i>: voices must be able to be heard in order to count and by granting votes as a UBI we are <i>tapping on delivering a human right</i> that can <u>effectively empower</u> individuals that will have to face the coming <u>challenges of automation</u>.</p>		+ cap	+ comp - comp + val - reac	Liquidity Coercion Votes as a UBI Individuals Automation
<p>Initially the vote token might be able to compete with pollsters and any other <i>rudimentary</i> simulations that aim to predict elections, but eventually it can become a <i>sovereign</i> system <i>on its own right</i> as citizenship migrates online.</p>			+ comp - comp	Vote token Pollsters and simulations
<p>A user must be able to delegate any of his available votes while <u>checking</u> the current delegated amount (if any).</p>		+ cap		User
<p>As newborn babies are <u>registered</u> under this <i>global</i> jurisdiction, blockbirths <i>get synced with</i> birth dates and will be able to incorruptibly attest</p>		+ norm	+ val	Newborn babies Jurisdiction

for age as well gradually reducing the work of authenticators over time.			+ comp	Blockbirths
But the generational opportunity to collaboratively build this possibility must be able to learn from the great lessons of History.			+ val + val	Generational opportunity History
Most of the research concerning how to prevent sybil attacks (identity forgery on peer to peer networks) revolves around requiring entities to perform a task that a sybil attacker would not be able to perform .		- cap	+ val	Research Sybil attacker
No technology will ever be able to satisfy democratic aspirations if it can only be understood by an elite.		- prop	- val	Technology Elite
An ideal voting system must be able to satisfy in the greatest possible extent these conditions: Secrecy: voter must be able to cast vote in secret. Verifiability: voter must be able to verify tallied vote . Integrity: system must be able to verify correct vote tally. Resistance: voter must be able to override own vote if necessary.		+ cap + cap	+ val + comp	Voting system Voter System Voter

<p>A user must be able to understand how many votes were received from someone else.</p>		<p>+ cap</p>		<p>User</p>
<p>If the delegation specifies that delegated votes can only be used on decisions with the #environment tag, then Charlie won't be able to use these anywhere else but on those specific issues.</p>		<p>+ norm</p>		<p>Delegation</p>
		<p>+ norm</p>	<p>+ comp</p>	<p>Charlie Issues</p>

Text	Affect	Judgement	Appreciation	Appraised
<p>During 2015 and 2016, Silicon Valley's Y Combinator and Fast Forward funded our efforts to start the Democracy Earth Foundation, a non-profit organization committed to the mission of borderless governance.</p>		<p>+ ten</p>	<p>+ val</p>	<p>Silicon Valley Democracy Earth</p>

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<p>Democracy Earth Foundation considers that the technology stack that includes Bitcoin as programmable money without Central Banks, and Ethereum enabling smart contracts without the need of Judiciary Courts, requires a new layer that signals incorruptible votes beyond the territorial boundaries of Nation-States.</p>			<p>+ comp + comp + val - val</p>	<p>Bitcoin Smart contracts Votes Nation-States</p>
<p>To all of you our gratitude from Democracy Earth Foundation.</p>	+ hap			<p>Democracy Earth Foundation/All of you</p>
<p>The Democracy Earth Foundation has performed extensive research on voting systems, cyberpolitics and blockchain networks; we stand at the forefront of a public conversation regarding the internet as a planetary jurisdiction.</p>		+ ver		<p>Democracy Earth Foundation</p>
<p>The Democracy Earth Foundation is a 501 (c) 3 not for profit organization from California and with presence in New York, San Francisco, Paris and Buenos Aires.</p>			+ val	<p>Democracy Earth Foundation</p>

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<p>Democracy Earth Foundation is building free, open source software for incorruptible blockchain-based decision-making (voting) within institutions of all sizes, from the most local involving two people to the most global involving all of us.</p>		+ cap	+ val + comp + comp	Democracy Earth Foundation Software Voting Institutions
<p>The goal of Democracy Earth Foundation is to scale the right to use votes to every single human: we are all us (or them).</p>			+ val	Democracy Earth Foundation
<p>The Democracy Earth Foundation is an effort made possible by collaborators, donors and supporters of all kinds.</p>			+ val	Democracy Earth Foundation
<p>This will be aided and abetted through work with the Democracy Earth Foundation partnership with Aragon, who is working on a digital jurisdiction that will make decentralized organizations efficient.</p>			+ val + comp	Aragon Decentralised organisations

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<p>Democracy Earth Foundation regards Facebook's like function <i>analogous</i> to using votes in an <i>open</i> network.</p>			+ comp	Facebook's like function
<p>Democracy Earth Foundation's aim is to deliver a Linux moment to Facebook: <i>analogous</i> to the <i>rise of open source</i> operating systems in the early 1990's, Linux became an <i>alternative</i> to the <i>monopolizing force</i> of Microsoft's Windows that <i>dominated</i> the market of personal computers and internet servers.</p>			+ val - val	Linux Microsoft's Windows
<p>For this reason, Democracy Earth Foundation will generate an Initial Rights Offering of vote <i>tokens designed to reach everyone</i> on Earth under a process that will offer two mechanisms: crypto funding for <u>anyone willing to allocate resources</u> that <i>strengthen</i> the development of a <i>global</i> democracy with the vote token; and a rights mechanism as a native way of getting vote tokens by <u>anyone able to mine</u> his or her <u>corresponding</u> share of votes through a Proof of Identity process.</p>		+ cap + cap	+ val + val	Vote tokens Anyone Democracy Anyone able to mine
<p>This is how Democracy Earth Foundation <u>will grant access to votes as a human right</u>.</p>		+ ver		Democracy Earth Foundation

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Text	Affect	Judgement	Appreciation	Appraised
Our proposal introduces cryptographically induced equality : as long as any person is able to validate his or her self-sovereign identity, they will receive a corresponding share of votes that is equal to the share of every active participant in the network .		+ ver + cap	+ val	Proposal Any person Participants in the network
As long as Bob has access to those tokens he can use them to vote on Alice's behalf.		+ cap		Bob
By issuing votes as a right that can be granted to anyone as long as his or her singular identity is proven , the vote operates as political clout.		+ prop	+ val + val	Votes Identity Vote
A proof can be done with any recording application as long as it satisfies the requirements of the protocol.			+ val	Protocol

<p>This might include a birth certificate, driver's license or a national ID as long as it doesn't hold any sensitive information (e.g. using a Social Security Number in the US).</p>			- val	Information
<p>Democracy thrives as long as participation is incentivized.</p>			+ val + val	Democracy Participation
<p>As long as replicants get successfully banned, the vote network is a genuinely democratic global commons.</p>		- cap	+ val + reac	Replicants Vote networks
<p>At any time, as long as the poll is still open, the user may remove his or her votes from a decision by simply sliding the liquid bar handle back to the initial position.</p>		+ cap		User
<p>But as long as the token is assigned to signal a preference on a contract ballot without closing date, it is part of the strategical decision.</p>			+ val	Token

<p>As long as the Proof of Identity has been validated by the community and a smart contract is synced with an active blockchain node, then the value of V_i will either be a number that defines the total amount of votes a self-sovereign has as a right to use on a hosted wallet or, if the POI is rejected (i.e. $S_i = \text{false}$), then the participant's available votes becomes zero.</p>		- cap	+ reac + comp + val	Proof of identity Smart contract Votes Participants
<p>As long as the network successfully bans replicants and rewards validated self-sovereign identities indexed on the Bitcoin blockchain, then any UBI initiative can trust the present data to allocate resources without the risk of abuse.</p>		+ norm	+ val + comp	Network Self-sovereign identities Present data
<p>On the Proof of Identity process (see Section 3), users are able to natively generate their own votes as long as their individuality gets endorsed by other identities.</p>		+ cap + norm		Users Individuality
<p>As long as there is a transaction in the blockchain that can validate the encoded hash with the data of the digital file, then the evidence is valid.</p>			+ comp + comp	Transaction in the blockchain Evidence

Text	Affect	Judgement	Appreciation	Appraised
<p>This document proposes a solution that will tackle both the political and technical issues currently weakening the prospects of democracy in the world by offering an alternative that can be adopted directly by citizens and implemented using peer to peer networks.</p>		<p>+ cap</p>	<p>- val + val</p>	<p>Political and technical issues Solution Citizens</p>
<p>To certify an identity is valid, verifiers are exposed to two simultaneous POI videos that can be chosen at random from all the indexed and hashed videos found on the blockchain.</p>		<p>+ ver</p>		<p>Verifiers</p>
<p>In this sense, we believe this price reference is relevant for end-users in order to empower them with a token that can be competitive with leading social media platforms.</p>		<p>+ cap</p>	<p>+ val + val</p>	<p>Price reference End-users Token</p>

<p>These consist of <i>simple</i> vision exercises that can be completed by a human more easily than by a computer.</p>		+ cap	+ comp	<p>Vision exercises</p> <p>Human</p>
<p>But it must be noted that unlike likes, votes directly <i>empower</i> holders with the right to participate in any financial benefit that can be connected to their use without intermediation.</p>		+ cap	<p>+ val</p> <p>- val</p>	<p>Votes</p> <p>Holders</p> <p>Intermediation</p>
<p>For example: the digital word processor became <i>successful</i> because it does what a typewriter did in a way that can be considered at least ten times better and ten times cheaper.</p>			<p>+ val</p> <p>- val</p>	<p>Digital word processor</p> <p>Typewriter</p>
<p>It is the <i>most flexible form</i> of democratic governance that can be constructed with digital technology, <i>operating as a hybrid</i> that enables direct or delegated voting at any time.</p>			+ val	A liquid democracy
<p>This might include a mining fee to settle the vote transaction that can be either <i>subsidized by the</i></p>			+ comp	Mining fee

<i>implementing organization</i> or <i>directly paid by voters.</i>				
By issuing votes as <i>a right</i> that can be <i>granted to anyone as long as</i> his or her singular <i>identity is proven</i> , the vote <i>operates</i> as <i>political</i> clout.		+ prop	+ val + val	Votes Identity Vote
Describes the building blocks for a system <i>that can be implemented by anyone</i> , anywhere.			+ val	System
Likes in social media <i>operate as worthless tokens that can be</i> inflated with a single click even though they set the price of advertising dollars.			- comp	Likes in social media
For this purpose the <i>user must broadcast</i> a proof of his or her identity that <i>strictly satisfies</i> a criteria <i>that can be</i> met by human judgment and <i>able to avoid</i> an artificial intelligence from interfering with the process.		+ cap - dep		User Artificial intelligence
As the internet becomes the <i>dominant</i> force in modern politics we see an indispensable need to develop			+ val	Internet

digital technology for voting that can be securely deployed in any geographical location and for communities of any size.			+ comp	Digital technology for voting
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Text	Affect	Judgement	Appreciation	Appraised
A foundational principle of democracy is the right to be heard.			+ val	Democracy
Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers.		+ prop		Everyone
Everyone has the right to freedom of peaceful assembly and association.		+ prop		Everyone
Public Vote: Often referred as the golden rule of liquid democracies, all delegators have the right to know			+ comp	Liquid democracies Delegators

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<p><u>how their delegate has voted</u> on any given issue with their votes.</p>		+ prop		
<p>But it must be noted that unlike likes, <i>votes directly empower holders</i> with the right to participate in any financial benefit that can be connected to their use without intermediation.</p>			+ val - val	Votes Intermediation
<p>Only <u>approved</u> members have the right to post.</p>		+ cap + prop		Members
<p>Members that <u>meet certain criteria</u> (e.g. a minimum of delegated votes or votes received under a specific tag) have the right to post.</p>		+ cap + prop		Members
<p>Only those among the elected positions (i.e. senators and congressmen) get the right to spend more votes than the rest of the citizens.</p>		+ cap		Elected positions
<p>Everyone has the right to take part in the government of his country,</p>		+ prop		Everyone

directly or through freely chosen representatives.				
The goal of Democracy Earth Foundation is to scale the right to use votes to every single human: we are all us (or them).		+ prop		Every single human
They enable systems of free association that help break the political and financial coercion that governments and banks impose by restricting the right to vote or limiting access to capital.		- ver		Governments and banks
Only members get the right to vote. Members: Only approved members have the right to post.		+ prop		Members
Every Organization has members that get the right to vote on the decisions of the organization.		+ prop		Members

Text	Affect	Judgement	Appreciation	Appraised
<p>Since in a liquid democracy a user can have one or more delegated votes, having a constant reminder of the balance <u>helps the user understand his or her current power</u> within the system.</p>		+ cap		User
<p>Any Member within an Organization <i>operating as a liquid democracy</i> can <u>get delegated votes</u>.</p>		+ cap		Member
<p>The small percentage in delegations means that Google Votes <i>operated more as a direct democracy</i> than a liquid democracy.</p>			- val - val + val	Google votes Direct democracy Liquid democracy
<p>The consequences of having a <u>monopolizing</u> leader in a liquid democracy environment goes against the <i>spirit</i> of an ecosystem that aims to <i>incentivize</i> more participation.</p>		- ten	+ val	Leader Ecosystem

<p>A Liquid Democracy Experiment on a Corporate Social Network.</p>			- val	Social network
<p>A liquid democracy is based on a dynamic representation model that works with a bottom-up approach: citizens are able to freely elect within their social graph (friends, colleagues, family) who they want to have as representatives on a specific set of topics.</p>		+ cap	+ comp	Liquid democracy Citizens
<p>A liquid democracy operates across domains.</p>			+ comp	Liquid democracy
<p>Among the most notable research projects on the field is Google Votes. This was an internal implementation made for Google employees led by engineer Steve Hardt where he created a liquid democracy plug-in to be used on the internal version of Google+.</p>			+ val + comp	Google Votes Implementation of Google votes
<p>A key setting of a liquid democracy system is to permit quadratic voting.</p>			+ comp + comp	Liquid democracy Quadratic voting

<p>This paper details the implementation of a liquid democracy using Sovereign, our <i>democratic</i> governance application that operates with blockchain tokens using a <i>basic set</i> of smart contracts.</p>			<p>+ val</p> <p>+ comp</p>	<p>Sovereign</p> <p>Smart contracts</p>
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Text	Affect	Judgement	Appreciation	Appraised
<p>In the Pangea Jurisdiction, Citizens are able to make peer-to-peer agreements, resolve disputes, and access governance services from DBVNs using the legal code of their preference.</p>		+ cap		Citizens
<p>Voluntary Nations must provide better, more secure, faster, cheaper and peer-to-peer alternatives for these services.</p>			+ comp	Voluntary nations
<p>The Pangea software is a Decentralized Opt-In Jurisdiction where Citizens can conduct peer-to-peer arbitration and create Nations.</p>		+ cap	+ comp	Pangea software Citizens
<p>Crowd Arbitration: Pangea's native arbitration system is focused on peer-to-peer arbitration.</p>			+ reac	Pangea's native arbitration system
<p>Peer-to-Peer Financial Redistribution: For instance, Johan</p>		+ cap		Individual citizens

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<p>Nygren's work with resilience.me to build a peer-to-peer basic income protocol as well as a redistribution scheme called Taxeme could be opted into by individual Citizens on Pangea or adopted by DBVNs for all their Citizens.</p>				DBVNS
<p>Peer to peer contracts: Imagine being able to make complex legal agreements at ease from your smartphone, through a user-friendly chat interface, similar to WeChat, Signal, WhatsApp, or Facebook Messenger, but without the time, costs and bureaucracy of public notaries, lawyers and regulators.</p>		- ten	+ comp + val	Legal agreements Chat interface Public notaries, lawyers and regulators
<p>After building and releasing the first version, market analysis suggested that in the future peer-to-peer contracts are most likely to achieve mass adoption through chat applications.</p>			+ val	Peer-to-peer contracts
<p>Pangea is a decentralized jurisdiction for the peer-to-peer creation of voluntary nations and making and arbitrating solemn agreements.</p>			+ comp + comp	Jurisdiction Voluntary nations

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<p>The Sybil attack in computer security is an attack wherein a reputation system is subverted by forging identities in peer-to-peer networks.</p>			<p>- comp - comp</p>	<p>Reputation system Identities</p>
<p>This modality incentivizes peer-to-peer promotion and adoption, creating a de-facto network effect to organically grow user adoption.</p>			<p>+ val + val</p>	<p>Modality User adoption</p>
<p>Pangea provides an easy way to draw up a contract peer-to-peer, resolve any disputes that may arise, and incentivize contract compliance through the reputation system.</p>			<p>+ comp + val</p>	<p>Pangea</p>
<p>Free market arbitration paves the way for humanity to reclaim personal sovereignty and return to peer-to-peer transactions.</p>		<p>+ prop</p>		<p>Humanity</p>
<p>In the realm of a DBVN, decentralization translates into both technological and human decentralization through the use of P2P (Peer-to-Peer) technology, modular interfaces, API (Applications Programming</p>			<p>+ val</p>	<p>Decentralisation</p>

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Interface) layers, and forkable (duplicated) code.				
<p>Peer-to-Peer Security: For actual physical security, a third-party developer could develop a DApp to for instance provide a form of neighborhood watch in their area - similar to the concept of for instance Cell 411 and other security applications.</p>		+ cap	+ val	<p>Security</p> <p>Third-party developer</p>

Text	Affect	Judgement	Appreciation	Appraised
<p>Through this process a body of rules (smart contracts) suited for various purposes will emerge in the Pangea jurisdiction and evolve through use to best serve Citizens' needs as an optional standard format for Citizens.</p>			+ comp + val	Body of rules
<p>The Pangea Jurisdiction Application allows DBVNs and P2P agreements to be created with clearly defined limits to which the organizations and individuals their rules apply.</p>			+ val + comp	Pangea jurisdiction application

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<p>In the Pangea Jurisdiction, Citizens are able to make peer-to-peer agreements, resolve disputes, and access governance services from DBVNs using the legal code of their preference.</p>		+ cap		Citizens
<p>The PAT token functions not only to provide incentives for dispute resolution and the creation and design of smart contracts within the Pangea jurisdiction incentive network, but also to build and monetize cooperative behavior amongst participants.</p>		+ ten	+ val	PAT token Participants
<p>The ability of Citizens to create their own Nations in the Pangea Jurisdiction is a core feature of the platform.</p>		+ cap	+ comp	Citizens Platform
<p>Pangea Arbitration Token (PAT): details the design and purpose of the Pangea Arbitration Token and describes how it powers the Pangea Jurisdiction.</p>			+ comp + val	Pangea Arbitration Token
<p>As a result, the Pangea jurisdiction relies on reputation (automated and human scores, ratings, collaborative filtering, and digital representations of sentiment, opinion and thought) to incentivize opt-in contractual rule compliance and decide which peers,</p>			+ val + val	Pangea jurisdiction Reputation

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Nations, service providers and arbitrators receive a favorable rating.		+ prop		Peers, nations, service providers, arbitrators
The Pangea Arbitration Token (PAT) is an ERC20 compatible in-app token for the Pangea Jurisdiction .			+ comp	Pangea Arbitration Token
The Pangea Jurisdiction: The Internet of Sovereignty			+ val	Pangea Jurisdiction
The Pangea Jurisdiction which has been in development since 2015, and is currently on version 0.3, is built on IPFS, SSB and Ethereum.			+ comp	Pangea Jurisdiction
By allowing each smart contract to have a reputation (to be rated and peer-reviewed) the Pangea jurisdiction will improve the quality of each set of rules as fitness is evaluated and the newest rules are optimized to become the fittest .			+ val + val + val	Pangea Jurisdiction Fitness Rules

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Text	Affect	Judgement	Appreciation	Appraised
<p>Pangea Arbitration Token (PAT): <i>details</i> the <i>design</i> and <i>purpose</i> of the Pangea Arbitration Token and <i>describes</i> how it <i>powers</i> the Pangea Jurisdiction.</p>			+ comp + val	Pangea Arbitration Token
<p>The Pangea Arbitration Token (PAT) is an ERC20 <i>compatible</i> in-app token for the Pangea Jurisdiction.</p>			+ comp	Pangea Arbitration Token
<p>The Pangea Arbitration Token (PAT) <i>master</i> token, together with the three non-tradable reputation sub-tokens, <i>forms</i> a financial <i>incentive</i> network on Pangea.</p>			+ val + comp	Pangea Arbitration Token
<p>Pangea Arbitration Token (PAT) 3.1 Purpose and Structure: This is a development that turns the <i>very logic</i> of political action on its head <i>thanks to</i> technology and the <i>distributed nature</i> of networks, we are <u>no longer beholden</u> to the political process, majoritarian rule, and the so-called fair tax and fiat money regime.</p>		+ ten	+ val + comp	Pangea Arbitration Token People

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<p>The Pangea Arbitration Token (PAT) is designed <i>specifically</i> to reward the <i>successful</i> execution of contractual agreements on the Pangea platform and is <i>not primarily</i> a currency, even though the <i>master</i> token will be <i>tradable</i> on cryptocurrency exchanges.</p>			<p>+ val</p> <p>+ val</p>	<p>Pangea Arbitration Token/ Pangea platform</p> <p>Master token</p>
<p>3.3 Pangea Arbitration Token (PAT): Master Token Mechanism PAT master tokens are <i>tradable</i> in-app tokens distributed through an Ethereum smart contract.</p>			<p>+ val</p>	<p>Pangea Arbitration Token</p>

Text	Affect	Judgement	Appreciation	Appraised
<p>Soon afterwards, the Treaty of Westphalia (1648) established the Nation State as the <i>standard</i> for governance in Europe.</p>			<p>+ comp</p>	<p>The nation state</p>

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<p>Radical politics are often expressed as xenophobia and violent nihilism and the Nation State is becoming increasingly intrusive and using technology and regulation punitively in a desperate attempt to regain the initiative from globalization and take control of every moment in our lives.</p>			<p>- reac - reac - val</p>	<p>Politics Nihilism Nation State</p>
<p>Our mission is urgent - to free humankind from the oppression and sanction of pooled sovereignty and geographical apartheid and the xenophobia and violence that is nurtured by the Nation State oligopoly. Our white paper is a living document and intended to evolve with input from our ever-growing community.</p>		<p>+ cap + prop - prop - prop + cap</p>	<p>+ comp</p>	<p>Our mission Humankind Sovereignty and geographical apartheid Nation state White paper Community</p>
<p>The Nation State oligopoly established after World War Two remains uncontested. Yet state monopolies are increasingly incompatible with our ever more interconnected lives.</p>			<p>- val - val</p>	<p>Nation state oligopoly State monopolies</p>

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<p><i>Increasingly</i> the Nation State oligopoly <i>represents an anachronistic</i> geographical apartheid.</p>			- val	Nation state oligopoly
<p>As the Nation States closed in these populations have become ever more subject to persecution. While the defined borders and cultural cohesion of the Nation State provided some relief from the violence of imperial wars after 1945, in our own era the borders themselves continue to be a perpetual source of conflict, instability, xenophobia and exclusion, and contribute to arbitrary economic and social impediments to prosperity worldwide.</p>		- cap	+ val - val - val	Populations Nation state Imperial wars Borders
<p>After World War Two, the nation state was ossified in International Law as the only permissible sovereign governance entity and by the end of the century had completely supplanted colonial empires and unincorporated territories, creating a global oligopoly on governance and claiming nearly every square meter of habitable space.</p>			+ val - val	Nation state as permissible Global oligopoly
<p>Through this process the Nation State will become increasingly irrelevant to our everyday lives. The time is right for every one of us to reclaim our</p>			- val	Nation state

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<p>sovereignty and build a positive future through decentralized governance. Enter Pangea.</p>		<p>+ prop + cap</p>		<p>People</p>
<p>Yet these organizational models can only outcompete Westphalian state sovereignty if they can provide credible alternatives to the Nation State raison'etre, the provision of security and justice.</p>			<p>+ val - val</p>	<p>Organisational models Nation state</p>

Text	Affect	Judgement	Appreciation	Appraised
<p>In order to avoid Sybil attacks, the PON reward will be calculated based on the votes obtained by the active usage of a specific contract and the reputation of voters (the amount of POAs they have) making a Sybil attack useless since accumulating a good reputation takes time.</p>		<p>+ cap</p>	<p>+ val - val + val</p>	<p>PON reward Voters Sybil attack Reputation</p>
<p>PAT holders do not have voting rights, in order to avoid the tyranny of the majority</p>		<p>- cap</p>		<p>PAT holders</p>

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problem. Instead, Bitnation is governed by the principles of liquid holacracy.		- prop	+ val	Tyranny of the majority Bitnation
In digital space, everything must be quantified in order to be computable .			+ comp	Digital space
Although all rewards and transaction fees on Pangea are paid or received in rewards in PAT, the Pangea wallet aims to integrate as many currencies as possible in order to let Citizens choose a conversion if they prefer to receive rewards and pay for services in other currencies.		+ cap	+ comp	Pangea wallet Citizens
However, a gay or lesbian couple might still want to engage in a legal union in order to protect their assets, by tying their union to ownership records of, for instance, their land ownership titles, mutual savings wallets, wills and child care contracts.		+ cap	+ val + val	Gay or lesbian couple Legal union Assets
Although membership will change, change is designed to have an inherent slowness worked into it in order to			+ val	Change

