ILGON Network White Paper

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Introductions

Credo

Throughout the last two decades, and even in more recent years, our lives have been transformed from the bottom-up by technological progress and innovation.

In 1988, Timothy C. May projected the world of today with almost visionary abilities and drew attention to the importance of protecting privacy.

For the past 12 years - since the advent of Bitcoin - humanity is exploring the technology that showed the world: In designing complex networks and systems, centralisation is not the way forward!

The genuine application of decentralised technologies can eliminate the need for trusted intermediaries and third parties - leading to more efficient and reliable processes and considerable reductions in operating costs.

In the pursuit of mass adoption, user-centric design has to be one of the key fundamentals in creating digital experiences that stand the test of time.

In the future world of interoperating ecosystems, isolated networks are a thing of the past, and a variety of blockchain protocols peacefully coexist, and together contribute to our species' shared and mutual progress.

The Concept

As cryptocurrency prices soar to previously unseen heights, and the number of users correspondingly increase, blockchain networks are operating notably overloaded, and with intense pressure to scale.

In the presence of a deadlock in consensus, the struggle with scaling and transaction costs remains ongoing. Although solution proposals are being worked on already, it will likely take years for Ethereum to move any further, due to internal community politics and the disadvantages of the Proof-of-Work consensus.

Ethereum has created a standard for both businesses and development. Smart contracts and decentralised applications run on Ethereum - and developers are familiar already with the blockchain's architecture and coding language.

ILGON is built on the Ethereum blockchain's foundations and implements many solutions from legacy blockchain technology and new academic proposals - resulting in significant performance and efficiency, a future-proof governance model, and the ability to scale.

Based on historical progress and driven by the zest of innovation, ILGON aims to become the user-centric blockchain with reliably low costs and transaction times as short as 5 seconds, resulting in an uncompromised second-generation blockchain experience benefitting consumers, corporations, and organisations worldwide.

With a clear vision in mind, ILGON is looking forward to hosting and connecting users with technology in a seamless, efficient, and integrated way, harnessing the potentials of the future already today.

Protocol Architecture

The ILGON Network relies on a uniquely modified sovereign version of the Ethereum blockchain and has a similar protocol architecture design.

Forking from Ethereum, the goal was to modify the protocol to allow for better scaling and to result in a future-proof governance model that enables the fine-tuning of parameters - all without the risk of compromising the integrity of the blockchain with hard forks, and fully preserving backward compatibility with Ethereum.

To establish a flexible consensus model, ILGON shifted away from the original Proof-of-Work approach to a hybrid model of Proof-of-Authority and Delegated Proof-of-Stake secured by the original Keccak-256 cryptographic hash function.

Data on the Ethereum blockchain's maximum utilisation shows that increasing the transaction speed up to 200 transactions a second guarantees that ILGON could withstand the highest historical demands of Ethereum, and even more.

Block propagation time is adjusted to ensure a higher throughput capacity, down from 10 - 19 seconds, to as short as 5 seconds per block - alongside increasing the maximum gas limit from 10 000 to 20 000 gas/ transaction.

As acting governance is in place, and median transaction fees expected to be as low as $0.03USD / transaction, reasonable gas prices and the lack of network congestion together make the ILGON Ecosystem a long-term cost-efficient green alternative to the original network.

General comparison of the ILGON Network and the Ethereum network		
Network:	**ILGON**	**ETHEREUM**
Native token:	ILGON	ETHER
Symbol:	$ILG	$ETH
Decimal places:	18	18
Network throughput:	200 tx / second	15 tx / second
Block propagation time:	5 seconds / block	10-19 seconds / block
Gas limit:	20.000 gas	10.000 gas
Block reward:	20 ILG (early stage)	2 ETH
Max. supply:	Not limited	—
Turing complete:	Yes	Yes

Governance

Legacy blockchain technologies tend to lag in development mostly due to the inability to reach a broad consensus on the direction of technological advancements.

The ILGON Network runs on a nation-state governance model. With off-chain governance, a system-of-actions align the users' interests on a set of governing crypto-economic principles, incentivising work towards the making of a more efficient and prosperous union.

