

CONFIDENTIAL INFORMATION¹

VALUELINE
BLOCKCHAIN PLATFORM FOR
DECENTRALIZED AUTONOMOUS COMMUNITIES

WHITE PAPER

White Paper V1.0

Table of Contents

1.1	OVERVIEW	3
1.2	THE PLATFORM	4
2.1	THE USERS	4
1.	ANONYMOUS USER:	4
2.	SECURED USER:	4
3.	PRIVATE USER:	4
4.	TRANSPARENT USER:	4
2.2	USER PERMISSIONS	5
3.1	VALUE CREATION	6
4.1	CONTRACTS	7
4.2	CLASSES OF CONTRACTS	9
5.1	ROLES	10
6.1	GOVERNANCE	13
7.1	VALUELINE GOLDEN POINTS	18
8.1	RESOURCE OPTIMIZATION OF VALUELINE	20

This whitepaper is being provided by the creators of Valueline platform (“Valueline token” and the “Talent token”), for informational purposes only and is not a binding legal agreement. There shall be no purchase and supply of tokens. This whitepaper may be amended from time-to-time.

1.1 VALUeline OVERVIEW

This white paper seeks to explore a new type of blockchain solution coined the “ValueLine” using a blockchain-based closed decentralized autonomous community (DAC) that determines its users and the access granted to them.

ValueLine is a type of governance model needed to regulate cryptocurrency transactions associated with a smart contract in digital communities. Our idea of smart governance built on intelligent blockchains is based on the premise that regulated (important/useful) knowledge rules/or patterns are built by a consensus of experiential and questioning processes; these processes represent a proportion of desire patterns obtained from a Knowledge Field (KF) composed of Governance Parameter Requirements and Specifications (GPRS). The GPRS will represent the blueprint or checklist that serve as input into a Governance rule training/or learning and prediction Knowledge System (GRTLP-KS).

We believe a modern governance system for decentralized communities should in addition to its self-capacity catering ability enable the easy integration of end-user experiences and end-user rule-specific contributions for improving the overall mining of processes within a smart contract in a clear and succinct manner.

An important difference in ValueLine when compared to other types of blockchain based DACs is its use of an invariant and more general structure for mining useful processes instead of simply programming or generating codes. This means that in a ValueLine blockchain app, any kind of contract can be processed using a single code structure that is general enough to accommodate diverse kinds of contract user input data patterns.

In a ValueLine blockchain, the problem of bias in which a particular user (or group of users) influence the mined blocks is eliminated by an optimization of experiential and search-query matching checks. This bias optimization (bias minimization) is carried out over a number of trial checks such that, the best experiential or search-query (probe-like) matching checks are the ones that gives the least expectation error response (eer). The eer is, thus, a metric that quantifies the value of a matching operation in ValueLine.

Thus, a ValueLine blockchain DAC will eliminate the double-spending property in the least matching error sense. This is achieved practically by employing time-based and rule learning Artificial Intelligence (AI) algorithms in both experiential and search-query mode of operation.

In ValueLine, the requirements for onboarding users shall be determined by the community. The Valueline platform powered by EOSIO solves a significant problem of user moderation and offers a more robust model for user interaction and reward incentive. While there are several innovations being proposed here, it is hoped that this model will lead to a platform where:

- a. Power is separated from its control;
- b. An account represents a person;
- c. A stablecoin is not tied to fiat;
- d. The primary token is never diluted;
- e. The utility or system token is never lost, and
- f. The greater the number of users/applications the faster the transactions; in this sense, a Knowledge System (KS) for automating ValueLine transactions in a blockchain will do less work as it will have a rich source of information or data to learn from.

In order to achieve the above, a 9-point format for data presentation is suggested to enable an intelligent organization of data at its point of creation. The metrics from this structured data is then used to enable automated resource allocation using executable contracts approved by the community. Every system contract must adhere to this format using a ValueLine engineered by a machine intelligence capable Knowledge System (KS).