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<i>provide long-term stability and continuity.</i>				
The higher the market-set price of PAT, the fewer tokens will be issued in order to reach the hard-cap.			+ val + val	Market-set price Tokens

Text	Affect	Judgement	Appreciation	Appraised
If a particular smart contract is good , then as more participants in the swarm discover how good it is, they can follow this set of rules and strengthen its digital pheromone trail - taking this smart contract viral .			+ val	Smart contract Participants in the swarm
By allowing each smart contract to have a reputation (to be rated and peer-reviewed) the Pangea jurisdiction will improve the quality of each set of rules as fitness is evaluated and the newest rules are optimized to become the fittest .			+ val + comp + comp	Smart contract Pangea jurisdiction Rules

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<p>The Initial Set of rules does little more than regulate the rule-changing process. The Initial Set of rules were published in Hofstadter's "Metamagical Themas" column in Scientific American in June of 1982.</p>			- comp	Initial set of rules
<p>DBVN Citizens voluntarily opt-in to the set of rules established in each Voluntary Nation they join using Pangea.</p>		+ cap		DBVN citizens
<p>The best set of rules in the form of smart contracts developed on Pangea will rise to the top and become recommended for continued use by Citizens based on reputation scores generated by informed users, developers and auditors.</p>		+ ten	+ comp	Set of rules Users, developers and auditors
<p>Each smart contract created on Pangea represents a set of rules. To provide better feedback, each smart contract will have a reputation score measured in proof-of-nomic sub-tokens.</p>			+ comp	Smart contract

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Text	Affect	Judgement	Appreciation	Appraised
<p>The Internet of Sovereignty: explains why opt-in governance is necessary to enable humankind to peacefully prosper and how Bitnation makes this possible with the Pangea software.</p>			<p>+ val + val</p>	<p>Opt-in Governance Bitnation</p>
<p>The Internet of Sovereignty: 1.1 Governance 1.0: A Geographical Apartheid: The novelty of the coming politics is that it will no longer be a struggle for the conquest or control of the State, but a struggle between the State and humanity, an insurmountable disjunction between whatever singularity and the State organization.</p>			<p>+ val - val</p>	<p>Coming politics State</p>
<p>II. The Pangea Jurisdiction: The Internet of Sovereignty: Our operating system, as operating systems will, has become buggy, strained, and outdated. Not only are people becoming weary of a system designed to pit people against each other with a crude majoritarian calculus, but new systems are being developed to accommodate phase transition. Indeed, some of these systems don't require the permission of authorities.</p>	- sat		<p>- comp - reac + comp + comp</p>	<p>Operating system People Majoritarian calculus New systems Systems</p>

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<p>1.3 Enter Pangea: The Internet of Sovereignty: “The end of law is not to abolish or restrain, but to preserve and enlarge freedom.” - John Locke, Philosopher</p>			+ val	End of law
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Text	Affect	Judgement	Appreciation	Appraised
<p>The Pangea Arbitration Token (PAT) master token, together with the three non-tradable reputation sub-tokens, forms a financial incentive network on Pangea.</p>			+ comp	Master token and sub-tokens
<p>A non-tradable reputation token for Pangea users and arbitrators which is governed by performance criteria for smart contract creation and execution.</p>			+ comp	Non-tradable reputation token
<p>A non-tradable reputation token for DBVNs, user groups and governance services created on Pangea, it is governed by user satisfaction with</p>			+ comp + reac	Non-tradable reputation token

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collective contract creation and execution .				
A non-tradable reputation token for contracts, laws and legal codes governed by user satisfaction .			+ reac	Non-tradable reputation token
The PAT token rewards good reputation and is issued on Pangea when Citizens accumulate non-tradable reputation tokens through creating a contract, successfully completing a contract or resolving a dispute attached to a contract.		+ cap + prop	+ val	PAT token Citizens
PAT is distributed via an Ethereum smart contract containing a tradable ECR20 master token which serves as a reward token on Pangea and also governs three non-tradable reputation tokens, each with specific functions and attributes.			+ comp + comp + val	PAT Master token Non-tradable reputation tokens
Our game theory requires that a portion of the tokens released are used to reward Citizens for accumulating POA (non-tradable reputation tokens).			+ val	Tokens

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<p>The purpose of having a large number of tokens is also to ensure there are enough to reward users who have accumulated non-tradable reputation tokens in the future.</p>			+ val	Tokens
<p>The remaining 34% of tokens will be used to power the platform by crediting users who have built up a large amount of non-tradable reputation tokens on Pangea as outlined in section 3.</p>			+ val + comp	Tokens

Text	Affect	Judgement	Appreciation	Appraised
<p>Revenue is charged in PAT, convertible from other cryptocurrencies on the platform.</p>			+ comp	Revenue
<p>Rewards are provided in the form of reputation, scores or ratings which Citizens, Arbitrators, Governance Services Providers, Nations, Smart Contracts and Codes of Law accumulate</p>		+ cap	+ comp + comp	Rewards Citizens, Arbitrators etc.

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and which can be searched by others on the platform .				Platform
This process creates the context in which Nomic Laws can evolve on the platform (i.e. a set of laws that are updated on usability criteria).			+ comp	Nomic laws
It also incentivizes late adopters to get on the platform .			+ reac	Platform
Nevertheless, master token holdings are not indicative of reputation themselves and reputation cannot be traded on the platform .			- comp + comp	Master token holdings Reputation
Pangea manages the dispute resolution process for agreements made on the platform .			+ comp	Pangea
Every smart contract created on the platform will also have a contract ID, associated public key(s), and possibly other additional IDs, addresses, or codes as is deemed necessary to validate identities and secure.			+ val	Smart contract

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Text	Affect	Judgement	Appreciation	Appraised
All tokens will be automatically converted to the final PAT token (1:1) as per the TSE/token contract when PAT is released with Pangea 0.003.			+ comp	All tokens
Existing Bitnation XBNX CounterParty tokens will be exchanged for PAT tokens at an equivalent value.			+ val	Tokens
The higher the market-set price of PAT, the fewer tokens will be issued in order to reach the hard-cap.			+ val - val	PAT Tokens
To maximize quantity, PAT tokens will be made available for purchase through a range of exchanges and wallets after the TSE.			+ val + val	PAT tokens Exchanges and wallets
In addition to the 34% sold during the TSE, 32% of tokens will be pre-allocated to founders, present and future core			+ val	Tokens

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contributors, and early adopters (pre-TSE Bitnation Citizens).				
A separate 34% of PAT master tokens will be sold to external stakeholders through a two stage Token Sale Event (TSE) to generate resources for the construction of Pangea and to empower a broad stakeholder community which drives user adoption .		+ cap	+ val	PAT master tokens Broad stakeholder community
Phase 3: Slow release - the remaining unsold tokens will be sold via exchanges over the following 24 months so that a total of 14.28 billion (34%) have been sold by April 2020.			+ val	Tokens
One of the effects of this model is that we do not know how many tokens will be sold during the auction.			- comp	Model
The remaining 34% of tokens will be used to power the platform by crediting users who have built up a large amount of non-tradable reputation tokens on Pangea as outlined in section 3.		+ cap	+ val	Token/ Platform Users

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White paper	Text	Affect	Judgement	Appreciation	Appraised
Democracy Earth	<p>In the same way congressmen votes are public, on liquid democracies competing delegates on any given tag have an incentive to build a public reputation based on their voting record in order to attract more delegations.</p>		+ cap		Delegates
	<p>In the same way that physical identities are checked by comparing picture to person, users will need to re-create their Proof of Identity and broadcast it for verification in order to authenticate their legitimacy.</p>		+ cap + prop		Users

	<p>Martin Haase was in charge of translating all uploaded propositions in the system to a neutral language in order to avoid any ideological bias, making him grasp 167 delegations from other members.</p>		- ver		Martin Haase
	<p>According to Facebook's seed investor Peter Thiel, a rule of thumb for technological innovation is that in order to beat a precedent paradigm, an innovation must outperform the task of the previous way of doing things by at least a factor of 10 in terms of cost and utility.</p>			+ comp	Innovation
	<p>Therefore in order to consolidate the political and</p>			+ val	Political and financial logic

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	<p>financial logic able to establish a borderless democracy, once a Proof of Identity is validated by peers the distribution mechanism triggered for votes will be based on time as a UBI.</p>			<p>+ val + val</p>	<p>Democracy Proof of identity</p>
	<p>Liquidity is a requirement for any democracy that aims to avoid coercion: voices must be able to be heard in order to count and by granting votes as a UBI we are tapping on delivering a human right that can effectively empower individuals that will have to face the coming challenges of automation.</p>		<p>+ cap</p>	<p>+ comp - comp + val - reac</p>	<p>Liquidity Coercion Votes as a UBI Individuals Automation</p>
	<p>Soldiers could loot silver and gold from</p>		<p>- prop</p>		<p>Soldiers</p>

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	<p>conquered cities and then exchange it afterwards as the emperors minted coins with the precious metals in order to create markets.</p>		- prop		Emperors
	<p>Although politics and economics are often perceived as different realms, history teaches that money means power and power means votes. In order to effectively promote democracy it is essential to address both. The association of debt, morality and wars remains at the root of the economic mental models of society.</p>			<p>+ val + val + val - va</p>	<p>Money Power Democracy Economic mental models of society</p>

	<p>In this sense, we believe this price reference is relevant for end-users in order to empower them with a token that can be competitive with leading social media platforms.</p>		+ cap	+ val + val	<p>Price reference</p> <p>End-users</p> <p>Token</p>
	<p>In order to enable the information processing of votes, ballots carry boolean values expressed in their options.</p>			+ val	Ballots
	<p>In a democracy without central governments instead of verifying encrypted blocks, human attention serves the purpose of voting on self-generated identities in order to grant them votes which can eventually be</p>		+ cap	+ val	<p>Democracy</p> <p>Human attention</p>

	used for new verifications.				
	<p>This is the playbook behind Donald Trump and his fight against the CNN & New York Times tandem; or the reason Vladimir Putin invested significant resources to create Russia Today in order to have a way of presenting alternative facts. Controlling the message tends to matter more than truth itself.</p>		<p>- prop</p> <p>- prop</p>	<p>- val</p> <p>+ val</p> <p>- val</p>	<p>Donald Trump</p> <p>Vladimir Putin</p> <p>Alternative facts</p> <p>Message</p> <p>Truth</p>
	<p>In order to have a mechanism that prevents bots, the system can generate modified videos to induce attackers to error.</p>			<p>+ comp</p> <p>+ val</p>	<p>Mechanism</p> <p>System</p>

	In it the user must follow a series of scripted steps in order to help validators judge with their attention.		+ cap + prop		User Validators
	Little brothers can outperform centralized identity providers in terms of accuracy as they are constantly incentivized to maintain legitimacy within the network in order to keep votes as a valuable asset: the success of the network on detecting replicants (duplicated identities) determines the scarcity of the vote token .		+ cap + prop	+ val + comp + val	Little brothers Votes Network Vote token
	In order to maintain the reference price set at the minimum wage in			- comp	Traditional election

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	<p>the US while being able to be at least ~10X more efficient than any traditional election, vote utility must be extended by making the token divisible.</p>			+ comp	Token
	<p>A Proof of Identity expires after a given period of time in order to prevent Sybil attacks and ensure that only living users are participating in the network.</p>		+ ten	+ comp	<p>Proof of identity</p> <p>Living users</p>
	<p>Following the example of Satoshi Nakamoto, prior to sharing our ideas in written form we have undertaken to write code first, in order to properly understand what can be done.</p>		+ cap + cap		<p>Satoshi Nakamoto</p> <p>Coders</p>

	<p>Anyone on the network can participate to verify new self-sovereigns in order to secure a global democracy against the threat of a Big Brother.</p>		+ ten	+ val - reac	<p>Anyone on the network</p> <p>Democracy</p> <p>Big Brother</p>
	<p>It is in their corporate interest to gather as much information as possible to profile people in order to stay competitive in the attention market, and both companies filter information fed to users with algorithms accountable to no one but their own board.</p>		- prop		Companies
	<p>This constraint is set in order to tie the economic logic of the vote token to its capacity of indexing all the</p>			+ val + val	<p>Vote token</p> <p>Proof of Identities</p>

	<p>successful Proof of Identities to a Universal Basic Income dripping dynamic.</p>				
Bitnation	<p>In order to avoid Sybil attacks, the PON reward will be calculated based on the votes obtained by the active usage of a and the reputation of voters (the amount of POAs they have) making a Sybil attack useless since accumulating a good reputation takes time.</p>		+ cap	+ val + comp + val	Usage Contract Voters Reputation
	<p>PAT holders do not have voting rights, in order to avoid the tyranny of the majority problem.</p>		- cap - prop		PAT holders Tyranny of the majority
	<p>In digital space, everything must be quantified in</p>			+ comp	Digital space

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	order to be computable.				
	Although all rewards and transaction fees on Pangea are paid or received in PAT, the Pangea wallet aims to integrate as many currencies as possible in order to let Citizens choose a conversion if they prefer to receive rewards and pay for services in other currencies.		+ cap	+ val	Pangea wallet Citizens
	However, a gay or lesbian couple might still want to engage in a legal union in order to protect their assets, by tying their union to ownership records of, for instance, their land ownership titles, mutual savings wallets,		+ cap	+ val + val	Gay or lesbian couple Legal union Assets

	wills and child care contracts.				
	Although membership will change, change is designed to have an inherent slowness worked into it in order to provide long-term stability and continuity .			+ val	Change
	The higher the market-set price of PAT, the fewer tokens will be issued in order to reach the hard-cap.			+ val + val	Market-set price Tokens
Creativechain	In order to encourage the use of free licenses, the platform rewards with Creativecoin the works licensed with CC that have obtained a better evaluation by the community.		+ prop	+ val	Licenses Community

<p>Steemit</p>	<p>In order to maintain a reasonable user experience with a minimum number of hung accounts, all new accounts should start out with a balance 10 times the minimum required to transact weekly.</p>			<p>+ val + val</p>	<p>User experience Accounts</p>
<p>Democracy Earth</p>	<p>Liquidity is a requirement for any democracy that aims to avoid coercion: voices must be able to be heard in order to count and by granting votes as a UBI we are tapping on delivering a human right that can effectively empower individuals that will have to face the coming challenges of automation.</p>	<p>+ cap</p>		<p>+ comp - comp + val - reac</p>	<p>Liquidity Coercion Votes as a UBI Individuals Automation</p>

	<p>Initially the vote token might be able to compete with pollsters and any other rudimentary simulations that aim to predict elections, but eventually it can become a sovereign system on its own right as citizenship migrates online.</p>			<p>+ comp - comp</p>	<p>Vote token Pollsters and simulations</p>
	<p>A user must be able to delegate any of his available votes while checking the current delegated amount (if any).</p>		<p>+ cap</p>		<p>User</p>
	<p>As newborn babies are registered under this global jurisdiction, blockbirths get synced with birth dates and will be able to incorruptibly attest for age as well gradually</p>		<p>+ norm</p>	<p>+ val + comp</p>	<p>Newborn babies Jurisdiction Blockbirths</p>

	<i>reducing</i> the work of authenticators over time.				
	But the <i>generational opportunity to collaboratively build</i> this possibility must be able to learn from the <i>great</i> lessons of History.			+ val + val	Generational opportunity History
	Most of the research <i>concerning how to prevent</i> sybil attacks (identity forgery on peer to peer networks) revolves around <i>requiring entities to perform a task</i> that a <u>sybil attacker</u> would not be able to perform .		- cap	+ val	Research Sybil attacker
	No technology will ever be able to <i>satisfy democratic aspirations</i> if it			- val	Technology

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	<p>If the delegation specifies that delegated votes can only be used on decisions with the #environment tag, then Charlie won't be able to use these anywhere else but on those specific issues.</p>		<p>+ norm</p> <p>+ norm</p>	<p>+ comp</p>	<p>Delegation</p> <p>Charlie</p> <p>Issues</p>
Creativechain	<p>This characteristic is the one that gives name to the platform and its final objective is to be able to create a map of connections that help us to understand how the cultural transmission is articulated and the creative processes that shape it over time.</p>			<p>+ val</p> <p>+ val</p>	<p>Platform</p> <p>Cultural transmission</p>
	<p>In Creativechain, the content owners are the authors, and they</p>		<p>+ cap</p>		<p>Content owners</p>

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	will always be able to prove it with the records that have been registered in the blockchain.				
Steemit	Under blockchain-based social media, a creator or author would always be able to point to a public record and timestamp showing proof of their content origination .		+ cap		Creator or author
	On the other hand, someone who owns 50% of the house is speculating that demand for the house will increase in the future and they will be able to sell their stake for more .		+ cap	+ val	Someone who owns 50% of the house House
Bitnation	Human nodes should be able to reorganize themselves in			+ comp	Human nodes

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	<p>resilient nodes no matter what part of the network comes under attack - be it human or other technological factors.</p>				
	<p>A specific PAT sub-token is created for rating smart contracts for this purpose and through the use of IPFS, an Oracle and an autonomous agent (Lucy) Pangea will be able to semi-autonomously distribute reputation to smart contracts based on performance (fitness).</p>			<p>+ comp</p> <p>+ comp</p>	<p>PAT sub-token</p> <p>Pangea</p>
	<p>Once Polkadot or a similar protocol is integrated, citizens will be able to use the blockchain they want, in an</p>		+ cap		Citizens

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	<u>interoperable</u> way.				
Democracy Earth	A <i>foundational</i> principle of democracy is the right to be heard.			+ val	Democracy
	Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers.		+ prop		Everyone
	Everyone has the right to freedom of peaceful assembly and association.		+ prop		Everyone
	Public Vote: Often referred as the golden rule of			+ comp	Liquid democracies

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	liquid democracies, all delegators have the right to know how their delegate has voted on any given issue with their votes.		+ prop		Delegators
	But it must be noted that unlike likes, votes directly empower holders with the right to participate in any financial benefit that can be connected to their use without intermediation.			+ val - val	Votes Intermediation
	Only approved members have the right to post.		+ cap + prop		Members
	Members that meet certain criteria (e.g. a minimum of delegated votes or votes received under a specific		+ cap + prop		Members

	tag) have the right to post.				
	Only those among the elected positions (i.e. senators and congressmen) get the right to spend more votes than the rest of the citizens.		+ cap		Elected positions
	Everyone has the right to take part in the government of his country, directly or through freely chosen representatives.		+ prop		Everyone
	The goal of Democracy Earth Foundation is to scale the right to use votes to every single human: we are all us (or them).		+ prop		Every single human

	They enable systems of free association that help break the political and financial coercion that governments and banks impose by restricting the right to vote or limiting access to capital.		- ver		Governments and banks
	Only members get the right to vote. Members: Only approved members have the right to post.		+ prop		Members
	Every Organization has members that get the right to vote on the decisions of the organization.		+ prop		Members
Bitnation	Every citizen is sovereign and has the right to self-determination		+ prop + cap		Every citizen

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	and is <u>at liberty to choose</u> any form of expression or way to be human or posthuman and with whom to <u>associate and cooperate.</u>				
Creativechain	Creativechain is a bet for the <i>public benefit of free culture</i> and common creation as a <i>collaborative method</i> of growing and guaranteeing the right to culture.			+ val + comp	Creativechain Common creation
	In most cases, these intermediaries acquire the right to include in both their terms and conditions of use the <u>ownership</u> of the digital archive and <u>the right to exploit it.</u>		- ver		Intermediaries
	The result is a <i>series of tensions</i> where the			- reac	Industry

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	interests of traditional industry collide with the right to information and access to culture.			+ val	Information/culture
Steemit	When someone owns a house they expect the right to use the house for free.		+ cap		Someone who owns a house
	If a group of people buy a house together then each can expect the right to use the house proportional to their percentage ownership in the house.		+ cap		A group of people buy a house together
	Without free discussion voters cannot be fully informed, and uninformed voters are a greater threat to society than losing the right to vote.			+ val	Discussion

Democracy Earth	In this way, the vote token can work as a device fit to foster a wave of entrepreneurship even among today's disenfranchised individuals left out by the legacy financial and political systems.		- cap	+ val - val	Vote token Individuals Financial and political systems
	In this way, institutional reality helps scale economic relations and reduces the information required for organizations to transact.			+ comp	Institutional reality
Creativechain	In this way and unlike the other centralized platforms like Google or Amazon in Creativechain all the people have the same power of access to the information of the network		+ cap + norm		People Users and distributors

	without generating positions of privileges between users and distributors.				
	In this way , any user can use the network's statistics to improve their content offer on equal terms with other users.		+ cap + norm		Any user
	In this way each era has a golden proportionality where each change of era is 1.6 times greater than the previous one.			+ comp + val	Each era
	In this way the payment or donation is extended in an "automagic" way to all the derivative works that have participated			+ comp	Payment and donation

	giving away part of its content.				
	In this way the platform becomes a kind of book of public records that can be consulted and verified by anyone at all times.			+ comp + val	Platform
	In this way the content that we upload remains opaque in the hands of intermediaries and their private interests, being able to be manipulated by the lack of transparency .		- ver	- cap	Content people upload Intermediaries
	In this way the benefits of distribution of the work are distributed automatically among all the microinverters.			+ val + comp	The work Microinverter

	<p>In this way, without the need to <u>restrictions</u> traditionally imposed by the copyright industry on use bank accounts, purchases, micropayments or donations the distribution and <u>development of knowledge</u> can be made to the authors of the registered contents.</p>		<p>- prop + cap</p>		<p>Copyright industry Authors</p>
Steemit	<p>In this way if any minority of individual feed producers produce outliers they have <u>minimal impact</u> on the actual median while still having the <u>ability impact their reputation</u>.</p>		+ cap		Individual feed producers
Bitnation	<p>In this way Pangea <i>mimics current Nation State jurisdictions</i></p>			+ comp	Pangea

	<p>where contracts are kept securely until needed, or where confidential documents are held securely by lawyers or in bank vaults.</p>		+ ten	+ comp + comp	Contracts Documents Lawyers/ bank vaults
Creativechain	<p>In this way and unlike the other centralized platforms like Google or Amazon in Creativechain all the people have the same power of access to the information of the network without generating positions of privileges between users and distributors.</p>		+ cap + norm		People Users and distributors
	<p>For the fair distribution of these funds an algorithm that values the quality of the content is used crossing all the data of</p>			+ val + val	Funds Algorithm

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	interaction of the network.				
	The <i>consensus</i> of the network can vary and <i>regulate</i> the algorithm indicators.			+ comp	The network
	This price is the <i>same</i> for all contents and goes <u>entirely</u> for the miners of the network.		+ ver	+ comp	Content Miners
	Taking into account that we are talking about a content platform, the volume of records will be one of the <i>largest</i> percentages with respect to the total volume of transactions of the network.			+ comp	Records
	This percentage ensures a <i>good</i> reward for the		+ prop		Miners

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	miners which in turn will motivate the increase of nodes and with it a greater security of the network.			+ val + val + comp	Reward Nodes/network
Democracy Earth	With this inflation process that rewards every new participant (diluting all pre-existing ones), everyone is <u>guaranteed an equal share</u> in the overall participating rights of the network.		+ cap	+ comp	Everyone Network
	The value of the network does not reside on the simulated scarcity but on its ability to register uncoerced decisions among self-sovereigns on the basis of equality.			+ comp	Value of the network

	<p>But as this happens on the individual level, the overall statistics of the network itself works as a reference framework in which to effectively measure decentralization down to each human across the globe and identify opportunities where it's needed as it grows.</p>			<p>+ comp</p>	<p>Network</p>
	<p>Little brothers can outperform centralized identity providers in terms of accuracy as they are constantly incentivized to maintain legitimacy within the network in order to keep votes as a valuable asset: the success of the network on detecting</p>		<p>+ cap</p>	<p>+ comp + comp + comp</p>	<p>Little brothers Votes Network Vote token</p>

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	<p>replicants (duplicated identities) determines the scarcity of the vote token.</p>				
Bitnation	<p>Human nodes should be able to reorganize themselves in resilient nodes no matter what part of the network comes under attack - be it human or other technological factors.</p>			+ comp	Human nodes
Steemit	<p>If the value of the network is flat or falling, then any interest offered will only make the debt-to-ownership ratio worse.</p>			- comp - comp	Value of the network Debt-to-ownership ratio
Creativechain	<p>Each user can remain anonymous or provide as many proofs about their identity as they want to be</p>		+ norm + ten		Each user