With built-in governance processes promoting the free flow and cultivation of ideas, and in a culture of scientific research and expert opinion, the focus is on building and maintaining a sustainable infrastructure that serves all individuals and organisations, robust, reliable, and yet able to adapt to any new and unforeseen circumstances.

The democratisation of governance and improvements rewards parties to take relevant roles in pushing through policy and protocol improvements and keep the checks and balances in place.

On the 3rd of January, 2021, 19:15 (GMT+1), the ILGON main network started its live operations as the genesis block received validation.

The project begins with a transition period of 888 days, rolling out a roadmap with many significant milestones ahead: the gradual introduction of institutional validators, the steady shift to Proof-of-Stake, and the community's scheduled takeover of network dominance and ownership.

Governance comparison of the ILGON Network and the Ethereum network		
Network:	**ILGON**	**ETHEREUM**
Governance type:	nation-state	informal
Consensus:	Hybrid: Proof-of-Authority (PoA) and Delegated-Proof-of-Stake (DPoS)	Proof-of-Work (PoW)
Cryptographic hash function:	Keccak-256	Keccak-256
Protocol change requires hard fork:	No	Yes
Staking available:	Yes	No

Validators

Transactions on the network are organised in blocks and cryptographically chained together for immutability. Network Validators verify the authenticity of newly minted blocks.

As network maturation progresses, ILGON will implement the Proof-of-Stake consensus mechanism, and the option to become a Validator will be available for the public.

To kickstart the initial stages of development, and to protect the network from external threats, at first the operation of Validators' is carried out internally.

Already by late 2021, the number of external validators will begin expanding through special invitations. Respected institutions and reputable organisations will be onboarded as first trusted Validators, further bolstering the network's security and immutability.

Security is additionally improved by shielding Validators behind The Onion Router (TOR) protocol, so any hostile attempt is much harder to realise due to layered and hidden routing.

Nodes

The primary bastions of every network: Nodes are automated network units, and serve as information relays between other network nodes. They store the full or partial transaction history of the blockchain and Nodes verify broadcast transactions, and produce the blocks for the Validators to verify.