The Nine-Point Format includes:

- i. *The Need*: A contract must define a need it seeks to address; this need is vital for determining the extent of the experiential or question-like solution matching process typically used by the KS.
- ii. *The Means*: A contract must define the means it seeks to use to address the need; the means will be determined largely by the value of tokens supplied to the system which in turn is regulated by the ValueLine KS experiential and probing rules.
- iii. *Consideration*: A contract must stipulate the cost of addressing the need; cost will be regulated by the ValueLine KS.
- iv. *The Execution*: A contract must adhere to this 9 point format when executed;
- v. *The Expectations*: A 9 point format contract must clearly stipulate rights and duties or risks and opportunities; Stipulated rights and duties will be used by the ValueLine KS for solution verification in a Proof of Work (PoW) in order to increase the trust mechanism during payout. The risks and opportunities will serve as context to the ValueLine KS in order to improve its probing (search/retrieval) function.
- vi. *The Conditions*: A contract must stipulate the necessary conditions for its execution; A contract based on the ValueLine KS will not execute unless the necessary conditions are met; the necessary conditions can also serve as additional context during experiential and interrogative learning.

vii. *The End*: A contract must stipulate the end that will emerge after its execution using the means; the end of a contract will be defined by a ValueLine KS query rule as fulfilling a sufficient condition.

viii. *The Rating*: A contract must make provision to be rated by the parties affected by its execution; ; the rating will be done by the ValueLine KS which includes a portion of experiences in part and a portion of probing queries in a consensus of user votes; and

ix. *The Record*: The record of i to viii above shall be documented on the blockchain. The ValueLine KS shall store the representations and/or patterns formed in a quadruple memory structure consisting of unknown unknowns, unknown knowns, known unknowns and known knowns. Any variations to the aforementioned knowledge units will be defined as an extended set of contract learning units.

1.2 THE PLATFORM

The Valueline platform is a decentralized platform that securely manages content creation and consumption. The platform shall have the following features:

- Accounts
- Relationships
- Verified profiles
- Community
 - Users (consumers)
 - dApps (producers)
 - BPs (resources providers – can be organized as producers)
 - Panels (governance)
- An intelligent Blockchain technology described as the Knowledge System (or simply the KS)
- Inbuilt Governance
- Identity Management and Regulation

2.1 THE ACCOUNTS/USERS

Four types of users shall exist on the platform. The user type will determine the spectrum of activities involved in the creation and consumption of private and public content (message/token transfers). The KS will harness the functionalities in User Types to build a Knowledge Field (KF) rich in users. The interaction among users will be described by the quadruple set of the KS including unknown users who desire content rendered publicly, users known only through experience or via probing operation exchange content when a secure matching condition is met.

The KS shall also be used to identify various classes of users; all of such users are referred to as the Knowledge Field (KF) of users. A typical classification scheme will include a time based Artificial Intelligence (AI) matching phase for interacting with a proportion of desired users and a rule-based matching phase for searching a proportion of desired users; the desired users represent a proportion of the KF of Users (KFoU). Both matching phases are used to predict the most likely user class(es) for a number of trial checks which in turn gives us the likely contents that will be mostly created or consumed in the blockchain.

The following users are identified.

1. ANONYMOUS USER:

The first type is the anonymous user, which is a party that has signed up through a Ricardian contract using **standard credentials** like an email address and or a telephone number. This type of party does not desire to be contacted or to contact anyone on the network. The party is a **passive user** and can **only access public content** that is available to non-users.

2. SECURED USER:

The second type of user is the secured user, which is a passive user that has **verified his identity** as a person using his immediate network and other standards prescribed by the community. This user is open to **receiving private content (message/token transfers)** from other users. This user is **visible to his network** of users and desires to be contacted privately.

3. PRIVATE USER:

The third type is the private user which is a **secured user** that has initiated a **successful transaction on the network**. This user is interested in creating or acquiring private content that can be shared with other secured users.

