

Abstract

As a modern digital economy platform, Distributed Ledger Technology (DLT) has extensive applications in optimizing both financial and non-financial transactions ranging from Know Your Customer (KYC) to bartering. The DLT is an irreversible, immutable, and permanent record of transactions with a high degree of verifiability, credibility, and reliability. Using this technology, the Kuknos Network creates an integrated platform of reputable anchors and issuers to facilitate the exchange of Paymon Tokens (PMN) to help the prosperity and development of the national economy. The underlying principles and values of Kuknos are based on the technological requirements of the DLT and blockchain as well as domestic and international laws and regulations. This whitepaper sets out to explain the building blocks, architecture, technical infrastructure, and the economics of the Kuknos Marketplace and Paymon.

Disclaimer: Kuknos is capable of supporting various tokens with different technical and economic properties. Investors are well-advised to carefully examine each token's whitepaper before making a commitment.

1. Introduction

11. Blockchain technology and its more general counterpart, the Distributed Ledger Technology (DLT), have seen unprecedented adoption from firms, markets, and industries. The realization of efficiency and effectiveness, enabled by eliminating centralization and establishing decentralization, has been the primary driver of this adoption.

12. Financial institutions have been spearheading DLT adoption and innovation, with the financial industry being the largest investor in the sector. This is a testament to the enormous gains in both efficiency and effectiveness generated by decentralized mechanisms and systems.

13. The advantages of using the DLT in the financial industry are manifold including the following: (1) the reduction of Know Your Customer (KYC) costs through sharing identity information; (2) streamlined asset management through uninterrupted access to asset data; (3) simplifying recoding multi-agent transactions; (4) improved credibility, trustability, and documentation; (5) increased security; (6) globalized markets, more widespread asset trades; (7) attracting micro-investments especially in low-return or no-return markets; and (8) a reasonable increase in the value of investments.

14. Thus, in the digital economy, all major markets require access to a robust technology platform that supports and operationalizes this plethora of modern applications. To facilitate market formation, the platform must be able to handle an extremely high load of financial transaction data while remaining flexible and user-friendly. Decentralization is one of the best solutions to achieve these benefits.

15. Thus, the Kuknos\Network is established as a symbol of unity among the largest economic players in Iran to create economic values. Being aware of the risks associated with unexplored markets, industries, products, and services, these founding members are leading the charge to create the best opportunities and tools that enable the realization of the "sustainable prosperity of national production" motto in the country.

16. This whitepaper presents the values, ideals, approaches, and plans of the founding members of Kuknos. It also sets out to facilitate and ensure solidarity and integrity among current and future participants of the Ecosystem.

2. Definitions

21. Whitepaper: The present document detailing the technical features and the applications of the Kuknos network as well as its native asset (Paymon), ecosystem of stakeholders, economics, and binding network rules to which the anchors agree.

22. Kuknos: Also referred to as the Kuknos Ecosystem, it comprises links between anchors, supervisors, issuers, service providers, startups, sponsors, developers, and users. The Ecosystem is based on the Distributed Ledger Technology (DLT) that enables the tokens, including the native asset (Paymon), to be offered and exchanged.

23. Distributed Ledger Technology: A consensus-based technology to manage decentralized storage of duplicated, shared, and synchronized digital data in domestic and international contexts. The ledger is maintained and updated using a consensus mechanism, and a data architecture agreed upon by the anchors.

24. Kuknos Network: Also referred to as the "Network," it is a network of anchors that use DLT to monitor, verify, and record all user transactions and operations. The Network is decentralized and autonomous in that the anchors process the transactions using an automatic consensus protocol.

25. Anchors: anchors form the Network's computational infrastructure. In addition to accessing the ledger, they create a transaction proposal package and participate in the consensus-based voting mechanism. In Kuknos, anchors are Network leaders.

26. Issuer: An anchor-monitored natural or legal person with authority to issue tokens. Anchors are required to advertise issuer details and token specifications.

27. Asset: Any movable or immovable, tangible or intangible property or right and its associated obligations that can be tokenized and used in transactions.

¹Kuknos (Greek: φοῦνιξ, Arabic: العنقاء; English: Phoenix) refers to a sacred bird which appears in various mythical stories in ancient Persia, Greece, Egypt, and China. Legend has it that kuknos regenerates without having a mate. After living a millennium, the bird dies in a ritual of flames and decomposes into ashes before another kuknos arises from the ashes. Kuknos represents eternal life and rebirth in many cultures. The word seems to have originated in Greek, taking multiple similar forms in Indo-European and Chinese languages throughout history.

28. Certificate token: A digital certificate signed by an issuer confirming the holder's partial or full ownership of an asset.

29. Asset-backed token: A token with independent ownership that is pegged to an asset as its collateral or guarantee of liquidation. Trading an asset-based token on the Network does not equal the trade of the underlying asset.

210. Token: Used interchangeably with certificate token or asset-backed token unless stated otherwise.

211. Tokenization: A process whereby an issuer generates tokens monitored by an anchor.

212. Kuknos native asset: Named "Paymon" (PMN), it is backed by gold (including but not limited to bars and equivalent coins) or other assets authorized by the Kuknos Foundation. Each token equals 0.001 grams of 24 karat gold (minimum purity standard of 995). All anchors guarantee token liquidity per the conditions of this whitepaper. The native asset facilitates transactions using other tokens, including certificate and asset-backed tokens. Network fees are paid solely in native assets. Paymon can in no way be used as a means of payment.

213. Peanuts: The smallest unit of Paymon equal to a ten-millionth (10^{-7}) of a single token.

214. Transaction: An operation or a series of operations signed by the corresponding account owners to be processed by an anchor. The processed transaction is sent to the Network and recorded in the ledger provided that anchors reach a consensus.

215. Operation: A Network operation which cannot be recorded in the ledger without being associated with a transaction. Operations may have financial or non-financial consequences for Kuknos accounts.

216. Key Pair: A private key and its associated public key used to access an account and sign its transactions on the Network. The keys are generated using the ED25519 encryption algorithm.

217. User: Any natural or legal person (without legal restrictions) along with their computer systems used to create accounts and perform transactions on the network.

218. Account: An entity on the Network whose address or identifier equals the owner's public key. Any account on the Network must have at least 1 Paymon to be recorded on the ledger.

219. Issuing: A process on the Network whereby a user account creates a defined number of tokens under the same exclusive name. Anchors are required to determine detailed token specifications before issuing.

220. Distribution: A process whereby the issuing account transfers the created tokens to a "distribution account." The number and structure of the distribution accounts are determined by the distribution policy of the token.

221. Exchange: A decentralized system of anchors in the core network layer where users can trade their tokens.

222. Wallet: A tool used to manage user key pairs, allowing owners to safely store their keys, and send and receive tokens on the Network.

223. Supervisor: Governance authorities, especially regulators, supervisory authorities, inspectors, financial auditors, law enforcement agencies, and judiciary bodies, who reserve the legal right to monitor and, if necessary, store transaction histories.

224. Kuknos consensus: The consensus mechanism in Kuknos is based on the Stellar Consensus Protocol (SCP), with at least 51% of the votes required for a transaction to be validated.

