An in-depth research on
Elrond network
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INTRODUCTION

What is Elrond Network?

Elrond is a high performing blockchain, with a focus on the scalability of the network with sharded state architecture. To ensure security, the network uses Secure Proof of Stake (sPoS) consensus mechanism while being relatively decentralized in the future.

The blockchain trilemma is an imminent problem for high-performing blockchain projects. The issue is the hard limitations of interdependencies between scalability, security, and decentralization. Therefore, the balance between these 3 aspects is significant for high performing ecosystems such as Elrond Network.

The sharding technology allows transactions to break up into 'shards' and unique nodes solely verify certain shards, effectively performing parallel processing to speed up the ecosystem. The performance of Elrond can theoretically scale up to more than 100.000 transactions per second while being relatively decentralized. To ensure security, Elrond Network uses the 'Secure Proof of Stake' consensus mechanism, which mitigates potential attack vectors when compared to Proof of Work, while enabling large throughput and fast execution. Elrond native token, EGLD, is used for native Elrond services such as staking and delegation, DeFi products, etc.

Tokenomics ■ ■ ■

Elrond network has a theoretical supply of 31,4 million, where the initial supply was 20 million and after 10 years another 11,8 million tokens could get released, shown in Table 1. The current supply is 16,8 million tokens because 3,2 million tokens are locked and these will gradually be released within 3 years.

As discussed in the first chapter, EGLD is a SPoS consensus coin hence validators are a vital and crucial component of the Elrond Ecosystem. The incentive to stake is economically motivated, considering the validator gets a percentage of a reward which depends on the total amount staked and the Elrond cycle i.e. the amount of added supply of EGLD tokens. The Elrond Ecosystem has deflationary tokenomics, hence the theoretical supply instead of a fixed supply. The token issuance of Elrond Network is, if possible, offset by the transaction fees of the ecosystem. Hence, the supply is theoretical considering, if adoption increases, the theoretical maximum supply of Elrond Network decreases. The deflationary nature of Elrond Network creates the premises for the transition to a deflationary monetary system. A side effect of the deflationary mechanism is a potential upwards movement of the ERD token value while assuming the market cap is unchanged.

Ecosystem Overview

General Overview

Project Name:	Elrond Network
Ticker:	EGLD
Circulating supply:	16,742,835
Max Supply:	31,415,926
Supply ratio (Max/Circulating):	53%

Financial Statistics

Current price:	49.15$
IEO Price:	$0.65
ROI (IEO price):	5800%
Market Cap:	$623,982,200
Fully diluted Market cap:	$1,171,204.106

Platform Overview

Token Type:	Utility
Sector:	Blockchain Protocol
Geographical audience:	Global
Located:	Malta
Release date (First time trading):	04/07/2020

Years	Mass to add	Total mass	Issuence rate %	Tx/s to zero issuence	Stock to flow
		20,000,000.00			
Year 1	2,169,025.00	22,169,025.00	10.845125	1375.586631	9.220732818
Year 2	1,940,707.00	24,109,733.00	9.703535	1230.788305	11.42316949
Year 3	1,712,388.00	25,822,122.00	8.56194	1085.989346	14.07959703
Year 4	1,484,070.00	27,306,192.00	7.42035	941.1910198	17.39953102
Year 5	1,255,751.00	28,561,944.00	6.278755	796.3920599	21.74490962
Year 6	1,027,433.00	29,589,377.00	5.137165	651.5937341	27.79932511
Year 7	799,144.00	30,388,492.00	3.99557	506.7947742	37.02772946
Year 8	570,796.00	30,959,288.00	2.85398	361.9964485	53.23879635
Year 9	342,477.00	31,301,766.00	1.712385	217.1974886	90.39815228
Year 10	114,159.00	31,415,926.00	0.570795	72.39916286	274.1944656

