



# THE GOVERNMENT NETWORK

The First Decentralised Borderless Nation

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## ABSTRACT

**The Government Network is building a borderless Nation powered by Blockchain Technology,** operating from a Decentralised Autonomous Organisation (DAO). Its purpose is to innovate governance one step at the time through the implementation of applications serving direct market needs as drivers for the ecosystem. **The goal is to build a nation, operating on a decentralised governance model, accessible and free for all, empowering the people with abilities to achieve their goals independently through the power of technology.** The following measures are taken to achieve our goal:

- The creation of an environment allowing our citizens to thrive in both their personal and professional lives. This includes:
  - A governance framework focussed around the individual, made possible through decentralised identity solutions.
  - Solutions and mechanisms allowing actors within the ecosystem to participate, voice, and transact in a trusted setting.
  - A secure and stable financial system.
  - An innovative judicial system that includes arbitration courts, smart contract guidelines and a High Court of Governance.
- The implementation of business drivers to leverage the larger ecosystem's growth facilitating the road to reaching critical mass.

Through the step-by-step implementation of our network, **starting with a constitutional convention,** the Government Network will rethink the role of governments and build a universal nation which knows no borders. The Crowdsale is being conducted from a Belize company allowing the organizers to execute a successful and legal Crowdsale. Crowdsale contributors receive an ERC20 token, the GOV token, in exchange for their contributions. The Government Network does not envision the creation of its DAO on the Ethereum network – the GOV token will later swap 1-1 with a proprietary token.

## VISION – MISSION

### VISION

The Government Network aims to build a borderless nation powered by blockchain technology. First of its kind, a political structure married to technology as a leading example of a digital government environment, to create a free nation built for the people, by the people.

### MISSION

To innovate governance models and impact the global rule of law, decentralize politics with technology and serve and empower our citizens.



## CONTENTS

Abstract	2
Vision – Mission	3
The state of governance	8
The Government Network	9
What is the Government Network?	9
1) To innovate governance by providing pioneering solutions	9
2) To create a governance system from the ground up by the people for the people	10
3) Implement governance solutions as leading examples for other governments to adopt	10
The Nation and its Citizens	11
Values of the Government Network citizens:	11
How will the Government Network expand?	11
The forum:	12
Crowdsale structure and future planning	13
Token Economy	14
Core principles GOV Token - NTN Token:	14
The platform, or Nation token (NTN)	14
The Government token (GOV token, GOVT)	14
GOV token >< NTN token swap	15
The internal exchange	16
Blockchain	17
The Government	19
The executive power	20
The legislative system	20
The judicial system	21
Nation controller	21
Monetary commission	22
Internal Exchange	22
Economy	23
Economy – Funding	23
Economy – Market Description	24
Economy – Market participation among citizens	24
The Forum	25
Usability	25

User Trust	25
User Trust – Trade	25
Trust mechanisms:	26
Morning Flash:	27
Marketplace:	27
Government interaction:	27
Petitions	28
Financial	28
Communication	28
Crowdsale	29
Crowdsale objective - \$ 3 000 000:	29
Crowdsale – Packages	30
KYC requirements Crowdsale	30
Projected GOV token distribution:	31
Funds allocation	31
Excess GOV Tokens	31
Roadmap	32
Team (core organizers)	33
Disclaimer & Risk Statement	34
Annex 1: Self-Sovereign Decentralized Identity Management	35
Example Use Cases	35
Decentralized Public Key Infrastructure	37
GDPR compliance and Private Data Stores	37
Preventing Correlation	38
Verifiable Claims and Building the Web of Trust	38
Public Claims	39
Layered Approach	39
Passwords	40
What Identity Management Looks Like and Our Role in Creating It	41
Value added services include:	41
ANNEX 2: Escrow and Arbitration	43
Fraud Services	43
Typical Purchase Flow, Escrow Service, and Fees	44
Arbitration	45



The Rule of Law in accordance to David Boaz in “Libertarianism: A Primer” (New York: The Free Press, 1998)

*“The Rule of Law. Libertarianism is not libertinism or hedonism. It is not a claim that “people can do anything they want to, and nobody else can say anything.” Rather, libertarianism proposes a society of liberty under law, in which individuals are free to pursue their own lives so long as they respect the equal rights of others. The rule of law means that individuals are governed by generally applicable and spontaneously developed legal rules, not by arbitrary commands; and that those rules should protect the freedom of individuals to pursue happiness in their own ways, not aim at any particular result or outcome.”*



## THE STATE OF GOVERNANCE

*The first stages of a global collaborative movement.*

In the last two hundred years, we experienced a decline in poverty and an enhancement of our overall living conditions. The majority of these improvements are a result of universal education, technological improvements and improved models of governance. However, across borders and through different layers of our respective cultures, not all participants in our global society are affected equally.

While some of us thrive, our consumption-based economies lead to the destruction of our natural resources and biodiversity. Our fragile debt-based financial systems, aggravated by corruption and bad governance, bring forward economic cycles which involve bubbles and their bursts. A currently relevant example is the hyperinflation striking Venezuela (2018). Many other examples can be given on the symptoms of inadequate governance models lacking focus on the future turning the weaker individuals of our society into victims.

With the slow realisation of said problems, enabled by the advancements of communication technology, a series of small and large revolts have taken place throughout the world. In some instances, they overthrew countries and proved that with the help of modern technology, people are more powerful than any state, religion or political system. It is in these events that the first stages of a global collaborative movement bringing forward change can be recognized, a movement in which the **Government Network** is taking part. The following are examples of an impressive global collaborative movement:

- 2010 - 2014: "Arab Spring" started in Egypt and spread throughout the region
- 2011 - 2012: "Occupy" started in the United States and spread worldwide
- 2012 - 2012: "May Day" protests across the United States and Asia
- 2013 - 2013: "Gezi Park" regional protests Turkey
- 2014 - 2014: "Umbrella Movement" in Hong Kong
- 2015 - 2018: "Black Lives Matter" in the United States
- 2016 - 2018: "Syrian Refugee Crisis" global support
- 2017 - 2018: "Iranian Uprising" global protests

Coincidentally with the advent of political change, the world is experiencing the rise of a new type of currency, namely, virtual-, cryptocurrency. Cryptocurrencies find their origin in 2009, after Satoshi Nakamoto's released his whitepaper on Bitcoin, and with it, the invention of distributed ledger technology. In less than a decade, the technology led to the creation of thousands of projects and applications.

The market capitalization of all cryptocurrencies combined briefly touched \$ 800 Billion at the beginning of 2018, countries have taken steps to integrate crypto in their respective legal frameworks and accept their integration into the economy. Cryptocurrencies and the underlying distributed ledger technology play a key role in the Government Network, enabling its formation.



**The Government Network will bring forward innovations in governance, providing voices to the silenced, identity to the stateless, and democracy to those under oppression.** Referring to the Atlantic Charter from 1941 stating “respect the right of all peoples to choose the form of government under which they will live” and the International Covenant on Civil and Political Rights, signed in 1966, stating that “All peoples have the right of self-determination. By virtue of that right they freely determine their political status...” to justify the nation’s right of existence and for its citizens, the right to choose their rule of law.

## THE GOVERNMENT NETWORK

### What is the Government Network?

**The Government Network aims to become the first decentralised borderless nation**, an ecosystem providing checks and balances to the world’s rule of law. Operating as a Smart Nation, it will empower its citizens to lead meaningful and fulfilling lives through technology. **The nation will have three core tasks, they are:**

- 1) To innovate governance by providing pioneering solutions

The Government Network DAO’s specifications and decentralised applications (Dapps) to be developed, will target towards solving or improving a variety of processes that are inherent to a successful rule of law such as:

- Voting, petition and polling mechanisms allowing for efficient community management, referendums, and democratic elections.
- Efficient decentralised identity management solutions, allowing for the identifications of individuals both with or without “seed documents”.
  - Proof of authenticity mechanisms allowing each actor in any given transaction to validate their counterpart.
  - Government Network intelligent Identification documents.
  - ‘Digital’ identity management.
  - Front-end applications for governments, universities, communities, to name a few.
- Escrow and arbitration services to fuel citizen, B2B and B2C trade through the platform.
  - The creation of a trade framework specialized in a variety of settings ranging from micro-transactions to complex global B2B transactions.
- A platform token operating as a stable currency, bought and sold through the platform’s proprietary exchange, enabling the integration of the Government Network in the traditional economy.

Through the provision of the above, the Government Network will provide alternative governance solutions to its citizens to utilize when favourable compared to their existing systems. All transactions with the Government Network are managed through a platform called **the Forum**.

## 2) To create a governance system from the ground up by the people for the people

The citizens will organically establish the rule of law under the Government Network, a palpable governance system will be construed starting with the constitutional convention which will take place after the Crowdsale.

The principles under which the organizers have started the Government Network project are adhered to by the Constitutional Convention. They include but are not limited to:

- The principal powers will be governed and operated through transparent decentralised applications.
- The citizens have a veto in matters that impact them directly.
- A strict separation of powers between the legislative, executive and judicial branch adheres.
- The different powers (judicial, executive, legislative) require to implement elaborate citizen participation mechanisms.
- Equality among persons, institutions, and entities, before the law.

## 3) Implement our governance solutions as leading examples for other governments to adopt

Through active pursuance of the implementation of our governance solutions around the globe, the Government Network will create an environment allowing its citizens to thrive in both their personal and professional lives. The implementation is supported by a judicial system which will be home to a High Court of Governance providing a voice to the citizens on subjects that involve an inadequate rule of law. The court will have a ceremonial function and is tasked with exposing Governance needs throughout the world, which in return will form a base for the implementation of innovative governance solutions.

## The Nation and its Citizens

The Government Network aims to attract citizens unsatisfied with their current Government, idealists believing in a borderless society, and those motivated by financial, business or personal incentives. Citizens are incentivised to actively participate in the platform and take further responsibility. Education on the use of technology and the blockchain take a prominent role. Private initiatives are encouraged, and through a series of API's the Nation will aim to enable the creation of governance, business or humanitarian Dapps to aid governance, business or humanism. The Nation will be home to a free market, for all citizens, across countries and communities, free to join, supported by a framework providing security and practicality to its citizens.