225. Kuknos Foundation: Also referred to as the "Foundation," it comprises the anchors on the Network who form a self-regulated structure based on relevant case laws.

226. Kuknos Co.: Also referred to as the "Company," it is a private joint-stock company registered under the name "Yekta Kuknos Pars Distributed Information and Financial Technologies" registered in the Islamic Republic of Iran.

227. Paymon gold price: The price of the gold backing Paymon in IRR.

228. Paymon nominal price: Paymon gold price plus the issuing fee.

229. Paymon market price: weighted average price of Paymon in different exchanges as a function of supply, demand, and backing gold price.

230. Security token offering: According to the Securities Market Act of the Islamic Republic of Iran, offering certificate and asset-backed tokens as electronic financial instruments guarantees transferrable financial rights on the Network.

3. Problem Definition

301. E-markets are a critical component of the digital economy. A market is essentially a network of transactions and connections where goods, services, and payments are exchanged. To operate without interruption, e-markets rely on 24/7 electronic transactions. Not bound by geographical borders, e-markets allow buyers and sellers to directly negotiate, agree, and even barter in a web-based environment.

302. However, current capital markets are severely limited in that they lack the prerequisites of a true e-market. For instance, services are only available at certain times, assets cannot be bartered, and settlements are not performed in real-time. Also, lack of transparency, occasional reversibility, and price manipulation and limit-setting cause various problems.

303. In the following, we discuss the most significant challenges that Kuknos aims to address in an attempt to promote Iran's digital economy.

31. Lack of an Agile, Flexible Technological Platform to Offer Tokens

311. The advantages of blockchain, including transparency, reliability, and data persistence, allow financial institutions to offer various types of assets as tokens and create a diverse set of products

for their customers. Kuknos aims to build a flexible, agile infrastructure that allows members to issue and exchange tokens without any restrictions.

32. Illiquidity of Frozen Assets

321. Frozen or non-productive assets refer to a category of assets that are illiquid or cannot generate an income stream for their owners. According to banking data, illiquid assets, especially surplus real estate, are a significant portion of bank assets. In some countries, only a few potential buyers can afford to purchase these high-priced assets. Therefore, the assets are unlikely to be sold. To resolve the issue, depending on the ratio of the country's economy to its frozen assets, encouraging micro-investments or global markets can prove useful. However, this requires access to efficient and transparent mechanisms based on DLT.

33. Depreciation of micro-capital

331. In the absence of transparent, observable structures to attract and lead micro-investments toward productive areas such as real estate and production, investments gravitate toward non-productive sectors. However, an efficient, transparent mechanism based on DLT can prevent unconventional market fluctuations, and more importantly, prevent the loss of resources.

34. Transparency, immutability, and availability

341. Centralized services have three persistent problem areas: (1) transparency, (2) changeability, and (3) availability. Efforts to establish information security and integrity result in loss of transparency; data protection mechanisms reduce the effectiveness of external monitoring efforts, leading to potential corruption; and data aggregation in centralized servers improves serviceability and compliance but may create a single point of failure which can decrease availability.

35. KYC

351. The majority of financial services cannot be provided without taking appropriate KYC measures. As a result, banks and financial institutions obtain and store user identity data. However, a unified identification process does not exist. Many financial institutions rely on time-consuming, costly in-person visits, and physical copies of identification documents to perform KYC tasks. These inefficiencies are caused by the absence of a centralized entity that provides identification services as well as incompatible country regulations, presence of multiple valid KYC mechanisms (e.g., social media), and the legal challenges of sharing identity information with banks. As a result, customers' personal information is at a high risk of theft and abuse.

4. Proposed Solution

41. Kuknos's proposed approach to solving the abovementioned problems is to use Stellar's solution as a new, independent DLT-based network with the ability to issue various tokens. The base gold-backed token in Kuknos, namely Paymon (PMN), is proposed to address the existing challenges.

42. To increase the liquidity of frozen assets, issuers can issue both certificate and asset-backed tokens in Kuknos. The most important features of Kuknos to operationalize this solution are as follows:

- 421.** an independent, public network of authorized anchors;
- 422.** a self-regulated structure to authorize anchors;
- 423.** a distributed exchange to facilitate transactions and micro-investments;
- 424.** tokenization of any asset within the jurisdiction of and monitored by an anchor;
- 425.** a flexible multi-signature structure for account management;
- 426.** facilitating the KYC process through member participation and commercializing the process through direct management by the members;
- 427.** speed and efficiency for high-volume transactions;
- 428.** supporting specialized data models and smart contracts in the financial industry;
- 429.** supporting lightning feature and creating off-chain payment channels
- 4210.** setting maximum allowable ownership of a token by the issuer;
- 4211.** support for reliable and straightforward addressing services.

43. To respond to new requests which the Stellar solution may not be able to handle, the Kuknos Foundation proposes the following methods:

- 431.** extending Stellar's core and ecosystem in a way that meets the new needs;
- 432.** using other platforms to create a cross-chain system.

5. Principles and Values

501 Kuknos is founded on the following principles and values, any damage to which may result in loss of credibility or the potential collapse of the entire network. Therefore, all anchors are required to adhere to these principles. Clearly, all other agreements between members or between members and non-members that violate the principles are void.

51. Decentralized Leadership

511. The ledger is inherently decentralized, and recording network transactions requires active participation from all the anchors. Therefore, the network is managed in a decentralized manner, and any attempt to centralize its functionality is in direct disagreement with the nature and applications of this technology. All measures to extend or upgrade Kuknos must adhere to the principle of decentralization.

52. Legal adherence

521. The most distinct advantage of DLT is that, compared to centralized solutions, it establishes a much higher degree of confidence in the validity of the transactions. This, more than anything, showcases our desire to abide by the rule of law. As such, all aspects of the Network's operations are continuously monitored by all members (especially supervisors) to ensure proper adherence. These include the legal identities of anchors, issuers, and users as well as the legality of token-related goods and services, distribution of Paymon tokens, and the mechanisms used to record and store transactions and contracts.

53. Paymon as a built-in Token

531. Members of the Kuknos Ecosystem acknowledge that Paymon, whose details are presented in this whitepaper, is used as the basis for token valuation, exchange of debt and liabilities, and charging transaction fees. They refrain from defining and allocating other native assets in any form or amount.

54. Regulated Fees

541. Members of the Ecosystem acknowledge to only charge transaction fees according to the arrangements outlined in this whitepaper, in a fair manner, and by respecting the maximum and minimum allowable values.

55. Transparency

551. The voting process in Kuknos is based on consensus and follows the procedure presented in this whitepaper. Anchors are assumed to vote based on their knowledge of each transaction's nature. Therefore, given the transparency of the Network, the transactions are credible and trustable. Elaborate precautions are taken to ensure that the transparency requirements do not violate stakeholder privacy or lead to the disclosure of commercial secrets.

56. Compatibility

561. Kuknos is founded on the principle of compatibility. Although anchors are free to define and operationalize their own tokens and transactions, they must be able to interact with one another. Therefore, anchors need to consider compatibility in all aspects of their infrastructure and technical development. This, in turn, leads to a higher degree of synergy among participants.

57. Availability

571. Kuknos anchors should provide the infrastructures as well as the technical and technological mechanisms compatible with the PMN whitepaper's terms and conditions to keep their services and applications available to and accessible by the Kuknos ecosystem.