4. TRANSPARENT USER:

The fourth and final user type is the transparent user, which is a private user who makes his identity known to everyone on the network by posting publicly a privately created or received content. Accordingly, this is an active user that creates public content and is identifiable to other users.

2.2 USER PERMISSIONS

The rules for permissions can be amended by the community to ensure that the network provides equal opportunities for all users while ensuring that unequal outcomes do not eliminate the equal opportunity objective.

For user permission to be granted, the initial standards of account creation by the anonymous user must be met. Another way to create an account is to be invited by a private or transparent user. The **Genesis account** will be a contract between the initial user and the network to produce the initial blocks and to stake all received tokens for future account creation or credentialing. This contract will last for 4 years, which is the time for the network to distribute all Valueline tokens. This will enable users to create accounts without incurring any costs.

For the sake of clarity, the permissions granted the above user types are enumerated below:

- a. **Anonymous user account:** This is the first type of account which entitles a user to join the network. This account can view limited records, but it cannot engage in any activity on the network. This is created on receiving and accepting the invitation. (Email, phone, number, location, etc may be used)
- b. **Secure user account:** This is an account that can receive secured messages but cannot transact or even respond to the messages. Bio-metrics, pictures, validations by other private or secured users may be required. This information will be accessible only to the user's network.
- c. **Private user account:** A private account is an account whose user has been verified as an actual person by six or more private or secured users or according to community standards. This account can receive and send messages from other Private accounts. KYC standards or any standards acceptable to various communities in the different jurisdictions may be required.
- d. **Transparent user account:** This account is a private user account that engages in public actions. This account is entitled to receive airdrops. All block producers (BPs) will be transparent accounts. (A unique system security to protect the accounts of users from the public may be required here - Transactions may be numbered but are not attached to accounts. Governance may require that the user data be accessible using a paid or owner-generated temporary permission key).

3.1 VALUE CREATION

1. **Value Creation:** An asset or a liability is a product or a service that supports a contract between two or more users. The users create value through the development, improvement, and implementation of processes that align or realign relationships and interests to produce profits after cost. This is facilitated by inventing, developing, producing, and delivering new market offerings that meet consumer needs.
2. **Identity Value:** A verified user is a valuable asset to the network.
3. **Value Representation:** Consumer needs are the basis for labor demands. The supply and demand for labor are consistent with the supply and demand for any other services. Accordingly, when the wage is low, labor supply decreases. This relationship is captured with the introduction of 2 tokens, Valueline, and Talent. Valueline is a token that represents labor, while Talent is a token that represents products and services produced by the labor; both Valueline and Talent are regulated by the KS.
4. **Resource Exchange:** An inbuilt exchange is used to facilitate the transfer of these assets between accounts in line with the primary blockchain contract. The initial value creation will be done intelligently through airdrops of Valueline using the ValueLine KS mechanism, and the airdrop of tokens will be done using the resource exchange.
5. **Value Exchange contract:** The airdrop is done using the Valueline and withdrawn to user accounts using the Talent. Every airdrop is to be used at the user's discretion. Every value created belongs to the creator. However, the network exchange shall retain a 16.666% commission for network transaction related to the airdropped tokens. When a user sends a request to withdraw his share of the Valueline contribution from a project, the network will initiate a withdrawal from the dApp to the resource exchange, and from the exchange it will send the equivalent Talent to the user. Each action will attract a commission of 16.66%, thereby enabling the exchange to retain 33.333% of all tokens.
6. **Worker Proposal Contract:** Every product and service funded by the network must go through the Worker Proposal System (WPS) and must adhere to the system contract to ensure that the network receives 33.3333% of all Talents while leasing to users 100% of all Valueline. Each lease shall not exceed a term stipulated by the community. Unused Valueline decays back into the system account within 24 hours for redistribution.
7. **Private Assets:** The proceeds of a privately funded project belongs to the creators and they retain 100% of the profits generated. They also pay for their network resources.
8. **Token Pricing:** When the system retains its share of the Talent (33.3333%), the price of Valueline becomes fixed as a stablecoin and adheres strictly to the 180-degree trajectory.