Values of the Government Network citizens:

The citizens are committed to the ideals of global stewardship, cultural solidarity, personal integrity, and freedom. They pursue the growth of the nation through active participation, the sharing of knowledge and a representative for our common causes. Citizens of the Government Network do not see race, colour, creed or social class and are found in all layers of our global society, together they aim to bring humanity forward.

How will the Government Network expand?

- Upon creation of the DAO, citizenship will be accessible and free to all. The driving factor for growth will consist of **a forum**, providing a trusted environment for identity management, governance participation, trade and communication, supported by a secure financial system. The Government Network intends to take an active role in the onboarding of citizens. Citizens will be incentivized to introduce new participants to the platform.
- Key applications will draw new citizens to the network such as escrow and arbitration services, self-sovereign identity management, secure voting and petition services, and social applications.
- The Government Network applications will be used to unite marginalized nations, interested governments, corporations, and communities, in return for an aided expansion of the Government Network on their territory, or under a trade agreement.
- The Government Network applications will be presented as a proof of concept to interested governments and corporations to acquire and implement under a trade agreement.

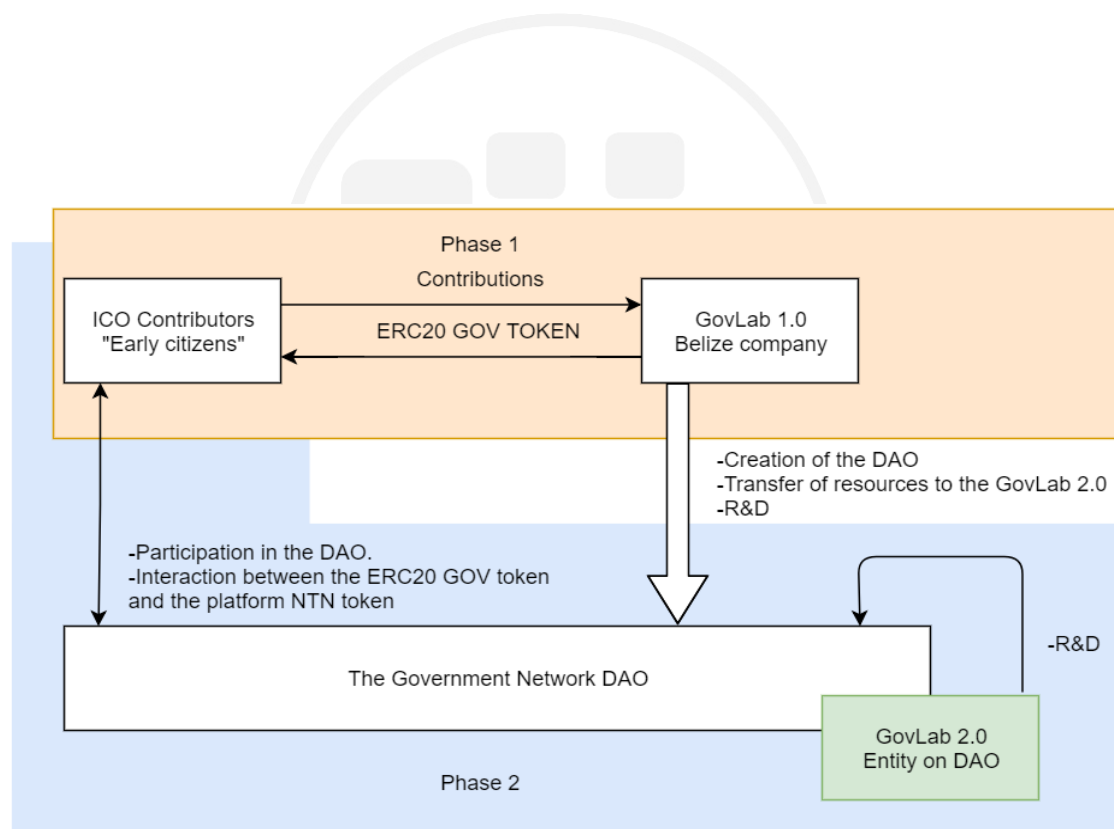
The forum:

- The forum is the front-end application of the Government Network, where every citizen of the nation shall access his trade, political, legal and social environment.
- The beta version of the platform aims to include the following:
  - A trade application allowing the exchange of goods and services among citizens.
    - Equipped with instant money transfer capabilities, payment gateways, basic escrow accounts and other financial services required for efficient trade.
  - A communication platform for citizens to meet, interact, raise awareness and voice opinions.
  - A voting, polling, service and participation platform as part of the decentralised government system.
  - Decentralised identity solutions.
- At a later stage, the Government Network aims to expand the Forum adding additional functionalities, this includes the following:
  - Improved decentralised identity management solutions.
    - Interaction with the Government Network ID card.
    - Multiple service providers.
  - Interaction with the Government Network crypto payment card.
  - An elaborate government participation platform.
  - Citizen-created Dapps and apps.
- The Forum will furthermore comprise of pilot applications launched by the Government Network throughout 2019, each tailored for a specific business use case.

## CROWDSALE STRUCTURE AND FUTURE PLANNING

The organisers of the Government Network, enabled by the contributions of the early citizens, will lay the foundation of the nation as stipulated in this whitepaper. The Crowdsale will be executed from a company in Belize. The company will create an entity called the GovLab, responsible for the creation of the Government Network DAO and the acceleration of the development of the nation. The company in Belize forms the first line of defence against possible attacks against the nation in its development phase, e.g. malevolent prosecution.

Upon completion of the DAO, the GovLab will be relocated as an entity within the DAO. The GovLab will be responsible for promoting citizen participation and driving innovation into the nation until critical mass is achieved. GovLab consists of a team of experts, and developers in a variety of fields required to successfully build the Government Network.



## TOKEN ECONOMY

Core principles GOV Token - NTN Token:

### *The platform, or Nation token (NTN)*

The token economy is directed toward enabling maximum market participation. This goal is realised through the creation of a platform token. The NTN token has an infinite supply, characterised by instant minting/ burning of the token when bought or sold on the internal exchange.

Each NTN token will have a predefined fixed value of \$ 1. The long-term goal of the Government Network is to replace the dollar as the fixed value of the NTN tokens to the value of a basket of consumer goods and services paid for in cryptocurrencies.

The NTN token will provide an alternative to fiat and fluctuating cryptocurrencies, its structure allows for efficient trade and market interaction. The dollar is chosen as fixed value due to it being the most well-known currency worldwide, with a footprint in most countries, facilitating adoption.

When NTN tokens are purchased on the internal exchange, the sums paid to the exchange are stored in the **internal exchange reserve assets**. The internal exchange will be provisioned with an initial reserve on inception, this provision will not be used in calculating the reserve ratio used in the GOV token >< NTN token swap and is there to guarantee the liquidity and solvability of the exchange in the early growth stages of the Government Network. The initial reserve will be considered the “equity” in the exchange and will be referred to as such in this whitepaper.

### *The Government token (GOV token, GOVT)*

The Crowdsale contributors will receive an ERC20 token, called the Government token or GOV token. Each GOV token holds a fixed value of 100 NTN tokens, the exchange happens over time through a swap mechanism triggered by the growth of and participation in the Nation. The GOV token can be used for staking several of the chains within the Government network. GOV tokens, including those used for staking, are eligible for a swap with NTN tokens. The Government Network can swap the GOV token 1 – 1 with a GOV protocol token with the same intrinsic monetary qualities once operational.

The internal exchange plays a crucial role in swapping the GOV token for NTN tokens; each time the exchange issues a new NTN token and its reserves<sup>1</sup> are higher than 85%, the internal exchange automatically mints additional NTN tokens which are swapped with GOV tokens at the prefixed exchange rate. Extra conditions apply and are explained in the GOV token >< NTN token swap section.

The speed at which the swaps occur depends on the Nation’s growth and participation rate, as the amount of NTN-tokens held by the citizens and transactions on the network are the direct drivers for the swaps. The swapped GOV tokens remain as a reserve asset on the exchange’s balance sheet.

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<sup>1</sup> ((reserve in USD – equity)/ circulating NTN tokens)

The Government Network will undertake actions to have the GOV token traded on a liquid exchange, available and liquid, clear and free-flowing.

	GOV Token	NTN Tokens
<b>Supply</b>	125.000.000	Infinite
<b>Issuance</b>	Distributed after the Crowdsale.	Minted and burned when bought or sold on the internal exchange, or by the automated swap algorithm.
<b>Traded</b>	Will be traded on public exchanges.	-Bought and sold to the internal exchange at a fixed price of \$ 1. -Can be traded on public exchanges.
<b>Function</b>	Interacts with some of the Government Network Blockchains.	Used for transactions, GAS collection and as a store of value.
<b>Intrinsic value</b>	1 GOV token can swap for 100 NTN tokens, the swap rate depends on the growth of and participation in the ecosystem. Holds the cumulative value of all future GOV <> NTN token swaps.	Backed for 85% by the internal exchange reserve: -The internal reserve holds all funds received from selling NTN tokens. -The internal reserve receives part of the transaction fees on the network.

GOV token >< NTN token swap

The GOV token >< NTN token swap structure, incentivises contributors to participate in the Crowdsale of the Government Network. The NTN tokens can operate as an intermediary currency across traditional and cryptocurrencies. Transaction costs on the Government Network are paid in NTN tokens.