Table 1 Tokenomics of Elrond Network

Value Creation Feedback Model ▪▪ ▪

The Elrond Network ecosystem has created an ecosystem, where unique network effects drive value creation for the ecosystem, shown in Figure 2. This allows Elrond Network to grow in users, ecosystem usage, and eventually in value of the Elrond Network native token, EGLD while being dependent on each instance. The dependence is crucial, considering it ensures that all stakeholders do benefit from the created value.
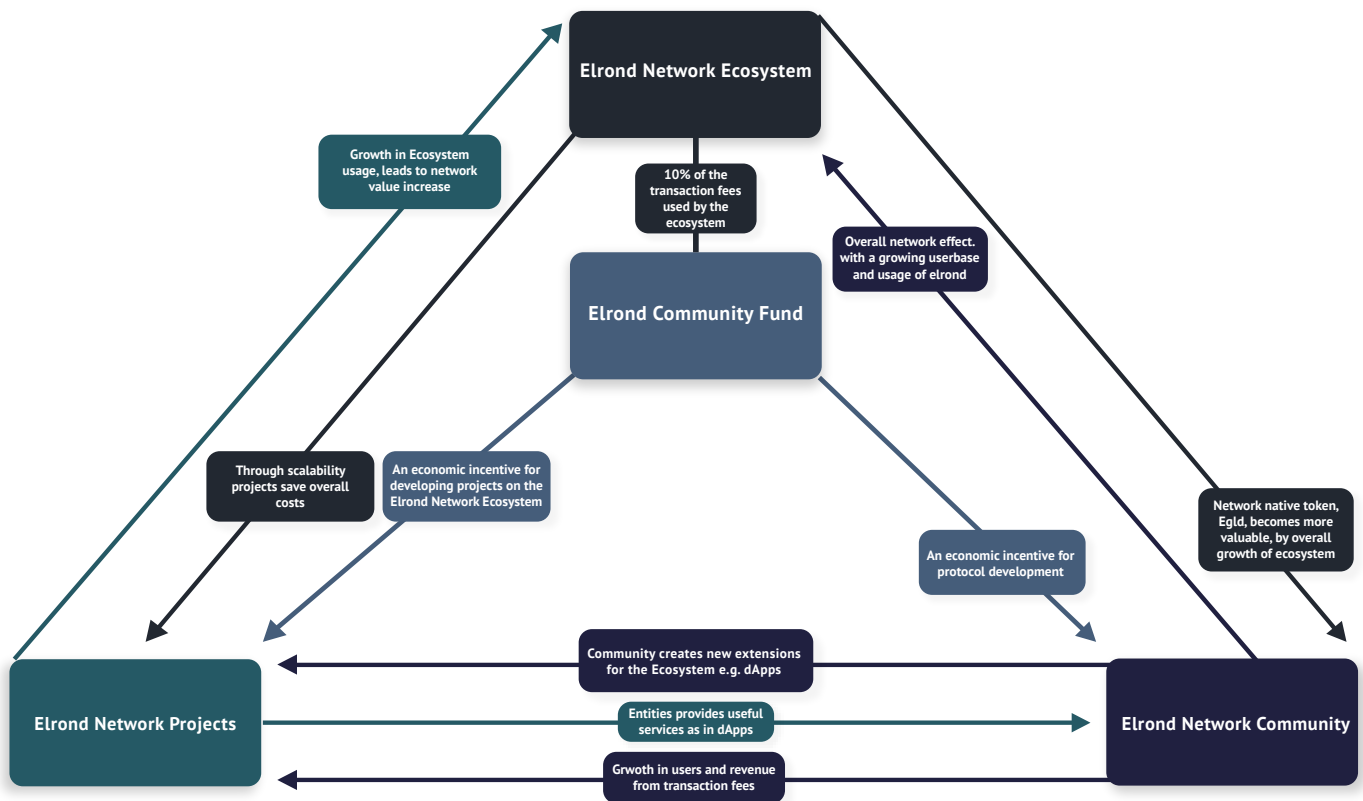

Figure 2 *Value Creation Feedback Model of the Elrond Network Ecosystem*

Scalability ▪▪ ▪

The issue of scalability is an imminent problem within the cryptocurrency system. The issue arises when cryptocurrency coins cannot meet the demand of transactions and requests e.g. by dApps. The direct consequence of not being able to satisfy demand is an increase in transaction costs, shown in Figure 3. In general, that means a network is undergoing a 'congestion' and this has a negative influence on traders, investors, and overall the reputation of the network.

Ethereum is notorious for the high fees, considering the network is often the victim of congestion. The current mean of transaction fees of Ethereum is equal to approx. 10$. To put that in perspective, according to Glassnode, 2.7 million Ethereum wallets contain <0.1 ETH. To move these funds, will cost approximately 10% of the total

Figure 3 *Ethereum Transaction fee Mean of the latest 30 days*

value of the entire wallet, which is economically not feasible nor sustainable. Ethereum is addressing the scalability issue with Ethereum 2.0, which should allegedly improve the scalability up to 100.000 TPS. However, Ethereum 2.0 is being launched in three phases with the first phase being the 'null phase'. The first phase consists of the beacon chain, the phase was launched back in December 2020. The second phase will address the congestion issue of the network, with improved scalability. However, it is expected that the second phase won't be here for at least another 9 – 12 months.

