electra

WHITEPAPER

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Electrifying the Cryptocurrency Community

User Benefits:

Since its inception in 2017, the Electra Project has been developed with invaluable features in mind, to allow merchants, customers, and casual users to incorporate Electra's global payment system into their everyday lives. Since the beginning, Electra has kept its users at the forefront of Project decisions throughout the development process with the goal of transforming how the world views payments through cryptocurrency and blockchain technologies. Together with our unique Project and the integrity of our strong and robust community, we believe Electra will achieve this goal.

Customer benefits include:

- Ability to join the Electra community & work to increase the monetary value of the Project and coin
- Use of ElectraPay, a payment option for online and in-store purchases
- Safe and secure payments built upon the NIST5 algorithm
- Transaction fee is virtually zero percent at 0.00001%
- Instant transactions with a 64-second confirmation time
- ATM's worldwide for easy use of an Electra debit card
- No foreign currency exchange fee charges
- Staking rewards on the Electra network

Merchant benefits include:

- Easy to install ElectraPay, a merchant plugin for online stores
- Safe and secure payments built on NIST5 algorithm with transaction fees substantially lower than credit or debit card options
- Instant transactions with a 64-second confirmation time
- No foreign currency exchange fee charges
- Global cryptocurrency ATM partnerships, with the opportunity to include an ATM at a merchant's location

THE OBJECTIVES

A. Design, build, and continuously evaluate a cryptocurrency project that stays at the forefront of cutting-edge technology advancements

B. Create a trusted financial ecosystem for our community

C. Ensure that our community continues to have a voice in the development of Electra as we move into the future while utilizing current best practices in cryptocurrency

Innovative and Open Development

Electra, ticker symbol ECA, is a product of the combined abilities, skills, and talents of an ever-growing community of coders, developers, core business professionals, and other contributors. The Project is built on a highly functional and feature-rich blockchain with a stable and solid foundation. Electra has continuously been subjected to multiple stages of validation, and through this process, only the most valuable changes have been adopted and integrated into the Project. As features have been added and as improvements continue to be made, decisions are subjected to intense review and enhanced as needed. A key component to Electra's strength is its ability to adapt and consistently meet the needs of an ever-changing global environment.

As Electra moves forward and as technology continues to advance, our continued success will be due in part to the fact that we allow the Project to expand, improve, and grow in tandem with the latest innovations. The updates that took place during the blockchain fork that occurred on February 22, 2019, have positioned Electra to become one of the main driving forces of change in the world of cryptocurrency.

Electra Sets New Standards for Cryptocurrencies

The Electra Project understands that the best product is capable of becoming completely different from its origins. As ECA has grown, so too has its algorithm with its enhanced NIST5 coding. This development has allowed it to become one of the fastest, most secure, least expensive and energy efficient currency available.

Electra is a unique cryptocurrency project in many ways, as it had no ICO (Initial Coin Offering), it has no CEO, as well as the fact that it is not run by a centralized authority. Decisions are made by the core team which consists of several highly experienced people across several regions of the world, while governed by a fully functioning Foundation that serves to further the development and growth of Electra by being a representative body in areas of community, development, partnerships, exchange listings, and much more.

Despite being a completely operational cryptocurrency at present, Electra is an ongoing development project that is subject review, innovation, and updating. With the Electra Foundation recently established in the Netherlands, the Electra Project is now, more than ever, controlled by its community.

The Foundation Board of Directors consists entirely of community members. This ensures that the Electra community plays a part in all Project decisions.

Current Technology

Algorithm

At the heart of every digital currency is a unique blockchain code, which was developed by a team of software specialists and supported by a peer-to-peer network that maintains the integrity of the blockchain's ledger. Electra's blockchain algorithm is known as NIST5 and was developed following the results of a 5-year study at the United States' National Institute of Standards and Technology (NIST). After many successful blockchain attacks in 2004 and 2005, NIST held a competition from 2007 to 2012 to determine the most secure algorithms. Their findings were released and NIST5 was born; a compilation of the best features from the top five blockchains. Electra is safe, secure and instantaneously accessible thanks to the award-winning NIST5 algorithm.