A simplified swap model can be shown as follows:

$$1) \text{ The internal exchange has a reserve ratio of } \approx 85\%, t_0. \\ \frac{((\text{Hedged reserve assets } (\$) + \text{Unhedged reserve assets } (\$)) - \text{Reserve assets related to Equity } (\$))}{\text{Circulating supply of NTN tokens } (t_0)}$$

$\approx 85\%$

$$2) \text{ An actor purchases new NTN tokens, resulting in a reserve ratio } > 85\%, t_1. \\ \frac{((\text{Hedged reserve assets } (\$) + \text{Unhedged reserve assets } (\$)) - \text{Reserve assets related to Equity } (\$) + \text{New reserves})}{(\text{Circulating supply of NTN tokens } (t_0) + \text{newly purchased NTN tokens } t_1)} \geq 85\%$$

3) The internal exchange mints new NTN tokens until the reserve ratio is back at  $\approx 85\%$ ,  $t_2$   
*Fixed exchange rate 1 GOV tokens = 100 NTN tokens*

$$\begin{aligned} & ((\text{Hedged reserve assets} (\$) + \text{Unhedged reserve assets} (\$)) \\ & \quad - \text{Reserve assets related to Equity} (\$) \\ & \quad + \text{New reserves}) / (\text{Circulating supply of NTN tokens} (t_0) \\ & \quad + \text{Newly Purchased NTN tokens} (t_1) + \text{Minted NTN tokens} (t_2)) \approx 85\% \end{aligned}$$

The minted NTN tokens will be swapped with GOV tokens (*Fixed exchange rate 1 GOV token = 100 NTN tokens*), GOV tokens will be swapped equally between all outstanding tokens. Upon completion of the swap, the internal exchange's simplified balance will look as follows:

Assets	Liabilities
Hedged reserve assets*	Equity
Unhedged reserve assets*	Circulating supply of NTN tokens*
GOV tokens	* Variables used to calculate the reserve ratio.

The algorithm allowing for the minting of new NTN tokens to be swapped with GOV tokens is more complex and includes the following variables:

- The weighted 30-day moving average of circulating NTN tokens.
- The historic movements of NTN tokens (e.g. New Year, tax seasons).
- The retention rate of NTN tokens post swap with GOV tokens holders.
- NTN tokens held by the Government (guaranteed expenditure).
- Other movements related to the behaviour of the token holders.
- NTN tokens held by the GovLab for research & development (guaranteed expenditure).
- Volatility of the reserve assets.
- Expected growth within the Government Network.
- Reserve generation from transactions.
- Liquidity of the reserve assets and transactions costs.

The intrinsic value of each GOV token is on par with the cumulative expected future swaps with NTN tokens, which are correlated to the Government Network financial and economic system growth rate, reduced with the risk premium.

The internal exchange

The internal exchange will operate the financial system of the Government Network within guidelines provided by the Monetary Commission. The Monetary Commission will be responsible for monitoring the health of the internal exchange. More information can be found in the section "The government – Monetary commission".

The internal exchange aims to have at least 85% reserves as opposed to the circulating NTN tokens. Making the Government Network's financial system one of the most solvable and liquid in the world.



## BLOCKCHAIN

The Government Network will use different blockchain ledgers to improve security, scalability, and efficiency with each chain optimized for its purpose. A restful API will be created to ease adoption, offer efficiency, service improvements, and create levels of abstraction.

**Example:** The Government Network could host an election for a country with 30 million voters with a governance contract on its own chain accessing a common identity management system used by the entire network.

It is essential that a fork is at no time required. When an update is required for security or improvements, the government produces the update and the DAO approves the implementation through an established and transparent procedure. Nodes on the network update within a particular number of cycles; when an update is enforced. An emergency enforced node update can be enacted on short notice through a multi-sig executive action to prevent corruption of a particular chain or its related infrastructure if a high priority exploit has been found within the software. The entire process and patches applied must be transparent and in line with the Constitution of the Government Network, any other blockchain updates have to go through a DAO process.

The network must support high bandwidth bursts from elections, and similar events, along with reasonable latency, and low cost per transactions. Security is the number one concern.

### Identity Management Ledger

The Government Network plans to become a steward on the Sovrin identity management platform, as well as running our own agent service on top. After extensive due diligence on scalability, cost, and compliance with privacy requirements, the Government Network chose to start with the integration of the Sovrin identity management platform within the ecosystem. The Government Network plans on featuring a fully featured agent service and user apps on the platform.

The Government Network will offer a number of value-add services including claim issuance for citizens, voting, polling, and petition services, reputation point systems, solutions for those without established official identity papers, among other things. The services will be continually refined and co-developed with others to bring forth reputable solutions.

The Government Network's front-facing identity services will employ universal discovery to support several of the leading identity platforms, including uPort, within most of the common use cases for identity. Purposed to bring forth a better adoption of decentralized self-sovereign identity solutions without creating silos. Where necessary, the Government Network will develop translation software to bridge areas where there is an impedance mismatch between systems.

### Forum Ledger

The Forum Ledger operates the trades, escrow services, social media, educational platforms, and news stations implanted by various DAPPS as channels using a common public decentralized proof of stake blockchain, along with decentralized data sharing and storage utilizing meshed networks. The Government Network will ensure that enough nodes are available at all times. It is on this chain that accounts hold tokens and new tokens are minted. Side chains and state ledgers such as Plasma will be

used for high throughput low-cost transactions such as anchoring social exchanges and microtransactions, while simultaneously taking the load off of the Forum Ledger.

### **Governance Ledger**

The constitution, governance, and smart contracts supporting the government processes will live on their own public-facing permissioned chain while allowing independent validation nodes to participate in consensus. It is on this chain that voting occurs for actual amendments to the laws of the Government Network.

### **Proof against immutability**

Other blockchains in our network will publish their block hashes to the forum ledger. The forum chain will publish the hash of its blocks to public chains outside of the network.



## THE GOVERNMENT

The Government network aims to become a reference for governments as a sustainable and empowering digital governance model. The initiative spreads a concept of digital and voluntary participation. The Government Network will provide the tools for its citizens to become self-ruling and solve their own issues and needs independently.

The organizers of the Government Network share libertarian ideas and stances on Governance, other core values include freedom, autonomy, and privacy. The constitution will govern the different branches and procedures of the Nation. It will be drafted by a **Constitutional Convention** consisting of an equally represented group of prominent experts, businessmen, and humanists from a variety of fields, with an aligned vision. The candidates for the Constitutional Convention will be brought forward by the organizers and early citizens of the Government Network, the final vote as to the members is made by the early citizens.

A set of base rules regarding the constitution are put forward by the organisers:

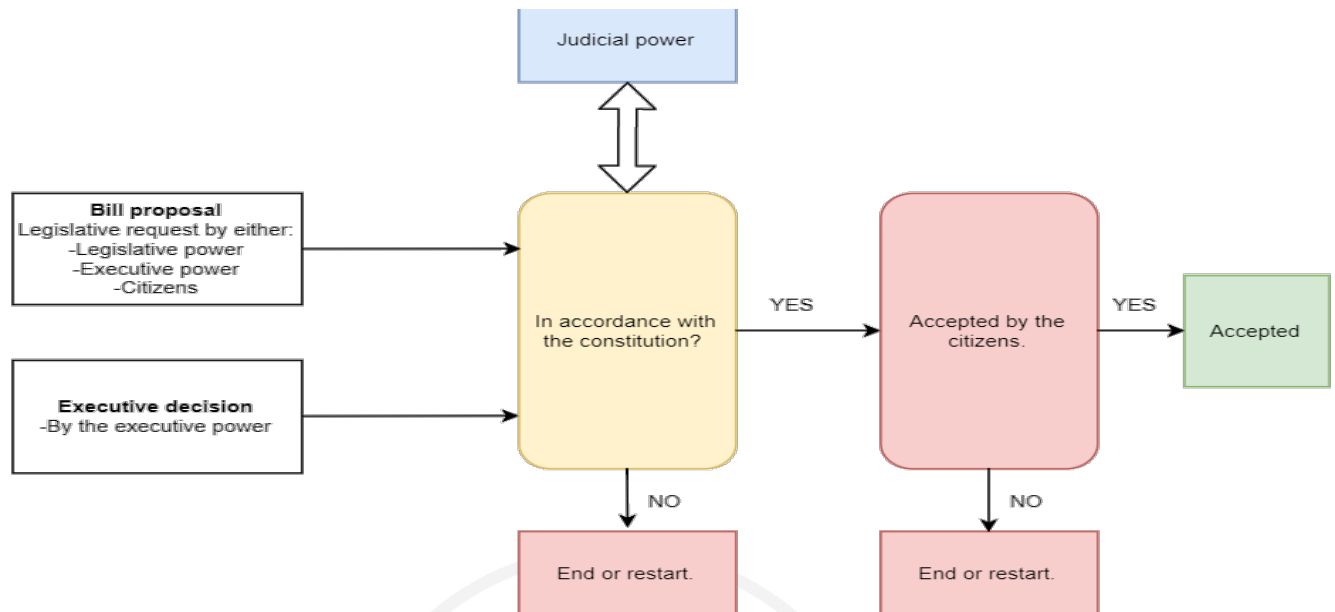
- The constitution needs to embrace technology as the driver of efficient governance, maximizing automated processes and community involvement throughout the Government Network.
- The principal powers of the Nation have to be governed and operated through transparent decentralized applications.
- The citizens have a veto in matters that impact them directly.
- A strict separation of powers between the legislative, executive and judicial branch adheres.
- The different powers (judicial, executive, legislative) require to implement elaborate citizen participation mechanisms.
- Equality among persons, institutions and entities, before the law.
- The citizens must be provided with checks and balances mechanisms against the government.
- The national controller, monetary commission and internal exchange are to be implemented in the nation as described in this whitepaper.

Once the constitution is put in place, an interim government will be tasked with the organization of the first democratic elections. The constitution will determine who is eligible for public office.

**The Constitution is tasked with rethinking the role of a Government, therefore there is a possibility that the traditional roles as described in this section will no longer be valid.**

The technology behind the different departments and services provided by the government, which will be largely determined by the constitution, are built by the GovLab.