Elrond can satisfy the demand with a TPS of 15.000, this means that transaction fees of sending Elrond are close to 0,001$. The transaction latency is incredibly low in comparison with competitors, which allows for mainstream adoption. In theory, a TPS of 15.000 could be not sufficient, however, that is highly implausible considering that VISA has an average TPS of 1500 to 2400. Thereby, the Elrond Ecosystem can scale further, by adding more shards, to 263.000 TPS with 50 shards.

Staking Program ∎∎∎

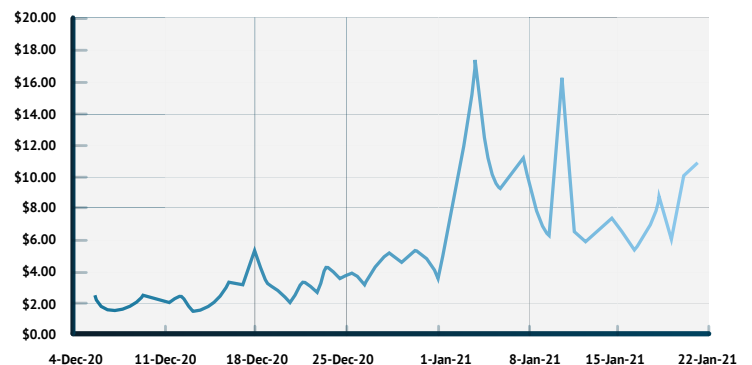The Elrond Network is running on validators and delegators, these are crucial for Elrond Network to keep the ecosystem secure, scalable, and vigorous. The number of shards, created by validators, should be able to match the demand in TPS. The ecosystem, however, should not add an excessive amount of shards considering the limited staking resources (i.e. validators rewards), hence all shards should have a load of approximately 50%. If the ecosystem adds unnecessary shards, the number of validators should increase, hence the validators rewards increase, and therefore the inflation of EGLD increases.

The number of validators in the Elrond network is currently fixed at 2,169 Validators, split into 3 execution shards and a meta-chain, which is similar in functionality to Ethereum 2.0's Beacon Chain. The validators are getting EGLD tokens in exchange for their node, the current APY is 36% for mainnet validators. The delegators on the Elrond Network help secure the network by delegating their stake to node operators, i.e. Elrond Community Delegation. The delegators are getting EGLD tokens as reward for their delegated stake, the current APY is 29% for mainnet delegators.

As discussed in the previous paragraph, the number of validators is limited considering the need for a limited amount of shards that can meet the demand of TPS. At the moment there are 1454 foundation nodes (Elrond Community Delegation nodes) of the 2169 total nodes, these foundation nodes will gradually reduce in the upcoming 6 to 12 months. The number of delegators is finite as well, considering the desired delegation stake is correlated to the number of running nodes. The delegators and validators that are not needed are placed on a waiting list, the APY on that waiting list is ~8%.

The current queue validator size is 272, while there are 2169 active validators, and the delegator queue is at 3,204,206 eGLD, while there is an active delegation of 3,635,000 EGLD. This means that at least 10% of the validators are in the queue and 45,6% of the delegation stake is in the queue. Therefore, the adjusted staking yield for validators is 33,2% and for delegating is 16,4%, shown in Table 4. However, under the assumption that the foundation nodes will reduce to 0, the waiting list will decrease and more delegators and validators will be able to get a higher yield.

The ecosystem of Elrond Network currently has an open proposal that would increase the number of validators to 3200, instead of the fixed 2169 validators. However, this would decrease the validator yield to 24,40% instead of 36% and the delegator stake to 19,65% instead of the current 29%.

To prevent that a validator performs malicious actions, Elrond Network has a mechanism that punishes validators for harmful actions. The Slashing mechanism punishes validators that perform malicious acts, by slashing their stake and reducing their overall rating score.

ASSET	STAKING REWARD (%APY)	STAKING REWARD (%APY)	MARKET CAPITALIZATION (MILLION $1)
Elrond	29,0	16,4	635
Zilliqa	14,93	31,53	752
Ethereurn 2.0	10,1	9,88	145.102
Algorand	7,51	7,38	648
MATIC	28,37	28,37	160
Tezos	6,0	5,37	2.341

Table 4 *Staking yields of various ecosystems*

Strategic partners ◼◼◼

Blockchain-powered ecosystems are recently flourishing in usage, considering the exceptional rise in usage of substantial cryptocurrencies such as Ethereum and Bitcoin. The growth in usage has negative side effects, as observed before in this research, however, it also has a positive effect on the adoption of these blockchain-powered ecosystems. Furthermore, Bitcoin is being adopted by financial institutions as a hedge against inflation, considering its limited supply.