9. **The Blockchain:** The most valuable assets on the network is the public ledger that orders transactions, ensures that the 33.3333% not at risk and that the stablecoin is maintained.

4.1 ACCOUNT CONTRACTS

To ensure that the stability of the network is maintained and that the network is intelligent, the system contract requires accounts that contain arbitrary objects that adhere to or recognize the consistent classes identified in the 9-point format.

1. Keys: Admission control will be based on a readable name that is stored on the blockchain and connected to your keys.
2. Accounts: For the purposes of maintaining network stability, the system contract will ensure that the resource demands made by the network will be correlated to the number of live accounts.
3. Value: The daily airdrop is distributed equally among live accounts. Any new log on will receive tokens at the prevailing rate at the time they went live. Any undistributed reserve will be deposited in the accounts that went live on that day.
4. System contract: This is the virtual machine that will execute every contract on the blockchain by merely identifying the arbitrary object that describes the any of the 5 states of the 9 items represented by the 9-point format. There are 45 (or 36) possible states, and the 5 states would be:

0 = rest (this may not be necessary)

1 = Invalid

2 = Not Valid

3 = Not Invalid

4 = Valid

The goal is to use a modular neural networks to build a neural classifier that matches #1 and #2 in #3 and uses #7 to deduce compliance with #6 and #5. This result is then presented to the user for his rating (#8) and then recorded on the blockchain (#9). Every contract (except #9) has a relationship with the user through the system contract.

5. Access (control): This is the management of access to resources using the virtual machine. Possible outcomes using the 5 states in a 9-point access contract would be any of the following:

- 0 = rest (No attempt to access is detected) ?
- 1 = Invalid (Eg: Wrong credentials)
- 2 = Not Valid (Eg: Expired credentials)
- 3 = Not Invalid (Eg: Improperly submitted credentials)
- 4 = Valid (Eg: Properly submitted credentials)

6. Ownership: As already stated, 33.33% of Talent tokens belong to the network. 100% of the network is owned by the community. 100% of Valueline is leased to the community by the network. Premium income from higher than average users goes directly to the active Block Producers, thereby increasing transaction speed when demand increases. Distribution of Talent in any project or contract is as follows:

1.85185185185185% of allocated Talents will be distributed among Providers selected by the users based on votes received. (The secondary pool). 50% of the income (Talent) will be distributed among the 6 top Providers (eg. BPs) that executed the Proposal (the primary pool):

Position	% of Talent earned by Projects using "Ranked Pay"
1	12.962962962963
2	11.111111111111
3	9.259259259259
4	7.407407407407
5	5.555555555555
6	3.703703703703

14.8148148148148% of the system income (Talent) will be distributed to users that voted and rated a Project (or referred another user) according to the position of their projects. The distribution will follow the "Ranked Pay" in the following order:

Position	% of Talent earned by voters
1	25.925925925925
2	22.222222222222
3	18.518518518518
4	14.814814814814
5	11.111111111111
6	7.407407407407

BPs or Projects must take into account for these system payments while planning their proposals.

7. Products and Services: The primary product is a responsive blockchain that offers a truly decentralized, secure, and scalable service. A secondary product would be data hosting services that make it unnecessary for dApps to rely on traditional data hosting service for their non-essential data. Accordingly, this proposal will make it possible for the contract to price in this service independently of the blockchain service.

8. Audits or ratings: Every project sponsored by the network is open source and must be rated for Talent rewards. The Valueline returns to the network reserve account the moment a completed project is a rated. Below is the 5-point rating system:

- 1 = Bad (Eg: Fraudulent service)
- 2 = Not Good (Eg: Poor service)
- 3 = Not Bad (Eg: Acceptable service)
- 4 = Good (Eg: Great service)

Payments of Talent rewards are tied to ratings received from voters and these ratings serve as matching context for the KS experiential and probing operations prior to a payout.