### Simplified process for matters that impact the citizens:



## The executive power

The tasks of the executive power of the Government Network include:

- Enforcing the laws of the nation.
- Managing the international relations of the nation.
- Overseeing the technical development of the platform, including monitoring third-party integration.
- Fuelling citizen participation in the nation.
- Implementing strategies for onboarding new citizens onto the platform.
- Managing the nation's cash flows and expenses.

The constitution will outline the structure and operations of the executive power.

## The legislative system

The tasks and powers of the legislative power of the Government Network include:

- Administrative council to the executive power.
- The creation of a legal framework within the boundaries of the constitution enabling the growth of the nation. Purposed around the organically developing legal rules, not by arbitrary commands; with the rules protecting the freedom of individuals to pursue happiness in their own ways, not aim at any particular result or outcome.
  - E.g. Translating the citizens' proposals into concrete bills, which have to pass the legislative procedures if they are to be turned into law.
- The legislative power can dispose of members of the executive power.

- The legislative power can consent to humanitarian missions or affirmative action for its citizens, the executive power is responsible to execute the mandates given by the legislative power.

## The judicial system

The judicial system is aimed to be automated where possible and uses a consensus-based court system among trusted citizens in combination with AI-based oracles. The judicial system will expand in relation to the growth of the nation.

The judicial system will be home to:

- Civil court:
  - Commercial and arbitration courts.
- Criminal court
- Supreme court:
  - Constitutional court
    - Tests government decisions and laws with the constitution.
    - Handles crimes against the state.
  - High Court of Governance, where citizens are able to go to court on subjects that involve an inadequate rule of law. The court will have a ceremonial function and is tasked with exposing Governance needs throughout the world, which in return will form a base for the implementation of innovative governance solutions.

## Nation controller

The DAO on which the nation will operate will provide the means for the government to operate efficiently, whereas the constitution will provide the framework. All actions of the government will be completely transparent. A nation controller will be responsible to monitor all government interactions. The nation controller has the ability to address the legislative power and the citizens with regards to any discrepancies. The activities of the nation controller are public.

The nation controller is assisted by the **'Court of Audit'**, which is responsible for mining data regarding economic growth, the evolution of reserves, transaction fees, government expenses and other relevant metrics. The purpose of the 'Court of Audit', is to provide valuable information to the government and its citizens about the state of the country. The 'Court of Audit' is autonomous.

## Monetary commission

The monetary commission is tasked with monitoring the financial health of the nation's internal exchange as well as its native NTN token. The internal exchange is operated through a decentralised application, and the monetary commission will only have limited instruments to adjust its functioning.

- The monetary commission has the following missions:
  - Identification of the “safe” assets in which the internal exchange reserve is allowed to invest.
  - Monitoring of the minting formula, required in order to mint and swap NTN tokens with GOV tokens.
    - See “Token Economy – GOV token >< NTN token swap” for more information.
  - Monitor the volatility and trading risks of the reserves.
  - Monitor the liquidity of the reserves.
  - Monitor the relationship between the payment gateway service providers and the exchange.
    - Monitoring of the fees relating to the purchase and sale of NTN tokens. (payment gateway providers)
  - Monitor the security procedures regarding the storage of the reserves (cold storage, multi-signature, ...)

## Internal Exchange

The internal exchange operates the platform token.

- The missions of the internal exchange are:
  - To implement the investment strategy and risk procedures according to the legal framework and safe assets as defined by the monetary commission.
  - To store the reserves, according to the procedures set forward by the monetary commission.
  - Management of the relationship with payment gateway service providers related to the internal exchange.
  - Ensuring proper operation of the exchange. (liquidity, solvability)
  - Burn and mint NTN tokens according to the demand and supply on the internal exchange.
  - Executing the minting and swapping process of NTN tokens in relation to the exchange reserves and the GOV tokens.
    - See “Token Economy – GOV token >< NTN token swap” for more information.

## ECONOMY

The Government Network proposes a sharing economy model, based on decentralized applications. The trusted environment created by the Government Network allows for the maximum participation of each citizen. Its creation is realized through market participant verification, financial services including direct money transfers and (aggregate) escrow accounts, and the facilitation of communication. The technology empowers the citizens to share their thoughts, products, and services, unlocking their true potential.

All trades and financial activities will take place on DAPPS accessible from the forum. For larger transactions specific procedures will be put in place (e.g. property trade and registration, public notary and service contracts). Finally, the Government Network looks to facilitate offline transactions, using mobile phones and payment cards. Through the development of unique ID cards it is our aim to provide the citizens with means of identification and additional 2-factor authentication. The economy will be supported by the judicial system which will include arbitration courts, Smart contract guidelines, and commercial courts.

Through the creation of the **Government Network's proprietary financial system**, interaction across markets will be facilitated, and between the traditional economy and the network. More information can be in the section "Token Economy".

The Government Network aims to incentivise its citizens to build decentralised applications on the platform, utilizing a provided set of APIs'. These applications will facilitate or incentivise trade and growth, examples of such an application are a micro-financing app, insurance tech, software licensing based on usage or an app for efficient asset tokenization.

### Economy – Funding

The Government Network will be primarily funded through the Crowdsale. The Crowdsale foresees a GOV token allocation in the form of a reserve fund. This allocation will provide a continues stream of growth capital as the nation evolves, through GOV token >< NTN token swaps. A secondary "Crowdsale reserve fund" will hold all unsold tokens from the GOV token Crowdsale.

Once live, the network will charge transaction fees to its participants. The fees are to be competitive within both crypto and fiat economies and will be communicated by the Government Network at a later stage.

Transaction fees replace taxation in the Government Network. Each fee has multiple functions:

- The provisioning of the reserve backing the NTN tokens.
- The provisioning of funds for government operations.
- The incentivising of citizens to participate in the Government Network token economy. e.g. staking rewards.
- The provisioning of funds for R&D ensuring the future growth of the nation (until durable organic growth is achieved).
- In extraordinary situations, the citizens can choose to fund a certain humanitarian mission or project through transaction fees.

## Economy – Market Description

In many countries, people have not been able to operate in a trusted environment, due to corruption, bad fiscal and monetary policies and other forms of bad governance, it is in these economies that the Government Network will gain traction. In countries where proper governance does exist, the Government Network aims to attract through its services.

Through the creation of new free markets by the provisioning of our governance model, some citizens will be provided with access to an open economy for the first time. The network effects related to this evolution could be meteoric.

## Economy – Market participation among citizens

The government network aims to categorise three different market actors in its economy.

- Physical persons
- Business limited companies
- Foundations

The physical persons operating within the economy can be citizens or visitors (otherwise referred to as tourists). Businesses operating within the Government Network, can either be structured to operate from the individual or organised within a limited company.

A foundation can have one of two purposes, either as a holding company for certain assets, businesses and/ or rights or as an NGO. The foundation structure increases anonymity on the platform, as the beneficial owners can choose to remain anonymous. Anonymity will be managed through a smart contract that can only be unlocked by the judicial branch through prefixed procedures.

Market participation will be facilitated by the Government Network through the integration of payment gateways allowing for the easier accessibility to NTN tokens. The payment gateways will be the bridge between the physical economy and the Government network. The government will be the initial driver for onboarding new payment gateways, in the future, the Government Network envisions to allow citizens to add additional payment gateways. The envisioned gateways include:

- Agreements with telecom operators to use mobile credits to purchase and sell NTN tokens.
- Agreements with money transfer agencies to purchase and sell NTN tokens.
  - Ability to accept cash.
- Production of prepaid cards containing NTN tokens that can be sold through local vendors.
- Enabling the purchase and sale of NTN tokens with crypto.
- Enabling the purchase and sale of NTN tokens through bank transfers.
- Enabling the purchase of NTN tokens through credit card payments.
- NTN token ATM's.



## THE FORUM

The Forum allows users to access the various channels provided by the Government Network as well as allowing for interaction with other users and entities in the ecosystem. A light version of the forum will be available at DAO inception with functionalities being added over time. This chapter provides an overview of the initially envisioned functionalities of the Forum. **The Forum is created on two pillars:** Usability and User trust

### Usability

One of the pillars in constructing the government network is usability, along with security, to make our DAPPs attractive, intuitive, responsive, consistent with modern design principles, and easy to use.

Developers will be provided with a restful API allowing them to build Apps and DAPPs powered by the Government Network.

Biometric scanning hardware built into modern smartphones and some tablets or PCs can be used to authenticate into the application as well as quickly confirming financial or sensitive transactions. The biometric data typically remains local to the device. User-defined policies can be set up to require a second form of authorization, such as entering a passphrase, for high-value transactions.

Support for a user's native language helps to increase clarity, and applications will be designed in a way where additional languages can be more easily added in the future.

### User Trust

The underlying technology of our platform will work in a secure, performant, and transparent manner. The various applications are built on top of the DAO are what the end user will interact with. It is important that the platform extends itself to assure the integrity of these interactions, and thus wins user's trust in the ecosystem.

The first step in protecting a user's information and habits from being accessed by third parties without their consent. This permission cannot be given in finely worded print by checking a box on a vendor's page; rather it is explicitly given independently in the neutral atmosphere of the identity area of the forum.

#### User Trust – Trade

Next is watching the user's back by being on the lookout for bad actors peddling bait, grossly misleading pretences, and fraud. Helping to maintain the integrity of the network, while allowing for the differences in expression is a combination of artificial intelligence and feedback mechanisms generating opt-in warning mechanism available to all participants, along with processes for handling mistaken alerts.

Finally, protecting both sides of a transaction, for B2B, B2C, and P2P, is a function of escrow smart contracts using arbitration when necessary. Escrow protection is an example of a service costing an

additional fee. Escrow services will be offered outside of the nation as well to build the stability of scale and as a source of revenue.

B2B (Business-to-Business) transactions often require additional safeguards, such as custom smart contracts with stages of fulfilment, multi-signature approvals, KYC and AML requirements, delayed triggers pending a chance for human intervention, penalties and bonuses, and more complex arbitration mechanisms. The Government Network will endeavour to serve the needs of such trade.