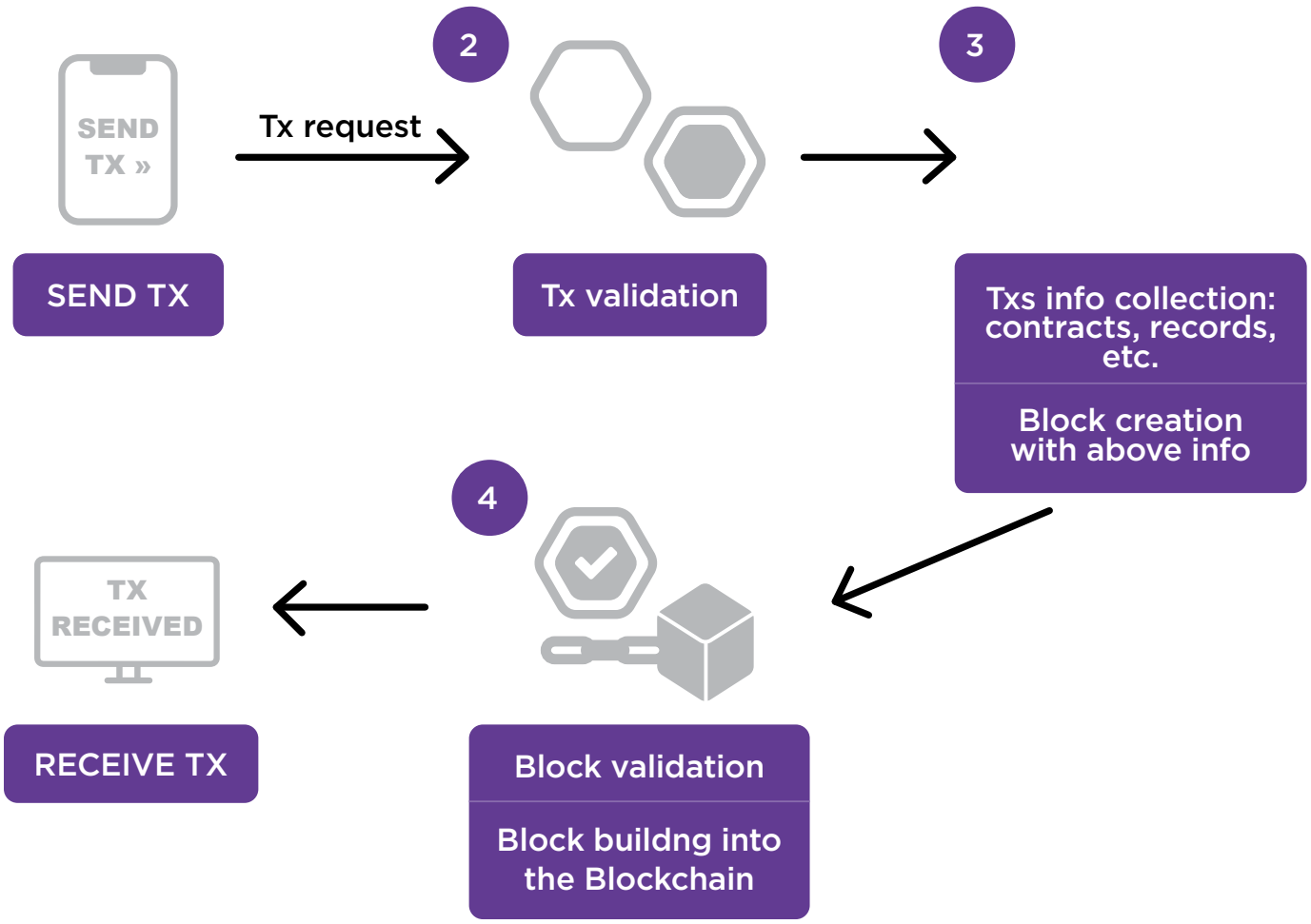
The ILGON Ecosystem utilises four types of nodes, differentiating them based on function, and network position.

- **Boot Nodes** are nodes with fixed, public IP addresses, acting as entry-points to the network and route traffic to other nodes.
- **Nodes** store a copy of the blockchain's complete transactions history. As ecosystems age, and get larger, the blockchain's stored copy also grows in length, and disk space requirements continue to increase.
- **Service Provider Node** is a node that allows the better servicing of smart contracts, decentralised applications, and other connected external units. Users can operate a node specifically to access, read, and write data into the blockchain.
- **Light Nodes** are the lightweight version of nodes and equipped only with a partial copy of the blockchain's transaction history. Light Nodes are not yet present in the ecosystem due to the early stage of ILGON's developments and the network's short blockchain transaction history.

The system requirements of operating a node are relatively low, and the technical skills necessary are not considerable either.

System requirement of running a Node on the ILGON Network	
Network:	**ILGON**
Recommended CPU:	Four or more CPU cores
Memory:	16 GB or more RAM
Storage:	SSD with at least 500 GB free space
Internet Connection Speed:	25+ Mbit/s