9. Record: This is the on-chain storage of the events from 1 to 8 above. These events can be classified as independent contracts that use a modular approach to organize themselves into a single smart contract transaction. The classes of contracts are identified and described in the following section.

4.2 Classes of Contracts

No contract

0 Rest: No contract is running. This is the state of an account that is not live.

User contract

1 Consumer or Demand Contracts: These are proposal contracts that are initiated by the users and validated by the system (e.g., account access control, project proposals);

DApp contract

2 Producer or Supply Contracts: These are proposal contracts that respond to Consumer or Demand Contracts (e.g., inventory of accounts, labor skills, products and services);

Exchange Contract

3 Exchange Contracts (Matches Demand & Supply): These are system contracts that match Consumer or Demand Contracts with Producer or Supply Contracts;

Verification contracts

4 System Contracts (Terms): These are system contracts that ensure that the 33.333% holding of the network is not at risk, that transactions are appropriately ordered, that the stablecoin is maintained and that the preceding contracts are beneficial to the network;

Role contracts

5 Terms of Demand Contracts: Using the last event, these are system contracts that conduct a SWOT analysis and identify accounts that will be affected by the preceding contracts;

Performance Contract

6 Terms of Supply Contracts: Using the last event, these are system contracts that verify compliance with community standards, the available capacity of the producers and monitors performance timeline in order to determine delivery time;

Receipt Contract

7 Terms of Exchange or Receipt Contracts: Using the last event, these are system contracts that monitor payments and the exchange or delivery of products and services in order to close a project;

Rating contracts

8 Rating Contracts: These are system contracts that measure users' satisfaction with products and services in order to optimize the ranking of consumers and producers; and

Record contract

9 System Contracts (Records): These are system contracts that record or file the data from 1 to 8 above using the 9-point format and Rest.

5.1 ROLES

1. Groups of credentials or a User: These are standards for account creation or access using community approved credentials.
2. Groups of Users: These are permissions or privileges that connect users through their accounts.
3. Groups of Permissions: These are roles attached to accounts. This is the foundation of all private relationships on the network.
4. Groups of Roles: These are publicly documented relationships or contracts between users and the network managed using modular neural networks to build neural classifiers that assign roles in order to create value by maximizing opportunities and minimizing risks.
5. Groups of Projects: These are qualified projects that adhere to the 9-point format.
6. Groups of value: These are dependent necessary conditions for the successful completion of projects.
7. Groups of Products and Services: These are delivered projects.
8. Groups of Ratings: These are aggregated clusters of ratings of different products or services from different groups reflecting their levels of satisfaction with the delivery.
9. Groups of records: These are independently verified contracts received from a pool of block producers. Six groups of records received from the six pools make a block.