Along with escrow services are 'proof of authenticity' stamps available to merchants to give further confidence to consumers. This can range from simple authentication of the origin of a product to more complex proofs which include 'fair-trade' arrangements, and links to immutable multi-step manufacturing authenticity protecting against counterfeit products.

## Trust mechanisms:

Other trust mechanisms between different actors might include:

- Activity level metrics, including network participation and transactions concluded.
- Date joined.
- Endorsements, an endorsement equals an elevated level of connection, when endorsing an actor on the Government Network you are vouching for its trustworthiness and ability to transact.
- Data whom which the actor chooses to make public: e.g. company details, location and trade licenses.
- Social media links.
- An automated KYC gradation system, based on the cumulative data received from the citizen and by its activity on the network.

## Morning Flash:

The education of the citizens, as well as their participation in the Government Network is a priority. To allow for efficient and quick interaction with the citizens, a “morning flash” will be created in order to provide the citizen with the most relevant information on that day as well as his/ her responsibilities. The purpose of this feature is to create an efficient and useful application, positively impacting the citizens’ organisation and sense of responsibility.

This may include:

- Voting and polling tasks regarding government participation, elections or other relevant subjects.
- Marketplace updates, (interactions).
- Important social information.
- Government updates.

## Marketplace:

The marketplace is designed to drive trade and provides a free market for all citizens to participate. The marketplace is interactive, adapting to the needs of each citizen, efficiently linking demand and supply for everything from menial goods to complex services.

Citizens can form companies and foundations on the Government Network, as well as trade in a personal capacity. Each actor in the marketplace has its own market, where it can choose to display information regarding its business. Actors can build DAPPS in the marketplace to facilitate trade.

ID cards containing encrypted information can be presented to a vendor who has a smartphone to complete low-value transactions. The Government Network provides solutions for both physical transactions as well as online transactions.

## Government interaction:

Basic interaction between the citizens and the government is managed within the forum. Voting and polling related to elections, executive decisions or laws that require citizen input. The voting right of each citizen can be passed on to a representative of his or her choosing, this decision can be withdrawn at any time.

The platform is further used to educate the citizens, as well as collect the required KYC documentation.

## Petitions

A product will be developed to support the online signing of petitions with a self-sovereign identity. Where our service can guarantee that each person only signs once and is eligible to sign, without revealing identifying information. This protects people from the concern of potential retribution for signing a petition. These concerns are playing out in several current scenarios throughout the world.

## Financial

The forum has built-in money transferring capabilities, enabling money transfers across borders and the use of the financial system for day to day trades and purchases. Initially, the forum will be focussed on integrating all financial services required to enable free trade, including escrow and arbitration services.

The financial system on which the Government Network operates allows for third parties to implement and integrate financial services.

## Communication

Citizens of the Government Network have a social interface to connect to each other. The Government Network has an internal messenger to enable communication between citizens, whether for business or personal.

Each citizen has the ability to raise concerns through a scaling consensus system. When an individual wants to raise a problem, solution or topic, he will be asked to find a certain level of supporters for his query. Upon reaching this, the topic scales through different validation processes to identify the public support, a validation system will be put in place that verifies if the topic at hand has been dealt with in the past if this is the case the system verifies if the citizens agree with the previous conclusion.

Depending on the total population size the topic scales higher until a critical group of citizens has expressed their interest in the topic at hand, at this point, the topic has to be addressed by the government.

## CROWDSALE

Upon completion of the Crowdsale, the Government Network will distribute an ERC20 token called the GOV token to its contributors. The role of the token is explained in the Token Economy section.

Name: GOV Token  
Ticker: GOVT  
Compliance: ERC 20 Ethereum standard  
Total Fixed Supply: 125 000 000  
Aimed raise: \$ 3 000 000

Maximum 70% for Tokens will be sold during the 3 sale stages:

Stage 01: Seed Round	Stage 02: Presale	Stage 03: Crowdsale
<ul style="list-style-type: none"><li>Started on September 12<sup>th</sup> (10:00 AM GMT) and ends on September 30<sup>th</sup> (10:00 PM GMT).</li><li>6% of the total token supply will be available = 7.500.000.</li><li>50% Discount on the GOV tokens compared to stage 3.</li></ul>	<ul style="list-style-type: none"><li>Starts on October 1<sup>st</sup> (10:00 AM GMT) to October 31<sup>st</sup> (10:00 PM GMT).</li><li>14% of the total token supply will be available = 17.500.000.</li><li>30% Discount on the GOV tokens compared to stage 3.</li></ul>	<ul style="list-style-type: none"><li>Starts on November 1<sup>st</sup> (10:00 AM GMT) to November 30<sup>th</sup> (10:00 PM GMT).</li><li>50% of the total token supply will be available = 62.500.000.</li></ul>

### Crowdsale objective - \$ 3 000 000:

The further strengthening of the parallel task groups building the Nation, with a first focus on completing the foundation required to develop the DAO and the initial front-end applications on the DAO. These applications include a decentralised self-sovereign identity solution, a trusted trade framework, and a basic community engagement platform. The applications will be layered so that the top layers are blockchain agnostic. The applications will adhere to standards where applicable, such as W3C schemas, along with a focus on scalability. Early development will run on test nets. Partnerships will be established with key organisations leveraging the development of the Nation. Essential to the development process is assuring maximum interoperability throughout the ecosystem, the creation of bridging technologies and integration of key technologies.

Furthermore, the Government Network will invest in testing the different assumptions on which the Nation will be built. A conference series on decentralised governance will be created and hosted quarterly educating the people on the Government Network and other relevant players in the field.

## Crowdsale – Packages

Package:	Volunteer	Citizen	Ambassador	Nation Supporter
<b>Early Citizenship</b>	No, will become a citizen at DAO inception.	YES	YES	YES
<b>Constitutional Convention Participation</b>		VOTE	VOTE	VOTE
			Periodically in contact with the organisers.	Active contact with the organisers.
<b>Seed Round</b>	\$ 0,320/ GOVT	\$ 0,250/ GOVT	\$ 0,220/ GOVT	\$ 0,180/ GOVT
<b>Presale</b>	\$ 0,448/ GOVT	\$ 0,350/ GOVT	\$ 0,308/ GOVT	\$ 0,252/ GOVT
<b>Crowdsale</b>	\$ 0,640/ GOVT	\$ 0,500/ GOVT	\$ 0,440/ GOVT	\$ 0,360/ GOVT
<b>Min</b>	\$ 350 (\$ 200 during Crowdsale)	\$ 2 950	\$ 9 000	\$ 150 000
<b>Maximum</b>	\$ 2 950	\$ 9 000	\$ 150 000	\$ 500 000 (total stages combined)
<b>Referral Grant</b>	2%; Max. 20 000 GOVT	5%; Max. 50 000 GOVT	15%; Max. 500 000 GOVT	20%; Max. 1 000 000 GOVT

-The token price is determined by the package in which the contributor is active.

-The package of the contributor is determined by the amount he or she contributes. When a contributor makes multiple contributions across sale stages, his or her last contribution will take into account the total amount of funds contributed to determine the package of the last transaction. Each transaction will be concluded at the token price equal to the contributor's package at the time of the transaction.

## KYC requirements Crowdsale

The Government Network outsources its KYC and AML requirements. Tokens will be distributed to individuals who have submitted the required KYC documentation after the Crowdsale. Our KYC/ AML service provider is:

### **PESCHECK BV**

Boulevard 1945 #3

7511 AA Enschede, The Netherlands

## Projected GOV token distribution:

6%	7.500.000	Private sale
14%	17.500.000	Presale
50%	62.500.000	Crowdsale
12%	15.000.000	Organisers
9%	11.250.000	Reserve fund
4%	5.000.000	Alliances & Partnerships
2%	2.500.000	Advisers & consultants
3%	3.750.000	Bounty campaign – Referral Grant (RG)