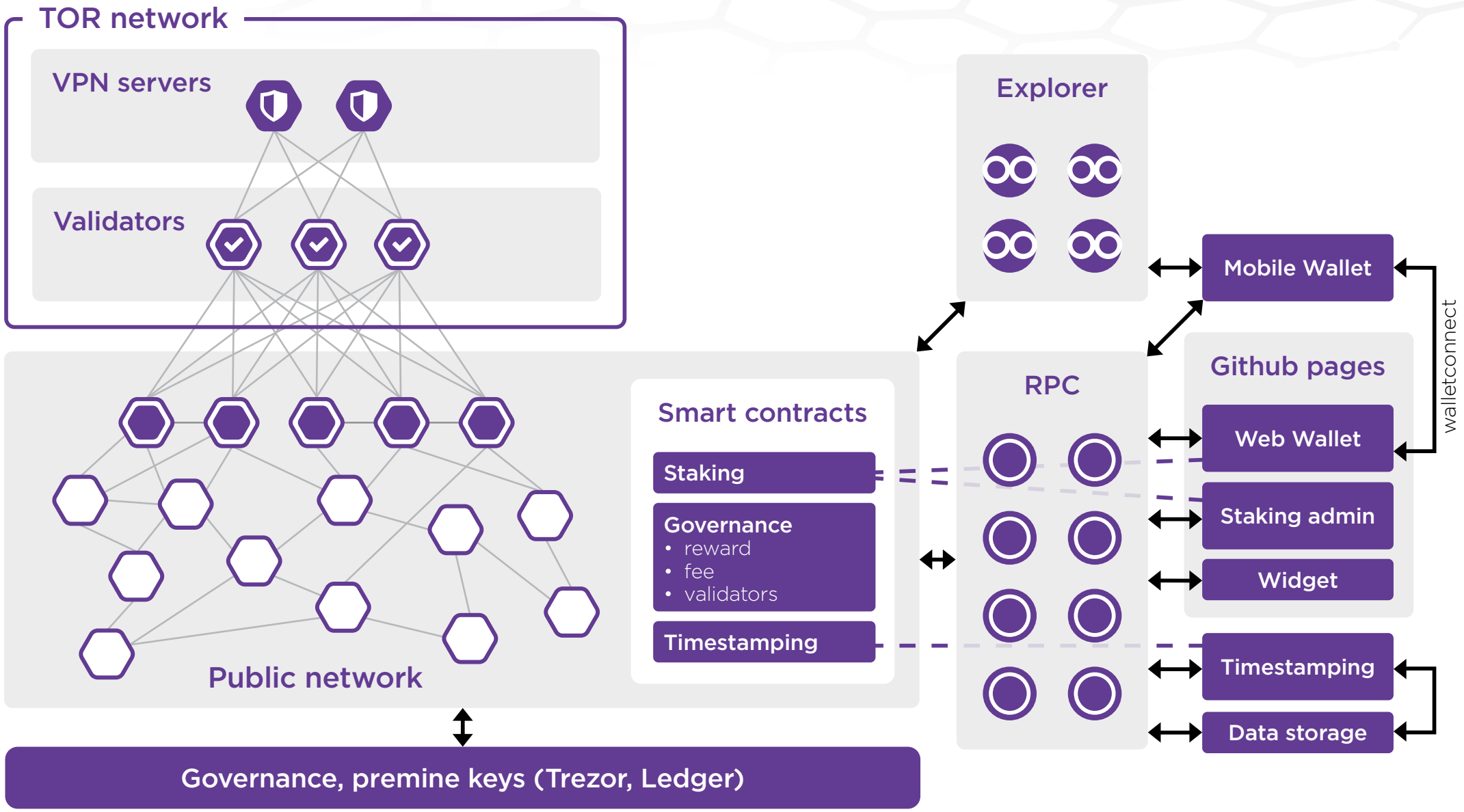
Transaction Validation process



LEGEND

Node · Boot node · Validator node

ILGON Nation State Architecture



LEGEND

Node · Boot node · Validator node · VPN server · Explorer · Remote Procedure Call

Improvement Proposal Processes

ILGON Improvement Proposals are processed on dedicated community forums (Reddit as of date) as part of the off-chain governance.

On the official channels of ILGON, the community gathers to discuss proposals for monetary and fiscal policies and technology improvements.

The community upvotes the favoured proposals, and self-organising advocacy groups arise led by a community-nominated Ambassador, that represents, leads and coordinates the proposal's publicity campaign.

Fundraising for advocacy groups is allowed, and the ILGON team supports the idea of crowdfunding in general. It is important to note though, that the ILGON Team DOES NOT endorse any advocacy groups or improvement proposal campaigns, and takes no responsibility for the damages suffered from, or originated in the participation of fundraisers, ICOs, or token releases of any kind.

For all improvement proposals to be brought before the Board of Experts, a Feasibility and Sustainability study must be delivered to showcase the long-term viability of the proposed change, and to prove and challenge the promised positive impact of the contribution. The studies produced must be sent for review on the ILGON Network's official channels to the Board of Experts.