Algorithm	Domain Extender	Underlying Primitive	Primitive size	Hash size	Security			
					Coll	Pre	2nd Pre	Indiff
BLAKE	HAIFA	Block cipher	k=512 b=512	224 256	112 128	224 256	224 256	128 128
			k=1024 b=1024	384 512	192 256	384 512	384 512	256 256
Grøstl	Grøstl	A pair of permutations	512 512	224 256	112 128	224 256	$256 - \log_2 L$	128 128
			1024 1024	384 512	192 256	384 512	$512 - \log_2 L$	256 256
JH	JH	Permutations	1024	224 256 384 512	112 128 192 256	224 256 256 256	224 256 256 256	256 256 256 256
Keccak	Sponge	Permutations	1600	224 256 384 512	112 128 192 256	224 256 384 512	224 256 384 512	224 256 384 512
Skein	UBI	Tweakable block cipher	k=512 b=512 t=128	224 256 384 512	112 128 192 256	224 256 384 512	224 256 384 512	256 256 256 256
SHA-2[6]	MD	Block cipher	k=512 b=256	224 256	112 128	224 256	$256 - \log_2 L$	1
			k=1024 b=512	384 512	192 256	384 512	$512 - \log_2 L$	1

The Electra Blockchain

The Electra blockchain has the following specifications with more enhancements in development:

- → Ticker: ECA
- → Algorithm: NIST5
- → Confirmation/Block Time: 64 Seconds
- → Block Size: 10 MB
- → Transactions/Second: Approx. 800 (1,600 after SegWit)
- → Consensus: POS v3.0e
- → Coin Maturity: 12 Hours
- → Electronic Payments: Yes
- → Atomic Swaps: Yes
- → Lightning Network: Yes
- → SegWit Integration: 2019
- → Mobile Wallet: 2019

Purpose and Use of Premine

In 2017 when Electra was released, 3.34% of the total anticipated coin supply was set aside in reserve or what is known as a "pre-mine". This equated to approximately 1 Billion coins being allocated for the future development of the Electra Project. These pre-mined coins have been used to develop new technology, hire strategic consultants, promote Electra, pay exchange fees and most recently, 300 Million ECA from the pre-mine were transferred to the Electra Foundation. The benefits of the Electra Foundation are discussed in greater detail below.

Fast Payments

Electra transactions are received in the merchant's or recipient's wallet almost instantly and the ECA received is spendable as soon as the first confirmation is recorded in the blockchain. Transaction confirmation process occurs at an unparalleled 64 seconds, making Electra one of the fastest in the industry.

Transaction Fees Approaching Zero

With transaction fees of the Electra network at 0.00001 ECA, it takes 100,000 transactions to accumulate one ECA worth of transaction fees (0.0003 USD at the time of this publication).

POS 3.0e

Electra's recent fork on February 22, 2019, incorporated Proof-of-Stake v3.0e (PoSv3e), a new consensus mechanism for awarding and verifying blocks while improving security and strengthening the overall peer-to-peer blockchain network.

PoSv3e moves away from the vulnerabilities created by staking weight and the ability of a rogue to user to initiate a 51% attack by gaining a majority of network weight and instead introduces considerations for transaction depth (UTXO's – Unspent Transaction Outputs) in the blockchain and also introduces a random component in awarding blocks and staking rewards. The deeper a transaction (UTXO) is in the blockchain (the more blocks created since the block containing the transaction was created) the greater the odds of it being selected for a new block and thereby a staking award.

Staking Rewards

Electra's new PoSv3e encourages users to stay connected to the network because if they don't they cannot earn a block or reward that's based partially on transaction depth and partially being randomly selected.

Once a single transaction containing coins has matured and remained unspent for 12 hours, that transaction is eligible to be selected to earn a block and a staking reward.

Once selected for a block and reward, a user's reward is determined by a separate calculation specific to Electra. Currently, the reward is set at 2.5% annually and planned to halve each year going forward and looks like the following:

Staking Reward = ((2.5% * # Coins in the Transaction Selected) * (Days Unspent) / 365).

Note:

- → Transactions that occur when coins are moved and unspent thereafter are what developers call UTXO's (Unspent Transaction Outputs). Because transaction inputs can be faked, it's more secure to look at transactions that have already been verified on the blockchain and are available for future transactions (spending).
- → Sending coins to the same address or wallet in stages or incrementally will create multiple UTXO's.
- → To earn a staking reward, wallets must remain unlocked.
- → "Days Unspent" are the number of days the transaction was staked or unspent and cannot exceed 30 days to encourage users to remain connected to the network.