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	<u>consulted</u> by a third party or organization that wants to give him access for any purpose that is required through the use of his public and private keys.				
	That is why we encourage, protect and give priority to the use of free licenses as a means of helping to reduce the cultural participation gap and facilitate the construction of a free culture necessary for the exercise of the right of access to the culture of all societies.		+ prop	+ val + val	Use of free licenses Free culture Culture of all societies
	Problem: Since the creation of Creative Commons licenses in 2002 to date, the use of these licenses in works has grown to more			- val - comp	Creative commons Licenses

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	than 1100 million in 2015.				
	In order to encourage the use of free licenses, the platform rewards with Creativecoin the works licensed with CC that have obtained a better evaluation by the community.			+ reac + reac	Free licenses CC
	There are many benefits attributed to the use of virtual currencies.			+ val	Virtual currencies
	The use of Creativecoin entails lower costs per transaction than any traditional credit card system or payment gateways such as Paypal.			+ val - val	Creative coin Credit card system

Steemit	The use of blockchain technology makes it trivial to replicate the database to many machines to prevent loss of data.			- val	Database
	The use of negative-voting to keep people from abusing the system leverages the crab mentality that many people have when it is perceived that one individual is profiting at the expense of everyone else.		- prop	+ val	Negative-voting People/ individual
Democracy Earth	With Sovereign we are aiming to provide a lightweight governance framework that permits all stakeholders of an organization to participate and enforce decisions		+ cap	+ val	Governance framework Stakeholders of an organisation

	through the use of cryptography.				
	<p>A looming threat is the use of unrestricted Artificial Intelligence (AI) that gets fueled by user generated content without any kind of public supervision.</p>			<p>- reac</p> <p>- comp</p>	Unrestricted artificial intelligence
Bitnation	<p>A specific PAT sub-token is created for rating smart contracts for this purpose and through the use of IPFS, an Oracle and an autonomous agent (Lucy) Pangea will be able to semi-autonomously distribute reputation to smart contracts based on performance (fitness).</p>			<p>+ comp</p> <p>+ comp</p>	<p>PAT sub-token</p> <p>Pangea</p>

	<p>In the realm of a DBVN, decentralization translates into both technological and human decentralization through the use of P2P (Peer-to-Peer) technology, modular interfaces, API (Applications Programming Interface) layers, and forkable (duplicated) code.</p>			+ val	Decentralization
Steemit	<p>This means that neither the traders nor the blockchain has any information advantage regarding the price at the time the conversion is executed.</p>		+ cap	+ val	Traders Blockchain
	<p>This means that people are given a familiar and widely used interface and no longer face the</p>			+ val - val	Interface

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	cognitive, financial, and opportunity costs associated traditional micropayment and tipping platforms.				Micropayment and tipping platforms
	This means that SP cannot be easily traded on cryptocurrency exchanges.			+ comp	SP
	This means that SP is an access token that grants its holders exclusive powers within the Steem platform.		+ norm		Holders
	This means that their bandwidth over a short period of time may appear much higher than if viewed over a longer period of time.			+ comp	Bandwidth

	<p>This means that those who contribute their scarce time and attention toward producing and curating content for others are just as valuable as those who contribute their scarce cash.</p>		+ cap		Users
Democracy Earth	<p>If some of the votes were delegated with strict conditions (e.g. a Tag Limited Delegation), this means that a user won't have the same amount of votes available to spend on every issue.</p>		- cap	- comp	Delegated votes User
	<p>This means that regardless where the video is stored, the permanent record of its hash on the Bitcoin blockchain can verify that the file's data was</p>			+ comp + val	Video File's data

	<i>not corrupted</i> and that it existed at the time the proof was generated.				
Creativechain	This means that creators <u>can limit the broadcast</u> of a digital artwork and <u>sell a limited number</u> of reproductions that are <i>certified and numbered</i> .		+ cap	+ val	Creators Reproductions
	This means that the platform not only bets on the <i>defense, protection and distribution</i> of copyleft content, but also gives " <i>fintech</i> " <i>solutions</i> for the <u>economic emancipation</u> of People who <u>produce it</u> .		+ cap	+ val	The platform People
Bitnation	This means that every user can <u>become its own node</u> and <u>transform</u> the		+ cap		User

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	platform to their own liking .				
	In practice, this means that various clusters, regional or otherwise, are entirely autonomous .			+ comp	Various clusters
Creativechain	It is already known that in the classical period Greeks used the essence of this sequence, the golden number ϕ (fi) 1.61803 that was applied to the design of their sculptures as well as to the construction of their temples among other manifestations of Greek art.			+ val + val	Sequence Greek art
Bitnation	For instance, Johan Nygren's work with resilience.me to build a peer-to-peer basic income protocol		+ cap	+ val	Johan's Nygren's work with resilience.me

	<p>as well as a redistribution scheme called Taxeme could be opted into by individual Citizens on Pangea or adopted by DBVNs for all their Citizens.</p>			+ val	Individual citizens DBVNs
	<p>The target market for early adopters has been defined as tech-savvy self-identified World Citizens in the BRICs and Next Eleven Markets, piggybacking on polling which indicates more general disillusionment with the State, as well as political unrest and increased cryptocurrency adoption (factors which extend to other markets in Europe, Asia and North America).</p>		+ cap	- val	Early adopters The state

	Each signatory is responsible for suggesting budgets and proposals, as well as reviewing proposals.		+ cap		Signatory
Steemit	Users also have the option to be paid in 100% SP, as well as decline payout on posts.		+ cap		Users
Democracy Earth	Among the most common ways to subvert an election is through voter registry manipulation. Securing this aspect with cryptographic means as well as an approval protocol is critical.			- val + val	Voter registry manipulation Cryptographic means
	Domain names help describe an issue as well as restricting the scope of a			+ val	Domain names

	delegation contract.				
	<p>We began the development of Sovereign, a blockchain liquid democracy that enables direct voting on issues as well as the ability to delegate voting power on specific topics to peers over a secure network without central authority.</p>			+ comp + comp	Sovereign Network
	<p>According to research presented at Basic Income Earth Network (Munich September 2012), the implementation of basic income can greatly contribute to realizing the principles of democracy as well as the establishment of</p>			+ val	Basic income

	its substantial foundation [14].				
	<p>Instead of giving a voter the binary option, the pilot enabled people to vote separately on seven individual sub-themes of the proposed treaty, as well as to delegate their votes to more knowledgeable voters, with results revealing important nuances in voter preferences not captured in the referendum, including the deal breaker that emerged: an overwhelming “No” among pilot participants to one particular statement of the treaty regarding political participation of the FARC.</p>		+ cap	+ comp + val + val	Voters Pilot Voter preferences Statement
Creativechain	In the same way the sequence of the blocks that			+ comp	Sequence of blocks

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	<i>mark the eras</i> is based on the sequence of Fibonacci.			+ comp	Fibonacci
Democracy Earth	The vote token will be <i>distributed as a Right</i> opposing the <i>historical association</i> of Debt and morals, generating <i>a new breeding ground</i> for transactions that are <i>not based on the possibility of coercion</i> .			+ val - val + val	Vote token Debt and morals Transactions
	The <i>legitimacy</i> of any democracy is based on the maintenance of a <i>proper</i> voter registry.			+ val + val	Democracy Voter registry
	With votes, <u>profiting from user data</u> will no longer be the <u>exclusive domain</u> of the Facebook middleman but instead will be enabled by a		- prop + prop		Facebook middleman Everyone

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	<p>native token generation mechanism that is based on the principles established by the Universal Declaration of Human Rights [17]: Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers.</p>				
	<p>Even though the inflation rate might initially seem too aggressive, the total supply of votes is still fixed to a maximum cap based on the quantity of participants in the network.</p>			<p>- reac + comp</p>	<p>Inflation rate Total supply of votes</p>

	<p>Marketers that operate the Facebook advertising machine price likes in a range that can go from \$0.10 to as high as \$25 based on the reputation and popularity of the account being used to capture user attention.</p>			+ reac	Account
	<p>In a decentralized internet architecture, the user interface (UI) should be based on the user's perspective.</p>			+ comp + comp	Internet architecture User interface
Bitnation	<p>Two previous iterations have been released in the past, the first one using the Horizon chain, and the second one based on the</p>			+ comp	Iterations

	SSB gossip protocol.				
	In order to avoid Sybil attacks, the PON reward will be calculated based on the votes obtained by the active usage of a specific contract and the reputation of voters (the amount of POAs they have) making a Sybil attack useless since accumulating a good reputation takes time.		+ cap	+ val + comp + val	Usage Contract Voters Reputation
Steemit	The percentage floors used to compute STEEM creation are based on the supply including the STEEM value of all outstanding SBD and SP (as determined by the current rate / feed).			+ val	Percentage floors

Creative chain	The currency is designed to be impossible to falsify , nor can a double expense be made without the network detecting it.			+ val	Currency
Steemit	Steem is designed to enable effective micropayments for all kinds of contribution by changing the economic equation.			+ val	Micropayments
	As we have already discussed at length, SP is designed to encourage long-term holding rather than short-term selling.			+ val - val	Holding Selling
	This process is designed to provide the best reliability while ensuring that		+ cap	+ val	Process Everyone

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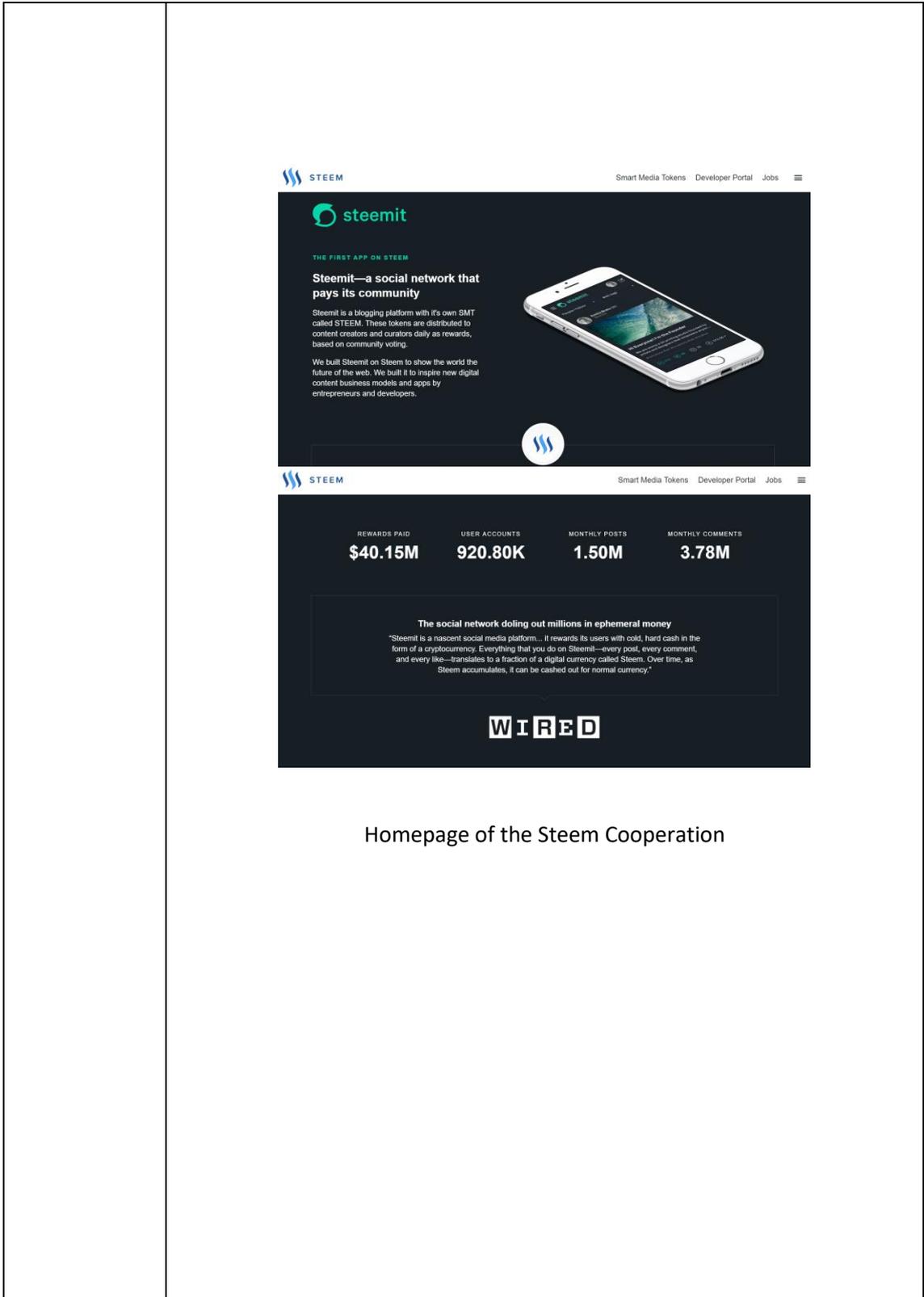
	everyone has the potential to participate in block production regardless of whether they are popular enough to get voted to the top.		+ norm		
	In other words, Steem is designed for the architectures of the future and is designed to scale.			+ val	Steem
	The Steem network is designed to tolerate short-term corruption of the median price feed while the community actively works to correct the issue.		+ cap	+ reac	Steem network Community
Democracy Earth	What differentiates a vote from money (or in broader terms: a political economy from a financial economy) is that			+ val	Political currency

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	political currency is designed to guarantee participating rights under fair conditions to all members within an organization.				
Bitnation	Although membership will change, change is designed to have an inherent slowness worked into it in order to provide long-term stability and continuity .			+ val	Change

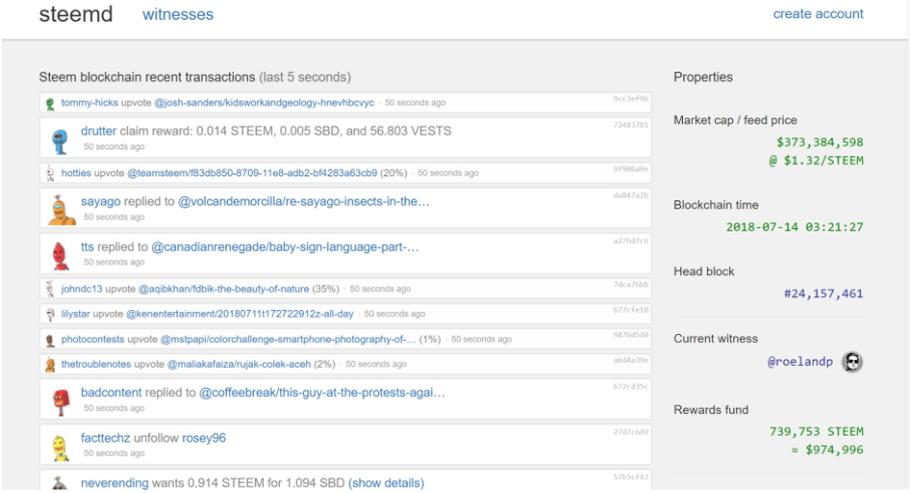
Appendix B

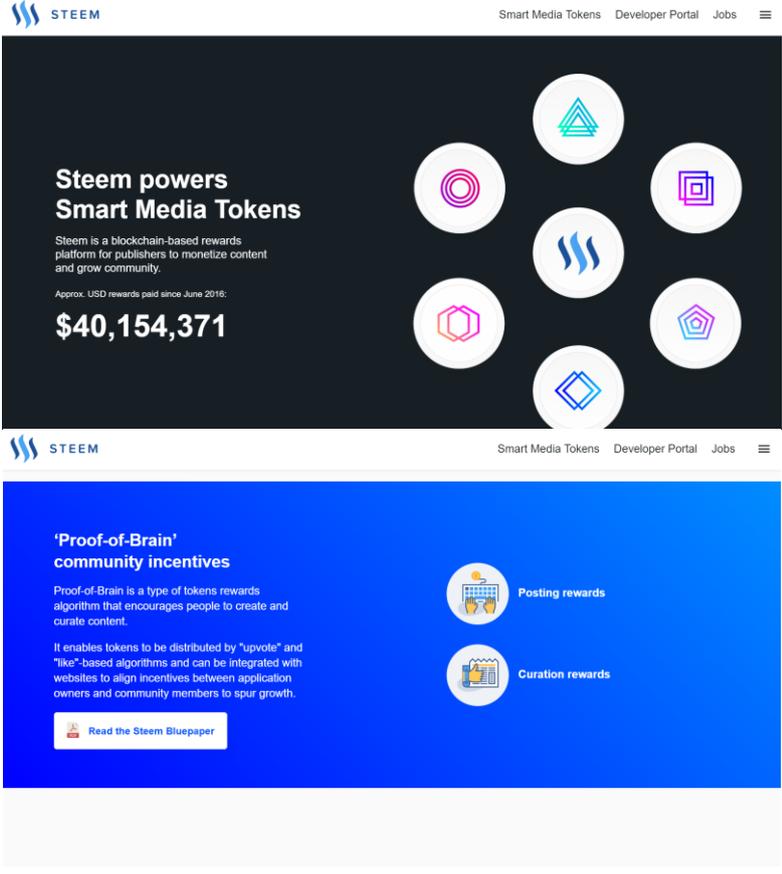
<p>Environment of Expected Use</p>	
<p>Vision – What is the app’s purpose, target user base and scenarios of use?</p> <p>(Light et al., 2016)</p>	<p>Steemit.com is a social networking and blogging site, modelled on Reddit. Users that write articles and vote on posts receive payment in the form of Steem-blockchain rewards. Steem is a cryptocurrency that is powered by blockchain; a digital ledger that publicly records every transaction ever made using cryptocurrency.</p> <p>On the main website Steemit.com it states that: “Steemit has redefined social media by building a living, breathing, and growing social economy – a community where users are rewarded for sharing their voice. It’s a new kind of social economy.”</p> <p>The website also provides a ‘white paper’ outlining the Steemit philosophy; “our thesis is that the same techniques used to grow major social media platforms can be used to bootstrap a successful cryptocurrency.” The white paper also adds that “Steem is the first cryptocurrency that attempts to accurately and transparently reward an unbounded number of individuals who make subjective contributions to the community.”</p> <p>Steemit.com works according to the notion that “when individuals join a community they buy into a particular set of beliefs and can vote to reinforce the community values or purpose”.</p>



Homepage of the Steem Cooperation

STEEMIT WALKTHROUGH METHOD

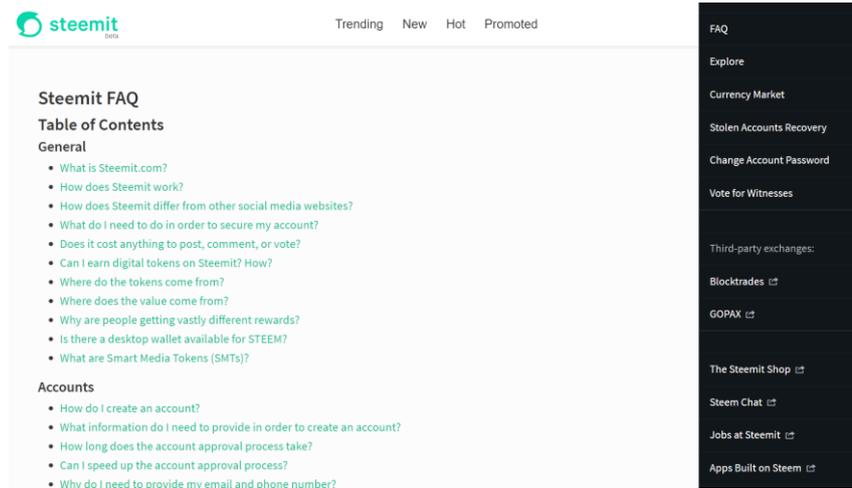
	 <p>The screenshot shows the Steem blockchain explorer interface. At the top, it says 'steemd witnesses' and 'create account'. Below that, it displays 'Steem blockchain recent transactions (last 5 seconds)'. The transactions list includes: 'tommy-hicks upvote @josh-sanders/kidsworkandgeology-hnevhbvcyc', 'drutter claim reward: 0.014 STEEM, 0.005 SBD, and 56.803 VESTS', 'hotties upvote @teamsteem/83db850-8709-11e8-adb2-b4f283a63cb9 (20%)', 'sayago replied to @volcandemorilla/re-sayago-insects-in-the...', 'tts replied to @canadianrenegade/baby-sign-language-part...', 'johndc13 upvote @eqibkhan/fdbik-the-beauty-of-nature (35%)', 'llystar upvote @kenentertainment/20180711h172722912z-all-day', 'photocontests upvote @mstpapi/colorchallenge-smartphone-photography-of-... (1%)', 'thetroublenotes upvote @malakafaiza/rujak-colek-aceh (2%)', 'badcontent replied to @coffeebreak/this-guy-at-the-protests-agai...', 'facttechz unfollow rosey96', and 'neverending wants 0.914 STEEM for 1.094 SBD (show details)'. On the right side, there are 'Properties' listed: 'Market cap / feed price' at '\$373,384,598 @ \$1.32/STEEM', 'Blockchain time' at '2018-07-14 03:21:27', 'Head block' at '#24,157,461', 'Current witness' at '@roelandp', and 'Rewards fund' at '739,753 STEEM = \$974,996'.</p>
<p>Operation Model – What is the app’s business strategy and revenue sources?</p>	<p>Steemit blockchain explorer – this page records every transaction made on Steemit</p> <p>Steemit.com is powered by the Steem Blockchain and STEEM cryptocurrency. The website reads and writes content to the Steem blockchain, which stores the content in an immutable blockchain ledger, and rewards users for their contributions with digital tokens called STEEM. One-steem equals one vote. Individuals who have contributed the most have more influence over how contributions are scored. Therefore, voting is critical to the Steemit.com platform.</p> <p>Steemit.com makes its revenue from blockchain rewards rather than advertising. It does not charge fees to join the site.</p>

	 <p style="text-align: center;">Screenshots from the Steem Cooperation homepage</p>
<p>Governance – How does the app provider seek to manage and regulate user activity to sustain their operating model and</p>	<p>Regarding censorship, Steemit.com writes that there is “no censorship” however “individual websites such as steemit.com may censor content on their particular site, but content publishing on the blockchain is inherently broadcast traffic and mirrors all around the world may continue to make it available”. There is also a group account called the “@steemcleaners” that monitor the pages and delete any content they believe is unacceptable and abusive. They post a log regarding all the decisions they make, that is accessible to everyone and under peer review from other members of the group.</p>

fulfil their vision?

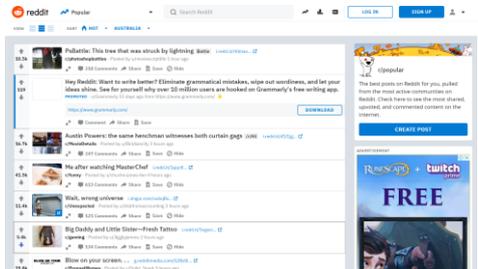
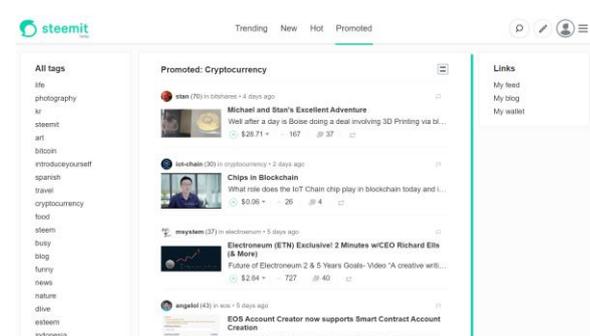
Steemit.com mentions that it was designed as a “cryptocurrency for the masses” and that there are no barriers to joining the site or need to understand the details of cryptocurrency. However, one disadvantage of the site is that it works according to a ‘weighed model’ which means experienced users have more voting power, that unfairly benefits the creators of the site Ned Scott and Dan Larimer who own a lot more STEEM currency.

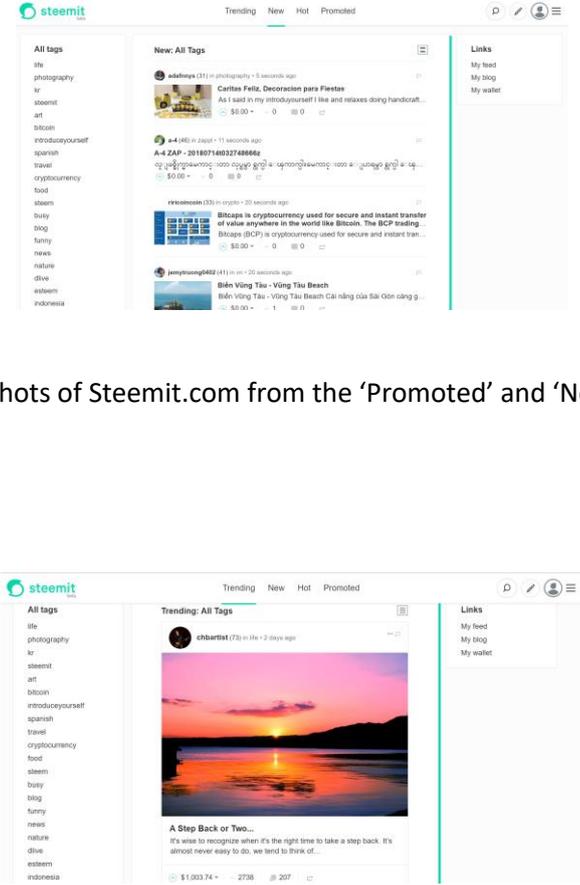
One of the challenges that the creators write about in the ‘white paper’ is in “deriving an algorithm for scoring individual contributions that most community members consider to be a fair assessment of the subjective value of each contribution”.