Following the papers' evaluation, if the documentation is accepted, and the Board of Experts announce the poll's date, and advocacy campaigns can inform the community on the raised topics' importance.

Board-of-Experts (BoE)

The ILGON Network, Board-of-Experts is the network's governing body - consisting of great new-generation thinkers, crypto-industry insiders, and experienced professionals from various industries.

The Board's primary purpose is the chairing, and coordination of governance in cyberspace and meatspace as well.

Based on initial ILGON Improvement Proposals, Ambassadors deliver both the Feasibility- and Sustainability Studies (together called "the Proposal Studies") to The Board via official communications channels.

As the Board of Experts' mandate expiration approaches, Members of the Board assemble the next Board of Experts, ensuring an orderly transition of power and the chairing board's continued existence.

Polls

Users in the nation-state can express views on policy and protocol improvements by taking part in many governance processes.

The official ILGON Campaign Tracker regularly informs the community about upcoming Polls and dates. Votes are cast through the ILGON web wallet application and recorded on the blockchain.

Each user has a specific Voting Weight calculated from parameters such as the total amount of staked collateral, staked time, KYC verification status, User Scoring and User Rating.

To keep the polls balanced, Voting Weight automatically resets after each poll is closed, and the collection of new voting weights begins.

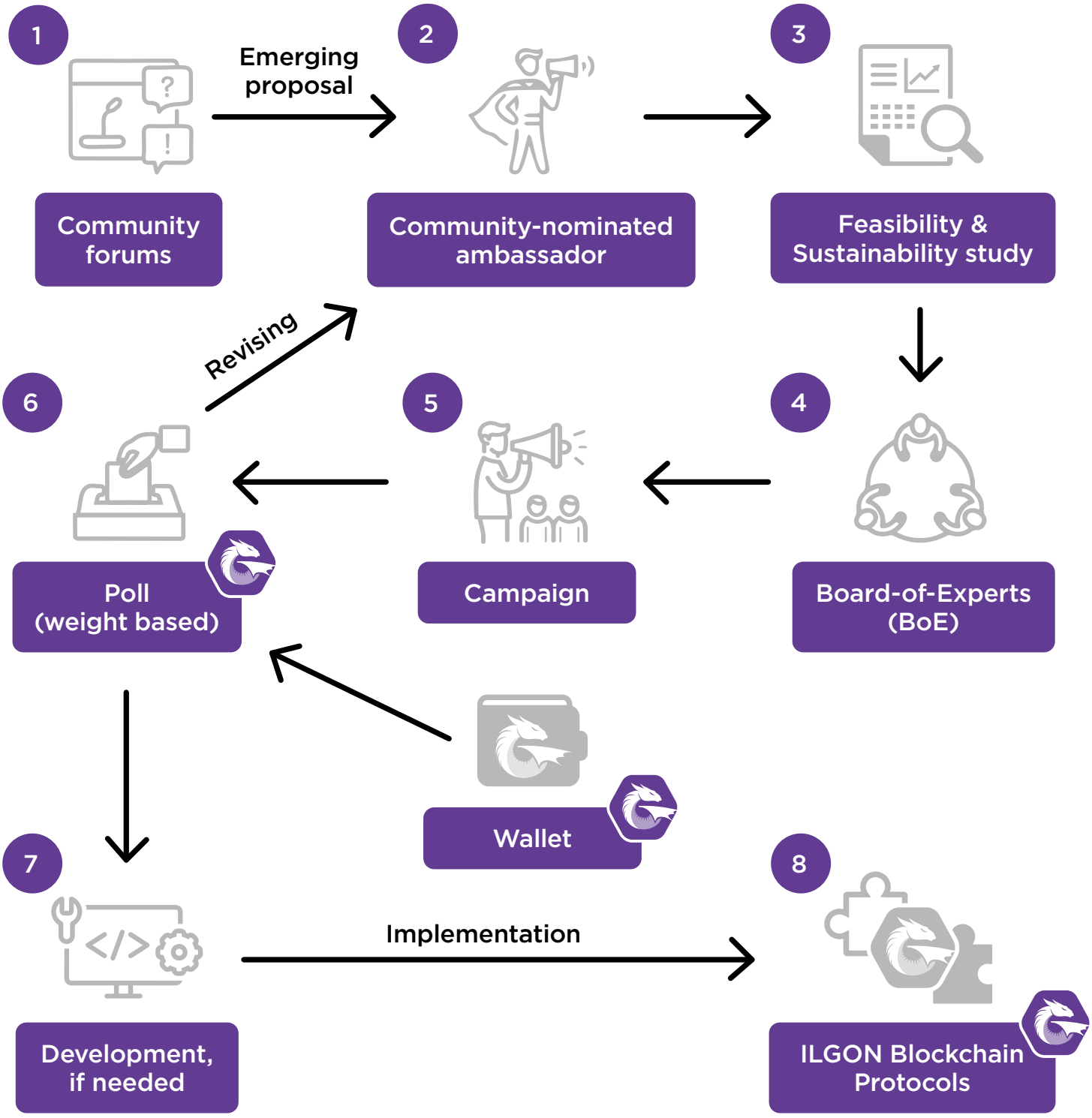
Polls are quarterly occasions of the nation-state's schedule, and Improvement Proposals are grouped so that each Poll can include multiple Improvement Proposals to vote on.