The Elrond Network ecosystem creates value by the adoption of beneficial partners. Therefore, 30% of the transaction fees directly associated with a smart contract, e.g. dApp, will go to the developer to accelerate developer adoption. Elrond Network managed to partner up with sizable partners such as Samsung, Chainlink, Matic Network, Binance, and fiat-onramps, as shown in Figure 5.

The liquidity of a cryptocurrency asset is extremely important for the health of a network to improve adoption by investors by avoiding liquidity traps and reducing overall transaction costs. Elrond Network is accessible globally, it has been adopted by the biggest cryptocurrency exchanges, and has been partnered up with several fiat onramps for a smooth transition of assets.

Elrond Network is actively boarding DeFi integrations such as Injective Protocol and Stafi. The DeFi industry is the quickest growing industry in the blockchain space, hence it is a logical and rational step for Elrond Network to penetrate this market. Furthermore, the influence of Elrond Network on the DeFi industry will be highlighted in the growth section of this research.
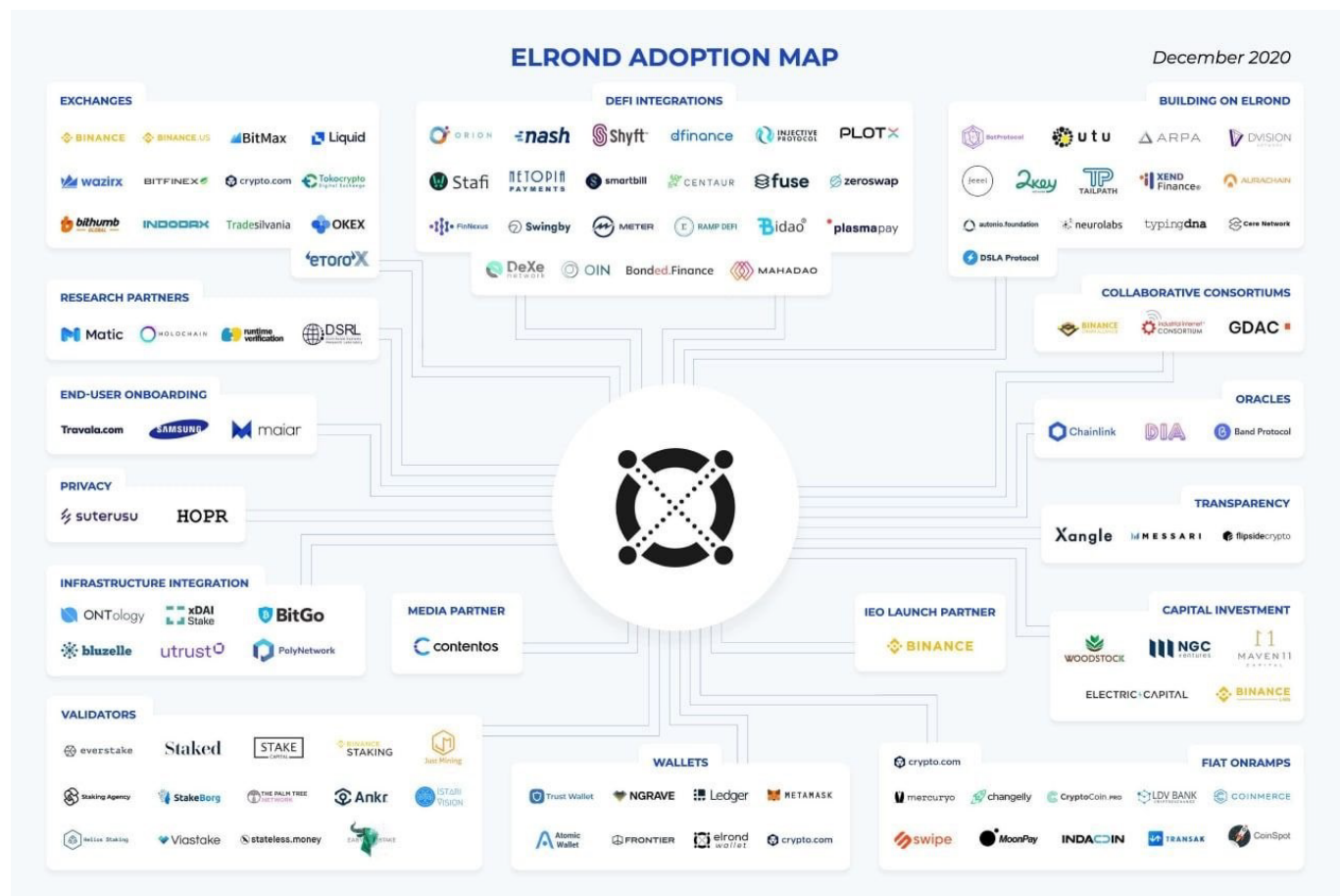