58. Irreversibility

581. Members of the Ecosystem acknowledge that, once recorded, all transactions are Immutable and that the correctness and integrity of the records on the Network are guaranteed. To modify an old transaction, one can only generate and record a new transaction.

6. Technical Infrastructure

601. The Network relies on DLT to implement the requirements set forth by the Kuknos Foundation.

61. Network Architecture

611. Kuknos is a public-permissioned network. To join, candidate anchors must meet the eligibility criteria in Paragraph 753 of this whitepaper. The network represents a customization of the Stellar solution. The overall architecture of the Network can be seen below.

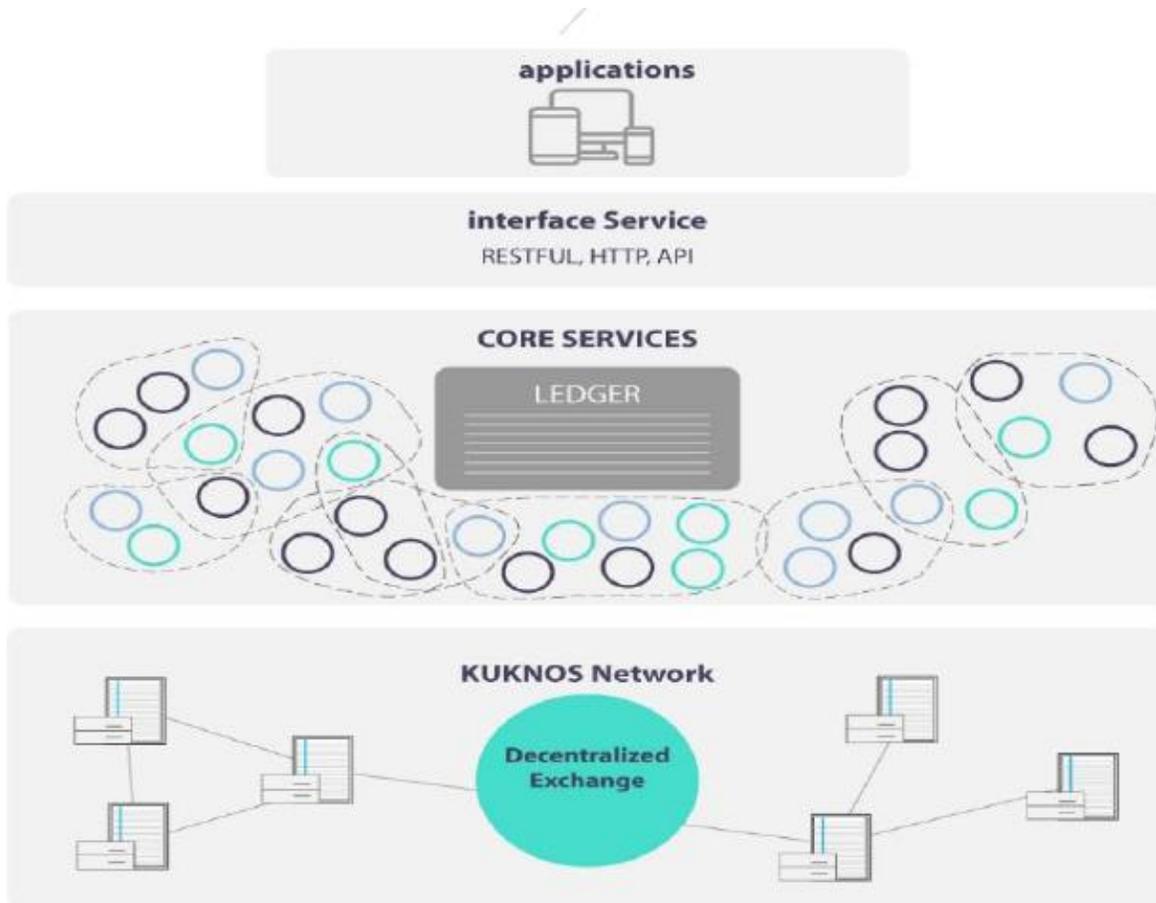


Figure 1. The overall architecture of Kuknos

612. In this architecture, anchor-provided applications are connected to the core of an active node via interface services. Together, the core nodes form the entire network.

613. Tokens are sent and received in a way that AML/compliance requirements are strictly fulfilled. The diagrams below present the conceptual models of how a user can send/receive a token.