Staking Contract

The ILGON Staking contract allows users to lock ILG tokens in a smart contract through the web wallet application, and collect immediate rewards as interests - while allowing the withdrawal of funds at any time without a penalty.

The minimum amount required for staking is 1 000 ILG - approximately 100 USD at the time of writing.

Improvement Proposal Processes



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ILGON Blockchain Network (On-Chain)

System Features

Scalability

The architecture of distributed ledger technologies brings to life the secure and immutable database structure that allows the handling of monetary assets. However, the technology comes with downsides as well.

Compared to global online financial services providers like PayPal or Visa, legacy blockchains - Ethereum and Bitcoin - still demonstrate poor performance in cost-effectiveness and transaction speeds.

As blockchain adoption grows, and more and more people hold cryptocurrencies, tokens, and make transactions daily, activity on the blockchain naturally keeps increasing. If the throughput remains similar to what it is now, we witness time and time again, the steady clogging up of transactions and the further skyrocketing of transaction fees.

Major legacy blockchains are again close to reaching their scaling limits, and without the ability to come to a consensus, the proposed scaling solutions seem to be almost beyond the horizon.

The ILGON nation-state's active governance, combined with the benevolent expert judgement of the ILGON Board-of-Experts, can together adjust the blockchain protocol's internal parameters without a hard fork (adjusting: block size, block propagation time, block reward, tx fees) so scaling to meet the demand is likely never going to be a problem for ILGON.

ETH cross-compatibility

Since the beginning of ILGON, cross-compatibility with Ethereum was one of the leading protocol design principles.

ILGON and Ethereum share many features in protocol and architecture. Smart contracts and DApps wrote to run on Ethereum, also work on ILGON - similarly to DApps.

At the moment, the ILGON team is unable to forecast whether it is going to be possible for the network to remain in full backwards compatibility with Ethereum after ETH 2.0 update is over. However, ILGON is committed to remaining fully compatible with Ethereum, for as long as it can.

Tokenisation

Due to the shared origins with Ethereum, ILGON is fully compatible with all Ethereum Token Standards.

Via the ILGON Tokenisation web application, Users can generate custom tokens with unique parameters and with superb ease of use. Contrary to Ethereum's dev-heavy token deployment process, creating custom tokens is easy as filling a form, and no technical skills or coding is required.

Identity Assessment

- **User Rating**
  ILGON makes it possible to leave a feedback rating (1-5 stars) on addresses after transacting.

  Ratings are permanently stored on-chain and can be publicly viewed from both the wallet application and the ILGON explorer itself.

  Ratings can be later edited, but that the original rating will remain visible as "edited".

- **User Scoring**
  Each address is assessed and given a Score based on address activity.

  Scoring incentivises good behaviour and reputation building, and allows parties to make educated assumptions on their prospective clients and partners.