Environment Friendly

The NIST5 algorithm utilized by Electra allows it to be one of the most environmentally friendly cryptocurrencies available. NIST5 requires significantly less energy to run than completing algorithms without compromising the security of network members. And since Electra is a Proof of Stake coin there are no miners, which greatly reduces its carbon footprint.

Lightning Network

The introduction of the Lightning Network (LN) into the Electra blockchain is yet another advancement in the Electra Project that proves ECA is setting the stage to become a global currency, and ready for rapid scaling. This, in turn, makes it attractive to merchants and will allow for mass adoption.

The Lightning Network (LN) was developed by Lightning Labs out of San Francisco, California to increase the number of Transactions Per Second (TPS) that could be completed over a blockchain network. Electra's Transactions per Second rate (TPS) is 800 currently and heading even higher with future advancements to the Lightning Network.

The integration of SegWit and the Lightning Network together will allow Electra to scale as its user base grows, all the while allowing this to occur without the need to force a hard-fork within the Electra Blockchain.

Segwit

The Segregated Witness, SegWit, integration into Electra includes many highly technical features, all of which have greatly improved the number of Transactions per Second (TPS) the Electra blockchain can process. Once SegWit has been incorporated, the TPS will double, allowing Electra to move to 1,600 TPS.

Future Technology

Creating the cryptocurrency of the future requires going beyond the limits of existing technology, it requires a commitment for continued growth and success. The strength of ECA resides in the fact that individuals from all over the world come together to form the community of stakeholders that fully participate in the direction of the Electra Project. As a community, we understand that in order to continue to develop the most cutting edge technology for the evolution of cryptocurrency, the Electra Project must adapt to future societal and economic needs.

As cryptocurrency technology moves forward, Electra's development team is fully prepared to adapt to emerging innovations that are more efficient and superior to current features, allowing it to maintain a competitive advantage in the market.

Electra Ecosystem

The Electra Family of Products

Electra's family of products can be summarized into the following categories.

- → Desktop Wallets (Windows, Mac, and Linux)
- → Mobile Wallets (Android and iOS)
- → Merchant Applications
    - Plugins for eCommerce Applications
    - Merchant Mobile Applications
    - Merchant Desktop Software
    - Centralized Online Payment Gateway
    - Point-of-Sale (POS) Terminals

Integrated support, containing user guides and live support from the community is available for the entire product line.

Electra Services

- → Integrated Merchant, Customer, and User Support
- → ElectraPay
- → Social Pay
- → Atomic Swaps