Steemit FAQs page

<p>The technical walkthrough</p>	<p style="text-align: center;">Technical Function</p> <p style="text-align: center;">(Name of (object) – what (object) does)</p>
<p><u>User-interface arrangement</u></p> <p>How does the app guide users through activities via the placement of buttons and menus?</p>	<p>Overall, the site works like a social media game. Similar to Reddit, users have the option to ‘up-vote’ or ‘down-vote’ a post. Users can scroll through various posts on the main page. On the main page you can read the headline of the post and the first sentence and see a thumbnail image. The username of the author and their image and time the article was written, is also present.</p> <p>Votes are expressed in ‘steem currency’ value and the number of actual votes overall. You can also see how many people have commented on the post. The re-share button is similar to Twitter’s re-share button, but instead it is called ‘resteam’.</p> <div data-bbox="778 1153 1236 1422" data-label="Image"> <p>The image shows a screenshot of the Steemit.com frontpage. The page is titled 'Trending: Cryptocurrency'. It features a list of posts with thumbnails, titles, and metadata. The first post is by 'memeart195' with the title '2000 Steem Power Give-Away - Musabbin Special'. The second post is by 'renewmark' with the title '[Mining] 201% more profitable than mining Ethereum'. The third post is by 'electronicshelp' with the title 'Managing your trades'. The fourth post is by 'mehmet195' with the title 'When you bought or invested in crypto?'. The page includes a sidebar with 'All tags' and 'Links'.</p> </div> <p style="text-align: center;">Frontpage of Steemit.com</p>

	 <p style="text-align: center;">Website site design of Reddit for comparison</p>
<p style="text-align: center;"><u>Functions and features</u></p> <p style="text-align: center;">What are the groups of arrangements that mandate or enable an activity?</p>	<ul style="list-style-type: none"> • All posts must have a title, body and at least 1 tag. • The site is organised around tagging – users discover posts based on ‘trending’, ‘new’, ‘hot’ or ‘promoted’ tags. Otherwise there is also a search button where users can type in key words. • The site provides external links to facebook, twitter, reddit, github and block explorer. • Posts can never be fully deleted; the blockchain records all edits. • Posts can be promoted (meaning that they go to the top of the webpage) if people contribute their STEEM dollars towards the promotion of the post. • There is an option to change the arrangement of the homepage – small image with more text vs. large image with less text (similarly Reddit also has this option to change the homepage arrangement). 

	 <p>Screenshots of Steemit.com from the 'Promoted' and 'New' tabs</p> <p>Screenshot of alternative arrangement of the homepage – the thumbnail image is considerably larger.</p>
<p><u>Textual content and tone</u></p> <p>What is the text embedded in the user interfaces and</p>	<ul style="list-style-type: none"> • Tags are the main way the site is organised. There are four main categories to initially select “Trending”, “New”, “Hot” and “Promoted”. • Users are also given a ‘reputation score’ based how long they have contributed to steemit.com. • From the marketing website, Steemit is described as the “social network that pays its community”, therefore setting up Steemit as

their discursive power to shape use?

an alternative to current social media platforms which make revenue from advertising and user data, without letting users have a share in any of these profits

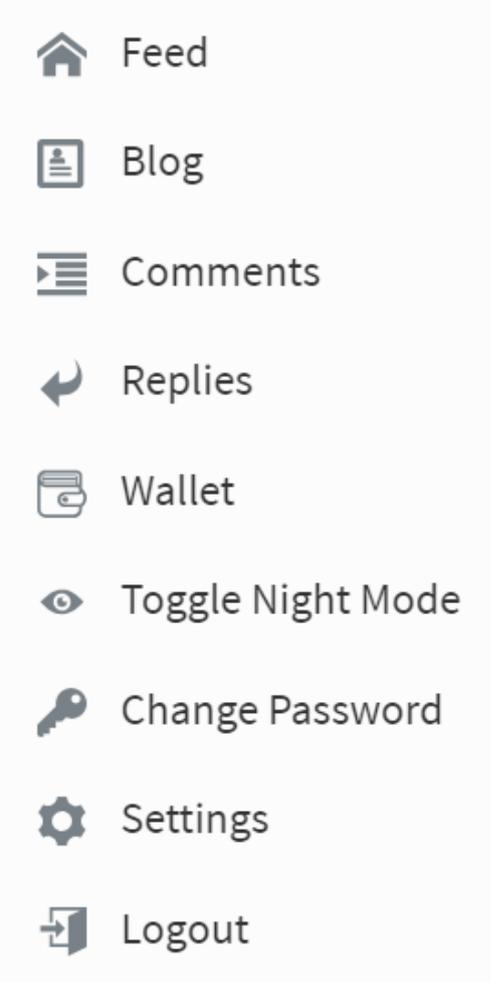
Tag	Posts	Comments	Payouts
accepted	59	22,153	629,351 SBD
aceh	168,494	79,892	293,101,521 SBD
adultery	6,606	17,144	451,389,092 SBD
adventure	23,000	18,456	368,135,240 SBD
advice	6,261	29,892	61,912,593 SBD
africa	15,755	8,227	252,172,136 SBD
aiidrop	25,005	8,866	28,365,695 SBD
alcohol	22,159	4,787	118,725,870 SBD
amazing	23,429	6,331	49,153,119 SBD
anarchy	7,076	18,721	504,499,801 SBD
animal	48,835	26,912	158,688,421 SBD
animalphotography	10,354	54,558	119,634,463 SBD

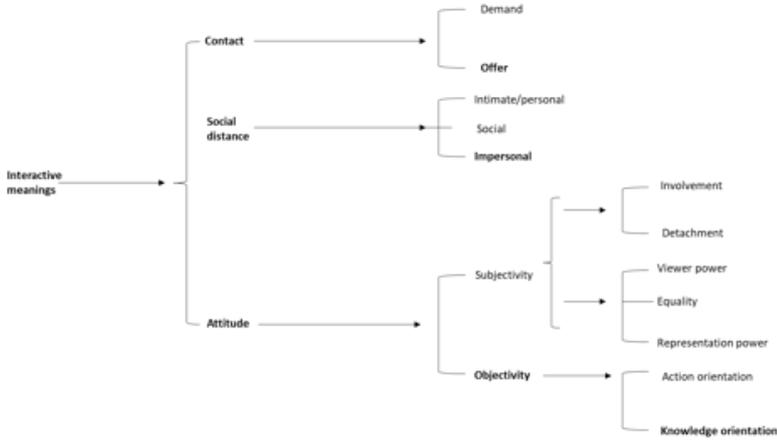
Screenshot of 'trending topics' page which lists the posts made using a specific tag, number of comments and 'payouts' in terms of Steem currency.

Tag	Posts	Comments	Payouts
utopian-ia	16,187	211,309	1,519,908,509 SBD
vegan	5,072	18,130	117,972,363 SBD
vehiclephotography	3,844	19,129	39,459,390 SBD
venezuela	32,711	21,833	130,088,107 SBD
video	171,267	52,129	1,135,956,394 SBD
vlog	13,576	23,493	447,065,041 SBD
walica	27,958	7,700	112,916,217 SBD
walkwithme	4,104	30,108	34,865,291 SBD
whalepower	27,313	20,576	363,655,216 SBD
witness-category	640	28,267	232,153,270 SBD
world	68,559	9,036	119,022,040 SBD
writing	146,072	164,703	3,087,254,438 SBD
youtube	49,858	15,425	229,128,912 SBD
zappi	57,681	178,882	107,169,265 SBD

Screenshot of 'trending topics' page which lists the posts made using a specific tag, number of comments and 'payouts' in terms of Steem currency.

<p style="text-align: center;"><u>Symbolic representations</u></p> <p style="text-align: center;">What are the semiotic, and likely connotations and cultural associations with respect to the imagined user and ideal scenarios of use?</p>	<ul style="list-style-type: none"> • The overall design is like a less-cluttered Reddit. Minimal main categories to select. • Similar colour design – mainly white with light green highlights. • Similar icons to usual blogging websites for example pencil icon = write a new post, looking glass = search <div style="text-align: center; margin: 20px 0;">  </div> <ul style="list-style-type: none"> • Alongside the number of comments a blog entry has, cryptocurrency elements are integrated – showing the ‘value’ of a blog post in STEEM currency <div style="text-align: center; margin: 20px 0;">  </div>
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	 <ul style="list-style-type: none"> Feed Blog Comments Replies Wallet Toggle Night Mode Change Password Settings Logout <p>The selection of icons available for a Steemit account – most icons resemble conventional website/blog options, excluding the ‘change password’ and ‘wallet’ icons.</p>
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<p>Textual:</p> <p>Information Values</p>	<p>The site has a triptych structure. The left-hand column provides the most popular ‘tags’ to select from. The centre column details all the posts that can be selected from. The right-hand column provides a ‘quick start guide’ and a login or sign up button.</p>  <p>Interpersonal:</p> <p>Interactive meanings</p> <p>The frontpage of the Steemit platform does not explicitly show interactions between the viewer and producer of the site. Therefore, the site can be interpreted as belonging to the knowledge orientation – with an objective and impersonal stance. If analysing the thumbnail images shown on the website, these images can provide a number of different interactive meanings, showing an offer or demand.</p>
<p>Interpersonal:</p>	<p>From an interpersonal perspective, tags function as the main form of social bonding on the Steemit platform.</p> <p>By conducting an appraisal analysis on the main marketing web page of the Steem Corporation, the main discursive values of Steemit can be realised. This table shows the main concordance lines and appraisal analysis conducted on the most frequently found 2-gram “is a”:</p>

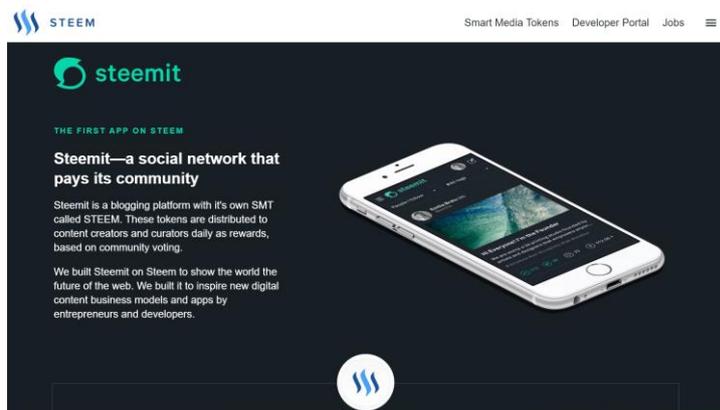
STEEMIT WALKTHROUGH METHOD

Appraisal Analysis				Appraisal	Appraised
	Steem	is a	blockchain-based rewards platform for publishers to monetize content and grow community.	+ cap	publishers
	Steemit	is a	blogging platform with its own SMT called STEEM.	+ comp	Steemit
	An SMT	is a	native digital asset on the Steem blockchain.	+ comp	SMT
	Steem	is a	next-generation blockchain, uniquely designed to run real-time applications with near instant, fee-free transactions.	+ val + comp	Steem
	STEEM	is a	tradeable token that is easily convertible to Bitcoin and Ethereum.	+ comp	STEEM

STEEMIT WALKTHROUGH METHOD

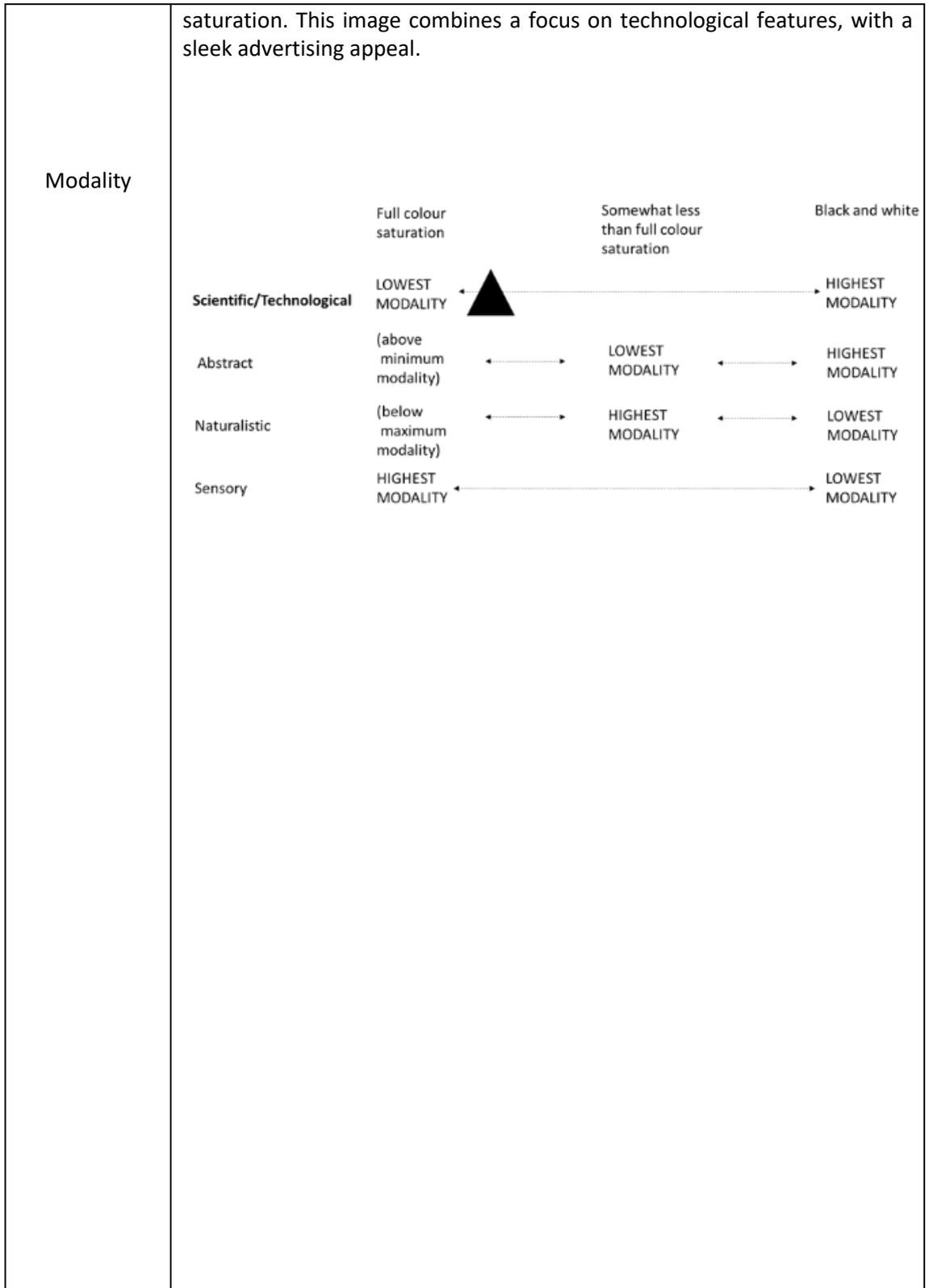
Proof-of-Brain	is a	type of <i>tokens rewards algorithm</i> that <i>encourages</i> people to <u>create and curate</u> content.	+ comp + cap	Proof-of-Brain People
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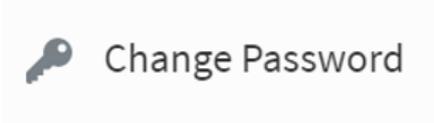
The most highly appraised item was "Steemit", associated with positive compositional values such as being monetizable and a "next-generation blockchain". Publishers and users were associated with positive capacity - with the ability to grow their communities and create and curate content. Therefore, a direct correlation is made between technology enabling users to create more freely and receive more benefits from their work. In particular, the "Proof-of-Brain" algorithm shows this with the positive compositional qualities of the algorithm linked in relation to encouraging people to create (positive capacity, stressing human qualities).



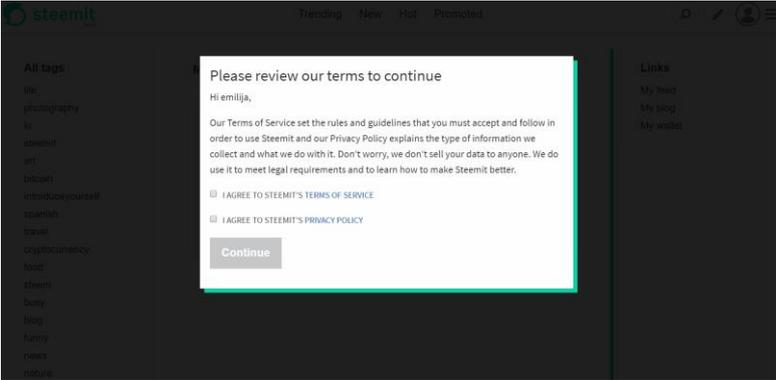
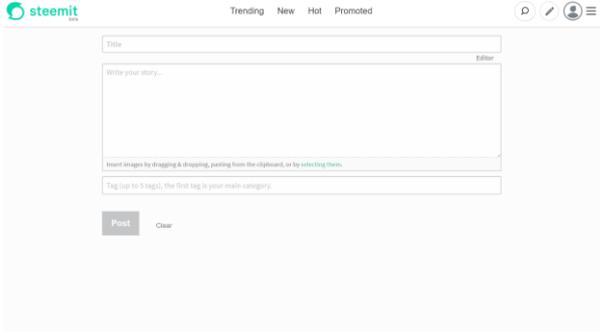
The Steem Corporation website follows a scientific/technological coding orientation as its focus is on the technological product – the mobile phone. Nonetheless, the site has a low modality on the scientific/technological coding orientation – the image of the mobile phone is in high full colour

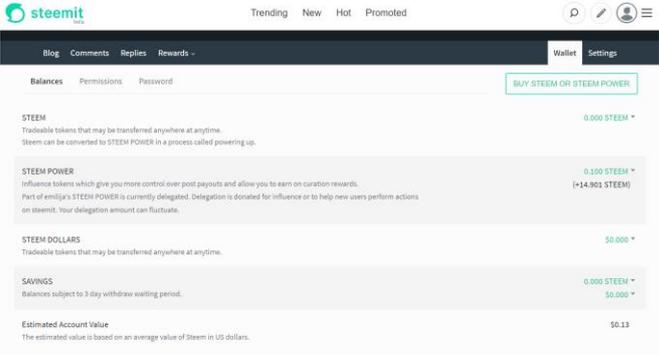
STEEMIT WALKTHROUGH METHOD



	<ul style="list-style-type: none"> • The Steemit logo resembles two speech bubbles in a neutral green/white colour scheme, similar to a yin/yang symbol  <ul style="list-style-type: none"> • The profile icon for Steemit resembles the Steemit logo with the speech bubble head  <ul style="list-style-type: none"> • The password icon is a 'key' – resembling the 'private key' structure of the blockchain  <ul style="list-style-type: none"> • Steem Corporation logo – resembles actual steam – movement of air  <ul style="list-style-type: none"> • Icons representing “smart media tokens” – the structure of the image, places Steem as the centre icons with the surrounding icons existing as periphery icons
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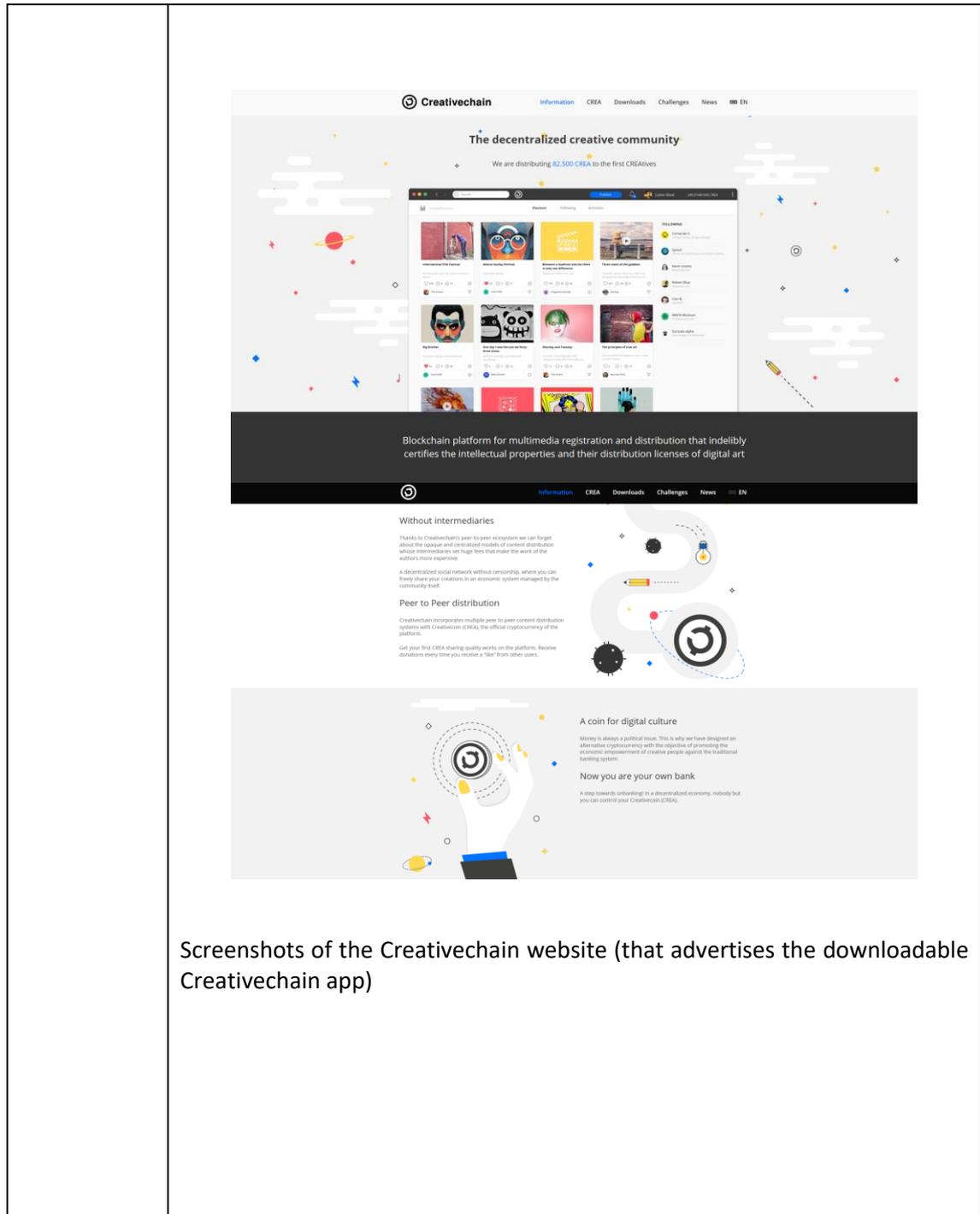
<p>Everyday Use</p>	
<p>Registration and Entry</p>	<p>To create an account the user must provide an email, username and phone number. In order to receive STEEM payments, the user must also create a digital blockchain wallet. In order to convert their STEEM payments into dollars, the user also has to have an account with Paypal.</p> <p>As the site is still in beta-mode, users that create an account have to wait for approval before they can be added to the site. Users are free to roam the site, even if they are not a member.</p> <p>As the quickstart guide writes “it is not possible to recover lost passwords on the Steem blockchain”. Users are responsible for securing their password.</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div>

	<p>Screenshots of the process of saving a password and confirming the master password</p>  <p>Screenshot confirming terms of agreement, upon registration on the site</p>
<p>Everyday Use</p>	<p>Every user has an account page that can also be viewed by other users. This page states the number of followers, posts and following. There is also a 'digital wallet' that details all the STEEM currency the user has made and their rewards history as an author/creator.</p>  <p>Screenshot of the page to write an entry on the Steemit platform</p>

	 <p>Screenshot of the account page – the ‘wallet’ section shows how much the user holds in STEEM currency</p>
<p>App suspension, closure and leaving</p>	<p>Users are responsible for storing a backup of their password. There is no password retrieval, so if you lose your password, you lose all your STEEM currency.</p> <p>Even if you delete your account, the posts, comments and messages submitted on the site might still be viewable or available on steemit.com’s servers (Steemit.com privacy policy).</p>