Figure 5 *Elrond Adoption Map*

Technical details of Elrond Network ■■■

Performance
- Elrond Network is capable to achieve up to 263.000 TPS, with 50 shards, on their testnet
- Low transaction fees and low latency for real-time payments and adoption.

Decentralization
- Elrond Network team is decreasing the foundation nodes to 0, within 6 to 12 months.

Security
- Using Secure Proof of Stake to form consensus, while eliminating the PoW computational waste.
- Slashing- and rating mechanism to prevent malicious node actors.

Development
- Creating an economic incentive for smart contract developers by giving 30% of smart contract transaction fees to these developers.
- Upcoming integration with Poly Network for interoperability within several blockchains.

GROWTH OVERVIEW

Growth overview

Ecosystem Growth ■ ■ ■

The blockchain industry is constantly adapting and innovating. The market is lively, reflected by a substantial increase of disruptive projects such as DeFi projects. Elrond Network is penetrating the DeFi industry by integrating DeFi projects on the Elrond Network ecosystem. The network integrated with Injective protocol, one of the most promising DeFi projects, to enable E-Gold-based derivative products to be created on their platform and to integrate Elrond technology to further their growth.

The growth of an ecosystem is a measure to understand and benchmark if a project is making significant differences in comparison with the market. The growth of Elrond Network will be broken down into three sections. The first section will

Figure 6 *Growth volume of Elrond Network and Bitcoin in the last 90 days.*

observe the general growth of the ecosystem, this includes statistical growth such as volume and spot price. The second section will observe the social media growth, this includes the growth of the social media accounts of Elrond Network and overall exposure. The last section will observe the technical growth, this includes the growth on public Github repositories of Elrond Network and the roadmap will be analyzed and observed if roadmap targets of Elrond Network are consistently being achieved.
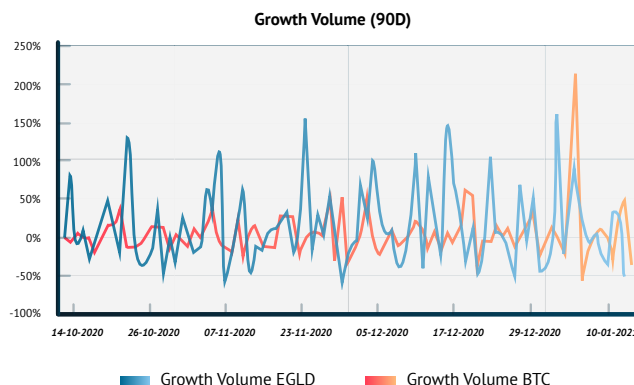
General Growth Elrond Network ■ ■ ■

Elrond Network is expanding into new markets and gaining new integrations, the newly gained exposure of Elrond Network is observable in the spot volume and price of the last 90 days. The spot volume grew on average by 14% daily, shown in Figure 6, in the last 90 days, with an ATH spot volume on 17/12/2020 of 211 million USD. The spot price grew by an incredible 300% in the last 90 days, shown in figure 7, however, to put this in perspective Bitcoin grew by 190% in the last 90 days. This means that EGLD has outgrown BTC in the last 90 days in terms of growth in USD value. As observable in Figure 7, the volatility of EGLD is higher than BTC, however, the course of the graph of the two assets are relatively equal. In general, this means that the two assets are positively correlated, hence the correlation between BTC and EGLD is equal to 0,92.