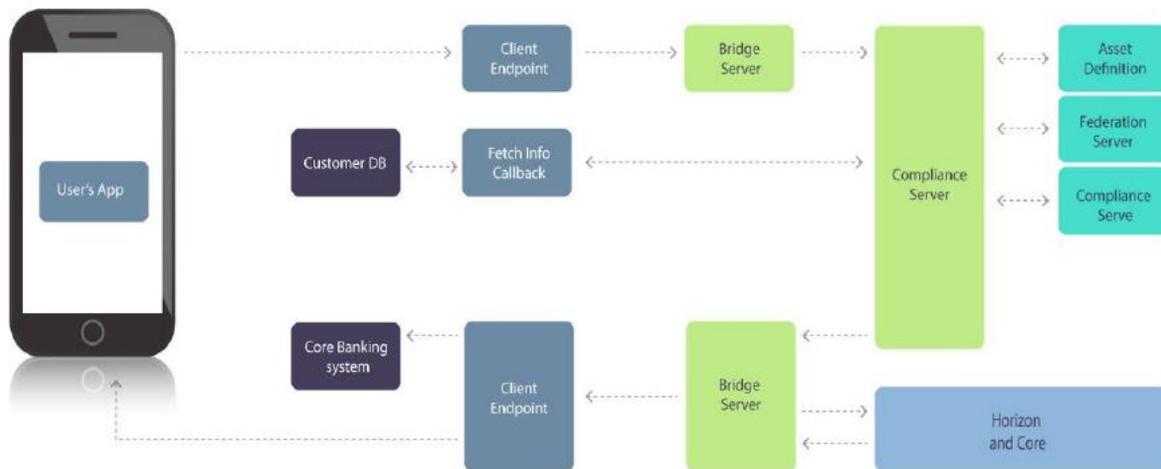


Figure 2. Conceptual model of a user sending a token

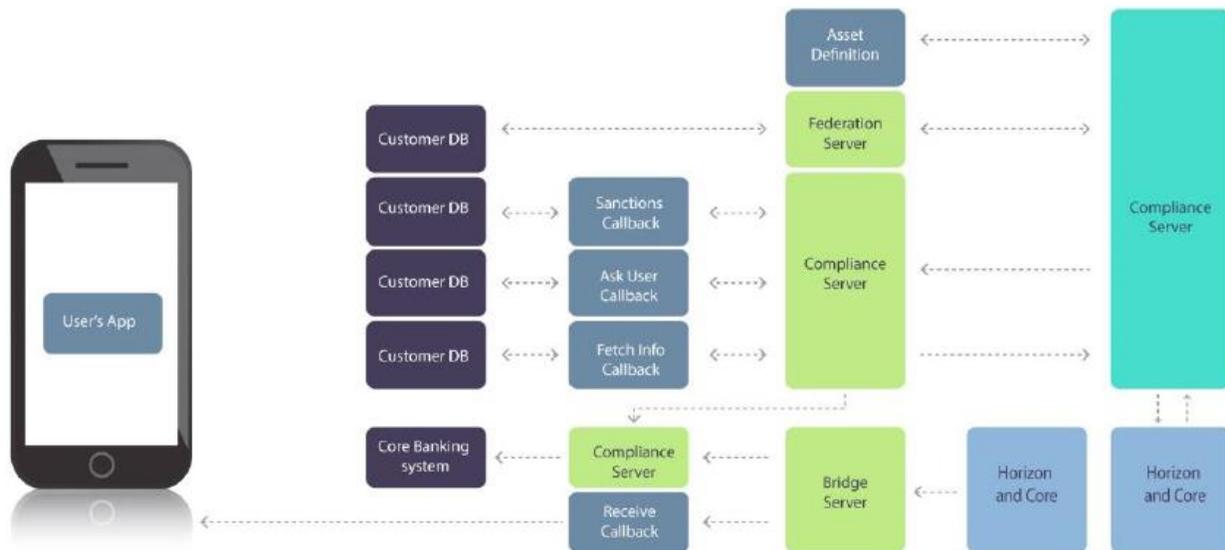


Figure 3. Conceptual model of a user receiving a token

62. Technical Components

620. This section presents the minimum technical components of the Kuknos Ecosystem. Anchors can decide to extend these components to match their business models.

621. Core Service

6211. The core service forms the backbone of the Network. Its primary functions include managing a local copy of the ledger, communicating with other nodes, and remaining homogeneous with other nodes. Optionally, the core service can provide archiving services and participate in the consensus to record transactions. The main components of the core service are as follows:

62111. SCP: The Network's consensus protocol based on Stellar's consensus algorithm.

62112. Herder: The interface between the consensus algorithm and other core services.

62113. Overlay: A component that communicates with the other nodes, transmits information, and remains informed of their statuses.

62114. Ledger: Provides the set of transactions for the consensus algorithm. It also transmits the events of other components to the network. The ledger also inserts the transactions in the bucket list and archives.

62115. History: Publishes the transactions and ledgers to outside storage.

62116. Bucket list: A storage for verified ledgers. It also manages the disks and controls their hash values to prevent duplication.

62117. Transaction: Implements the different types of transactions.

622. Interface Service

6221. The interface service provides a set of APIs that connect user software to the Network. The service acts as an intermediary layer between core services and applications to facilitate software development on the Network.

623. Bridge Service

6231. The bridge service is a facilitated interface to implement the compliance service. It stores the keys associated with a business account or application. Once the compliance service authorizes the transaction, it is automatically processed.

624. Compliance Service

6241. The compliance service ensures that anchors meet the legal requirements in their respective jurisdictions and handles AML controls. In short, the service acts as an intermediary layer that checks the compliance of a transaction before authorizing it.

625. Federation Service

The federation service converts human-readable addresses into real addresses on the network. The human-readable addresses are in the user*domainname.ir format and are mapped to key pair addresses.

626. Exchange Service

6261. Kuknos includes a decentralized exchange infrastructure that enables the exchange of various tokens. Thus, token issuers can set exchange rates based on market conditions.



Figure 4. Conceptual model of the decentralized exchange service

6262. To serve its customers' unique needs, an anchor is free to create a customized GUI for the exchange service. Unique and user-friendly UX can become a competitive advantage.

627. Archive Service

6271. This service is an independent tool connected directly to the core archive service. It is only used to create an off-chain archive.

628. Kuknos Wallet

6281. Anchors are free to create customized wallets that suit the specific needs of their customers. However, user authorization is mandatory.

629. Kuknos Dashboard

6291. Allows users to monitor the Network, anchor, transaction details, and the ledger. The service is available via <https://dashboard.kuknos.org>.

630. Kuknos Laboratory

6301. The laboratory environment is connected to Kuknos's testnet and makes it possible to test different ideas without going through the entire software development process. All the services provided by service interface APIs can be tested in the laboratory. The service is available via <https://lab.kuknos.org>.

631. Mainnet and Testnet

6311. Kuknos consists of a mainnet and a testnet. The latter serves as a platform for training purposes as well as developing innovative ideas.

6312. The communication platform of the Network is based on the internet, and the founding members provide the anchoring infrastructure.

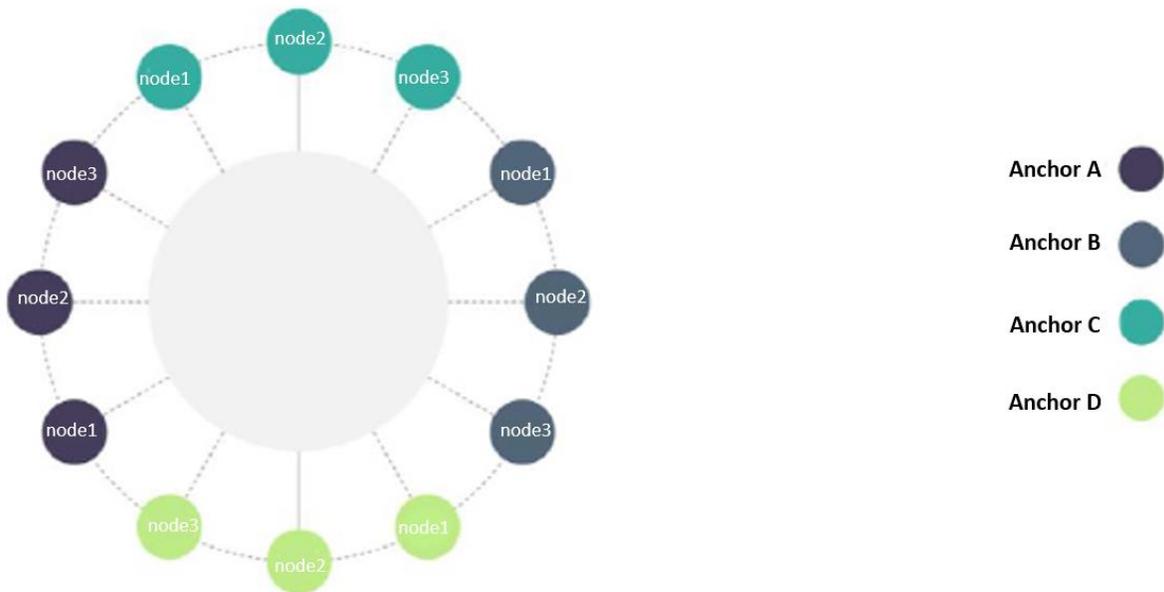


Figure 5. An illustration of how anchors nodes are connected

6313. As the first step to creating a dynamic mainnet, each founding member acts as an anchor and creates three active nodes in three different data centers. The initial network consists of at least three anchors, each of which has three active node service providers.

6314. The source code repositories of Kuknos services are available at <https://git.kuknos.org> for the anchors to access. New anchors can implement and deploy their services by accessing this source code.

6315. To simplify service deployment for anchors and accelerate network updates, the system uses application virtualization and Docker. Anchors can download the necessary Docker Images from <https://repository.kuknos.org> to make the service deployment process faster and easier.