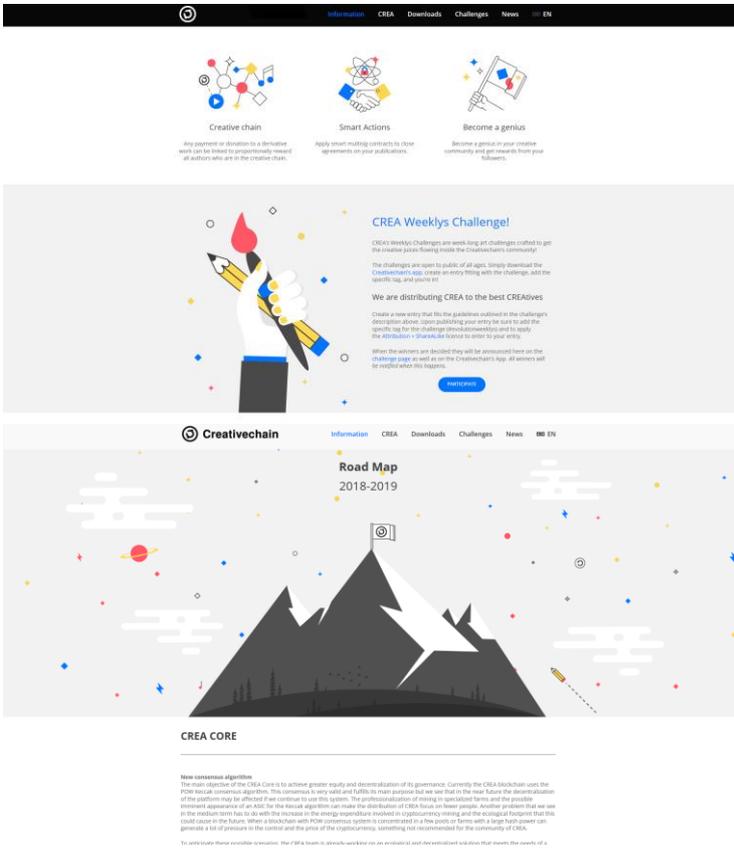
<p>Environment of Expected Use</p>	
<p>Vision – What is the app’s purpose, target user base and scenarios of use?</p>	<p>Creativechain describes itself as “the decentralised creative community” and an “open source ecosystem”. As it mentions on the homepage, Creativechain is a “blockchain platform for multimedia registration and distribution that indelibly certifies the intellectual properties and their distribution licenses of digital art”.</p> <p>Creativechain is able to add digital works on the blockchain by creating a timestamp for each work that certifies the authorship of the work and attaching a ‘smart contract’ to each work. The smart contract “acts as an informatic program that facilitates, secures, enforces and executes agreements between individuals and organisations” (p.4). This means that users can select for example if their work belongs to the public domain, traditional copyright laws or creative commons licensing.</p> <p>The target user base of creativechain are creators of any digital content. The platform has a dual purpose, as a record of digital works and a social networking site. Users are paid in the cryptocurrency CREA for engaging on the site as creators – uploading their work and commenting on the work of others. Regarding the social network function, users can create distribution channels and communities that interact with each other</p> <p>In the creativechain white paper, the ‘community’ of the site is comprised of creators, content consumers, institutions, companies and content platforms, cultural centres and specialised lawyers. Of particular note, is the defining of “institutions” as “organisations or institutions committed to the commons that seek a technological way to democratise their digital heritage” (p.6). Thus, creativechain defines itself as a “commons” and way of ensuring that all users fairly distributed “digital heritage”, without any exploitation from intermediaries.</p>

CREATIVECHAIN WALKTHROUGH METHOD



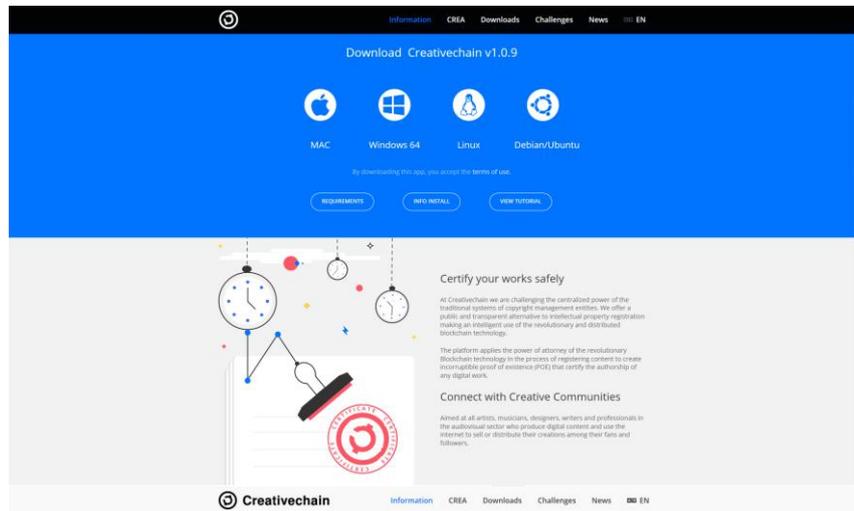
Screenshots of the Creativechain website (that advertises the downloadable Creativechain app)

CREATIVECHAIN WALKTHROUGH METHOD

	 <p>The screenshot shows the Creativechain website interface. At the top, there is a navigation bar with links for 'Information', 'CREA', 'Downloads', 'Challenges', 'News', and 'EN'. Below the navigation bar are three main icons: 'Creative chain' (a network of nodes), 'Smart Actions' (a hand holding a pencil), and 'Become a genius' (a hand holding a pencil). The 'CREA Weeklys Challenge!' section features a hand holding a pencil and text explaining the challenge. The 'Road Map 2018-2019' section shows a mountain graphic with a flag on top, representing the project's goals.</p>
<p>Operation Model – What is the app’s business strategy and revenue sources?</p>	<p>Creativechain exists as software downloaded to a computer. The platform makes revenue from CREA mining by the proof-of-work algorithm – this means that users have the ability to earn a share of CREA coins by generating their computer power towards solving the cryptographic algorithm. Users have the ability to mine independently or as part of a ‘pool’ – where the profits of mining are distributed among a group of users. The added application of “digishield” also prevents the possibility of a 51% attack.</p> <p>With the release of Creativechain v1.0.9, there is also an Initial Coin Offering (ICO) where users are issued with CREA coins and can spend these coins by liking and buying the rights to the digital work of artists. This ICO is a business</p>

CREATIVECHAIN WALKTHROUGH METHOD

strategy to incentivise users to join the platform and become active users. On the Creativechain website, the CREA blockchain explorer shows every transaction recorded on the creativechain platform.



HOW TO INSTALL CREATIVECHAIN?

Step 1. Visit Creativechain.org

Access from our website to the home page or downloads. From either of the two, look for the blue banner with the title **Download Creativechain**. In the site you can check the latest update of the platform.

Step 2. Requirements.

Click on the **REQUIREMENTS** button and read carefully the versions of the operating systems compatible with Creativechain.

Step 3. How to install.

If your computer is compatible, click on the **HOW TO INSTALL** button and read the steps to be taken into account. If something has not been clear later is explained again in this tutorial.

Step 4. Download the app.

If you have verified that your computer is compatible and you have read everything carefully, you can download the application. Choose your operating system and click on its representative icon. Immediately you will see that the latest version of Creativechain is downloaded and you can run it on your computer.

ATTENTION

If you are a Windows user, a screen will appear where you will have to check the **Public Network connection box** so that the application can start correctly.

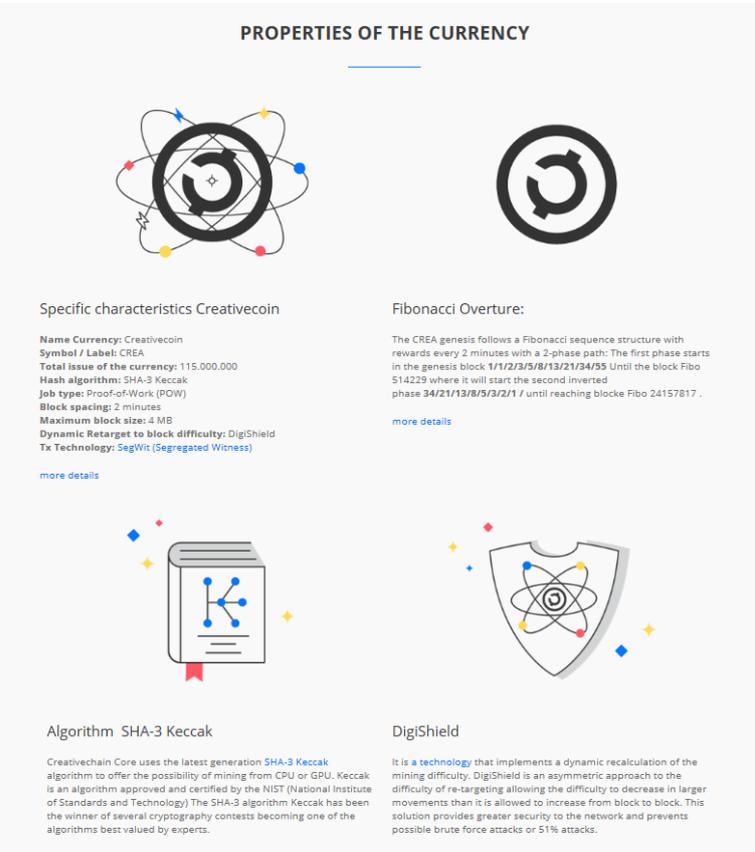
If you have ignored this indication, read the instructions below:

Activate the connection option to public networks in Windows.

- 1- Completely close the Creativechain application.
- 2- From the search engine of your Windows find the option "Allow a program through Windows Firewall"
- 3- In the list that appears, look for "creativechain.exe" "creativechain-win64.exe" and activate the public network by checking the corresponding checkbox.

Screenshots of Creativechain website pages to download the software and the 'how to install Creativechain' page

CREATIVECHAIN WALKTHROUGH METHOD

	 <p>PROPERTIES OF THE CURRENCY</p> <p>Specific characteristics Creativecoin</p> <p>Name Currency: Creativecoin Symbol / Label: CREA Total issue of the currency: 115.000.000 Hash algorithm: SHA-3 Keccak Job type: Proof-of-Work (POW) Block spacing: 2 minutes Maximum block size: 4 MB Dynamic Retarget to block difficulty: DigiShield Tx Technology: SegWit (Segregated Witness)</p> <p>more details</p> <p>Fibonacci Overture:</p> <p>The CREA genesis follows a Fibonacci sequence structure with rewards every 2 minutes with a 2-phase path: The first phase starts in the genesis block 1/1/2/3/5/8/13/21/34/55 Until the block Fib 514229 where it will start the second inverted phase 34/21/13/8/5/3/2/1 / until reaching block Fib 24157817 .</p> <p>more details</p> <p>Algorithm SHA-3 Keccak</p> <p>Creativechain Core uses the latest generation SHA-3 Keccak algorithm to offer the possibility of mining from CPU or GPU. Keccak is an algorithm approved and certified by the NIST (National Institute of Standards and Technology) The SHA-3 algorithm Keccak has been the winner of several cryptography contests becoming one of the algorithms best valued by experts.</p> <p>DigiShield</p> <p>It is a technology that implements a dynamic recalculation of the mining difficulty. DigiShield is an asymmetric approach to the difficulty of re-targeting allowing the difficulty to decrease in larger movements than it is allowed to increase from block to block. This solution provides greater security to the network and prevents possible brute force attacks or 51% attacks.</p>
<p>Governance – How does the app provider seek to manage and regulate user activity to</p>	<p>Creativechain consists of a team of developers. These developers can release new versions of the software (for example CREA 2.0 will be released in August) and are in charge of the marketing of the platform.</p> <p>However as mentioned in the terms of use document “Creativechain is a free software project and its code is in the public domain. It is a software program</p>

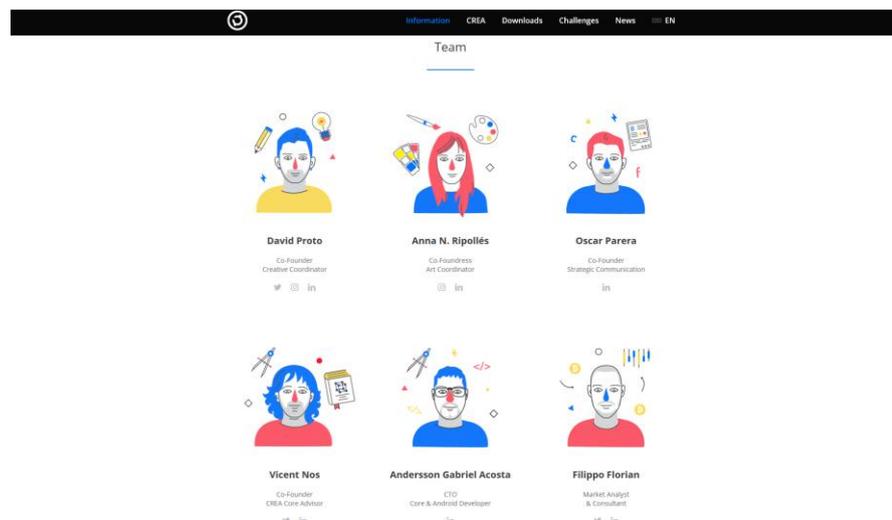
CREATIVECHAIN WALKTHROUGH METHOD

sustain their operating model and fulfil their vision?

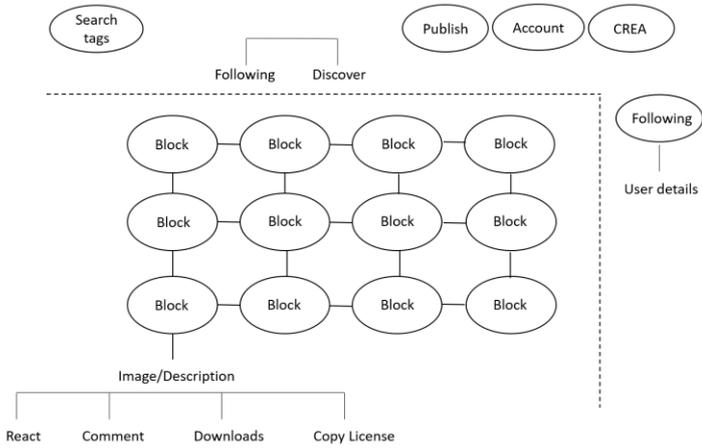
that everyone can execute. However, once people download and start executing it, its creators no longer have control over it.”.

The terms of use also indicate that creativechain is a non-for-profit organisation “whose purpose is to develop and disseminate projects related to the main development of CREA CORE”.

The existence of smart contracts is supposed to ensure that computational governance takes precedence. This means that users select from a range of different ‘licenses’ and trust that their decision will always be implemented. The types of licenses that exist are: creative commons and copyleft, royalty free, equity crowdfunding, donations, limited edition, creative chains (that can link intellectual creations together).



Screenshot of “Team” page

<p>Metafunction</p> <p>(interpretation site/app)</p>	<p>Semiotic function</p> <p>of (representation and meaning)</p>
<p>Textual:</p> <p>Non-Linear Models</p>	 <p>The non-linear model represents a network structure in the centre as all the 'blocks' are of equal importance. The blocks themselves represent the visualisation of the blockchain network process, as the blocks update in real-time, reflecting the updating process of the blockchain record.</p> <p>Within each block there is a taxonomic structure as each image is surrounded by the options of 'react', 'comment', 'downloads' and 'copy license'.</p>

CREATIVECHAIN WALKTHROUGH METHOD

<p>Interpersonal:</p>	<p>By conducting an appraisal analysis on the main marketing page of Creativechain, the main discursive values of Creativechain can be realised. This table shows the main concordance lines and appraisal analysis conducted on the most frequently found 2-gram "of the":</p>				
<p>Appraisal Analysis</p>				<p>Appraised</p>	<p>Appraisal</p>
<p>Thanks to Creativechain's peer-to-peer ecosystem we can forget about the opaque and centralized models of content distribution whose intermediaries set huge fees that make the work</p>	<p>of the</p>	<p>authors more expensive.</p>	<p>+ comp - comp - cap - cap</p>	<p>Ecosystem Traditional Content distribution Intermediaries Authors</p>	
<p>Gamma Rewards is one</p>	<p>of the</p>	<p>formats used by the CREA project to distribute its cryptocurrency</p>	<p>+ cap</p>	<p>Community of creatives</p>	

CREATIVECHAIN WALKTHROUGH METHOD

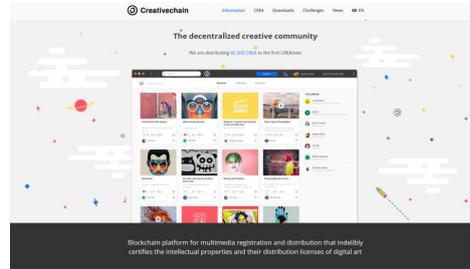
			among the community of creatives that participate in this reward system.		
	Creativechain incorporates multiple peer to peer content distribution systems with Creativecoin (CREA), the official cryptocurrency	of the	platform.	+ comp + comp	Content distribution systems CREA
	We offer a public and transparent alternative to intellectual property registration making an intelligent use	of the	revolutionary and distributed blockchain technology.	+ comp	Blockchain technology
	The platform applies the	of the	revolutionary Blockchain technology in the process of	+ comp	Blockchain technology

CREATIVECHAIN WALKTHROUGH METHOD

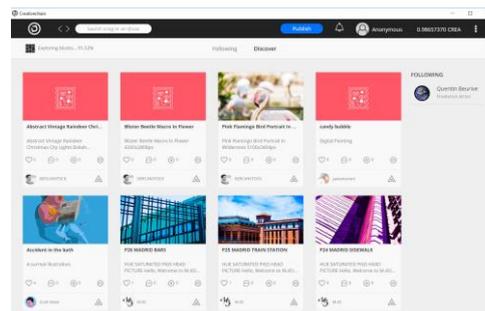
power of attorney		registering content to create incorruptible proof of existence (POE) that certify the authorship of any digital work.	+ comp	Proof of Existence
At Creativechain we are challenging the centralized power	of the	traditional systems of copyright management entities.	- comp	Copyright management entities

The most highly appraised items associated with the Creativechain platform were "blockchain technology", "content distribution systems" and the cryptocurrency CREA, all of which had positive compositional values. In contrast, "intermediaries" and "copyright management entities" were associated with negative capacity and negative compositional values. Blockchain technology was most commonly described as "revolutionary" in contrast to "opaque and centralised" models of the past. Authors were also associated with having negative capacity at the moment, due to these traditional copyright models, and thus blockchain technology is depicted as "revolutionary" in the sense that it will liberate authors from these present conditions.

CREATIVECHAIN WALKTHROUGH METHOD



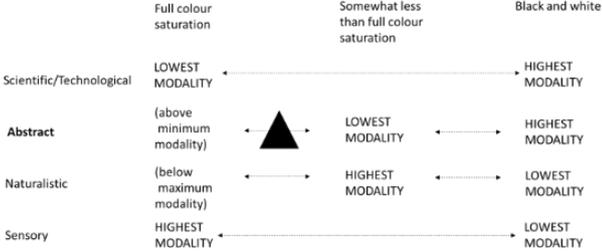
Screenshot of frontpage – Creativechain website



Screenshot of main page – Creativechain platform

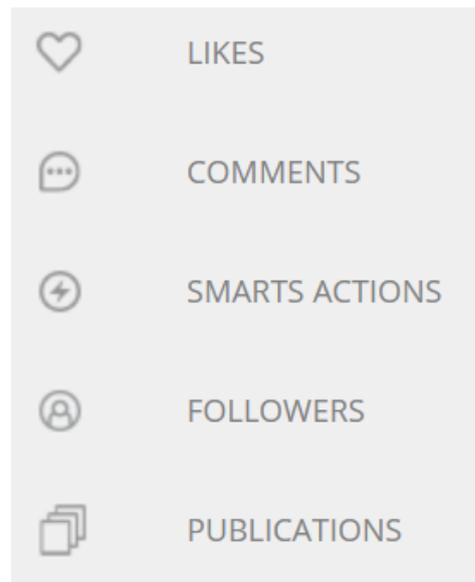
The main page of the Creativechain platform and the creativechain app both follow an abstract coding orientation as there is a focus on more generalised features and abstract illustrations rather than technological/scientific diagrams.

CREATIVECHAIN WALKTHROUGH METHOD

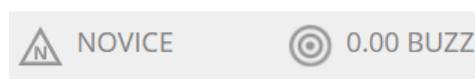
<p>Modality</p>	<p>The pages are of a lower modality on the abstract coding scale, as more colour is used rather than black and white.</p> 
<p>Ideational:</p> <p>Symbolic Processes</p>	<p>Creativechain features many symbolic attributes:</p>  <ul style="list-style-type: none"> The creativechain logo is a “CREA” coin – reappropriating elements of the dollar sign \$ 

CREATIVECHAIN WALKTHROUGH METHOD

- ‘Exploring blocks’ is an icon that appears in the top left-hand corner of the homepage of the Creativechain platform. The icon refers to how much of the Creativechain blockchain record has been uploaded onto the computer. In this sense, this icon functions as a visualisation of the blockchain record.



- Icons shown on the user account page of the Creativechain platform. “Smart actions” refer to number of downloads of images.



- Tab showing user experience level and aggregated number “buzz”

CREATIVECHAIN WALKTHROUGH METHOD

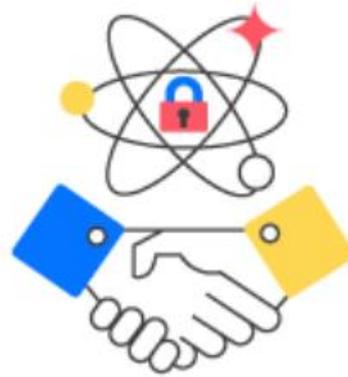


- Illustrations of this style are displayed through the website – the CREA coin is prominently featured, along with planets resembling network nodes.



- Close-up image of illustrated network nodes – CREA coin, music, play symbol are all prominent

CREATIVECHAIN WALKTHROUGH METHOD

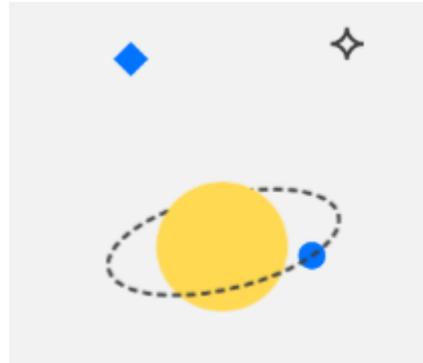


- Illustrating peer-to-peer agreements on the website. The network node is shown to be secure.