6.1 GOVERNANCE

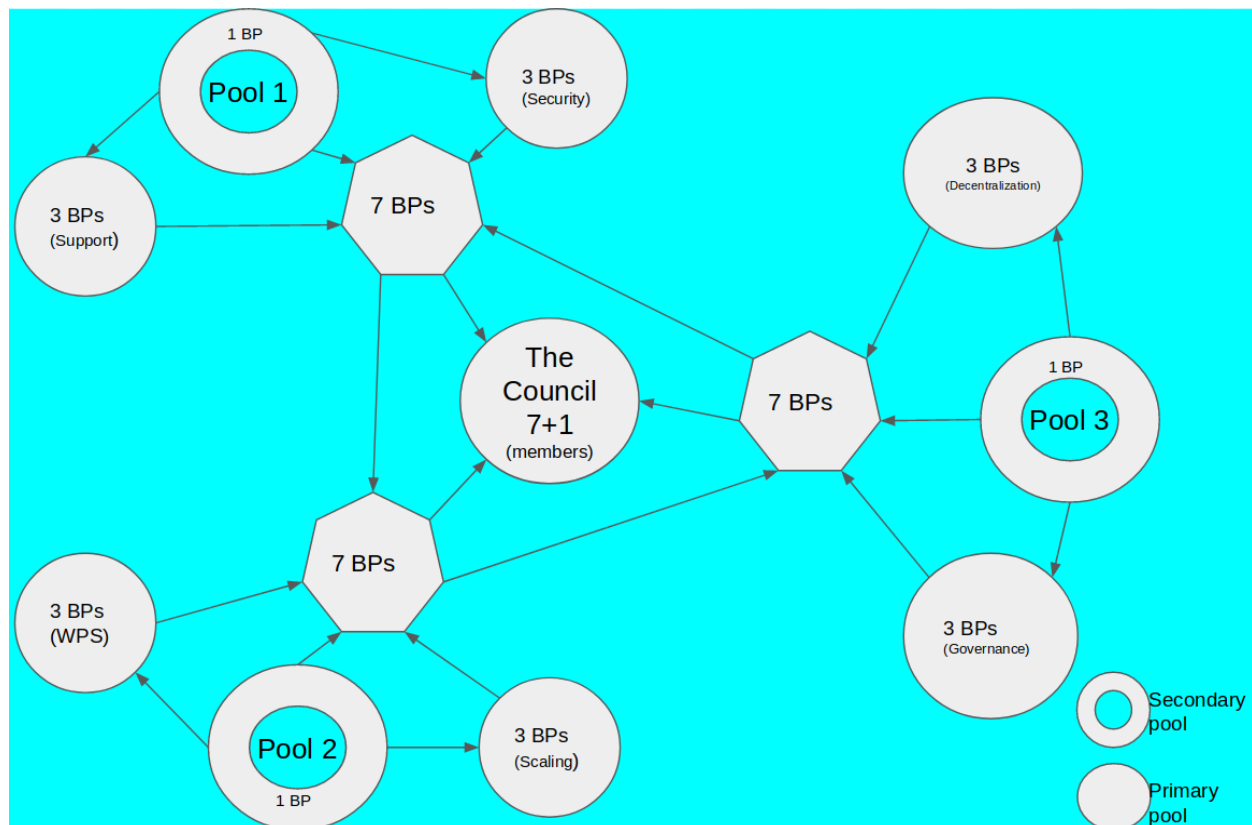
There shall be a governance council made up of the 21 **block producers** (BPs).

1. The users will elect 21 BPs into 3 secondary administrative pools that are focused on:

Pool 1 - Support and Security-(33.33% of network profits less Valueline insurance)

Pool 2 - Decentralization and Governance; and (33.33% of network profits ...)

Pool 3 - Scaling and WPS (33.33% of network profits less Valueline insurance)



2. Using performance metrics approved by the Council, 18 BPs shall be automatically or manually segregated into 6 primary pools of 3 BPs each, focusing on one task (eg. WPS).

3. Using the same performance metrics, the 3 top performers in the 3 secondary pools and the 18 BPs in the primary pools shall be the decentralized entities governing the blockchain through the Council. The BP candidates in the secondary pools shall make the rules governing acceptance into the 6 primary pools. The 3 lowest ranking of the top 21 BPs shall remain in the 3 secondary pools.

4. The Council shall be represented by 7 BPs elected by the 21 BPs each casting a vote for the term of a project. The 7 BPs shall elect another BP as the 8th member of the Council
 5. The Council shall ensure that every proposal adheres to the 9-point format;
 6. Every decision on a proposal must be reached through a referendum and every proposal must articulate a solution that can be executed as programatically;
 7. The 8 members of the Council shall use the 9 point format to outline the governance challenge or a regulation and then vote on each point or provision. This means that the 8 members must cast 72 votes and a proposal can only be approved with 48 votes or at least when a percentage of the votes meet a desired value. This value is automatically computed using a Knowledge System where a matching (experiential-like) processor is used to determine similar votes from a fraction of the 72 votes; a similar matching but probing (question-like) rule is also used to determine votes that meet a search criteria e.g. the number of votes that are cast as Point 1 will be determined by issuing a search criteria “Which Vote = Point 1” in the search rule. As another example, the search criteria could be the joint query “Which Vote = Point 1 and Which Vote = Point 2”.
- The search rule will also consider a fraction of the 72 votes for the governance approval. Hence, the actual governance proposal will be a consensus of experiential and question-like learning; these operations are achieved by performing several trial runs over the vote sequence entries from users such that the level of bias in decision making by the KS is greatly reduced and the solution is close to the optimal one.
8. Every proposal from the Council must be approved by the remaining 13 BPs. This means that the 13 members must cast 117 votes and a proposal from the Council can only be approved with 78 votes. The votes may also be computed using a similar mechanism as in item 7.
 9. The results of the votes and the timeline for its implementation shall be published by the Council on the network and each BP, Pool or the Council shall immediately communicate the outcome and its implications to its supporters. BPs whose supporters disagree with vote will lose the supporters’ votes automatically.