7. Roles and Members

71. Founding Members

711. The Kuknos Network is founded by a coalition of technology companies consisting of Tecvest (Technology Investors), Sadad Co., Parsian Bank Data Processing Group Co. Fanavaran Hooshmand Behsazan Farda Holding Company, Fanap ICT Co., Yekta Kuknos Pars Distributed Information and Financial Technology Company.

712. As the founding members, these companies contribute the initial technical infrastructure (e.g., servers) as well as the minimum economic requirements (e.g., gold reserves backing Paymon), so that Network operations can begin per the principles and values outlined in this whitepaper.

713. The founding members are free to act as independent anchors to offer proprietary services and applications. However, they are not granted any privileges for being a founding member.

714. Prior to the public offering of Paymon, the founding members act as anchors, and their decisions per Paragraph 72 are regarded as the decisions of the Kuknos Foundation.

72. Kuknos Foundation

721. The Foundation is a self-regulated distributed organization.

722. The Foundation is a nonprofit non-union institution.

723. Each anchor has two representatives in the Foundation with independent voting rights.

724. Any eligible anchor can become a member of the Foundation contingent on the condition that 51 percent of the anchors agree to the addition. Anchors that are operated by government bodies are solely responsible for all compliance and legal issues.

725. To make strategic decisions, at least 80 percent of the foundation members must reach a consensus. Such decisions include interpreting or revising the whitepaper, regulating the relationships between members of the Ecosystem, identifying violations and setting penalties (e.g., prohibiting anchor participation in the network), resolving anchor disputes, and appointing a secretariat of anchors with specific responsibilities and authority.

726. The Foundation manages the unbacked Paymon accounts. The tokens are distributed among the anchors according to the procedures in this whitepaper, provided that at least 51 percent of the members reach a consensus.

727. To create a transparent, credible leadership structure, the voting infrastructure is implemented using a public ethereum smart contract as a Distributed Autonomous Organization (DAO). The details of the smart contracts are available via <https://www.kuknos.org/dao>.

73. Secretariat

731. From the effective date of this whitepaper, the Company is responsible for the Secretariat affairs of the Foundation for three years.

732. Secretariat affairs cover a wide range of responsibilities including but not limited to establishing collaboration among members of the Ecosystem to develop technical infrastructure and novel authorized services, connecting new members to the Network, monitoring the Network and markets, holding relevant events, accepting and proposing revisions to the whitepaper, regulating the relationships among ecosystem members, identifying violations, and setting penalties.

733. Members of the Foundation must pay a subscription fee to cover the expenses of the Secretariat.

734. To help with the goals of the Foundation, the Secretariat is permitted to accept gifts and donations from natural or legal persons.

74. Supervisors`

741. Competent authorities responsible for governance issues pertaining to members of the Ecosystem have the capacity to serve as supervisors with respect to policy, regulation, management, auditing, surveillance, execution agents, investigation, and trial.

742. Supervisors are only regarded as members of Kuknos in their capacity to follow up governance issues pertaining to one or more anchors. Relevant anchors invite the supervisors.

743. Supervisors are not involved in validating the transactions. They can only view and store records.

744. To become members of the Foundation, supervisors must agree to follow the provisions of this whitepaper.

745. Supervisors are free to serve as anchors as long as their anchoring interests are not in conflict with their supervisory duties. The Foundation judges potential conflicts of interest.

75. Anchors

751. All natural or legal persons from the public or private sector can become anchors provided that they agree to the provisions of the whitepaper, and satisfy the technical and economic requirements. When operating anchors, government entities are solely responsible for complying with their own rules and regulations.

752. The addition of new anchors is contingent on fulfilling the eligibility requirements and a majority vote (51 percent) of the current anchors.

753. Anchors eligibility requirements are as follows:

7531. Applicants must have no criminal conviction related to their professional activities. However, it is not mandatory to provide a certificate of clearance from a competent authority. Applicants need to declare their status and agree to accept the consequences of being dishonest.

7532. Applicants must have an excellent reputation in their professional field.

7533. Applicants must have all the necessary certificates and licenses and comply with all the respective rules and regulations.

7534. Applicants must present a draft whitepaper of at least one specialized token to be offered on the network.

7535. Applicants must sign a contract with at least one current anchor to fully guarantee their debts and liabilities toward Kuknos stakeholders. Anchors are not allowed to have mutual guarantees.

7536. Applicants are required to provide at least three active service providers for the network.

7537. Applicants must demonstrate the technical capacity to effectively use the infrastructure provided by Kuknos.

7538. At least 51 percent of the current anchors must agree to the applicant's request to join the network.

7539. Applicants must offer backing assets for at least one million Paymon.

754. Anchors' responsibilities with respect to the supply, distribution, and market-making of the backing gold are detailed in Section 83 of the whitepaper.

755. Anchors are responsible for acquiring, supporting, and monitoring issuers. They are free to simultaneously act as issuers and service providers.

756. A list of active anchors is available via <https://www.kuknos.org/anchor>

76. Issuers

761. All legal and natural persons in the public or private sectors are able to assume the role of an issuer after obtaining consent from at least one anchor.

762. Issuers can interact with multiple anchors at the same time.

763. From a technical perspective, issuers are dependent on the infrastructure and applications provided by the anchors.

764. Tokens must be issued according to the requirements and conditions of the respective anchor.

765. Anchors are obligated to publish issuer-related information with sufficient transparency.

766. Provision of other Kuknos services by the issuer (e.g., wallet and exchange) is contingent on the respective anchor accepting the relevant responsibilities.

767. Issuers are obligated to publish a whitepaper for each token. The verification and publishing process of the whitepaper includes the following steps:

7671. The issuer prepares a draft of the whitepaper according to the Foundation's approved template.

7672. The issuer delivers the whitepaper to the anchor.

7673. The anchor evaluates the whitepaper and checks for compliance with the Kuknos whitepaper and the approved template.

7674. The anchor approves the revised whitepaper and signs a contract with the issuer.

7675. The anchor confirms that the issuer has obtained all the required certificates and licenses relevant to the scope of the whitepaper.

7676. The anchor publishes the final version of the whitepaper on its website.

77. Users

771. All natural and legal persons from the public and private sectors are free to join Kuknos as users unless legally prohibited.

772. Users connect to the Network exclusively through services provided by the anchors. Each service provides its own connection mechanism.

773. When using anchor-provided services such as wallets and exchange GUIs, users must be identified and authorized according to the requirements set by the Foundation. Users are authorized with different levels of KYC, using the following methods:

7731. Kuknos address and verified cellphone number corresponding to a public key provided by an anchor.

7732. Kuknos address, email address, and verified cellphone number corresponding to a public key provided by an anchor.

7733. In-person identification in a branch of a member bank for a Kuknos public key[†].

774. In the Kuknos core, users are defined and identified by their key pairs. All users are responsible for protecting their private keys.

775. Users are able to vote for anchors, and each vote is assigned a weight based on the user's Paymon balance. Anchor votes are automatically calculated each month and published on the public dashboard for the entire Ecosystem. User votes represent satisfaction with anchor performance. Users can retract their votes before the end of the voting period (one month) and vote for another anchor.