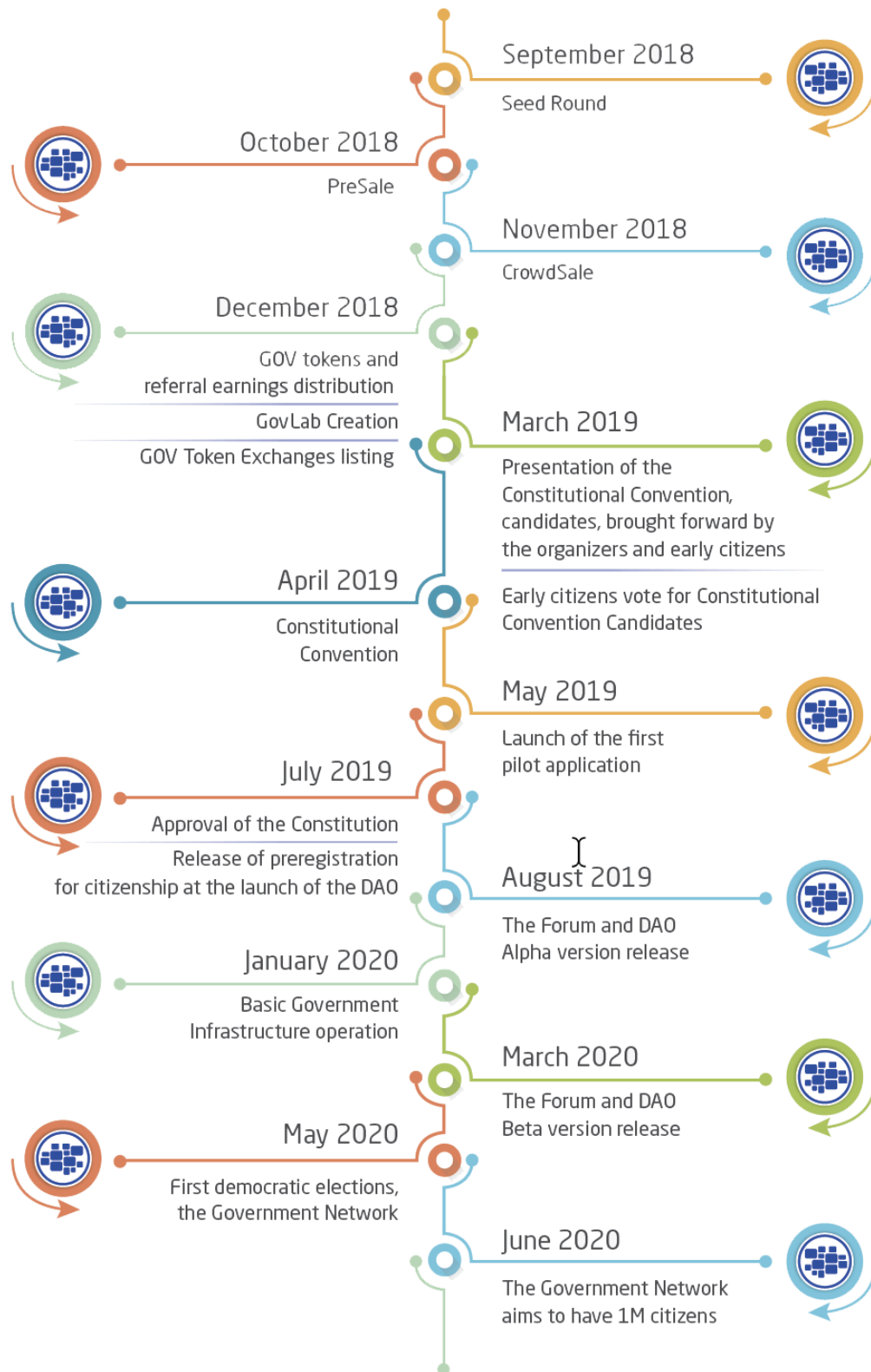
## Funds allocation

5%	Legal & Compliance
20%	Operations
40%	Development
20%	Marketing
10%	Bonus, Commissions & Loans
5%	Reserve

## Excess GOV Tokens

Any GOV Tokens remaining after the Seed Round or Presale are carried over to the next sale stage, Presale and Crowdsale respectively. Once the token sale is concluded, all excess tokens are moved into a specific “Crowdsale reserve fund”.

## ROADMAP





## TEAM (core organizers)



**Jens Lievens, Team Leader**, Entrepreneur with a passion for blockchain and governance. Jens holds a master in finance and risk management and has formerly worked in banking. Next to his business endeavours Jens is a strong advocate for animal conservation.

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**Michael V. Khalsa, Visionary lead**, Senior Full Stack Microsoft Developer with 40 years of experience in software development bringing forth innovative approaches in commerce, unified platforms, systems integration, and even chip design. Michael balances this with a love of internal cultivation and time in nature in several continents.



**Washington Kapapero, Head of Development and Expansion**, a pan-African globalist and visionary leader in the entrepreneurial space. Besides holding key positions in a variety of companies Washington is Chairman of the Global African Business Club (GABC), creating a borderless mindset for Africa.



**Bukhosi Sibanda, Project Manager Africa**, as an innovative leader in Africa Bukhosi is the head of Youth Development for the Global African Business Club (GABC). Driven and Ambitious Bukhosi is making waves as one of the top under 30's in Africa. He is a business strategist with an ability to lead with motivation, excitement and flair. Bukhosi has a proven track record of successfully leading investment and property portfolios.



**Tim Mak, Token Strategy and Operations**, as a Finance and IT professional Tim specializes in aiding companies on the development and implementation of their business strategy. Tim was a part of several ICO's as a business and investment advisor and has helped several private companies with launching security token offerings.



**Genelle Keswick, Brand & Communication Lead** Brand and Marketing specialist with 13+ years of experience across diverse and challenging markets. She has led complex brand mandates across companies and offers a strong combination of consulting and practical experience coupled with entrepreneurial ability.



**Gaurav Areng Chakraverti, Community Engagement Strategist**, ICOBench, IDACB, ICO Advisor and Expert; A Marketing & Business specialist and entrepreneur with over 12 years of experience across industries, including financial-technology, gaming, and media. Gaurav has extensive experience leading teams through high-pressure situations.



**Efraim Wyeth, Advisor**, Efraim is focused on accelerating global achievement of the United Nations' Sustainable Development Goals, formerly as Founding Director of Blockchain for Impact (an initiative of Blockchain Commission for Sustainable Development), and currently as Founding Director of the SDG Film Institute, Senior Partner at SDG.Systems, and Executive Producer at The Production Machine.



**Dr. Mustafa Disli, Advisor**, research and teaching fellow with a specialization in (behavioral) banking and finance. His work focuses, among other things, on the study of alternative delivery channels for financial inclusion. Dr. Disli has over 10 years of teaching experience and has published in various peer-reviewed international journals.

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TOKENS ARE NOT INTENDED TO CONSTITUTE SECURITIES IN ANY JURISDICTION. THIS WHITEPAPER DOES NOT CONSTITUTE A PROSPECTUS OR OFFER DOCUMENT OF ANY SORT AND IS NOT INTENDED TO CONSTITUTE AN OFFER OF SECURITIES OR A SOLICITATION FOR INVESTMENTS IN SECURITIES IN ANY JURISDICTION.

This Whitepaper is for information purposes only. The contents of this Whitepaper are not a financial promotion. Therefore, none of the contents of this Whitepaper serves as an invitation or inducement to engage in any sort of investment activity.

Prospective acquirers of GOV tokens should carefully consider and evaluate all risks and uncertainties associated with cryptocurrencies, the Government Network and the Government Network Crowdsale. Familiarise yourself with all the information set out in this Whitepaper, the token sale agreement, the terms and conditions document and the legal disclaimer document prior to any purchase of GOV tokens.

Ensure that you are aware of the risks prior to obtaining our tokens. The Government Network recommends that you seek out independent financial advice before engaging in any sort of business endeavour.

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## ANNEX 1: SELF-SOVEREIGN DECENTRALIZED IDENTITY MANAGEMENT

The authentication, authorization, and exchange of verifiable identities online is a cornerstone around which all of the services of The Government Network revolve. Self-sovereign identity is embraced using a decentralized public key infrastructure (DPKI) anchored onto a blockchain. The services we innovate and develop are layered upon industry foundations being established in this space, and thus will have integration into the larger self-sovereign identity ecosystem. In short, we are not interested in becoming a silo.

The basis of Self-Sovereign identity is that our personal information, who it is shared with, and under what conditions, or for how long another party may retain it - remains completely under our control.

In this approach, the Government Network is a hub and the information we exchange with another is a spoke. Together, the hub, its many spokes, and resultant action form a wheel, whereby design we always remain at the centre.

Likewise, personal information others share with us remains under their control. If they revoke our right to store it, the infrastructure maintaining the information will automatically remove it and sends a receipt that it has been removed. Generally, information that does not belong to us no longer needs to be stored, or only stored while being used. A fresh copy of it is requested each time the information is required through the digital relationships formed. Thus, identity theft through centralized data breaches becomes an event of the past. Corporations can keep data for statistical analyses that has been stripped of personal identifying attributes.

Organizing the flow of our personal information in this way is a completely different paradigm within the digital world, and similar to how we work in the physical one; such as receiving a driver's license, taking it out of our wallet, and then putting it back. Our 'online identity' collectively consists of many relationships, where we set the rules and types of information exchanged independently for each one, including the ability to forget all about a particular relationship if desired.

### Example Use Cases

- *A theme in all of these use cases is that passwords have disappeared.* To log in to a website, we simply open our identity app on our cell phone, scan a barcode, and click a confirmation on the app. In a second or two, we see we are signed in on the website. No password is needed or stored on the website backend.
- We want to have a peer-to-peer encrypted communication with a friend, with no person in the middle handling the encryptions. We open up our chat, click on our friend's icon, and away we go.
- Purchasing a new rug online, we scan a barcode on checkout. Our app displays a confirmation that we want to share our name, shipping address, phone number, and email address until the order is complete and for 30 days thereafter. Clicking 'OK', the website then calculates shipping and asks how we want to pay. We select a method, and another barcode is shown on the website. Our app displays the details, along with the escrow arrangements to protect our

purchase if using cryptocurrency. We touch our finger to the fingerprint reader and click accept. The website then sends us a receipt.

- We are applying for a loan from a bank online. The bank requests our name, address, social security number, if we own our house, driver's license, that we are employed for at least a certain salary and period of time, and our credit score. We click on each attribute we have in our identity needed for the request while removing aspects that the bank does not need to know, and our app assembles a disclosure proof of these 'claims'. An example of the proof giving need to know information is not revealing our salary, only that it is over the amount required in a yes/no attribute. The bank verifies it automatically within a couple of seconds without the need to contact the organizations that have issued these claims, or our employer, and thus protecting our privacy.
- We want to sign a petition anonymously. On the petition site, we scan a barcode, after which a confirmation appears on our phone to engage. The polling site checks our eligibility, and that we have not previously signed it even with a different identity, all while maintaining anonymity from the parties who the petition results will be submitted to, even if those same parties are the ones who we rely on to prove our identity. Next, we click to confirm on the website our signature, and optionally answer any polling questions. We are given a receipt verifying that we have signed the petition, which no one else can decipher. These types of services will be offered by The Government network.
- A refugee arrives with children and no identity papers, however in the possession of a cell phone. An NGO or government official helps to start a new digital identity that will be valid for a lifetime, along with a free online account with the Government Network or other institution. If the cell phone is lost or stolen, there is a way to recover the identity. The children are also given identities under the guardianship of the parent until they are of legal age at which time the identities are transferred to the children in full. As micropayments appear in the account for sporadic work connected to reputation points and attestations from friends, a web of trust is built up that helps to establish the validity of the digital identity. NGO's can also use the identity in collaboration with biometric verifiable claims to grant assistance. In time, this goes a long way towards issuance of official government identity cards which then become verifiable and help from falling into traps of vulnerability through lack of recognition. Over 1.1 billion people on the planet currently have no proof of identity. For some of these people, such as in areas of ethnic cleansing and political turmoil, if granted an identity, the ability to control it is life and death.
- In many countries, the simple act of purchasing a new SIM card for a phone has to go through a KYC requirement such as multiple photocopies of passports or id cards, utility statements, and approval processes that can sometimes take weeks during which cell phone service may be suspended. A KYC validation could be done at the time of purchase in seconds using a smartphone or by a traditional login to a website for identity management.
- A contributor wants to purchase tokens for an ICO. A KYC check could be inexpensively done at the time of purchase in a few seconds by scanning a barcode, rather than waiting for the sale to close. If the sale is only open to accredited investors in particular countries, the KYC check can include this requirement, if the investor is from such a country. Contributors who do not have the necessary verifiable claims can go through a traditional KYC check when the ICO closes.