Figure 7 *Spot Price Growth of Elrond Network and Bitcoin in the last 90 days*

The overall usage of the Elrond Network is crucial, as seen in the Value Creation Feedback model, to keep the ecosystem healthy and stakeholders lively. The Elrond ecosystem is getting more usage by investors and integrated projects, hence the transactions on the Elrond network increased by 150.000 in the last 30 days. The increase in transactions is a crucial aspect for Elrond Network, considering that smart contract developers do earn 30% of the transaction fees of smart contracts assuming that the increase in transactions is reflected in smart contracts usage. Therefore, the economic incentive to build on Elrond Network increases, and this is healthy for the overall ecosystem.
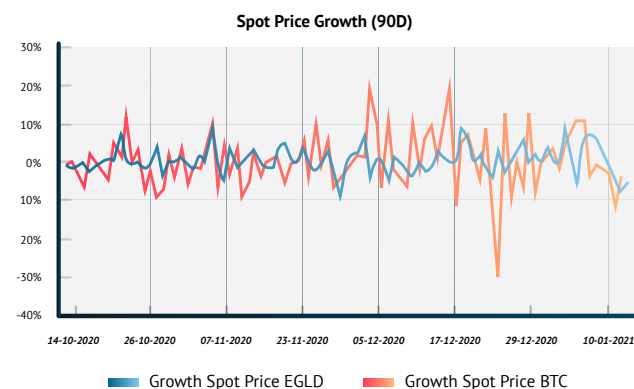
Social Media Growth ■ ■ ■

Social Media Growth
The exposure of a project is incredibly important to attract new investors and to keep the ecosystem lively. The usage of the ecosystem is crucial for the ecosystem, considering most cryptocurrency coins do have a value feedback creation mechanism that relies on the usage of the network i.e. transaction fees. Elrond Network does rely on the transaction fees, as seen in the value creation feedback model.

Social media is an excellent benchmark to understand if a project is increasing its exposure to investors and if the engagement is increasing within its pool of investors. The Twitter of Elrond increased with 50.000 followers in 90 days, an increase of 69,4%. As shown in Figure 8, The Twitter of Elrond

Figure 8 *Twitter followers growth of various ecosystems in the last 90 days*

Network grew the most in the last 90 days. The telegram announcement channel of Elrond Network grew with ~4.000 subscribers, an increase of 61,2% in 90 days. As shown in Figure 9, Elrond grew the most in the last 90 days in terms of Telegram subscribers.

The increase of exposure is an excellent sign for Elrond Network, therefore the reach of the project widens and this could lead to new investors and adoption. The network grew more than other substantial projects such as Zilliqa and Tezos. This is a good sign, considering every edge on your competitors is necessary for a developing highly competitive market.

Technical Growth ■ ■ ■

The technical growth of a project is the most important measure of growth. This growth measure reflects the technical improvements of the project which shows if a project is still developing. In an advancing market, a constant flow of improvements is important to keep up with your direct competitors and to gain an advantage.

Elrond Network has one of the most active public GitHub in the cryptocurrency industry. In the latest 4 weeks, the developers of Elrond Network pushed more than 450 commits. To put this in perspective, Bitcoin pushed 244 commits in the last 4 weeks. However, quite a few cryptocurrency projects are not working with public Github repositories. Therefore, to base the technical growth solely on GitHub statistics might be slightly biased and inaccurate. Hence, the roadmap of Elrond Network will be analyzed and observed if roadmap targets are consistently being achieved.

Figure 9 *Telegram subscribers growth of various ecosystems in last 90 days*

As shown in Table 10 in the appendix, the roadmap of Elrond Network was quite packed through 2020 with several improvements and features to expand the ecosystem. The team had 12 major roadmap releases in 2020, of which 3 are delayed or at least still in progress. That means that less than 20% of the major releases in 2020 were delayed, which is a considerable score considering Elrond Network had a packed year with a token swap and significant improvements to the economic ecosystem model and ecosystem. The technical growth of Elrond Network is exceptional and continues with the launch of the payment app Maiar in Q1 2021.
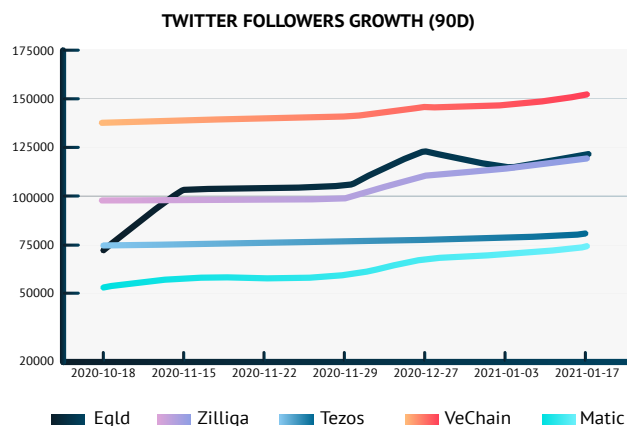
MARKET OPPORTUNITY

Market opportunity

Retail Accessibility ■■■

The accessibility of disruptive technology is decisive for the probability of success. As highlighted in the general ecosystem overview, it is unsustainable and inaccessible for average retail investors to pay high transaction fees. Thereby, retail investors are thrown off by the concept of cryptocurrencies considering the traditional banking system is arguably cheaper. Therefore, the retail run on cryptocurrencies is not here yet and retail investors mainly invest by speculating on cryptocurrencies.