7.1 VALUELINE GOLDEN POINTS

Golden Points (Valuation of Tokens):

Valueline token price (vtp) \equiv average of the three top bitcoin currencies.

Daily control of the price of *Valueline* is achieved by:

- increasing or decreasing the supply of tokens (daily airdrop of *Valueline* tokens), platform fees
- interest rates and
- miners' commissions
 - 1) Unmet Demand Value (c) \equiv Held Class on the platform Under contract (e).
 - 2) The increased demand for tokens for platform stability (ensure there is no increase or decrease of *Valueline's* price) will be under the class met demand (d).
 - 3) Issued token is a member of - class Held in Reserve: Not under Contract (f).
 - 4) Issued token of Past contracts used to make an exchange is a member of - class Executed & Fulfilled Contracts (b); Past contracts can be used to build in stability. Stability is defined by the degree of fitness of met demand wrt unmet demand.
 - 4a) For example, purchased *Valueline* tokens that have been exchanged with *Talent* tokens.
 - 5) Issued token of Past contracts not used to make an exchange is a member of - class Executed & Unfulfilled Contracts (a).
 - 5a) For example, purchased *Valueline* tokens that have not yet been exchanged with *Talent* tokens.
 - 6) Future contracts:
 - 6a) Funded contracts (h) \equiv the exchange platform allocated capital for purchase of tokens in future.
 - 6b) Un-Funded contracts (g) \equiv the exchange platform unallocated capital for purchase of tokens in future.

Golden Points (Talent):

Talent token price (ttp) \equiv function of active users willing to purchase it

This will be computed on the basis of the number of active users obtained from a predefined pool of active exchange users (AUs); the pricing scheme will be a consensus of potential active users who are determined (discovered) by an experiential learning phase and a probing phase within an invariant or fixed Token Price Estimation Knowledge System (tPEKs).

Note*: The number of willing AUs represents the Demand.Change (increase or decrease) in Token price reflects change in demand which in turn impacts on resource usage.

Other exchange platform parameters that change are:

- Exchange Fees
- interest rates
- miners' commissions

Increasing Active Applications

Since the demand for tokens will be higher than the supply, which will result in a shortage of tokens, the token prices will increase to match the demand and supply forces.

A Knowledge System will define an experience and probing phase where a portion of AUs describing the ttp will be optimized in such a way that it matches the available AU-biased tokens with the tokens demanded.

The optimization phase will use a self-discovery phase involving a number of initial trials:

- If a token match is found, the experiential and probing operation terminates; else the trial is incremented to continue the matching process until a maximum number of trials is exceeded.
- If the number of trials is exceeded and an exact match is not found, we take the trial count that gave token price with the least matching fitness error (mfe).

Decreasing Active Applications

When the resources exceed the demand, this will result in a surplus in token supply; thus, the token prices will decrease to match the demand and supply forces. The aforementioned KS concept also applies to this function.