## Decentralized Public Key Infrastructure

The encrypted exchange of almost all digital information is made possible through what is called Public Key Infrastructure (PKI). Data signed (encrypted) by a public key, can only be decrypted by the corresponding private key in the pair. The public key of each party is shared with the other. Any message the other party sends to you that is encrypted using your public key can only be decrypted with your private key which you keep close to you, and visa-versa.

Traditional PKI systems used today, such as logging into an online service, or viewing an encrypted website revolve around a 'centralized' certificate authority (CA) who then issues certificates stating that the owner of the public key used in an exchange is whom they say they are (a name attached to a certificate). Certificate Authorities can change the terms of their service anytime.

A revolutionary improvement is Decentralized PKI, where direct peer-to-peer encrypted communications can be made without the need of an intermediary. Each side of a relationship creates what is called a Decentralized Identifier (DID). A DID is a relatively short unique and static identifier which is published on a blockchain and points to a corresponding JSON document which contains the public key for the DID and an optional end-point describing how to contact the creator of the DID.

This means that a 'Certificate' is no longer needed to find the public key. Rather, the software we use to start a connection to the owner of a DID, first looks up the public key on a public blockchain, along with their endpoint (A process called discovery). The other side of the connection does the same. Public/private keys can be changed at any time and recorded in the document by the owner of a DID, such as for key rotation, or if the private keys are compromised; so, it is important that these are looked up rather than stored by the other party, inferred from the DID, or taken on face value by supplying them without a lookup.

## GDPR compliance and Private Data Stores

It is impossible to store personal information, even if encrypted, onto a blockchain and be GDPR compliant. Besides, such an approach would never scale, as blockchains are poor choices for storing the volume of data that millions or billions of users would generate.

The solution is to store personal information in private data stores directly under the user's control. There are strict guidelines as to the nature of these encrypted data stores, including the GDPR requirement that all of a user's data can be transported from one location to another at the user's whim.

A user's personal data store includes, but is not limited to:

- Self-claims
- Issued (verifiable) claims
- Private keys for the public keys in each DID
- Pairwise relationships and the details of each relationship
- Receipts of the type of information shared (of which hashes are stored on the blockchain)

- Micro-ledgers for DID's and their respective DOCS containing public keys and endpoints. A micro-ledger is created for each relationship where it is not desired by either party to register the identifiers on the public ledger. Each party helps keep each other's micro ledger in sync, such as rotating key changes and end-point changes in the docs. This is also a mechanism to reduce the load on the public chain.

## Preventing Correlation

Correlation occurs when different parties can share information with each other to build up a secret profile about you, or even across different transactions within the same party correlating information for different transactions. This is very common in our current identity solutions.

The first step is to only share the minimum amount of information needed for a transaction. It is also a GDPR law that an organization can only request what they need to complete the transaction and not store it longer than needed. GDPR requirements also state that identity data must be managed in a way that makes correlation difficult.

To prevent correlation, a new pairwise set of identifiers (DID's) is created for each relationship. This also makes it easy to change the terms of an arrangement for a particular relationship without changing others. The only place where a correlation is kept between all the DID's you own is in your personal data store, i.e., it is not, published on the blockchain.

A minor source of correlation is searching all of the DID's on a public chain looking for ones with the same end-points. This only has relevance if your end-points point directly to your personal device, such as a smartphone. This can be made meaningless by having the end-points resolve to a cloud service used by many identity holders in tandem, and the cloud service then makes the last mile connection to your devices.

Mechanisms for sharing claim information can prevent the sharing of the DID the claim was originated for, while still allowing full verification by the other party.

## Verifiable Claims and Building the Web of Trust

A set of particular identity attributes is called a 'claim'. Because we can claim anything we want about ourselves, self-claims are of limited value as far as others are concerned who do not personally know us. When another identity who is trusted issues a claim about us, which we then accept, this has much greater value.

One of the main functions of identity management is the ability to verify that the information shared with a claim actually originated by the party issuing the claim, and not a pretention. These are called verifiable claims in contrast to self-claims.

When some party would like information about us, which we agree to, our app will assemble attributes from multiple claims, including both self and verifiable claims, that can be combined into a disclosure presented to the other party. The other party can then verify in a couple of seconds the validity of the proof through an automated process without the need to contact the issuers of the claims.

Contacting of the issuer would be a violation of anonymity and perhaps leak intentions which you would rather keep private.

For example, if a university issues a claim that you are a currently enrolled student, and you share the student id on the claim to a petition service, to ensure eligibility and uniqueness, while signing a petition to be presented to the university anonymously – it would be inappropriate for the petition service to contact the university as that would destroy anonymity. The petition service would also have to delete the student id they have as soon as the petition is closed.

Some have called the ability to easily transact with verifiable identity claims within a business environment the ‘killer application’ for blockchain technology. The estimated cost for compliance of the new GDPR laws is 200 billion euros in Europe alone, with an additional estimated \$47 billion dollars in the USA. This is not even counting the upcoming cost of compliance to California’s similar ABA 375 law taking effect in 2020, nor the potential huge fines from GDPR laws of up to 4% of the gross worldwide revenue of a company for an infraction, even if not intentional. The fines for a breach in the ABA 375 law is the greater of \$100 to \$750 per identity holder or actual costs. Some breaches have involved from tens to hundreds of millions of account holders, which if you multiple by the above numbers can result in the ruin of a large company, not to mention its reputation.

## Public Claims

A public institution may elect to create a DID, in which additional information is included in its document, such as their name and address, etc. These are intended to be searchable, upon which you can make a request to them, through the creation of a DID on your side for this relationship. Examples can be banks, passport issuers, travel agents, insurance companies, etc. If the institution accepts this request, they will create a DID just for you in what is known as a pairwise set of identifiers, and not use there pubic DID.

Just as they can validate that you are indeed the owner of the public key in the DID, you can do the same for them. This is done programmatically and automatically behind the scenes via software by encryption and decryption of challenge phases.

Just because someone created a DID and a public claim that he or she are so and so, does not mean that this is true. This is where the web of trust comes in, through the verification of verifiable claims supporting their legitimacy, as well as reputation points kept track of through user experiences. The Government Network will offer a reputation and fraud service to point out to end users suspicious actors along with well-trusted service providers.

## Layered Approach

We recognize that the best approach to building this infrastructure is a layered approach driven by a combination of community defined standards, such as the W3C schemas for DID’s, claim Schemas, and adherence to the GDPR protections for private information.

Because the needs within identity management are nuanced and complex – a layered approach starts with a foundation and then adds to it, with the ability to swap out layers or add options to them as the technology improves and scope increases. It is beyond the ability of any one organization to build a



complete solution from scratch, and doing so would create a silo. Research within the industry has progressed with the greatest challenge is bridging the technology to the last mile.

A carefully layered approach, with each layer optimized for its task at hand, facilitates much greater scalability and responsiveness, as each layer is only touched as needed. As most of the work is offloaded into easily scalable layers, then the blockchains are used only for DID resolution.

Layers include:

- A Blockchain to record DID's on and their documents, as well as revocation, receipt hashes, claim schemas, and housekeeping activities. This also includes nodes, consensus, and governance mechanisms. For scalability, only the minimum required information should be recorded.
- A blockchain specific API to interface directly with a particular blockchain, hiding its complexity, along with indexing and caches behind an API.
- Universal Discovery, which can route the lookup for a DID to the particular chain it is anchored on and return the public keys, end-points, PKI protocols, and any other associated information from the DID document.
- Claim protocols for working with claims and claim schemas, including combining information from multiply claims, predicates, minimizing correlation, and best practices.
- Fee management for use of service.
- Services which maintain our private ledgers and handle the mechanics of connecting to all of the underlying layers as well as peer-to-peer communications. Typically, a cloud service is the endpoint contained in a DID document, which then has a two-way connection with apps on each of our personal devices or a software process such as an IOT device. The cloud service syncs data onto our personal devices and takes its direction from us via our personal devices; for example, whether to accept a request to share personal information or not. These services also communicate fees (when applicable).
- Additional value-adds, such as premium verification services, trade of value using tokens, etc.

## Passwords

Because a user's personal information is under their direct control, transmission of a password for authentication to a third-party, or to initialize a direct peer-to-peer exchange is no longer needed. Breaches of passwords and user information on centralized services will be a thing of the past.

Biometric authentication and authorization will still be used on a local device to access locally controlled repositories and to confirm important steps, as part of a well-designed app.



## What Identity Management Looks Like and Our Role in Creating It

While there is a lot of excellent industry-wide collaboration to create the foundations of the next generation of identity management – no one has actually created a full-featured end user identity application beyond proof of concept stages or specialize niches.

Part of our platform development is to create this application including its underlying service agents in a fully scalable and easy to use manner.

This development includes an API that will be made publicly available to ease the integration of these services by other developers to help create an eco-system and increase the adoption of this vision.