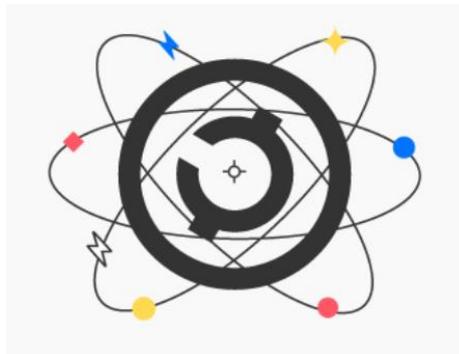


- Illustration on the website – futuristic imagery alongside a focus on the artistic elements of the site and the CREA coin

CREATIVECHAIN WALKTHROUGH METHOD



- Illustrated network node/planet



- Illustration of the CREA coin – the decentralised aspects of the CREA coin are highlighted with the illustrated of the network nodes

CREATIVECHAIN WALKTHROUGH METHOD



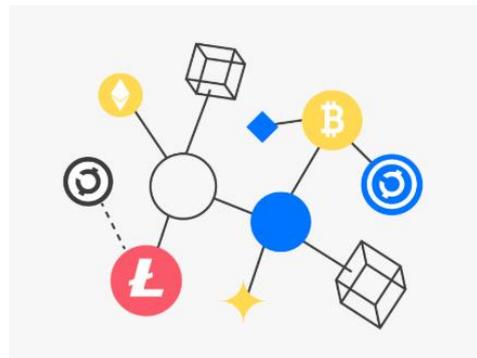
- Illustration of the SHA-3 Keccak algorithm – network nodes are prominent



- Illustration of Digishield (algorithm which prevents 51% attacks) – the CREA coin is in the centre, surrounding by network nodes

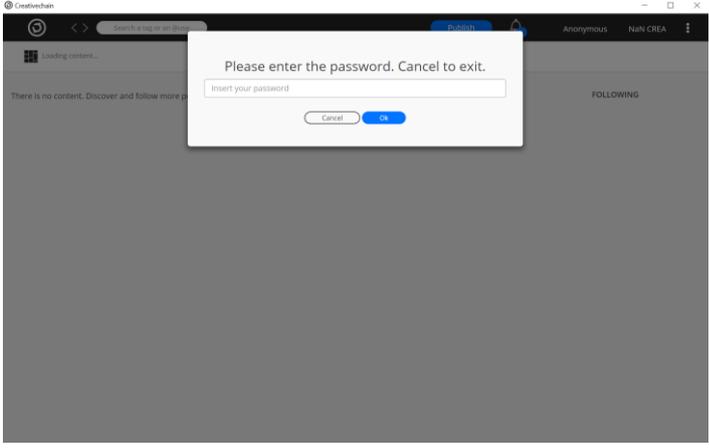


- Illustration of network nodes – highlighting the creative commons, art, music, play button (videos), CREA coin



- Illustration of network nodes – highlighting CREA coin, Bitcoin, Litecoin, Ethereum cryptocurrencies

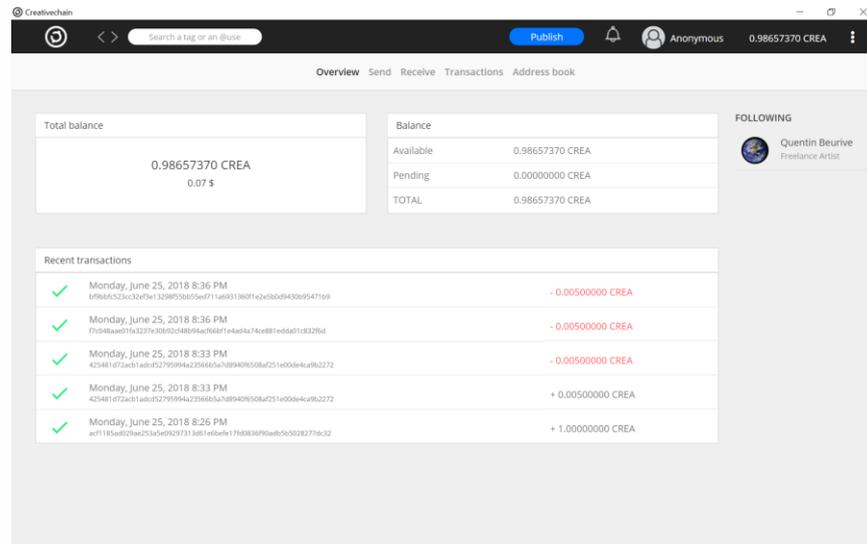
CREATIVECHAIN WALKTHROUGH METHOD

<p>Everyday Use</p>	
<p>Registration and Entry</p>	<p>To open the platform, the user must first download the Creativechain software package. They will then be requested to enter a private key. For new users, they will be given a downloadable wallet.dat and will be made to also generate a password. The system cannot recover the data if the wallet.dat and password are lost. Each new user starts with 1 CREA in their wallet. Thus, the wallet.dat is like a bank account number.</p> <p>After this, the software takes some time to download, due to the “synchronization of the network” and downloading of the complete blockchain. The software remains on the computer, and after the installation process the user can simply log back into the program by entering their password, without the need to always re-enter their wallet.dat number. If the user wants to use the program on another computer, they will need the wallet.dat number again to retrieve their data.</p>  <p>Screenshot of page that requests password to access the Creativechain platform</p>

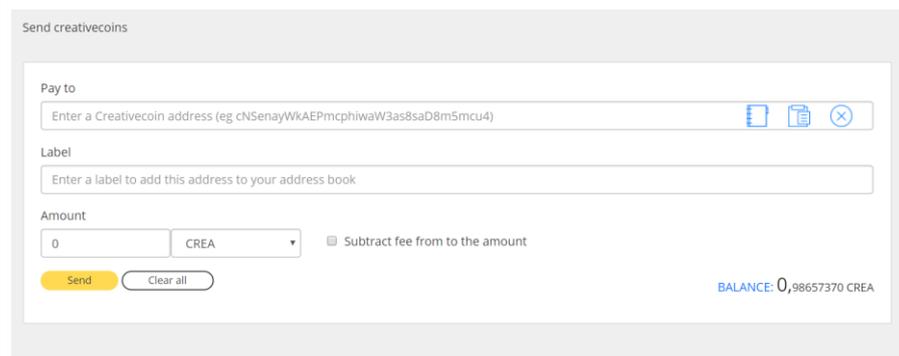
CREATIVECHAIN WALKTHROUGH METHOD

Everyday Use

- CREA wallet available for separate download
- CREAstation – to purchase artworks directly on a mobile app
- CREA weekly challenges – competition – winners are given CREA
- GAMMA rewards – chance to get first CREA coins (initial coin offering)

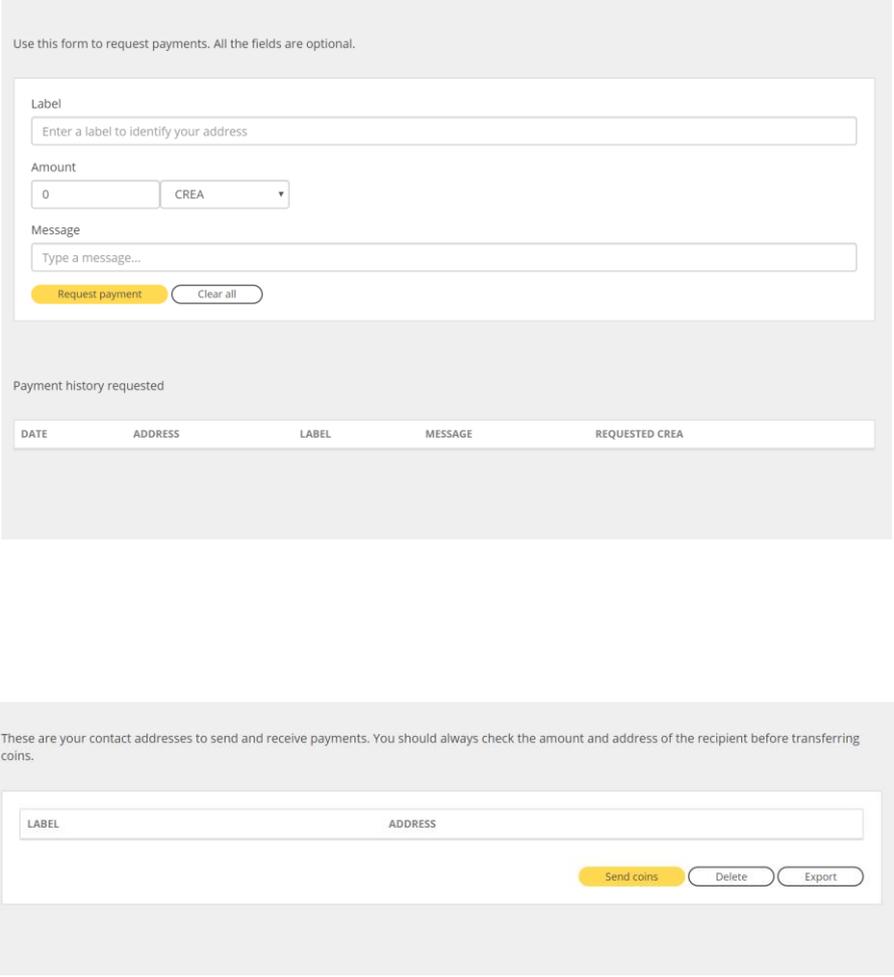


Screenshot of “wallet” page highlighting how much CREA the user has



Screenshot of how to send creativecoin to other users

CREATIVECHAIN WALKTHROUGH METHOD



Use this form to request payments. All the fields are optional.

Label
Enter a label to identify your address

Amount
0 CREA

Message
Type a message...

Request payment Clear all

Payment history requested

DATE	ADDRESS	LABEL	MESSAGE	REQUESTED CREA
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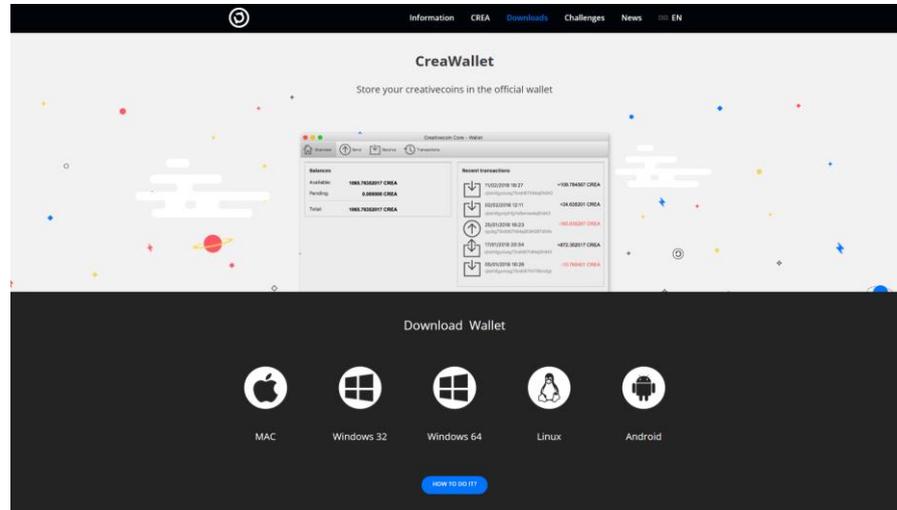
These are your contact addresses to send and receive payments. You should always check the amount and address of the recipient before transferring coins.

LABEL	ADDRESS
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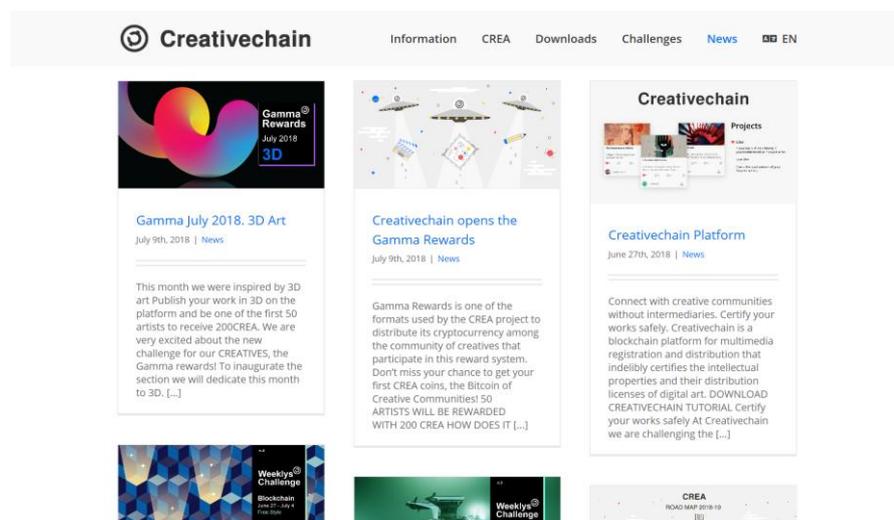
Send coins Delete Export

Screenshots of how to send payments to other users

CREATIVECHAIN WALKTHROUGH METHOD

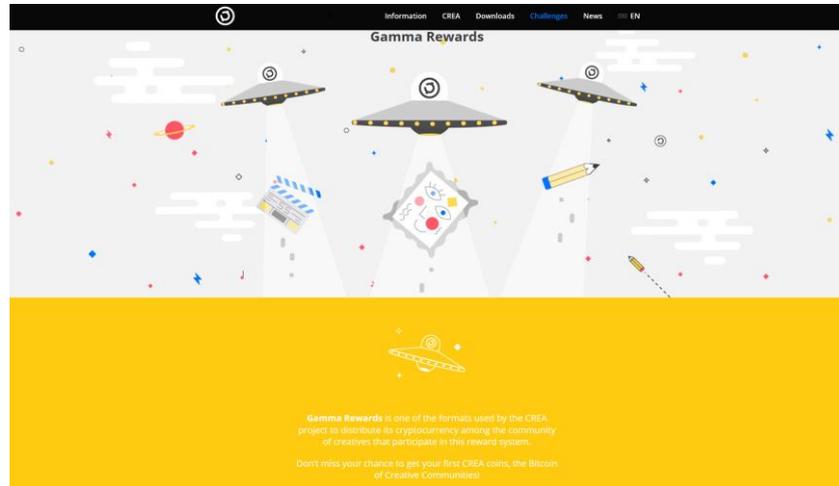


Screenshot of the downloadable CreaWallet to store CREA in

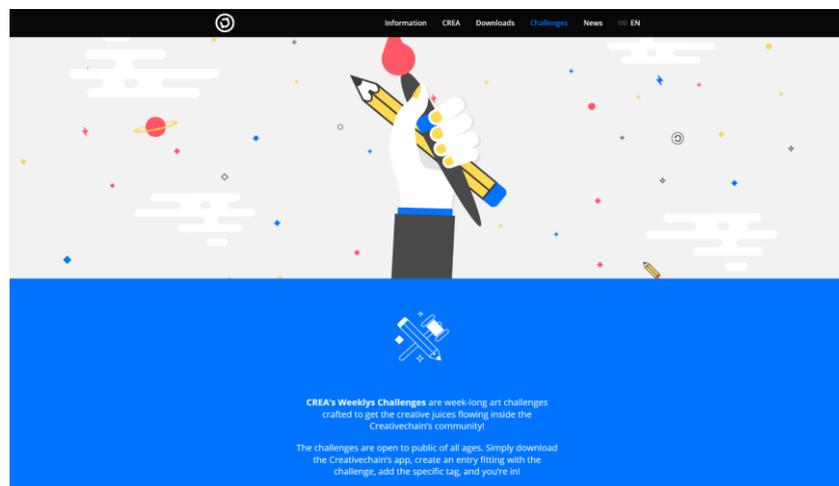


Screenshot of the Creativechain blog

CREATIVECHAIN WALKTHROUGH METHOD

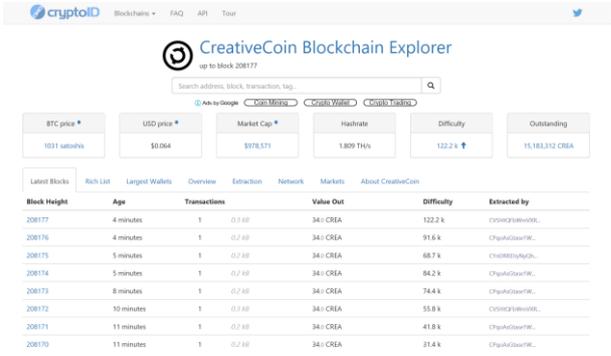
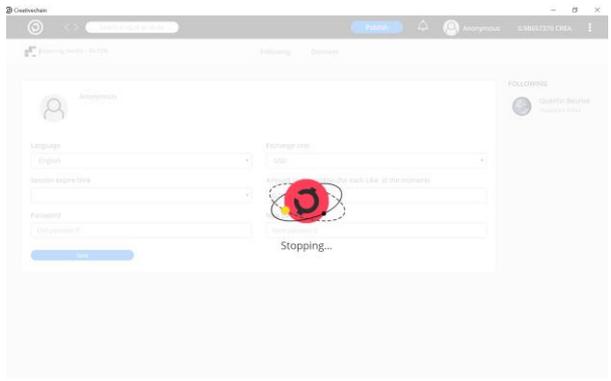


Screenshot of the Creativechain website page on “Gamma Rewards” – an art competition that awards CREA to winning participants



Screenshot of “CREA’s Weekly Challenges” – an art competition rewarding winners with CREA

CREATIVECHAIN WALKTHROUGH METHOD

	 <p>Screenshot of the Creativecoin blockchain explorer that shows every transaction made on the creativechain platform, therefore serving as the official blockchain record that can be accessed by everyone.</p>
App suspension, closure and leaving	<p>The software can be deleted from a computer. However the memory of creating the account itself and all transactions by the user, cannot be deleted as everything is exists as an incorruptible record on the blockchain.</p>  <p>Screenshot of the exit page</p>

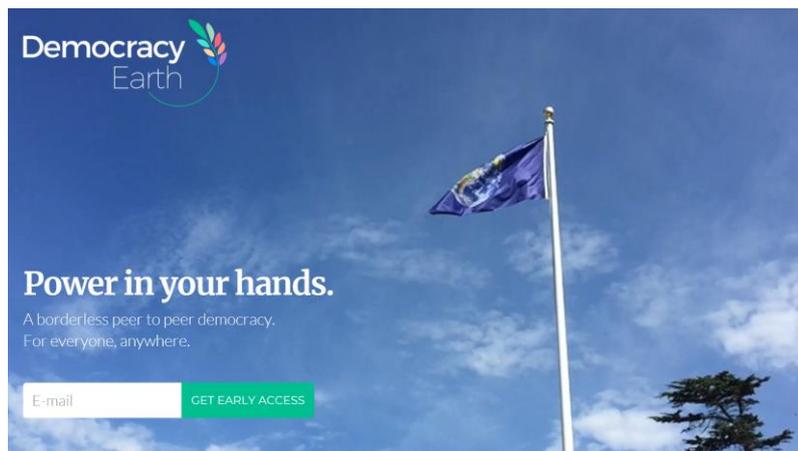
CREATIVECHAIN WALKTHROUGH METHOD

<p>Environment of Expected Use</p>	
<p>Vision – What is the app’s purpose, target user base and scenarios of use?</p>	<p>Democracy Earth is a non-profit organisation, advocating for a “borderless peer-to-peer democracy”. The vision of Democracy Earth is embedded in its software platform Sovereign - a blockchain voting platform, resembling a ‘liquid democracy’. Sovereign describes itself as “censorship resistant” and “open and transparent for all.”</p> <p>In the white paper, Democracy Earth describes its goal as forming “a living roadmap for planetary governance.” This involves creating a form of crypto politics, based about the key values of planetary impact, borderless governance, self sovereignty, users owning their own data and hacktivism. The Democracy Earth blog, further outlines these key values and visions of the organisation. On the homepage, a video also encompasses the ideology of Democracy Earth and the background story of the key developer Santiago Siri, with the tagline being “coding democracy”, reflecting how democracy can be brought into the internet era.</p> <p>The current targeted users for Democracy Earth would include members of the Github community (an open code sharing platform) and anyone with an interest in blockchain, cryptocurrencies and new voting platforms.</p> <p>The first iteration of the Sovereign platform was DemocracyOS, that was released in 2012. As it mentions in the white paper, the ‘code’ was written before Democracy Earth’s ideologies were realised.</p> <p>“Following the example of Satoshi Nakamoto, prior to sharing our ideas in written form we have undertaken to write code first, in order to properly understand what can be done. To this end, more than 30,000 lines of code have been written since October 2015, which in turn has driven our</p>

DEMOCRACY EARTH WALKTHROUGH METHOD

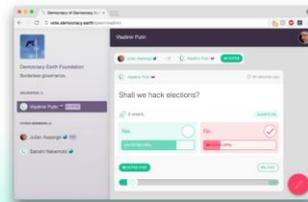
research, use cases, and the ideas presented herein. This is our proposal.”
(p.2)

Thus, there is a strong focus on code as informing governance structures.



Become **Self Sovereign**.

With the rise of open source software and peer to peer networks, political intermediation is no longer necessary. We are building Sovereign, an open source and decentralized democratic governance protocol for any kind of organization.



Liquid Democracy.

Vote on issues you care. Delegate power to those you already trust.



Own Your Data.

Sign with keys only known to you and a blockchain, not big brother.



Borderless governance.

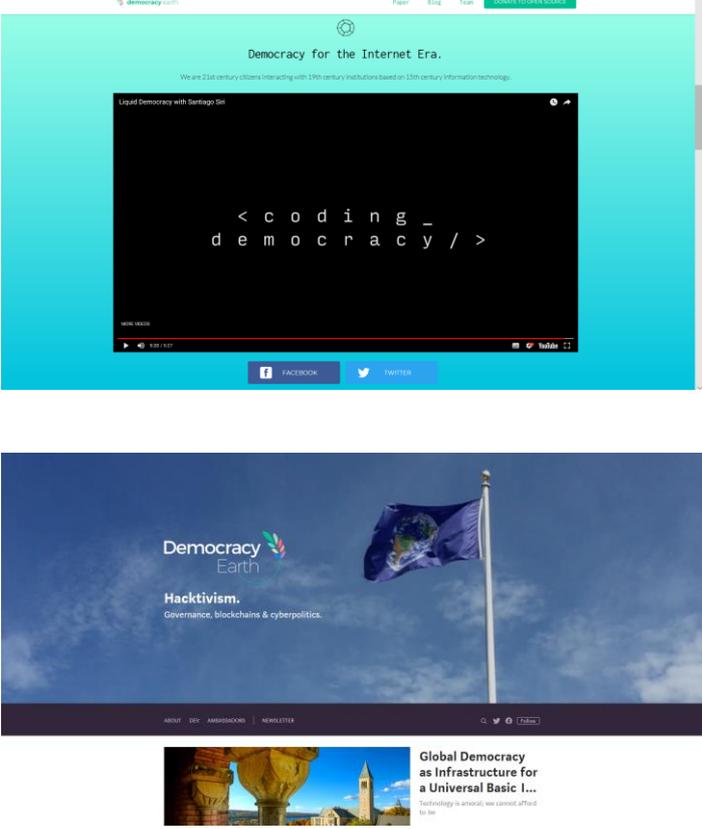
Participatory budgeting with bitcoin & smart contracts.

[JOIN OUR SLACK](#)

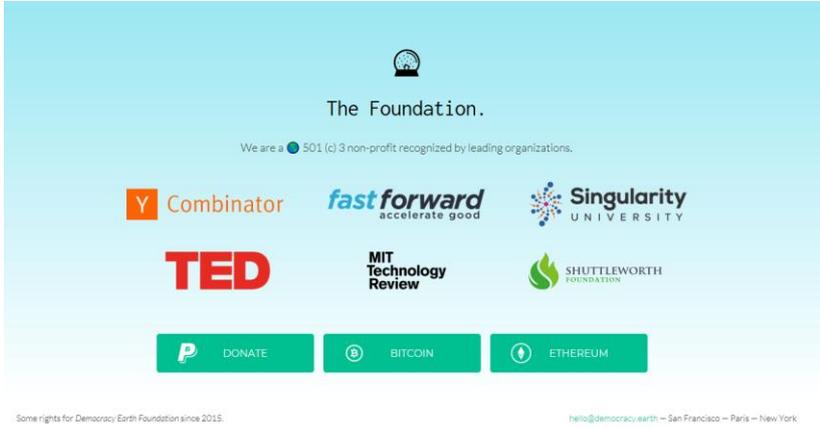
[CODE WITH US](#)

Screenshots of the frontpage Democracy Earth website

DEMOCRACY EARTH WALKTHROUGH METHOD

	 <p>Screenshots from the Democracy Earth website – showing the ‘coding democracy’ video and the democracy earth blog ‘hackivism’</p>
<p>Operation Model – What is the app’s business strategy and</p>	<p>The Democracy Earth organisation runs one platform Sovereign. This platform exists online in beta mode, so it is not fully functional. The code for Sovereign also exists on Github, and thus other developers can use the code and create their own versions of the platform.</p> <p>As Democracy Earth is a non-profit organisation, there is no explicit revenue model. Sponsors of the site include Y Combinator, TED, MIT Technology</p>

DEMOCRACY EARTH WALKTHROUGH METHOD

<p>revenue sources?</p>	<p>Review and Singularity University. The homepage also features buttons to make a donation via Paypal, Bitcoin or Ethereum.</p> <p>The white paper details how the Sovereign platform utilises blockchain technology and cryptogovernance mechanisms. Rather than an Initial Coin Offering, Democracy Earth has an “Initial Rights Offering”, where each user is given 1000 votes upon registering.</p> <p>Rather than “Proof of Work” Democracy Earth uses “Proof of Identity”.</p>  <p>Screenshot on the mainpage of the Democracy Earth website showing the main sponsors of Democracy Earth</p>
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DEMOCRACY EARTH WALKTHROUGH METHOD

Governance – How does the app provider seek to manage and regulate user activity to sustain their operating model and fulfil their vision?

Democracy Earth is a non-profit organisation, comprised of a team of “hackers, thinkers and makers distributed around the globe”. The organisation functions in terms of open source development practices and partnerships with blockchain technology organisations such as Blockstack, Civic and Consensys.

The creators of Democracy Earth founded the first digital political party “the Partido de la Red (Peers Party) that ran in the Buenos Aires election in 2013.