The interoperability of an ecosystem is significant, considering the TPS constraint of the Ethereum Network that correlates with high transaction fees. The interoperability of an ecosystem allows bridging with different ecosystems, such as Ethereum while holding specific native ecosystem characteristics. Elrond Network can meet demand by adaptive scaling, as observed earlier, therefore, the transaction costs are relatively low in comparison with Ethereum. More importantly, it allows for an effortless transition in financial assets which lowers overall financial risks and especially liquidity risks. The importance of effortless transition in financial assets is vital for investors and speculators, to hedge against potential risks and avoid liquidity risks. Given transaction costs, Elrond can adopt real-world applications considering the ability to scale, hence the ecosystem can break traditional finance barriers with their Open Finance integrations and Maiar.

Maiar ■■■

Maiar is a financial product that uses the Elrond Network ecosystem for numerous reasons such as scalability and security. Maiar provides financial services such as payments, investments, and passive earning, therefore providing near-instant transfers all over the world is essential. Speaking of retail accessibility, Maiar doesn't require a complex 24 words password and other un-intuitive entry barriers that discourage users. To add to that, Maiar is a non-custodial wallet that means that the user owns the private key and has full control of their funds. Therefore, no centralized entity has any influence on the funds of the user, this improves the accessibility greatly. To ensure security, Maiar uses a cryptographic hash of the user's phone number, without the phone number leaving the device. Maiar aims to become the decentralized version of PayPal, Revolut, offering similar features, however, without collecting personal information, while charging negligible fixed fees instead of a percentage of transacted value.

Maiar is the first app that will leverage Elrond network natively, and it does meet specific needs within the financial industry. There has been a recent public uproar on the amount of data that big companies retrieve from their customers and sell to questionable partners. Therefore, it is a unique selling point that Maiar does not collect any personal information, while being arguably cheaper than traditional products, as shown in Table 11 Therefore, the accessibility of Maiar is extremely high considering anyone can use it without having to worry about potential financial and usage constraints.

FINANCIAL PAYMENT PRODUCTS	MAIAR	PAYPAL	REVOLUT
Transaction Speed (Non-bank wire)	Near-Instant	Up to 60 seconds	Near-instant
Transaction Costs	as low as 0.001$	2.9% + 0.3$	Up to 1000€ free, after 0.5% fee.
Accessibility	Extremely high	High	High
Decentralized	Yes	No	No
Collecting User data	No	Yes	Yes
Cryptocurrency Support	Yes (Withdrawal and deposit)	In progress (Unknown)	Yes (Deposit only)

Table 11 Comparison between various financial payment products

Open Finance ■ ■ ■

The move from traditional banking to the blockchain will reduce costs and enable more users to use services. Open Finance pushes the boundaries of traditional finance by innovation and improved technology. Open Finance applications can offer benefits because the core innovation is a trust layer that is inherent to the software development itself, hence financial services, in that case, are permissionless, as shown in Figure 12. Therefore, the entry barrier will be lowered to enter new financial services, thereby improving the competitive landscape and driving further financial innovation.

The Decentralized Finance (DeFi) i.e. Open Finance (OpFi) industry is arguably the next revolution in the banking industry. The industry is considered the most innovative and disruptive product of cryptocurrencies. The increase of total locked value (TVL), represents the dollar value of all the tokens locked in the smart contract of a given decentralized lending project, increased by 3000% to 25 billion USD dollars, in only 12 months. Therefore, it is coherent that Elrond Network is penetrating this industry with integrations such as Orion Protocol and Bonded Finance, as shown in Table 8. DeFi products on the Elrond Network would increase the exposure of the project and increase the reputation of the ecosystem. Further, to ensure integrations, Elrond Network launched Elrond Standard Digital Token and Elrond Virtual Machine to ensure accessibility for developers, therefore integrations.
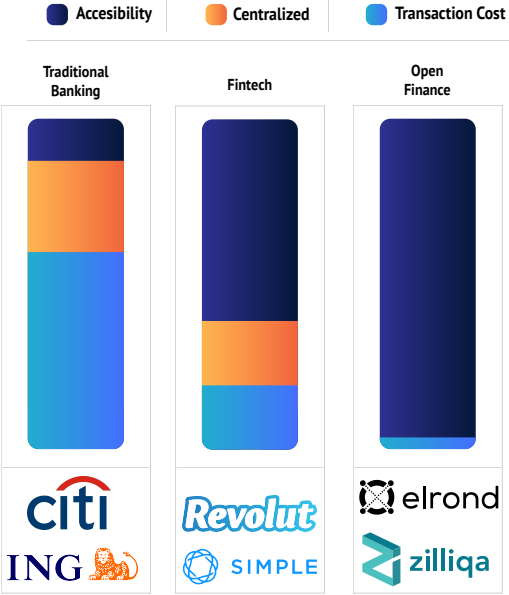