8.1 RESOURCE OPTIMIZATION OF VALUELINE WITH THE KS

Model of a Reward-Penalty Scheme for a ValueLine KS Processor:

Block producers add content (resource) and hence value to a blockchain community in diverse ways. For a set of resource contributions by a BP, a resource will be numerically assigned a value by rating. The resource is specifically believed to add value to the community *iff* after an unbiased rating (voting) exercise, the block producers' content meet the needs (minimum and maximum specifications) of a select portion of the regulating community. The regulating community may be referred to as experts or simply regulator.

This rating or numeric quantification is performed by anonymous judges, experts, contributors or any user who has a first-hand knowledge in the assessment of such a resource.

Typically, the resource(s) will be published through a suitable forum or social network site online and provisions made for the categories of contributors in the aforementioned paragraph.

In order to assure a level playing field it is useful to add some sort of reinforcement programme to move the community efforts towards a more reliable and justifiable process. By so doing, it will then be possible to effectively evaluate the performance of a given blockchain network: Is it doing poorly or is it ok? Hence, we are able to suggest remedial actions or necessary adjustments to the former case.

In equation (1), we provide a very simple but powerful model that borrows from the basic principles of reinforcement learning used in Artificial Intelligent (AI) systems. The definitions and notations of symbol used are also provided below.

$$n_p^n = \begin{cases} n_p^n - 1.85\% n_p^k, & m_o^- > th_{\max} \\ n_p^n - 1.85\% n_p^k, & m_o^- < th_{\min} \end{cases} \text{Penalty} \quad (1)$$

$$\begin{cases} n_p^n + 1.85\% n_p^k, & m_o^- < th_{\max} \text{ \& } m_o^- < th_{\max} \end{cases} \text{Reward}$$

An Unsigned match operation is computed as:

$$m_o^- = |n - (n - 1)|^{abs} \quad (2)$$

While it's Signed equivalent is computed as:

$$m_o = n - (n - 1) \quad (3)$$

where,

n_p^k = standard or fixed commission, k , to a block producer (BP) providing a resource.

n_p^n = current (initialized) commission, n , to a block producer (BP)

n = nth value of a resource, the resource being part of a KS sequence

Thus, if a BP provides a correct resource, the network saves resources. If the opposite is the case, the BP will be penalized so that he provides the correct resource next time – note that in this situation, the BP will have realized his/her error and attempt to provide a matching resource on next trial where possible.

From our aforementioned model, if m_o is within its threshold value, we say it is within-rating; otherwise, it is out-of-rating.

Next, we need to provide a means of determining the needs of the regulating community. In this regard, this reduces to a means of calculating th_{max} and th_{min} .

How to determine th_{max} and th_{min} :

Given a pool of resource-regulated ratings, a %UK of a desired pool size (originally obtained from a Knowledge pool of selected vote ratings) is selected from the vote pool; then useful information is obtained experientially by using a random matching operation through time in accordance with equation (2) for m number of times.

For each extraction operation performed in the aforementioned paragraph, a UK pool mean is computed as:

$$UK_{\mu o} = \frac{UK_{(m_k)}}{n(m_k)}, \quad m_k \in Z, m_k \subset m, UK_{(m_k)} \in U_k, U_{(m_k)} \subset U_k \quad (4)$$

where,

$m_k = \bigcup_1^m randperm \rightarrow$ Random Permuted integer number between 1 and m

$n(m_k) \rightarrow$ Cardinality of m_k

Also,

$$UK_{\mu o} = \{UK_{\mu o 1}, UK_{\mu o 2}, UK_{\mu o 3}, \dots, UK_{\mu o m_k}\}, \forall m \text{ considered} \quad (5)$$

where,

\forall denotes the mathematical symbol “for all”.

From equation (5), the min-max thresholds can easily be computed by taking the min and max of the UK sequence as in equation (6) and (7) respectively.

$$UK_{\mu o_min} = \min(UK_{\mu o}^{\dots}) \quad (6)$$

$$UK_{\mu o_max} = \max(UK_{\mu o}^{\dots}) \quad (7)$$

Systems View:

A systems view of the proposed KS-ValueLine concept is as shown below.