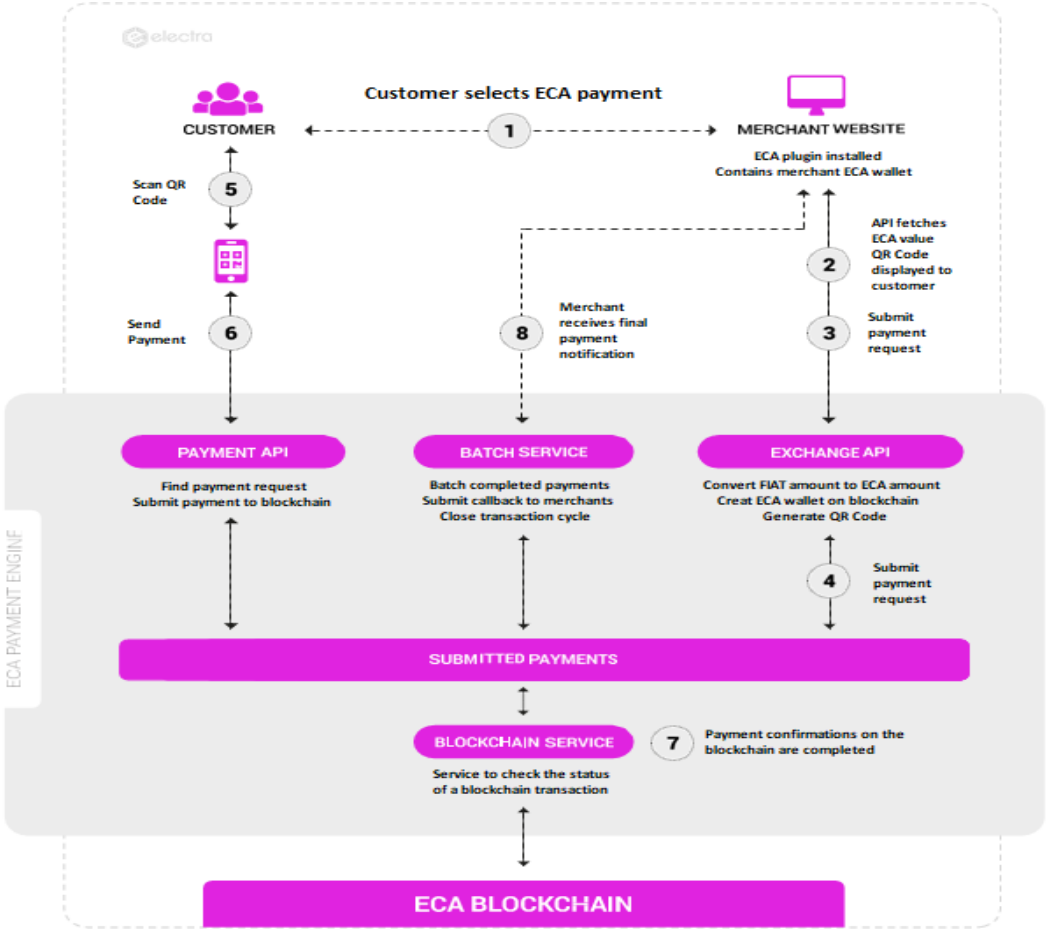
Integrated Merchant, Customer, and User

As the world moves closer to cryptocurrency mainstream adoption, the community behind Electra understands that the idea of managing a digital wallet and using digital currencies may seem to be a daunting task for some. To that end, Electra users can rest assured that regardless of where you are located in the world, there will be someone from our 30,000 plus member community that will be able to provide you with the assistance and support you need as you integrate the Electra Payments Gateway and other Electra products and services into your life.

Electra Pay

ElectraPay allows any merchant with a WooCommerce, Magento or Shopify based website to easily accept Electra as payment. Customers simply shop and select ECA at checkout as their desired payment option and complete the transaction just like normal. What isn't just like normal is the savings a merchant sees over traditional credit or debit card transactions.

Because Electra can be transferred at virtually no cost (less than 0.00001%), the merchant essentially receives the funds from the sale for free compared to a 2.5% to 3.0% fee from a bank issued credit or debit card.



ElectraPay is very fast. Transactions appear in both the merchant's and customers' accounts within milliseconds and are completely verified within 64 seconds or less.

One of the best features of ElectraPay is that all transactions are transparent and visible on Electra's blockchain which serves as a permanent record of payments and receipts for merchants and customers alike.

ElectraPay's core applications and database for transaction processing currently reside on a cloud-based server provided by Amazon Web Services (AWS). Working with AWS also provides scalable bandwidth for future needs and certainty to merchants and customers alike that ElectraPay services are always available and 100% reliable.

Future developments in ElectraPay will allow for off-blockchain contracts for even faster payment verification, mobile payments with private party send-and-receive capability, Electra cards that transact with the swipe of a card, currency exchange or swap, known as an Atomic Swap, so that a customer can pay with ECA and a merchant can receive the currency of their choosing.

Social Pay

Electra's SocialPay is an automated application that enables individuals and organizations to leverage the power of Social Media as a way to send and receive ECA.

Electra users simply post a message to their social media account and are instantly able to receive payments. These messages can be either public or private. Possible scenarios where SocialPay will be used include but are not limited to the following:

- → Content creators and non-profit organizations accepting donations
- → Rewards-based community building
- → Crowdfunding

Imagine the Red Cross responding to an emergency situation, where they would like to have the ability to raise funds to provide relief for those affected. Using Electra SocialPay, organizers can post a message to their social media accounts requesting donations. Once the message goes out, social media users will then be able to send an ECA donation directly to the Red Cross. The Red Cross instantly receives the ECA within its account and will be able to use the funds where they are needed the most. This is not possible using current fiat methods.

Currently, SocialPay can be found on our Discord and Telegram social media platforms. As the development of SocialPay continues, additional social media channels will be added. Future developments within Electra's SocialPay application will be aimed at expanding social media participants.