8. Paymon

81. Issuing

811. The Foundation initially issues Paymon (PMN) tokens at the outset of Network operations.

812. Initially, the Foundation issues one billion unbacked tokens and transfers them to its distribution accounts. The required gold reserves are acquired relative to the level of Network activity, and the tokens are transferred from distribution accounts to anchor accounts to be offered publicly.

813. Details of the token issuance process are available via <https://www.kuknos.org/Paymon>

814. Nine hundred million (900,000,000) unbacked tokens (out of one billion) were transferred to an irreversible account (an account with a permanently expired signature). Therefore, a total of 100,000,000 unbacked tokens can be offered on the network.

[†]A specialized token, namely SKYC, will be issued for securely managing and sharing customer banking data. Details will be published in the respective whitepaper.

82. Minimum Account Balance

821. To prevent dormant accounts and spam transactions, several minimum Paymon balance requirements are established and checked before conducting transactions.

822. The minimum balance is calculated based on the following relation:

$$\text{Minimum balance} = (2 + \# \text{ of entities}) * \text{base reserve}$$

- base reserve = 0.5 Paymon
- Entities include the following:
 - o Number of trustlines
 - o Number of offers
 - o Number of signers
 - o Number of data entries

83. Distribution

831. Paymon distribution accounts (excluding those of the founding members) require multiple signatures, with all members of the Foundation having their signatures defined for these accounts. Paymon distribution is contingent on the majority vote (51 percent) of the anchors.

832. There are four distribution accounts with the following token allocations:

8321. Twenty percent (20%) of the 100,000,000 tokens for the anchors.

8322. Fifteen percent (15%) of the 100,000,000 tokens for Flagship users.

8323. Sixty percent (60%) of the 100,000,000 tokens for floating monthly offers relative to network performance.

8324. Five percent (5%) of the 100,000,000 tokens for the founding group[¶]

84. Distribution Rules

841. Twenty percent (20%) of the 100,000,000 tokens are allocated to network anchors.

8411. In this stage, at least 1,000,000 Paymon are offered to authorized anchors.

8412. Anchors must supply the backing gold before the tokens are transferred from the Foundation's accounts.

8413. The initial offering period for anchors is between 06 November 2019 to 05 December 2019.

[¶]The founding members constitute the group of natural people who designed, developed, and deployed the Network. Mr. ولی الله فاطمی اردکانی (National ID Number: 4449594932) provides a list the members' names and their stakes in the project.

8414. Anchors must meet the eligibility criteria in Paragraph 753.

8415. Unclaimed tokens from the initial offering are added to the pool of tokens offered monthly.

8416. Once the initial offering to the anchors concludes, new anchors must obtain their tokens from current anchors by participating in their monthly offerings.

842. Fifteen percent (15%) of the 100,000,000 tokens are allocated to flagship users.

8421. Each Flagship user receives a minimum of 1000 and a maximum of 8000 Paymons.

8422. Flagship users supply the gold used to back Paymon. Multiple anchors are selected by the Foundation to evaluate, equalize, and store the gold provided by the Flagship users. The process must be carried out by considering all applicable laws related to the sale of gold.

8423. The selected anchors who evaluate and store Flagship users' gold are allowed to charge a maximum fee of 0.5% in Paymon.

8424. The initial offering of coins to Flagship users is between 06 November 2019 to 19 March 2020.

8425. The selected anchors must conduct Flagship user identification according to the relevant rules.

8426. Flagship users are able to return the Paymon to the anchor and have their gold refunded at the initial calculated value. In this case, the anchor transfers the received Paymons to the refund account maintained by the Foundation.

843. Sixty percent (60%) of the 100,000,000 tokens are offered on a floating monthly basis relative to network performance.

8431. Monthly offerings begin on 06 November 2019.

8432. Applicants must meet the anchor eligibility requirements.

8433. The maximum allowable Paymon to be offered on the Network is calculated using the following relation:

Total monthly supply = Number of active anchors * 100,000 * (1 + (Total monthly votes/All issued tokens))

8434. Each anchor can receive a maximum number of tokens determined by the following relation:

Maximum monthly tokens = 100,000 * (1 + * (Total monthly votes/All issued tokens))

844. Five percent (5%) of the tokens are allocated to the founding group.

8441. The tokens are offered when at least 70 percent of the group members reach a consensus. The tokens are offered gradually (up to 20 percent each year).

8442. Group members designate 10 distribution account signatories among themselves.

8443. Members of the founding group must supply the gold reserves for their tokens or delegate the task to one or multiple anchors. The gold must be supplied in proportion to the offered tokens.

8444. Anchors can sell and distribute their Paymon only through Kuknos's distributed exchange. Receiving more Paymon from Kuknos's distribution is contingent on monthly sale amounts and providing equal backing gold. Anchors are allowed to send their request for more Paymon to Kuknos foundation considering abovementioned conditions. The Foundation then decides whether new tokens should be allocated to the anchor from the distribution accounts. The decision is based on sale records and documents demonstrating the provision of new gold.

8445. When offering Paymon tokens to users, anchors are allowed to tokenize common currency by considering all applicable laws. Users can then use their common currency tokens or the common currency itself to purchase/barter Paymon in an exchange.

8446. The minimum price at which anchors are allowed to offer Paymon in an exchange or direct sale using a local currency is calculated as follows:

Offer price of 1 PMN by an anchor = 1.1 * (Price of 1mg gold in the local currency)

84461. The price of gold is determined based on the prices announced by the Tehran Jewelry and Gold Union (TGJU) and by converting other standards (e.g., 17 karats) to the 24 karat price.

84462. Other members and users of Kuknos are not obligated to follow this formula on the exchange.

8447. At least 10 percent of the abovementioned price is allocated as an issuance fee to incentivize anchors to actively participate in the distribution process.

8448. Conversion of Paymon to other tokens in Kuknos is only allowed by paying the network fee.

8449. Paymon redemption (i.e., receiving the backing gold from the anchor) must follow the requirements in Paragraph 84481 with fees determined by the anchor. The redeemed tokens are transferred to the "Redemption Account" managed by the Kuknos Foundation to be redistributed to the market. The following conditions apply:

84491. Paymon is redeemable in packages of 10,000.

84492. The redemption fee cannot exceed 1 percent, and it is received in Paymon.

84493. Anchors that are eligible to redeem Paymon are selected by the Foundation and announced on the Secretariat's official website.

844931. Contingent on the Foundation's approval, the Redemption Account balance is transferred to the monthly distribution account.

85. Paymon Guarantee Conditions

851. Anchors are required to publish the gold deposit certificate or insurance documents for the Paymon token.

852. Anchors are required to provide adequate access for regular audits by the Secretariat or other competent authorities (and, in some cases, token owners) to ensure that sufficient gold reserves are maintained.

853. The backing gold must be kept in safe and publicly observable storage.

8544. In case of failure of the responsible anchor to fulfill its obligations and/or to pay its debts resulting from its activities on Kuknos, including the inability to provide sufficient backing gold, the guaranteeing anchor is responsible for those liabilities.