Screenshot of the website page providing a link to access the Democracy Earth white paper: The Social Smart Contract

DEMOCRACY EARTH WALKTHROUGH METHOD

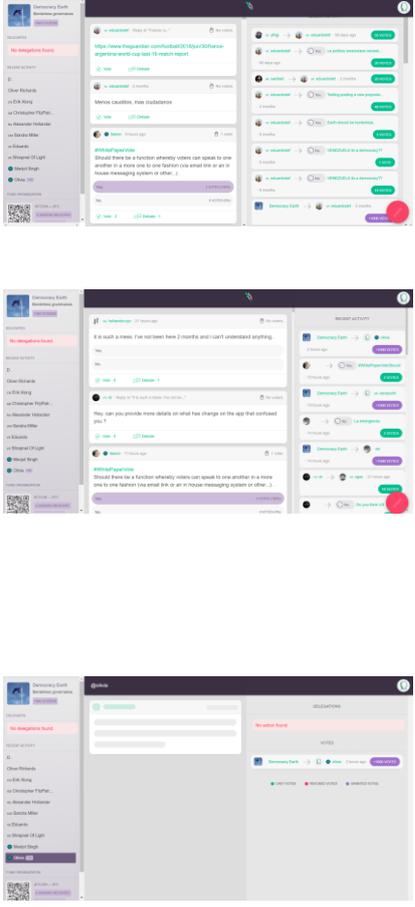


Screenshot showing the team of developers behind Democracy Earth

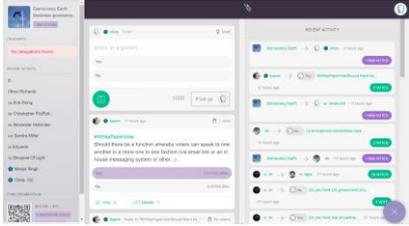
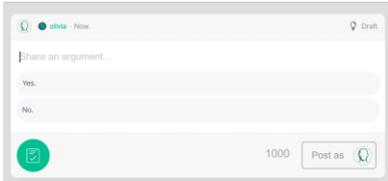


Screenshot of the website page providing a video about the creator of Democracy Earth Santiago Siri and the vision of Democracy Earth – ‘crypto politics’.

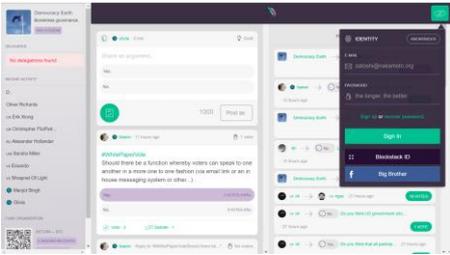
DEMOCRACY EARTH WALKTHROUGH METHOD

<p>The technical walkthrough</p>	<p>Technical Function</p> <p>(Name of (object) – what (object) does)</p>
<p><u>User-interface arrangement</u></p> <p>How does the app guide users through activities via the placement of buttons and menus?</p>	 <p>The first two screenshots show a chat interface with a list of messages on the left and a text input field on the right. The messages include a link, a question about a function, and a response. The third screenshot shows a form with a title, a text input field, and a 'SUBMIT' button.</p>

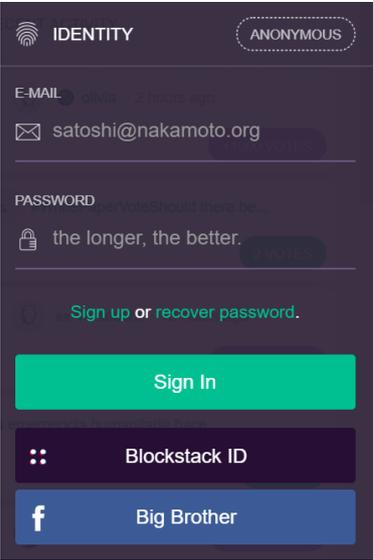
DEMOCRACY EARTH WALKTHROUGH METHOD

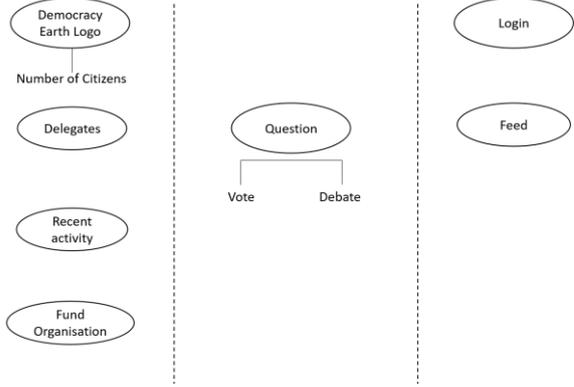
	 <p>Screenshots of the Democracy Earth platform in beta testing mode</p>
<p><u>Functions and features</u></p> <p>What are the groups of arrangements that mandate or enable an activity?</p>	<ul style="list-style-type: none"> • On the website users can “Start an Embassy”. • There are options to: ‘Vote’ and ‘debate’ • Record of ‘delegations’ and ‘votes’ • Types of votes – cast votes, revoked votes, granted votes • There is an option to register as a ‘nationality’ or as a citizen of ‘earth’  <p>Screenshot of the page where users can post a question to be debated/voted upon</p>

DEMOCRACY EARTH WALKTHROUGH METHOD

<p><u>Textual content and tone</u></p> <p>What is the text embedded in the user interfaces and their discursive power to shape use?</p>	<ul style="list-style-type: none"> • Pen icon means that users can create something to be voted on • ‘Share an argument’ (yes or no construction + option to debate) • Democracy Earth blog connects the organisation to “hactivism” and “digital democracy” • Focus on a new type of politics “crypto-politics”
<p><u>Symbolic representations</u></p> <p>What are the semiotic, and likely connotations and cultural associations with respect to the imagined user and ideal scenarios of use?</p>	<ul style="list-style-type: none"> • Wings icon = freedom • Fingerprint = identity • Leaf = democracy earth logo • Flag on pole photograph – no national flag, a flag of the earth • Identity – Facebook is referred to as “Big Brother” and validators are referred to as “Little brothers • Light grey background • Purple, blue and green colour scheme – earthy colours  <p>Screenshot of platform page to write a post and sign in.</p>

DEMOCRACY EARTH WALKTHROUGH METHOD

	 <ul style="list-style-type: none">• The log-in screen refers to facebook as “Big Brother”• The fingerprint icon is used to represent identity• Satoshi Nakamoto the creator of Bitcoin is alluded to in the example sign-up screen
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<p>Metafunction</p> <p>(interpretation of site/app)</p>	<p>Semiotic function</p> <p>(representation and meaning)</p>
<p>Textual:</p> <p>Non-linear models</p>	 <p>The non-linear model represents a taxonomic structure. From the 'question' column, there are further options to 'vote' or 'debate'. From the 'Democracy Earth' left-hand column, the main options of 'Delegates', 'recent activity' and 'fund organisation' all have further options. With the right-hand column, the 'feed' again represents a taxonomic structure, with further details of recent activity stemming from the 'feed' column.</p>

DEMOCRACY EARTH WALKTHROUGH METHOD

<p>Textual:</p> <p>Information Values</p>	<p>The homepage features a triptych structure, with the option to adjust the width of the columns. The left-hand column, representing the 'given', shows the name of users who were recently active along with the Democracy Earth logo – a flag with the image of the Earth represented geographically not geopolitically. There is also the option to donate Bitcoin (shown as a QR code).</p> <p>The middle column, 'the mediator', is the interactive aspect of the platform and shows the discussion unfolding.</p> <p>The right-hand column, 'the new', shows any recent activity and where all votes have been directed, essentially functioning like the 'blockchain' of the platform. The right-hand column shows: 1,000 total votes, % of votes cast.</p>
<p>Interpersonal:</p>	<p>The frontpage of the Democracy Earth platform does not explicitly show interactions between the viewer and producer of the site. Therefore, the site can be interpreted as belonging to the knowledge orientation – with an objective and impersonal stance.</p>
<p>Interactive Meanings</p>	<pre> graph LR IM[Interactive meanings] --> C[Contact] IM --> SD[Social distance] IM --> A[Attitude] C --> D[Demand] C --> O[Offer] SD --> IP[Intimate/personal] SD --> S[Social] SD --> I[Impersonal] A --> Sub[Subjectivity] A --> Obj[Objectivity] Sub --> Inv[Involvement] Sub --> Det[Detachment] Sub --> VP[Viewer power] Sub --> Eq[Equality] Obj --> RP[Representation power] Obj --> AO[Action orientation] Obj --> KO[Knowledge orientation] </pre>

DEMOCRACY EARTH WALKTHROUGH METHOD

	We are	building Sovereign, an open source and decentralized democratic governance protocol for any kind of organization.	+ cap + comp	Democracy Earth Sovereign
	We are	21st century citizens interacting with 19th century institutions based on 15th century information technology.	+ cap - comp - comp	Democracy Earth Institutions Information technology
<p>The most highly appraised items associated with the Democracy Earth platform were the "Democracy Earth" organisation and "Sovereign platform" all associated with positive compositional values. In contrast, "19th century institutions" and "15th century information technology" were associated with negative compositional values. Democracy Earth's community of "hackers, thinkers and makers" was also stressed throughout the website and associated with positive capacity. Overall, the Democracy Earth site focused a lot more on positively appraised items, promoting Democracy Earth as "pioneering" and "new" with "planetary impact".</p>				

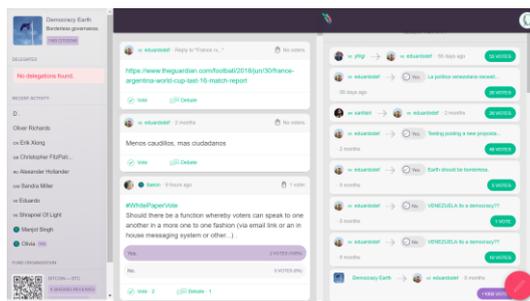
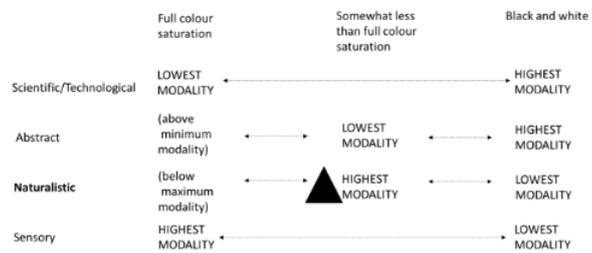
DEMOCRACY EARTH WALKTHROUGH METHOD

Modality

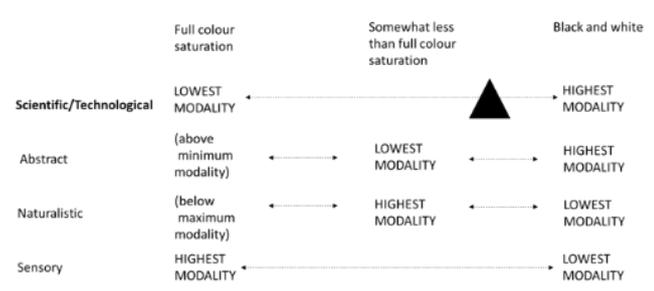


The main page of the Democracy Earth site follows a naturalistic coding orientation as there is a real-life photograph of a flag pole as the main image.

The main page is of a high modality on the naturalistic coding scale, as it is closest to having “somewhat less than full colour saturation”.



DEMOCRACY EARTH WALKTHROUGH METHOD

	<p>The Democracy Earth platform follows a scientific/technological coding orientation as there is a focus on the technological aspects of the site (buttons, interactive elements, text) rather than a focus on images.</p> <p>The main page is of a higher modality on the scientific/technological coding scale, as it is closest to “black and white” with minimal colours used.</p> 
<p>Ideational: Symbolic processes</p>	<p>The Democracy Earth site features a number of symbolic attributes:</p>  <ul style="list-style-type: none"> • The Democracy Earth logo features a leaf in earthy colours. There are similarities to the laurel wreath associated with Ancient Greece – the birthplace of democracy.

DEMOCRACY EARTH WALKTHROUGH METHOD

	<div data-bbox="780 405 1254 622"><p>Crypto Politics.</p></div> <ul style="list-style-type: none">• Crypto politics icon is associated with network nodes <div data-bbox="796 788 1238 1070"><p>From Earth.</p></div> <ul style="list-style-type: none">• The “From Earth” icon is a laurel wreath, again associated with Ancient Greece – the birthplace of democracy. <div data-bbox="796 1267 1238 1579"><p>White Paper.</p></div> <ul style="list-style-type: none">• The “White Paper” icon features a construction of a rabbit – alluding to the technical aspects of the white paper.
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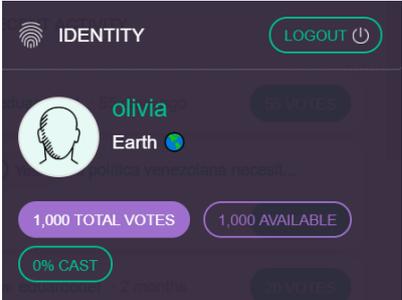
DEMOCRACY EARTH WALKTHROUGH METHOD

	<div data-bbox="798 407 1238 524" style="text-align: center;"><p>Democracy for the Internet Era.</p></div> <ul data-bbox="608 595 1430 663" style="list-style-type: none">• “Democracy for the Internet Era” has a circular icon – representing totality – linking democracy to technology <div data-bbox="798 734 1238 860" style="text-align: center;"><p>Become Self Sovereign.</p></div> <ul data-bbox="608 943 1430 1010" style="list-style-type: none">• “Become Self Sovereign” features an icon of the earth with a smaller planet beside it <div data-bbox="810 1075 1225 1115" style="text-align: center;"><p>We are a  501 (c) 3 non-profit recognized by leading organizations.</p></div> <ul data-bbox="608 1182 1430 1249" style="list-style-type: none">• The statement regarding Democracy Earth as a non-profit organisation also features an icon of the earth <div data-bbox="798 1317 1238 1547" style="text-align: center;"><p>The Foundation.</p></div> <ul data-bbox="608 1619 1342 1648" style="list-style-type: none">• A snowglobe represents the Democracy Earth foundation
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DEMOCRACY EARTH WALKTHROUGH METHOD

	<div data-bbox="791 405 1230 506" data-label="Image"> </div> <ul style="list-style-type: none"> Advertising Democracy Earth refers to starting “an embassy”. The embassy icon is a building with a flag attached to it. <div data-bbox="791 719 1230 965" data-label="Image"> </div> <ul style="list-style-type: none"> “Liquid Democracy”, “Own your own Data” and “Borderless Governance” are the three main benefits of Democracy Earth that are highlighted and illustrated. Trust, avoiding “Big Brother” and the benefits of cryptocurrencies are all stressed. <div data-bbox="791 1245 1230 1547" data-label="Image"> </div> <ul style="list-style-type: none"> An example screenshot of the Democracy Earth platform critiques Vladimir Putin hacking US elections, again establishing that there is no trust in current politics.
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DEMOCRACY EARTH WALKTHROUGH METHOD

	<div data-bbox="794 405 1241 607"><p>Democracy Earth Borderless governance. 1361 CITIZENS</p></div> <ul style="list-style-type: none">• Only one image is featured on the Democracy Earth platform – an image of an Earth flag in the left-hand corner, with the caption “borderless governance”. <div data-bbox="817 846 1219 1146"><p>IDENTITY LOGOUT</p><p> olivia Earth</p><p>1,000 TOTAL VOTES 1,000 AVAILABLE</p><p>0% CAST</p></div> <ul style="list-style-type: none">• The user profile page gives users the option to not state what country they are from, and instead just state that they are from “Earth”
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DEMOCRACY EARTH WALKTHROUGH METHOD

<p>Everyday Use</p>	
<p>Registration and Entry</p>	<p>There are three current types of registration on the site: via Facebook ID known as 'Big Brother', a blockstack ID (on the blockchain ID) and registration via email and the creation of a password (with this option the user needs to verify their email, by clicking on a link sent to the email address specified). There is also the option to select an 'anonymous' identity to simply look at the website, but not engage with any of the features.</p> <p>Each registered user is initially given '1000 votes'.</p> <p>There is an option to 'recover password'. There is no current functioning blockchain for Sovereign, but a feed appears with everyone's actions recorded on it, similar to how the future implemented blockchain would appear.</p> <p>In the future, as indicated in the white paper, users will register by filming themselves, hashing the content and putting it on the blockchain, after it has been verified by a group of people known as 'little brothers'.</p>
<p>Everyday Use</p>	<p>The full functionality of the site is not available yet as it is still in beta mode. Many aspects outlined in white paper can't be accessed yet.</p> <p>Currently the platform is being used by open source creators wanting to alter the platform, thus posting suggestions for alterations to site.</p>

DEMOCRACY EARTH WALKTHROUGH METHOD

	<p>Bitcoin Address Addresses are identifiers which you use to send bitcoins to another person.</p> <div data-bbox="507 465 1324 616"> <table border="1"> <thead> <tr> <th colspan="2">Summary</th> <th colspan="2">Transactions</th> </tr> </thead> <tbody> <tr> <td>Address</td> <td>1KezZwndL3ioMPw1Ad337dcCWL6KaeVIC7</td> <td>No. Transactions</td> <td>10</td> </tr> <tr> <td>Hash 160</td> <td>cca1b5c5c7f961fd77429740ac876095bcd6736d</td> <td>Total Received</td> <td>4.35422053 BTC</td> </tr> <tr> <td></td> <td></td> <td>Final Balance</td> <td>0 BTC</td> </tr> </tbody> </table>  <p style="text-align: center;">Request Payment Donation Button</p> </div> <p>Transactions (Oldest First) Filter ▾</p> <table border="1"> <thead> <tr> <th>Transaction ID</th> <th>Amount</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>61434ae1770atafe618f584b46035e3558612ad96139350b4632fc833a11e40</td> <td></td> <td>2018-07-02 20:29:30</td> </tr> <tr> <td>1KezZwndL3ioMPw1Ad337dcCWL6KaeVIC7 → 3FrBnga8eZZWUbA8tped4ku9s3o8Ek7Ysh</td> <td>0.00412 BTC</td> <td></td> </tr> <tr> <td></td> <td>-0.0005928 BTC</td> <td></td> </tr> </tbody> </table> <p>A screenshot of the bitcoin blockchain record showing who has donated to Democracy Earth</p>	Summary		Transactions		Address	1KezZwndL3ioMPw1Ad337dcCWL6KaeVIC7	No. Transactions	10	Hash 160	cca1b5c5c7f961fd77429740ac876095bcd6736d	Total Received	4.35422053 BTC			Final Balance	0 BTC	Transaction ID	Amount	Date	61434ae1770atafe618f584b46035e3558612ad96139350b4632fc833a11e40		2018-07-02 20:29:30	1KezZwndL3ioMPw1Ad337dcCWL6KaeVIC7 → 3FrBnga8eZZWUbA8tped4ku9s3o8Ek7Ysh	0.00412 BTC			-0.0005928 BTC	
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	-0.0005928 BTC																												
<p>App suspension, closure and leaving</p>	<p>Users can log out of the system, but have no option to completely erase their account on the platform, keeping with the notion that the blockchain record is immutable.</p>																												

<p>Environment of Expected Use</p>	
<p>Vision – What is the app’s purpose, target user base and scenarios of use?</p>	<p>The vision of Bitnation is the establishment of decentralised, borderless, voluntary nations (referred to as DBVNs). Bitnation believes that anyone has the right to form their own nations, based on their own constitutions, which would be enabled as smart contracts. The ideology behind Bitnation is that humans currently exist as “geographical prisoners” and that freedom of choice is key to escaping this fate (https://motherboard.vice.com/en_us/article/xyg5x7/bitnation-or-bust).</p> <p>The Bitnation homepage infers that technological innovations will enable greater governance.</p> <p>As the Bitnation white paper states:</p> <p style="padding-left: 40px;">“A post-nation state world of Voluntary Nations, City States and Autonomous Communities” is the future, where these various nations will compete for Citizens, thus establishing “a global free market for governance services”. (p.4)</p> <p>With the creation of smart contracts and new forms of bureaucracy, individuals will have the power to decide what forms of governance work best for them.</p> <p>The target base for Bitnation is those with an anarchist or libertarian ideology; a desire for as little government intervention as possible, or no government intervention at all. The white paper quotes from prominent cyber-anarchists such as Timothy May and cyber-libertarian John Perry Barlow.</p>

BITNATION WALKTHROUGH METHOD

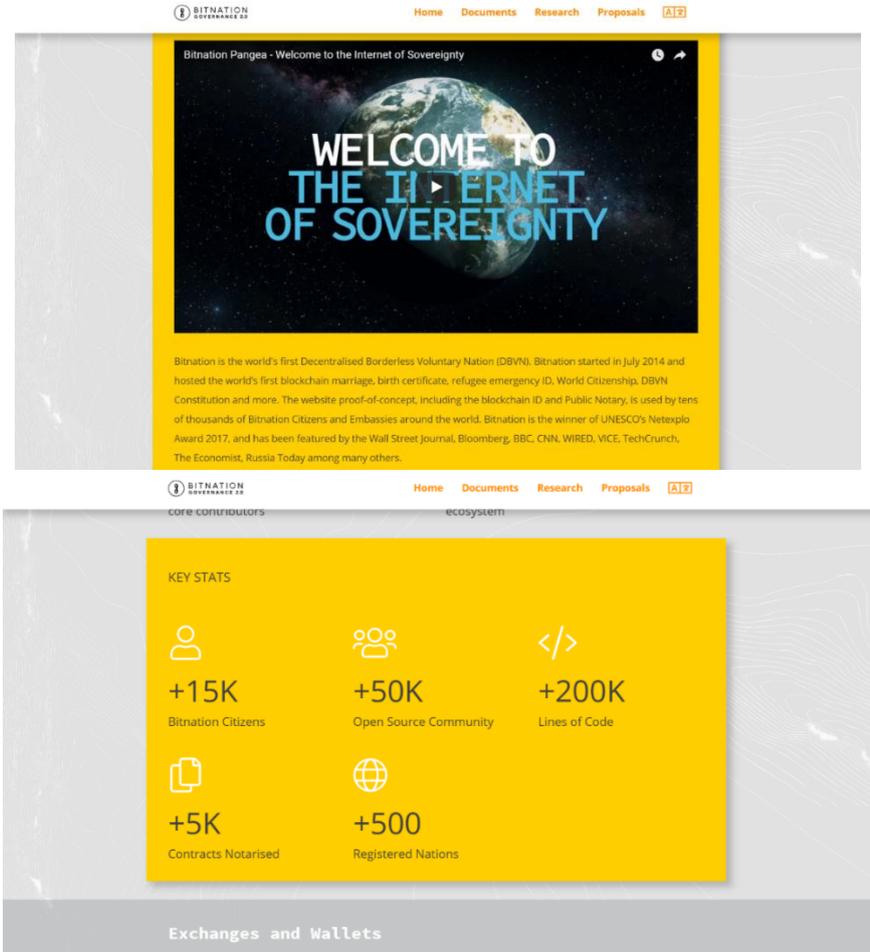
In addition, Bitnation markets itself as suitable for people from “emerging markets” with the app able to give agency to groups that have been ignored or repressed by modern nation-states. Bitnation also states that it can provide support services for refugees – for example by giving refugees a verifiable identity when governments fail to do so. (p.5)

In comparison to the politically dense nature of the ‘white paper’, the Bitnation ‘litepaper’ focuses as the main marketing material for the site. The litepaper provides details about the PAT token sale – explaining the Initial Coin Offering (ICO) to attract users to the platform (p.3). As the ‘litepaper’ states regarding the vision of Bitnation:

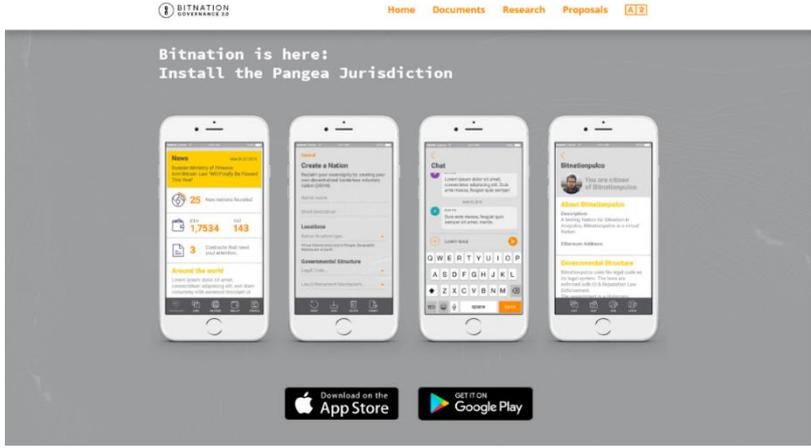
“In BITNATION's world sovereignty shifts decisively from the State to the Citizen. By reducing competition between citizens for services and increasing competition between Nations for citizens we will improve the quality of governance and reduce incentives for coercion and violence. We wish you to be able to create, opt-in or opt-out of the Nation of your choice on your mobile phone.” (p.2).