Atomic Swap

Electra has recently completed Atomic Swap integration into its blockchain. Atomic Swap technology allows ECA users, consumers and merchants to "swap" Electra for another cryptocurrency in a completely anonymous two-way cross-blockchain transaction hidden from blockchain explorer searches. Swaps are completed between users with Electra's integration of BarterDEX technology. BarterDEX is a core technology that uses a decentralized exchange for secure transactions as neither party deposits their coins on the exchange. Users hold their coins and initiate swaps from a local and secure wallet. Atomic Swap technology is enthusiastically being embraced by industry pioneers and is a key element for the future of Electra.

Why Atomic Swap

There are currently thousands of cryptocurrency projects in existence and the number continues to grow exponentially as blockchain technology is adopted. As this list continues to grow, so too will the complexity of exchanging one cryptocurrency for another when payment needs require different currencies. Currently, cryptocurrency transactions are irreversible, so users must fully understand the steps needed to complete sometimes-complicated transactions. Due to this level of difficulty, user adoption can be time delayed, due to the level of trust in the entire process.

Electra aims to eliminate the complexity associated with this process and our community believes that implementing Atomic Swaps is the answer.

Utilizing Atomic Swaps

The steps needed to complete an atomic swap are quite simple. As an example, imagine you go to pay for a pizza at an establishment that only accepts Bitcoin and you would like to pay for it with your ECA. Using the Atomic Swap feature you would simply choose to "swap" your Electra for Bitcoin in a two-way cross blockchain private transaction. This swap is completed between users with Electra's integration of BarterDEX technology.

Another exciting feature that Atomic Swap will allow is the opportunity to complete a secure over-the-counter (OTC) sale, which is becoming increasingly popular as cryptocurrency trading grows. The OTC option allows users to bypass the use of an exchange, set an agreed upon price, and complete the transaction, without ever leaving the sellers wallet until the sell is complete. Since the buyer will be buying with a coin other than ECA, those coins cannot be kept in the seller's ECA wallet. The BarterDex wallet will be utilized, where users own their private key (Mnemonic passphrase) allowing for maximum security.

BarterDEX is a core technology, decentralized exchange, which provides amazing security because unlike traditional cryptocurrency exchanges, community members never deposit their coins on an exchange. Users simply hold their coins and initiate swaps from a local and secure wallet.

Industry pioneers are embracing Atomic Swap technology, as it works with a variety of other cryptocurrencies that a merchant may choose to use. Electra believes that this is a key element for its future growth.

Roadmap

With the release of the latest fork, Electra was able to meet the roadmap goals that have long been in place. Below you will find an updated roadmap, one of which will lead Electra further into the future. For the most current version and additional details regarding the direction of Electra please visit **https://electraproject.org/roadmap/**

Electra Team

As the Electra community continues to expand, so too does the Electra team.

- → Electra01 – Founder/Developer
- → Aykut Baybas 'MasterDen' – Global Coordinator
- → Asmoth – Global Coordinator
- → Ruanne Lloyd, 'Ruru' – Development Coordinator
- → Aman Singh – Community Team Manager and Web Developer
- → Tekin Akdeniz – Business Development
- → Aleksey 'Cybergipsy' – Marketing Coordinator/Designer
- → Adolist – Design and Content/Marketing
- → Durrab – Reactive Mobile Development
- → Christopher Celestino 'Studly' – User Support Coordinator
- → Jenova – Developer/User Support
- → Nathan Nash 'nashclay' – User Support Coordinator
- → Greg Cherry – White Paper Author and Senior Editor
- → Captain Ron – Copywriting and Messaging Coordinator
- → Harly Zappino – Legal Advisor
- → Kenny Lee – Legal Advisor

Team member web page can be viewed here: **https://electraproject.org/team/**

Communications

The Electra Team has a number of core members who volunteer their time to develop and promote Electra. Team members are from many countries including the Netherlands, South Africa, India, Turkey, USA, Canada, UAE and more. To keep in contact with the community, the team utilizes a variety of social media applications, which include Twitter, Telegram, Discord, and Medium. At any time, day or night, you can find a team member online to communicate with in regards to the project, or to answer any questions you may have.

Each month the core team holds an open channel engineering call that is audio streamed live on YouTube. Each call last between 30 to 45 minutes and covers technological updates, project progress, marketing objectives, new partnerships, and team member responsibilities.

Foundation

To fully understand Electra's decision to become a foundation, one needs to have a general understanding of how foundations are structured as opposed to other forms of legal entities, as well as the concept of decentralization in regards to cryptocurrencies and blockchain technology.