8545. If the liable anchor is expelled, its backing gold is transferred to the guaranteeing host.

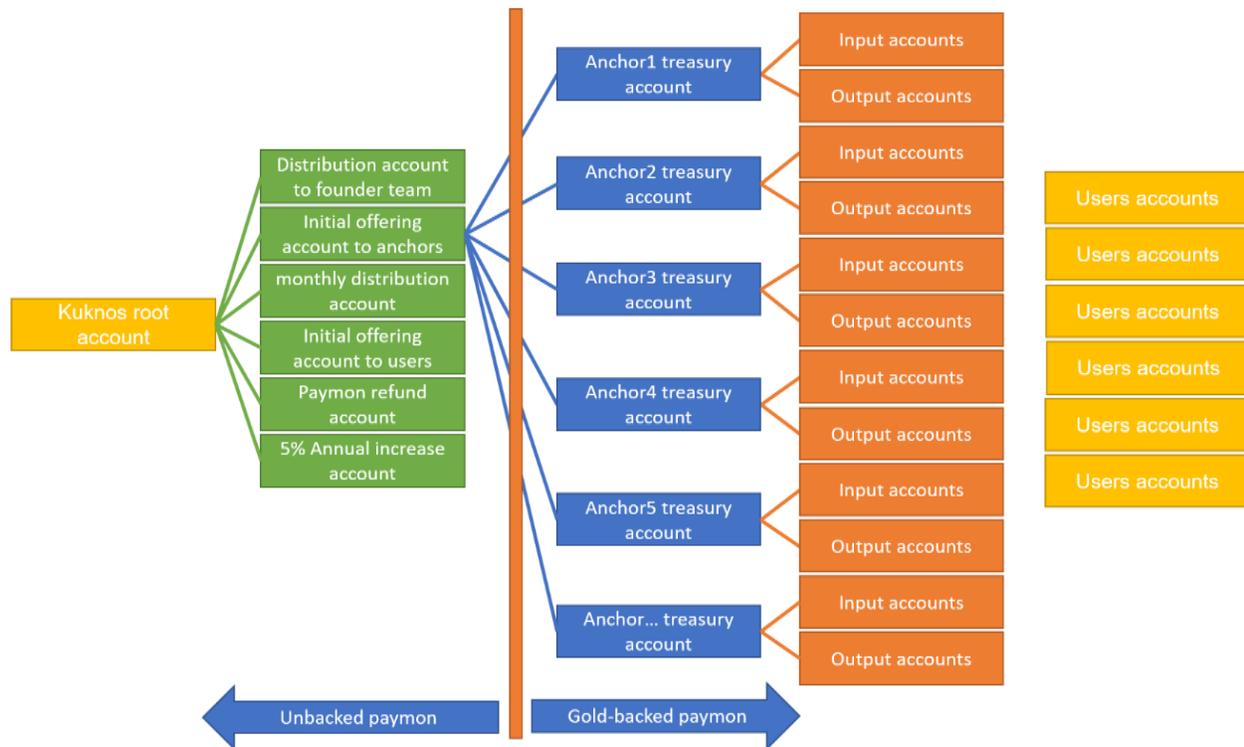


Figure 6. The structure of the issuance and distribution accounts

9. Anchor Revenue Models

91. Anchors have the following revenue streams:

911. Each transaction carries a fee of 50,000 peanuts. Anchors collect their fees based on the number of votes they receive each month.

912. Asset token issuance fees are arbitrary.

913. Paymon issuance fee equals at least 10 percent of the backing gold value, as per Paragraph 8446.

914. Fees for other service providers are arbitrary.

915. The maximum redemption fee is 1 percent, payable in Paymon.

916. The revenue from managing Paymon supply and demand (market price minus issuance price).

917. Anchors receive 1 percent of the backing gold of the distributed Paymon tokens each year as compensation for their services.

10. Anchor Competition

101. Anchors and issuers have no restrictions in developing and diversifying their markets, provided that their actions not violate the principles laid out in this whitepaper.

102. If necessary, the Foundation takes the necessary measures to regulate the market and prevent and counteract anti-competition practices by any member(s) of the Kuknos Ecosystem.

103. The maximum and minimum fees are set in the whitepaper to incentivize anchors to improve service quality, optimize interests, and promote healthy competition.

104. Users vote for anchors based on the Paymon balance in their accounts. Therefore, by creating diversified and user-friendly channels and services, anchors can attract more votes and increase their revenue in the following areas:

1041. Fair distribution of network operation fees.

1042. Receiving more distributable Paymon tokens each month.

11. Kuknos Legal System

111. Governing Laws

1111. Kuknos is governed by the Electronic Commerce Act of the Islamic Republic of Iran. Members of Kuknos must abide by other applicable laws of the country, including the Cyber Crimes Act.

1112. According to Article 3 of the Electronic Commerce Act: “The international origin, the need to promote uniformity in its application, and the observance of good faith should always be taken into consideration in the interpretations of this Law.”

1113. Anchors owned and operated by foreign entities are bound by the laws of their home countries provided that those laws not contradict the laws of the Islamic Republic of Iran (IRI).

1114. Kuknos is bound by the applicable laws of transnational institutions recognized by the IRI.

112. Validating the Kuknos Ecosystem

1121. The Secretariat obtains all required licenses from qualified national and transnational competent authorities.

1122. All members of Kuknos are required to obtain pertinent licenses from competent authorities. Their responsibilities cannot be abdicated based on the licenses obtained by Kuknos.

1123. If the licenses of any Ecosystem member, especially anchors, are revoked, operations of Kuknos remain unaffected unless the conditions in Paragraph 1261 apply.

113. Kuknos Foundation Votes

1131. Foundation votes do not signify competence, license to operate, or the revocation thereof in Paragraph 1122.

1132. With respect to strategic issues enumerated in this whitepaper, decisions are made based on a supermajority (80 percent of the votes) of the anchors. Disagreements about strategic issues are also resolved using the same approach.

1133. Transaction verification, the addition of new anchors, and Paymon distribution management require a simple majority vote (51 percent).

1134. The Foundation does not interfere with the managerial and internal affairs of the anchors and among them. All decisions must be made based on relevant whitepapers, agreements, and contracts.

114. Ownership of Kuknos

1141. Kuknos is not owned by any of its members.

1142. All anchors have full ownership of their technical infrastructure.

1143. The assets backing Paymon and other tokens belong to the issuers unless token holders are contractually able to own or seize those assets.

1144. Excluding proprietary intellectual properties belonging to the anchors, all intellectual properties associated with the Kuknos name and brand, as well as their material benefits, belong to the Foundation.

115. Kuknos Trades

1151. Recording trade transactions in the ledger does not imply legitimacy. Members are required to abide by all pertinent laws.

1152. All contracts and agreements between the anchors, issuers and users shall be agreed and signed between the relevant parties in compliance with all relevant applicable laws. If the parties do not refer to any specific legal system as governing law, then the laws of the Islamic Republic of Iran apply.

1153. The issuer and anchor are responsible for setting a legal framework and contract type for their respective token(s).

1154. The issuer(s) and anchor(s) are jointly obligated to conduct their duties and responsibilities.

1155. Contracts are digitally signed using reliable electronic signatures that meet the requirements of the Electronic Commerce Act.

116. Privacy

1161. Kuknos respects the privacy of its members and all other stakeholders. Anchors must provide fully transparent privacy terms in their tools and services.