  Scoring is stored on-chain and can be publicly viewed from both the wallet application and the ILGON explorer.

- **KYC Status**
  In cooperation with certified identity providers, ILGON wallet addresses can be verified through KYC.

  A badge is granted to verified addresses, showcasing that the owner's identity is verified by an independent third-party.

  The verified status of an address ends, and inactivates following the expiration of the KYC.

Services

Web Wallet

https://ilgonwallet.com/

The ILGON Wallet (IW) is the original wallet application of the ILGON Network. Supported by most modern browsers, IW makes it intuitive and straightforward to create, store and manage multiple addresses in one application, and generally simplifies interactions on the blockchain.

New wallets can be generated, or existing ones can be imported using one of many options (WalletConnect, Keystore, Trezor, Ledger, Private key, Mnemonic phase). Ethereum wallets are supported and can be imported to work on the ILGON network.

Users can specify and send transactions to ILGON (or ETH) addresses in $ILG, custom tokens, and even in collectibles. Each transaction can include a human-readable UTF-8 memo that is stored on the blockchain and can be viewed from the Block Explorer.

Users can receive transactions and request payments with specific details by generating a QR code or copying and transferring related parameters.

Address details such as Balance, Transaction history, Score, Rate, and KYC status are displayed via a clean interface, and transaction parameters can be shared by a single touch.

The web wallet is the main gateway for accessing ILGON's staking services and for interacting with the Staking Contract.

The wallet also provides access to both the main network and for the test network as well. The latter serves as a risk-free environment for educational and development purposes only.

Through the web wallet, Users can also access many features of the ILGON Ecosystem such as Tokenisation, Simple Timestamp Solution, Contract interactions and so forth.

Mobile wallet

The ILGON Mobile wallet is a simplified version of the web wallet that delivers wallet services to Android and iOS users as well.

Developing the ILGON mobile wallet, the goal was to create a lightweight version of the web wallet that integrates most possible features, while ensuring a secure, quick and easy gateway for an on-the-go access to the ILGON ecosystem.

ILGON Explorer

https://ilgonexplorer.com

The ILGON Explorer is the official block explorer of the ILGON Network.

Users can monitor the blockchain's activity, find addresses, confirm transactions, and view blocks, smart contracts, and tokens.

The ILGON Explorer displays a number of additional data points such as Rating, Scoring or the KYC verified status of an address, helping users and providers make more informed decisions.

Use cases

Authenticated Corporate Environment (ACE)

Using an ILGON-based corporate management information system, the Small and Medium Businesses, which are the bedrock of the world economy, can make their own digital smart contracts between each other and able to make their own cryptocurrencies and their own ecosystem for their employees and their partners as well. With ILGON authentication, the administration procedures - like accounting, authenticated mailing, and contracting - can be minimalized for the whole corporate ecosystem in the world.

Tamper-proof database for academic documents and certificates

In the age of digital transformation and globalisation, the need for paper-backed certificates is close to over. The access to job markets, corporate communications, and even academic studies like most aspects

of our lives, have long transitioned to live in the digital clouds. Powered by ILGON, academic documents and certificates can now be easily authenticated on the blockchain from our homes' comfort and can be stored and securely sent online, even to parties outside of trusted circles.

Simple Timestamp Solution (STS)

Using the web-based, or in-wallet Simple Timestamp Solution of ILGON, users can generate "Proof-of-Authenticity" for a file of any type and size. The proof is then stored on the blockchain, and the integrity of the file can be independently verified.

Data Storage

ILGON Data storage off-chain services combine cloud data storage technology with the Simple Timestamp Solution, making the authenticated files accessible on the cloud and verifiable on the blockchain.

Educational purposes

As blockchain technologies and cryptocurrencies so rapidly evolve, education in the sector could hardly be more relevant. Universities and research centres globally are working on educating the next generation of blockchain experts. With ETH cross-compatible architecture, and with much lower transaction costs, ILGON is ideal for providing an authentic, yet cost-effective way to study, tinker and develop industry-standard smart contracts and decentralised applications.

ILGON
TECHNOLOGIES