BITNATION WALKTHROUGH METHOD

	 <p>Bitnation Pangea - Welcome to the Internet of Sovereignty</p> <p>Bitnation is the world's first Decentralised Borderless Voluntary Nation (DBVN). Bitnation started in July 2014 and hosted the world's first blockchain marriage, birth certificate, refugee emergency ID, World Citizenship, DBVN Constitution and more. The website proof-of-concept, including the blockchain ID and Public Notary, is used by tens of thousands of Bitnation Citizens and Embassies around the world. Bitnation is the winner of UNESCO's Netexplo Award 2017, and has been featured by the Wall Street Journal, Bloomberg, BBC, CNN, WIRED, VICE, TechCrunch, The Economist, Russia Today among many others.</p> <p>KEY STATS</p> <ul style="list-style-type: none"> +15K Bitnation Citizens +50K Open Source Community +200K Lines of Code +5K Contracts Notarised +500 Registered Nations <p>Exchanges and Wallets</p>
<p>Operation Model – What is the app's business strategy and revenue sources?</p>	<p>The Bitnation Pangea app can be downloaded from either the Apple store or Google Play store. So, users would also have to agree to Apple's and Google's terms of service agreements, therefore user data could be mined by these companies, as well as the GPS device location being shared.</p> <p>Bitnation is currently bound to cryptocurrencies and uses the Ethereum blockchain, issuing XPAT tokens.</p>

BITNATION WALKTHROUGH METHOD

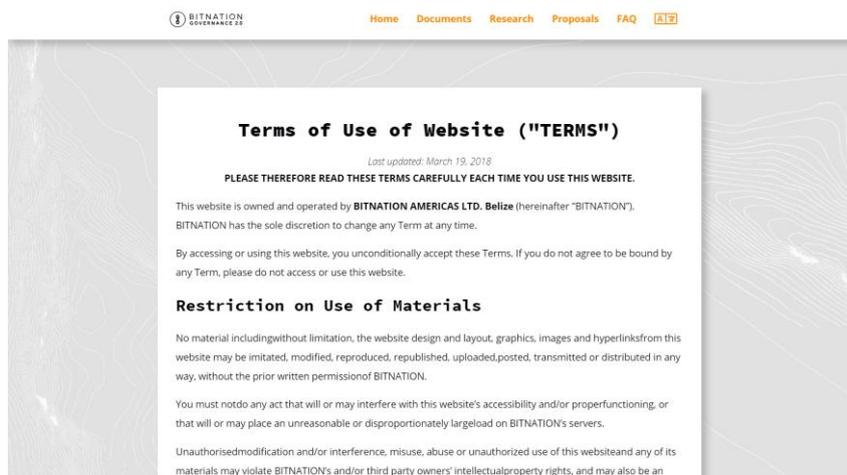
	<p>The Bitnation webpages provide key statistics regarding the platform.</p>  <p>Screenshot of the Bitnation webpage advertising the Bitnation Pangea Jurisdiction app</p>
<p>Governance – How does the app provider seek to manage and regulate user activity to sustain their operating model and fulfil their vision?</p>	<p>Bitnation was founded by Susanne Tarkowski Tempelhof. Regarding the process of writing the white paper:</p> <p>“Following our holacratic governance structure and open source principles, our paper was drafted by Bitnation’s Founder Susanne Tarkowski Tempelhof, supported by Bitnation core contributors and then shared for comments from our community for several months as a Google document, via our communications channels.” (p.9)</p> <p>The “terms of use of website”, states that the website material and Bitnation logo are under copyright. However, the software itself is open source:</p> <p>“We may make (but are not obligated to make) the source code for the software we develop available for download as open source software. You agree to be bound by, and comply with, any license agreement that applies to this open source software. You will not</p>

BITNATION WALKTHROUGH METHOD

indicate that you are associated with us in connection with your use, modifications or distributions of this open source software.”

Bitnation has partnerships with organisations such as the Estonian E-residency program (<https://www.ibtimes.co.uk/bitnation-estonian-government-start-spreading-sovereign-jurisdiction-blockchain-1530923>), Liberland (a micronation between Croatia and Serbia, formed by Czech right-libertarian politician and activist Vít Jedlička <https://liberland.org/en/about/>) and Bitcoin Suisse (a regulated crypto financial broker, asset manager and service provider <https://bitcoinsuisse.ch/>).

The Bitnation website provides an option for users to make their own proposals regarding DBVN’s and “fund your own governance project”. Users can write a short statement about their idea which is then voted on by other users.



Terms of Use webpage on the Bitnation site

The screenshot shows the Bitnation website header with navigation links: Home, Documents, Research, Proposals, and a language selector (EN). Below the header, the 'Our Partners' section features logos for ABDK, AmaZix, Bitcoin Suisse, FusionCO.pro, LIBERLAND, Network Society Ventures, and the Republic of Estonia e-Residency. The 'Media Coverage' section displays logos for BBC, Bloomberg, BUSINESS INSIDER, CNN, Forbes, IBT., LE FIGARO-fr, and NewStatesman.

Screenshot of Bitnation sponsors and media coverage

This screenshot focuses on the 'Media Coverage' section of the Bitnation website. It lists a wide array of media outlets, including BBC, Bloomberg, BUSINESS INSIDER, CNN, Forbes, IBT., LE FIGARO-fr, NewStatesman, RT (RUSSIA TODAY), TEDx, TechCrunch, The Atlantic, The Economist, theguardian, HUFFPOST, INDEPENDENT, The Telegraph, WSJ, VICE, and WIRED.

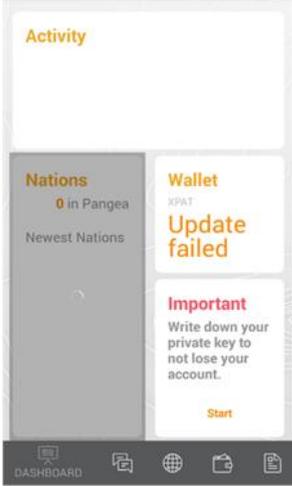
Screenshot of Bitnation media coverage



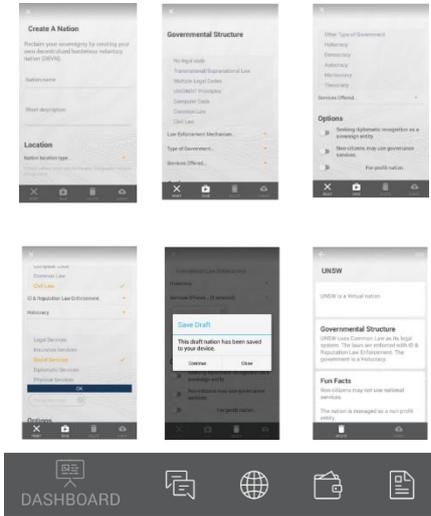
Screenshot of the Bitnation site <https://bitnation.consider.it/> - where users can write proposals for their own ideas to expand Bitnation or “fund your own governance project”.

Proposal Title	Date	Status	Opinions
<u>We can create a federation of nations based on the respect of the Golden Rule</u>	Yesterday	0 pros and cons	1 opinion
<u>A nation to create and distribute basic income to its citizens</u>	2 weeks ago	2 pros and cons	7 opinions
<u>Develop community based energy provider in Jamaican communities, bypassing energy monopoly.</u>	6/3/2017	1 pro or con	7 opinions
<u>Establishing new enterprises in different locations via crowdfunding (micro ICOs) to enforce employment opportunities</u>	7/7/2017	7 pros and cons	19 opinions
<u>Free Press Blockchain/Cryptocurrency</u>	10/6/2016	12 pros and cons	25 opinions
<u>Passport or other travel document for BITNATION</u>			7 opinions

Screenshot of the Bitnation “Consider It” site – allowing users to write and vote on their own proposals to enhance Bitnation’s governance project

<p>The technical walkthrough</p>	<p>Technical Function</p> <p>(Name of (object) – what (object) does)</p>
<p><u>User-interface arrangement</u></p> <p>How does the app guide users through activities via the placement of buttons and menus?</p>	<p>The main interface of the site, the dashboard, consists of a grid structure with a grey tab at the bottom of the dashboard.</p>  <p>Screenshot from the Bitnation App main page</p>

BITNATION WALKTHROUGH METHOD

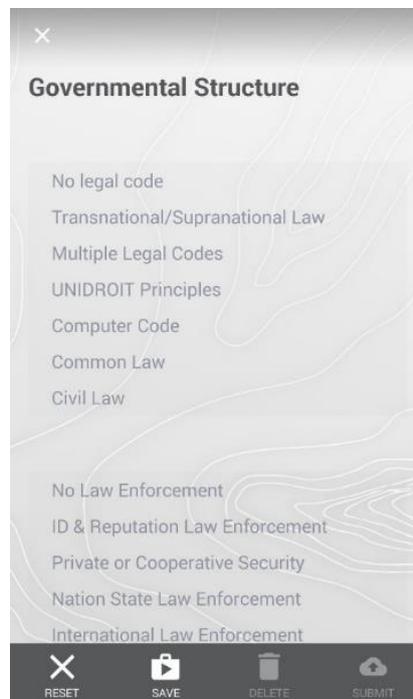
	 <p>Close-up of the icons that can be selected on the Bitnation app</p> <p>The five icons:</p> <ul style="list-style-type: none"> - Dashboard (monitor icon) - Chat (speech bubble icon) - Nations (globe icon without nations on it) - Wallet (wallet icon) - Settings (document icon) <p>Screenshots of the process of “creating a nation” on the Bitnation app:</p>
<p><u>Functions and features</u></p> <p>What are the groups of arrangements</p>	<p>On the current version of the app there are options to:</p> <ul style="list-style-type: none"> - Link to the Ethereum wallet - Set up a private key for extra protection - Create a draft nation - Chat to those who you know the public key of

BITNATION WALKTHROUGH METHOD

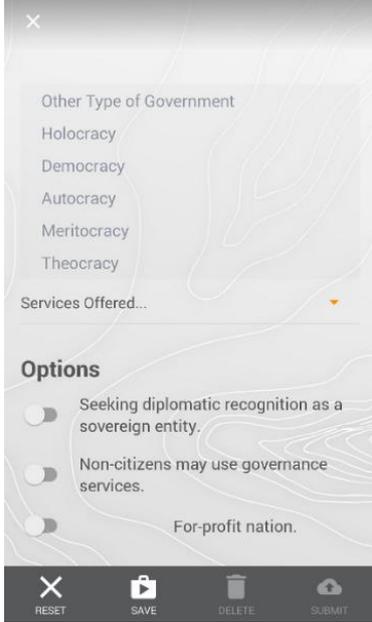
that mandate or enable an activity?	<ul style="list-style-type: none"> - Browse other nations created by users
<p><u>Textual content and tone</u></p> <p>What is the text embedded in the user interfaces and their discursive power to shape use?</p>	<p>“Create a Nation” option: “to reclaim your sovereignty by creating your own decentralised, borderless, voluntary nation (DBVNs)”.</p> <p>Selections under “Governmental Structure”:</p> <ul style="list-style-type: none"> - Legal code - Law enforcement mechanism - Type of government - Services offered <p>Selections under “Types of government”:</p> <ul style="list-style-type: none"> - Holocracy (https://www.holacracy.org/ https://blog.ethereum.org/2014/08/21/introduction-futarchy/ https://en.wikipedia.org/wiki/Holacracy - same concept but spelt differently). As stated in the white paper: “A DBVN scales through people forming Holons, a self-organized system. Sometimes synonymous with ‘holacracy’ and ‘swarm methodology’, it has been successfully implemented in organizations such as the Pirate Party, Bitcoin, Linux and Anonymous.” (p.28). - Democracy - Autocracy - Meritocracy - Theocracy <p>In the current format of the app, political ideologies/laws are already marked as ridged categories, thus appearing as selections not as ‘writing your own constitution’, as stated in the white paper.</p>

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“Pangea” = “A vast continental area or supercontinent comprising all the continental crust of the earth, which is postulated to have existed in late Palaeozoic and Mesozoic times before breaking up into Gondwana and Laurasia.”
(<https://en.oxforddictionaries.com/definition/pangaea>)



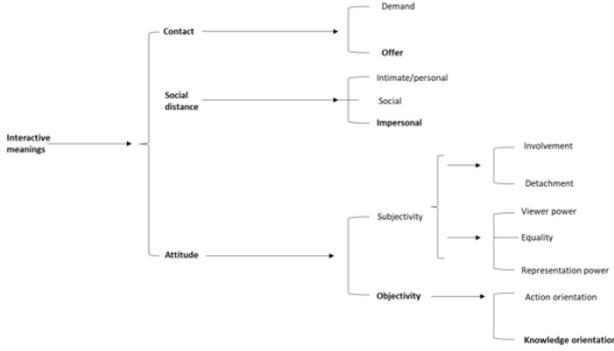
Screenshot of “governmental structure” section of the Bitnation app

	 <p>Screenshot of “governmental structure” section of the Bitnation app</p>
<p><u>Symbolic representations</u></p> <p>What are the semiotic, and likely connotations and cultural associations with respect to the imagined user and ideal scenarios of use?</p>	<ul style="list-style-type: none"> • The grey background with ‘pangea’ lines – a focus on geographical rather than geopolitical features. • The globe is always shown without geopolitical markings - ‘nations’ or ‘borders’. • User-experience (ideal scenarios of use)– no hyperlinks, single touch, on/off button options, minimal need to type information. • Wallet – cryptocurrencies • Bitnation logo – chain symbol – security, connectedness

BITNATION WALKTHROUGH METHOD

<p>Metafunction</p>	<p>Semiotic function</p> <p>(representation and meaning)</p>
<p>Textual:</p> <p>Non-Linear models</p>	<div data-bbox="730 689 1276 1064" data-label="Diagram"> <pre> graph TD subgraph Ideal A((Activity)) --- W((Wallet)) N1((Nations)) --- PK1((Private Key)) A --- N1 W --- PK1 end subgraph Real D((Dashboard)) C((Chat)) N2((Nations)) W2((Wallet)) S((Settings)) end D --- H[] C --- H N2 --- H W2 --- H S --- H style H width:0px,height:0px </pre> <p>Public Key New All Nations My Nations Draft Ethereum Send/Receive XPAT Send/Receive Identity Security Private Key Switch Accounts</p> </div> <p>The non-linear model predominately represents a network structure with the positioning of 'activity', 'wallet', 'nations' and 'private key' as these options are all of equal importance and interconnected with the grid-like structure of the app. The other categories 'dashboard', 'chat', 'nations', 'wallet' and 'settings' exist within a taxonomic structure, as each category leads to further options.</p>
<p>Textual:</p> <p>Information values</p>	<p>The grey tab 'the real' always remains at the bottom of the app. The buttons have a minimalist appearance. Words only appear under the icon of the selected page.</p>

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<p>Interpersonal</p>	 <p>The frontpage of the Bitnation platform does not explicitly show interactions between the viewer and producer of the site. Therefore, the site can be interpreted as belonging to the knowledge orientation – with an objective and impersonal stance.</p>
<p>Interpersonal</p>	<p>Examples of evaluative language on the app:</p> <p>“Reclaim your sovereignty” Judgement (+ cap)</p> <p>“For-profit nation” Appreciation (+val)</p> <p>Examples of evaluative language from the website:</p> <p>“BITNATION is a Decentralized Borderless Voluntary Nation (DBVN), powered by the Ethereum blockchain. Our Holocratic Governance structure allows you to create your own Holons, and invest or donate into Holons, Projects, and different parts of BITNATION’s own Infrastructure depending on what matters to you.”</p> <p>Bitnation – appreciation (+ val)</p>

BITNATION WALKTHROUGH METHOD

Appraisal	Governance structure – appreciation (+val)				
	Bitnation’s own infrastructure – appreciation (+val)				
	User – judgment (+ cap)				
	<p>By conducting an appraisal analysis on the main marketing web page of Bitnation, the main discursive values of Bitnation can be realised. This table shows the main concordance lines and appraisal analysis conducted on the most frequently found 2-gram “is the”:</p>				
				Appraisal	Appraised
	Is the	<p>Bitnation Jurisdiction available on Android and iOS? Yes! It's available to download at the Google Play store for Android and on TestFlight for iOS. Updated versions with new features integrated will be released every few weeks to the stores.</p>	+ comp		Bitnation Jurisdiction
	Currently the Ethereum chain	is the	<p>only one integrated, but we intend to add Bitcoin through the Rootstock protocol, Lisk, EOS and others. Citizens will be able to choose between blockchains depending on <u>their requirements</u>. Our</p>	+ cap + comp	Citizens

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		architecture has been shaped to be configurable to new technologies as they emerge, including quantum resistant cryptography, which has been anticipated at the design-stage of our software.		Bitnation architecture
	Bitnation is the	organization that is building world's first Decentralized Borderless Voluntary Nation (DBVN) - the Pangea Blockchain Jurisdiction.	+ comp	Pangea Blockchain Jurisdiction
	What is the	Pangea Arbitration Token (XPAT) and how do I <u>earn</u> it on the Bitnation Jurisdiction? XPAT is an ERC20 token which serves as a contract enforcement mechanism and drives the reputation system on Pangea, our Jurisdiction.	+ cap + comp	User XPAT

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	What is the target audience for Bitnation's Blockchain Jurisdiction?	+ cap	Audience
	Over 1 billion people will be online workers by 2025. These people will be offering their services globally and requiring jurisdictions and governance service providers that transcend national and legal boundaries.	+ cap	Online workers
		+ cap	Jurisdictions and governance service providers
Bitnation is the winner of UNESCO's Netexplo Award 2017, and has been featured by the Wall Street Journal, Bloomberg, BBC, CNN, WIRED, VICE, TechCrunch, The Economist, Russia Today among many others.	+ cap	Bitnation	
Bitnation is the world's first Decentralised Borderless Voluntary Nation (DBVN) .	+ comp	Bitnation	

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The most highly appraised item was the Bitnation Pangea Jurisdiction app, associated with positive compositional values such as being "decentralised", "borderless", "new", "world's first" and being "quantum resistant". Citizens, users, new "jurisdictions and governance service providers" and "audiences" of the Bitnation app were all associated with positive capacity, with the ability to "transcend" current national borders. On the website, there was less of a focus on highlighting negative aspects of current or future systems, instead there was much more of a focus on highlighting the positive features of the Bitnation app.

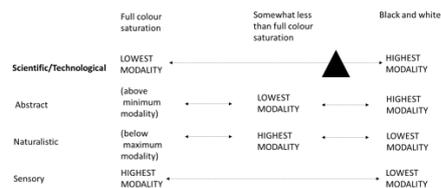


Screenshot of the frontpage of the Bitnation website

Modality



Screenshot of the frontpage of the Bitnation app

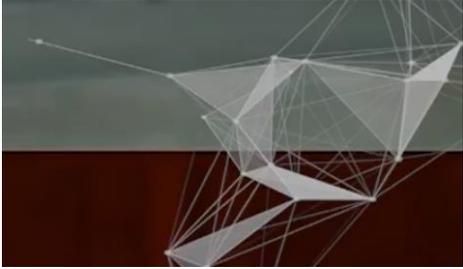


The main page of the Bitnation site and the Bitnation app both follow a scientific/technological coding orientation as there is a focus on the technical aspects of the platform with minimal imagery.

The website page and app are both closer towards the highest modality on the scientific/technological scale, as they are closest to “black and white” on the scale.

Scientific/technological coding orientation

High modality – closer to the ‘black and white’ colour saturation.

Ideational	<p>The Bitnation app consists mainly of symbolic attributes:</p>  <ul style="list-style-type: none"> The icons on the app feature standardised icons (chat, settings etc) with the new additions of a globe without geopolitical markings and a wallet (referring to cryptocurrencies)  <ul style="list-style-type: none"> On the website, there is a video featuring the CEO of Bitnation and Bitnation users.  <ul style="list-style-type: none"> As seen by this screenshot, network nodes are featured in the video 
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BITNATION WALKTHROUGH METHOD

- Screenshot of the features of Bitnation stressed on the mainpage of the website: “P2P agreements”, “Frontier technology” and the ability to run “Your own nations”



- The Bitnation site features a map of the world with topographical lines drawn over it



- Frontpage of the Bitnation site with the logo, key slogan “The Internet of Sovereignty” and map of the world



- Screenshot from the Bitnation video showing a globe with technological features (such as the ability to create smart contracts)

BITNATION WALKTHROUGH METHOD



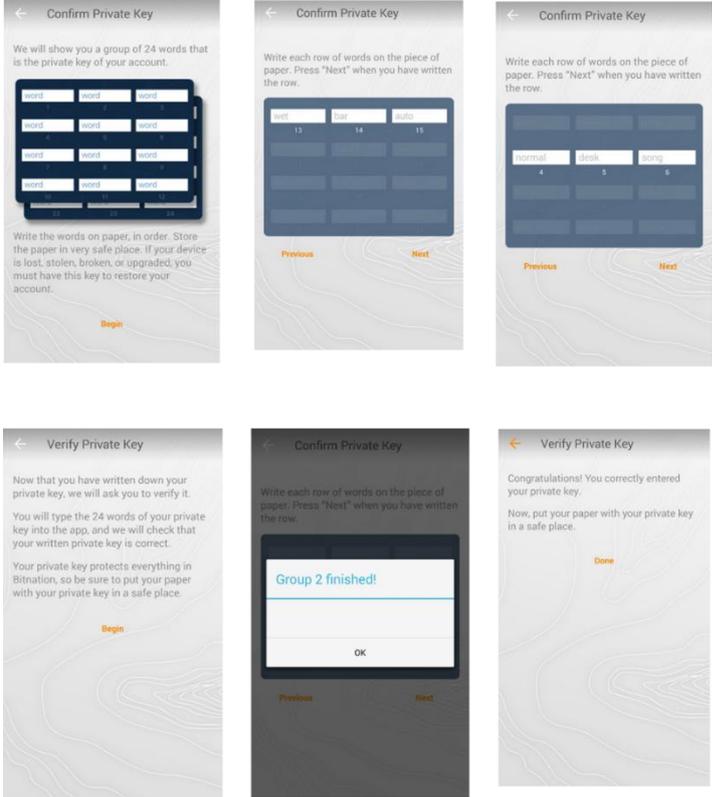
- The Bitnation logo: resembling a chain link – security, connectedness, topographical lines featured in the background



- Bitnation logo “Governance 2.0” referring to the new platform replacing traditional politics. The circles around the chain logo can refer to the networked, totalised nature of the platform

<p>Everyday Use</p>	
<p>Registration and Entry</p>	<p>Can only use 'Bitnation' through the mobile phone app, must download from either Google Play or the Apple store. Users register on the Bitnation app itself – “create account” – simple password mechanism.</p> <p>Option to either register under 'Ethereum' or 'testing mode. Users are then encouraged to set up a private key.</p> <p>Ethereum wallet registration must be completed separately. Instructions to purchase XPAT tokens are also only given on the website. Users must have a prior understanding of ICOs.</p> <div data-bbox="667 1061 1251 1688" data-label="Image"> <p>The image contains six screenshots of the Bitnation mobile app interface, arranged in two rows of three. The top row shows: 1) The 'Accounts' screen with a 'New Account' button and a warning about a previous release. 2) The 'Create Account' screen with 'Developer Settings' and 'Testing Account' options. 3) The 'Security settings' screen with a numeric passcode field. The bottom row shows: 4) The 'Security settings' screen with a passcode length slider set to 6. 5) The 'Enter password' screen with a password input field. 6) The 'Settings' screen with options for Identity, Security, and Private Key.</p> </div> <p>Screenshots of the “accounts” and “security settings” features of the app</p>

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	 <p>Screenshots of how to confirm a private key on the app</p>
<p>Everyday Use</p>	<p>In terms of functionality, the app is not fully developed yet. Many aspects of Bitnation described in the white paper are not accessible on the app. Users can only create draft nations, as smart contracts have not yet been enabled. In order to ensure flow of activity, there are minimal buttons to select from, with more icons featured than text.</p> <p>Users need to know the public key of other users, in order to chat and interact with others. Thus, the public keys of other users can only be found 'outside' of the app – in online or offline discussions.</p>

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	<p>Therefore, the app is currently remaining in 'test mode'. Most likely, so that developers can decide whether or not they want to invest in the software. Thus, Bitnation seems to exist more as a business proposition or outline of a political ideology, than an application with current pragmatic uses.</p> <div data-bbox="710 526 1204 1048" data-label="Image"> </div> <p>Screenshots of the app main page, chat function, profile function, wallet, accounts and nations page</p>
<p>App suspension, closure and leaving</p>	<p>There is no 'log out' button for the app.</p> <p>If users want to leave the app, they can delete it from their device, however if they have registered for a 'public key' this will remain on the blockchain, thus users are unable to completely delete their presence from the database.</p>

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