In general, cryptocurrencies such as Electra are structured in a way to remove authoritative control from centralized organizations. In order to honor the decentralization concept, a cryptocurrency cannot exist as a limited liability company, as a publicly-listed company, or even as a private business owned by the founder(s), as all of these suggest a centralized or for-profit goal. By choosing to exist as a foundation, the Electra Foundation is a non-profit organization that represents a cause, which is to help the Electra Project reach its full potential while allowing it to exist independently while providing support in terms of research, development, partnerships, marketing, education, and much more. Since it based in the Netherlands, and with it being a non-profit organization, all donations to the Electra Foundation are exempt from taxes.

After many months of research and work towards establishing a foundation, the Electra Foundation was formed on October 09, 2018, in the Netherlands. Recognized as a legal entity backed by Dutch Law, the Electra Foundation now has a legal body and must act in accordance to the Foundation's articles of association, where the goal is to promote and further develop blockchain and cryptocurrency as a whole while focusing primarily on the Electra Project. In the short term, the Foundation will continue to work towards the pursuit of partnerships, the listing of ECA on large exchanges, and engage with other projects on behalf of the Electra community. As Electra grows, so too will the objective of the Foundation's goals.

The foundation is a fully transparent entity and all transactions are recorded and available for public viewing. This means that all donations, purchases, and transactions are recorded according to Dutch Law. Currently, the foundation is managed by three long-time Electra community team members who have experience well suited for the task of creating and establishing a first of its kind foundation for Electra. As an added bonus, the foundation is based in the Netherlands, which is currently one of the more crypto-friendly countries.

Contact Information

- → Official name: Stichting Electra Project
- → Trade name: Electra Foundation
- → Dutch Chamber of Commerce, number: 728 22120
- → Address: Zilverenberg 36, 5234 GM 's-Hertogenbosch, The Netherlands
- → Mail: **foundation@electraproject.org**

Board Members

Foundation Board Members are:

- → Bob van Egeraat
- → Robert Bakker
- → Raymond Vlieland

Board Member information can be found at: **https://electraproject.org/foundation-team**

Funds

The Electra Foundation makes every attempt to be as transparent as possible. In order to meet this goal, we provide a web page that outlines all transactions made from the foundation's wallet. In addition to the amount spent, we give an explanation for each transaction made. In providing this information we allow our community to maintain the highest level of trust in the Electra Foundation, as well as the Electra Project in general.

The Electra Foundation's wallet and transactions can be viewed here: **https://electraproject.org/foundation-wallet**

To make a donation to the Electra Foundation, please do so at this address:

- Electra: **EYPFYiy3gkS7ENJ8zFfctMXrFdiBggh2Fc**
- Bitcoin: **33AJAGjPDfm6zoXFBjfemxHdqHoAAovCdt**
- Litecoin: **38nfGmEZWQ7HENz9rDjW9QQJ23mwSbYwFv**
- Ethereum: **0x9233d4f5629e75cef5403e5c97319bf94e1cbf33**

Partnerships & Charity

Since Electra had no ICO and has no CEO, our success is due in large part to the community that supports the overall mission of the Electra Project. Over the past two years there have been thousands of individuals from all over the world that have come together to contribute to Electra in countless ways, so we are fully aware that there is strength in numbers and that success occurs when we all work together. This same principle holds true in regards to our partnerships and social responsibilities, as both play pivotal roles in Electra's future.

At Electra, we understand that relationships, big or small, work best when there is a shared goal. To learn more about our partners and the services they offer please visit, **https://electraproject.org/partnerships/**

To learn more about the supported charities that we have partnered with please visit, **https://electraproject.org/charity**

Founder's Vision

"The main goals I had when creating Electra was for it to be able to remain active indefinitely and easy to use. A key component to achieve these goals is an active community. In less than a year, the community has progressed immensely and is a completely self-governing entity that can act without my interference. The whitepaper itself is written by the community, which may be a first in the blockchain sector. The current parameters of Electra take into account security, privacy, speed, and efficiency. It is a solid template to build upon.

The new community roadmap is ambitious and aims to make Electra a premier cryptocurrency. For these goals, as well as my own, the development team has been expanded and will also eventually become self-governing. Just as I have done so far, I will aid Electra's expansion and provide funding when necessary for future endeavors." – Electra01

Disclaimer