1162. All Kuknos applications must publish independent privacy and data protection policies. Relevant anchors are responsible for developing and publishing those policies.

1163. In all Kuknos contracts, breach of user privacy and private stakeholder information must be anticipated as a violation of the contract, and appropriate guarantees must be obtained.

117. Security

1171. Anchors, issuers, and users are responsible for the security of their respective applications, infrastructures, and systems. Anchors are responsible for monitoring activities and must deploy appropriate urgent response systems.

1172. In case of any threats to any application, the respective anchor must inform other entities, especially its issuers and users, in the shortest possible period. Otherwise, the anchor is responsible for potential damages.

1173. Each anchor is required to notify users of potential security events and possible solutions either directly or through the issuers.

1174. Anchors are required to insure their users against security threats.

1175. Users are responsible for the safekeeping of their private keys. No entity in the Kuknos Ecosystem is responsible for the theft or misuse of private keys.

118. Referability

1181. All stakeholders can reference recorded transactions. Unrecorded transactions can be referenced by the anchor.

1182. Having access to transaction records does not prevent one from requesting them. It is possible to request records maintained by other parties for purposes such as comparison.

1183. The initiator must store operations that do not result in a transaction.

1184. All transaction records must be stored for at least two years.

1185. All transaction records are legally attributable and referable to the relevant party and as valid as electronic signature of each person as mentioned in Electronic Commerce Law of the Islamic Republic of Iran.

119. Undeniability

1191. Each transaction is presumed to be referable/attributionable to the person who is the owner of the account which has applied for the registration of such transaction in the Ledger.

1192. Kuknos transactions cannot be denied with the quality of identity information connection to account number being determined based on the requirements of each KYC level. The desired anchor is fully responsible for making the connection.

120. Transparency

1201. All hosts and supervisors have access to transaction records.

1202. Each transaction has different information requirements and follows different regulations.

1203. Requests for further transparency are contingent on the protection of other stakeholders' rights, especially with respect to reputation and ownership.

1204. Binding national or transnational laws of Anti-Money Laundering (AML), anti-terrorism, or other serious crimes supersede ownership or reputation rights of the Ecosystem members.

1205. Transparency does not entail publicly announcing all available information. It is sufficient to allow competent authorities and stakeholders access to relevant information.

1206. Transparency measures must persist until all ambiguities in the activities, interests, losses, effects, consequences, rights, personal liabilities, and potential responsibilities of all parties are resolved. If necessary, appropriate textual, visual, and/or auditory content must be created.

1207. Members of the Ecosystem are required to establish appropriate (preferably 24/7) support and communication channels with their stakeholders and recruit experienced technicians to handle the responsibilities.

121. Announcements

1211. All public, limited, or individual announcements about Kuknos are solely made by the Secretariat and can be republished provided that a reference is given.

1212. Anchors are allowed to own and operate independent media.

122. Liabilities and Responsibilities

1221. Anchors and issuers are responsible for managing the legal aspects of all their services.

1222. The losses incurred by a delay in distribution or failure to redeem the distributed Paymon tokens are covered by the anchor, in proportion to their supply of Paymon.

1223. The losses incurred by a delay in distribution or failure to redeem asset tokens are covered jointly by the issuer(s) and the anchor.

1224. The anchor or issuer is liable for any responsibility related to/resulting from any failure to respect administrative regulations and/or applicable obligations or any criminal or civil responsibility resulting from crimes as mentioned in local applicable laws of anchors and/or issuers country.

1225. Users are responsible for the following issues:

12251. Failure to comply with the rules and regulations governing user activities in Kuknos.

12252. Failure to comply with the security requirements of the Kuknos Ecosystem members.

12253. Failure to honor the terms of the Kuknos contract.

12254. Having insufficient knowledge of the terms and requirements of each market, member, or trade in Kuknos.

123. Compensations

1231. Any approval or rejection of any request for registration of any transaction in the ledger shall cause no responsibility for the voting anchors or supervisors. The applicant of such request or transaction is directly and specifically responsible for all obligations resulting from the request or transaction.

1232. All losses, whether material or immaterial, caused by trades and interactions on Kuknos, must be compensated by the issuers, hosts, and users.

124. Anchor Exits

1241. To exit Kuknos, whether mandatory or optional, an anchor must go through the following steps:

12411. Publicly announcing the exit at least three months prior.

12412. Ceasing all customer (i.e., issuers and users) acquisition efforts.

12413. Removing the anchor's signature from all of the Foundation's accounts.

12414. Providing the Secretariat with timed exit procedures verified by the guaranteeing anchor.

12415. Transferring the Paymon backing gold to the guaranteeing anchor.

12416. Transferring other backing assets and asset tokens to the guaranteeing anchor.

12417. Transferring all issuance account keys associated with all tokens to the guaranteeing anchor.

12418. Transferring all issuer and user contracts to the guaranteeing anchor.

12419. Disconnecting from technical infrastructure and transferring user service provision channels to the guaranteeing anchor.

12420. Transferring customer information as well as connected to or independent from the Kuknos Network to the guaranteeing anchor.

12421. Submission of a letter of undertaking addressed to the Kuknos Foundation accepting not to use, transfer and disclose Kuknos network's information, data and system for personal purposes or against the agreed terms and conditions.

12422. Anchors guaranteed by the exiting anchor must introduce a new guaranteeing anchor within 3 months.

125. Dispute Resolution

1251. Anchors are required to have a dispute resolution clause in their contracts and other legal documents.

1252. In case of disputes among anchors with respect to the terms of the whitepaper or mutual interactions, especially between the anchors that support and provide similar applications, the Foundation can act as the arbitration authority or mediator to solve the disputes between the parties amicably and in a peaceable manner

126. End of Life

1261. Kuknos ceases to exist if there are fewer than 3 anchors in the network.

1262. If the number of anchors does not fall below the threshold in Paragraph 1261, anchor exists (whether ... or ...) do not affect Kuknos operations.

1263. Anchors are obliged to protect the assets backing the Paymon and their issued tokens from any seizure and confiscation resulting from legal and judicial actions. Otherwise, they are solely responsible for the consequences of claims and accusations such as fraud, unjust enrichment of another's property, betrayal of the trust or sale of another's property.

127. Enforcement of Whitepaper

1271. The present whitepaper comes into effect after it is signed by at least 3 anchors and communicated to the Secretariat.

1272. Whitepaper revisions are considered strategic decisions and come into effect after being communicated to the Secretariat.

1273. Issuer whitepapers come into effect as soon as the official approval of anchors confirming lack of conflict between Kuknos whitepaper and the relevant whitepaper. Anchor audits must be performed within 10 working days. Failure to present an opinion is regarded as approval.

1274. Anchors that sign the whitepaper hereby agree and are obliged to respect and protect the terms and conditions resulted from this whitepaper and its further amendments in all relevant agreements, minutes and contracts irrevocably. Anchors agree to follow this whitepaper themselves and keep it binding for their relevant contractual parties.

1275. This document is the final version of the agreement between signatory anchors. Once the present whitepaper comes into effect, all previous versions of the whitepaper, as well as all bilateral and multilateral agreements among anchors, whether written or spoken, are considered to be void.