Our identity management hub will initially be a user-friendly section of the 'Forum' app whereby a user can manage all of their identity relationships in an easy to understand manner, including requesting new ones. We call this your Identity Hub, and may later be offered as a standalone app as well

Features within the identity hub include:

- Viewing all of your identity claims and revoking ones you no longer want.
- Organizing your identity relationships.
- Searching for identity relationships using particular attributes.
- Within the detail mode of a relationship, viewing the currently shared information, and its history of usage.
- The ability to revoke access to some of the information in a pairwise relationship, to change its usage agreement, or to terminate the relationship.
- View requests for information and to approve or deny them.
- Options to automatically include requests from particular parties for the specified types of attributes.
- View a log of all activities.
- Search for public institutions who issue verifiable claims that you may be involved with, thus making it easy to open a digital relationship with them. View the types of information that will be included in each claim.
- Assign your own weight to the value of attributes in each claim, so that the software can automatically assemble proof responses using attributes from multiple claims to information requests. You can always adjust these prior to submitting.

Various third-party websites, apps, and services will be encouraged to include the option for integration into this ecosystem, as well as SDK kits and examples to make it relatively easy.

Value added services include:

- Email verification claims.
- Voting, Petition, and Polling services with the option to keep individuals anonymous and yet guaranteeing eligibility and only one vote per actual person.
- Universal Discovery Extensibility, thus allowing more premium services to interoperate between platforms.
- Mechanisms for building reputation points and help in building a web of trust.

- If you are about to create a relationship with a suspicious identity, alerts will warn you of the concerns before you continue.
- Integration with other services within the Government Network.



## ANNEX 2: ESCROW AND ARBITRATION

As cryptocurrency becomes popular for online purchases by consumers, it is imperative that the same kind of support network enjoyed by traditional credit card payments is in place.

The ability for market actors to trust one another when transacting is one of these factors, such as making certain they receive their product or service in a satisfactory condition. Unlike using a credit card, without further safeguards there is no recourse once a cryptocurrency payment is made. This risk factor is often not worth it, particularly if purchasing from an unknown vendor. A solution to this is escrow and arbitration services implemented through smart contracts protecting the consumers and providing them with a way for their funds to be returned if something goes wrong.

While the overall concept is simple, it is required to fine tune the process to maximize the immediate flow of revenues to the vendor for each purchase, so that not too much is locked up in escrow. It is also imperative that a brand trust is built so that customers know they are getting a trustworthy service.

The currency held in escrow must be stable so that there is not a significant value fluctuation during that time. The NTN token with its large reserve backing can fulfil this need. A built-in exchange will handle other currencies as well.

The Government Network aspires to build this trusted and branded solution both for the use of trades on its network and as a service to other platforms.

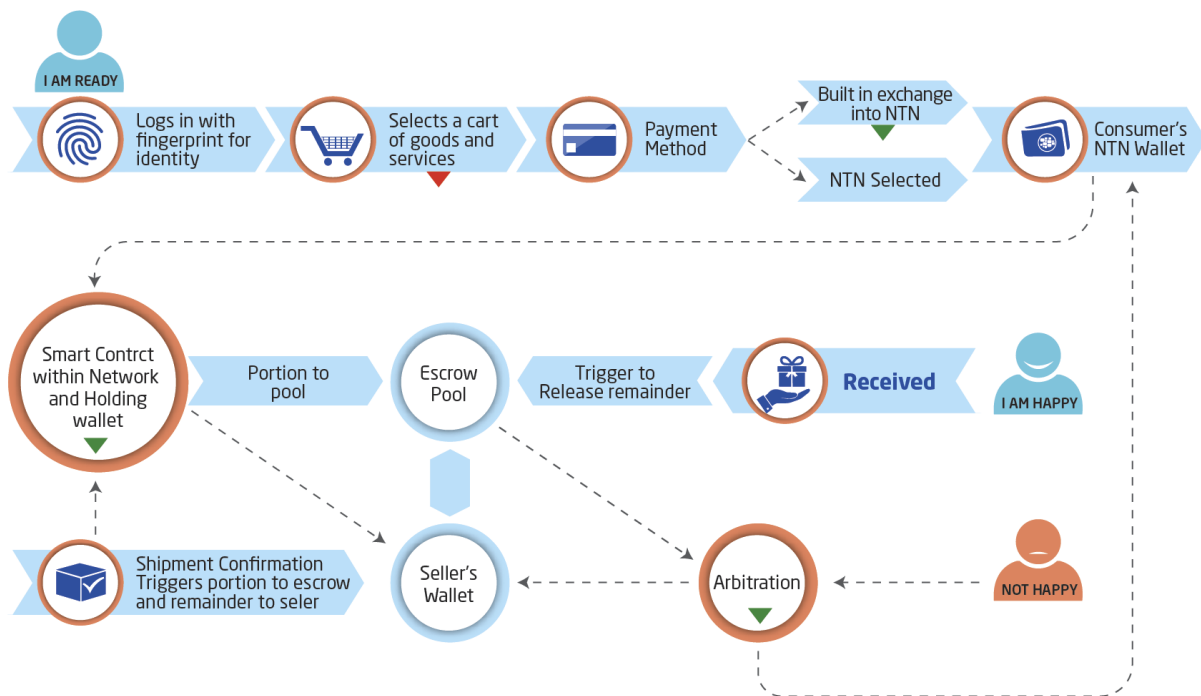
Part of creating a branded solution is to have it integrated into various ecommerce platforms, as a ready to go option for payment. In addition to exposing API's and providing development kits, we will offer to integrate it for free into some of the larger commerce platform providers. This in turn makes it easy for vendors to adopt, especially in conjunction with a marketing and readiness push.

Once approximately .25 to 1% of online transactions within a large marketplace (such as one of the African countries) move over to cryptocurrencies, those who do already have a working escrow and arbitration service will have missed the boat, as building branded trust is just as important as the technical aspects of implementation. At that time this will be a billion dollar and growing industry.

### Fraud Services

Part of our services include potential fraud alerts to the buyer. This works differently than typical centralized systems, because of the ease which a buyer can set up a new identity prior to making a purchase. As the first line of defence, hashing of standardized delivery addresses can be used to look up any previous problems. A greater benefit can be gained by going from the other direction, which is that a vendor limits orders over a particular amount to customers with a verified identity, or significant reputation points. A similar approach is already used within some centralized systems, such as verified by PayPal.

## Typical Purchase Flow, Escrow Service, and Fees



Simplified flow-chart (a detailed flow-chart can be provided upon request)

### Purchase

When a consumer makes a purchase backed by our escrow and arbitration services, the 100% of the funds first flow into a holding wallet on behalf of the buyer.

### Cancellation Prior to Shipment

If an order is cancelled by the buyer prior to shipment, 100% of the funds flow back to the buyer.

If the order is cancelled by the vendor, 100% of the funds are returned to the buyer and a small fee deducted from the vendor's escrow pool (.25% of order value, with a minimum of .05 NTN (5 cents) and maximum of 1 NTN (\$1)). Thus, assuming a 1:1 NTN token equivalent to the dollar, the buyer cancellation of a \$50 ticket item, would cost 12.5 cents.

If an order is not confirmed as received within 2 business days by the vendor, it goes the same route as a vendor cancelled order.

### Shipment

Once a shipment confirmation trigger is received, the currency held in the holding wallet flows into 3 accounts:

- Vendor's account for immediate withdrawal if desired.
- The vendor's escrow holding account.
- A fee to the Government Network.

A typical example would be approximately:

- 89% to the vendor's wallet
- 10% to the vendor's escrow pool
- 1% fee for the service (sliding)

The service fee will be less for high-value purchases with low line item count.

At no time does the escrow pool have less than the highest value of a particular purchase still covered by the escrow as well as a padding to cover potential escrow services. The amounts for the split are adjusted as a vendor gains reputation and according to the type of goods sold. Some vendors may initially start with a much larger percentage held in escrow, and some may have significantly less. An escrow is held from 10 to 21 days after anticipated delivery, depending on the market and nature of the business.

### **Delivery**

When an order has been confirmed as delivered, this is recorded in the escrow contract as evidence, and an email is automatically sent to the customer confirming that all items were received in good standing. An affirmative confirmation from the customer (clicking a link in the email), or the passage of enough time with no communication to the contrary releases the remaining funds held in escrow the vendor.

### **Arbitration**

If there is a conflict between the buyer and vendor, this begins an arbitration process. An arbitration smart contract is created, and depending on the value of the claim, either the min required amount within the escrow account is increased, or withdrawn into an arbitration holding account.

Arbitration has several stages to it, of which the first stage will go through an automated process to try and bring forth a resolution, including mutual submission of evidence which will be stored and anchored via a hash signature to ensure immutability. The submitted evidence is visible to both parties in the conflict, which can in turn help to resolve a mutually agreeable resolution while in the initial stages.

These automated processes will be easy to use and fair. It is critical to make this process as smooth as possible to reduce the number of claims that move to an arbitration panel. The bottom line is, for any new technology to be accepted, it needs to be easy to use, straight-forward, and trustworthy to the last mile.

If these initial, and inexpensive resolution stages fail, it then moves to a physical arbitration board whose decision is binding. The cost of this is borne by the vendor, and estimated to be typically in the neighbourhood of \$35. It is highly advantageous for the vendor to use reputable delivery services that receive a signed delivery for high-value shipments, that can, in turn, be automatically received into the escrow and arbitration services as evidence.

A published return policy by the vendor, including the condition of goods returns, can often bring solutions in the much cheaper automated resolution process prior to an arbitration panel, as well as

eliminate hard feelings. The Government Network will supply guidelines to help vendors both protect themselves and offer a better level of service.

Reputation points earned by a vendor are careful to differentiate faults of the vendor, such as packaging and mis-labelling, from the issues that beyond a vendor's control, which then effects a manufacturers reputation.

## Business to Business Escrow and Arbitration Services

Business-to-Business (B2B) online sales are approximately twice of B2C sales, with B2B sales estimated to be ~6.7 trillion dollars globally in 2020. B2B transactions often require additional safeguards, such as custom smart contracts with stages of fulfilment, multi-signature approvals, KYC and AML requirements, delayed triggers pending a chance for human intervention, penalties and bonuses, and more complex arbitration mechanisms. The Government Network endeavours to serve the needs of such trade.