Figure 12 *Open Finance value proposition*

Developer Accessibility ■ ■ ■

The accessibility of an ecosystem to developers is crucial, considering the development of an ecosystem. Due to the competitive nature of the cryptocurrency industry, often referred to as tribalism, getting an advantage over direct competitors is difficult. Therefore, an ecosystem should enable developers to build on their ecosystem with ease to increase exposure and usage with newly launched projects.

As shown in the Value Creation Feedback loop, developers are a part of the value creation of the Elrond network ecosystem, therefore essential for a healthy network. The economic incentive to build smart contracts, on Elrond Network, is that 30% of the transaction fees directly associated with will go to the developer. To ensure a high standard of accessibility to developers, Elrond Network has a dedicated smart contract, Elrond Virtual Machine, execution engine built on WASM. It expands the family of languages available to smart contract developers to include Rust, C/C++, C#, and Typescript. This allows developers to write smart contracts in their favorable programming language, compile it of WASM and debug with ease its WAT format. The Elrond Virtual Machine is considerably faster than the competitor's virtual machines, as shown in figure 13.

The Elrond Standard Digital Token (ESDT), Elrond their equivalent of ERC-20, will enable blockchain developers to issue their tokens. Furthermore, developers can create a smart contract in the Elrond Blockchain and issue tokens, or without a smart contract and use WASM instead. ESDT utilizes the Elrond Ecosystem, therefore the native Elrond Network ecosystem characteristics as speed and security remain. To add to that, the user of the ESDT issued token retains full ownership, considering an ESDT issued token uses the same structure as ELGD, unlike ERC-20 tokens that uses smart contracts. Regarding scalability, the inter-shard transaction will be available for ESDT issued tokens since Elrond Network supports ESDT transaction processing mechanisms. Considering that ESDT allows developers to issue and build tokens on top of Elrond Network, this creates value and exposure to the Elrond Ecosystem and the native token Egld.

PROJECT	CPU CALCULATE (8000)	FIBONACCI (32)	STRING APPEND (10000)
Elrond	3.9 ms	16 ms	6.7 ms
EVM	91 ms	8250 ms	2173 ms
Polkadot	220 ms	832 ms	380 ms
Lua Code	6.31 ms	467 ms	367 ms
EOS binaryen	3.31 ms	5480 ms	313 ms
EOS wavm	10.25 ms	536 ms	96 ms
IOST V8VM	6.21 ms	42 ms	9 ms

Figure 13 *Performance Comparison of various Virtual machines*

COMPETITION AND RISKS

Competition of Elrond Network

The characteristics of a competitive market are many buyers and sellers, undifferentiated products, relatively low transaction costs, and no barriers to entry and exit. The blockchain industry does meet quite a few of these characteristics, hence the industry is a highly competitive market with projects entering the market daily. Therefore, a competitive advantage, a set of qualities that give businesses leverage over their competition, on direct competitors is increasingly important for the long term horizon. Elrond has a couple of substantial competitors, such as Zilliqa and Ethereum.

Zilliqa ▪▪▪

Zilliqa is a high-performing blockchain project and is one of the fastest-growing projects in the industry. To meet demand, Zilliqa uses sharding while ensuring security with scilla and being decentralized with practical Byzantine Fault Tolerance (pBFT) consensus method. The difference between Zilliqa and Elrond Network is that Zilliqa is targeting specific geographical regions such as the ASEAN region. Elrond Network is active globally, and this could be an advantage considering the global audience is considerably bigger, however, it also could be a disadvantage considering it is harder to differentiate and it is harder to meet specific geographical needs.

The growth strategy of Zilliqa and Elrond Network is different, where Zilliqa is actively setting up venture and accelerator funds, is Elrond Network mainly focusing on the technical side of the coin. The argument could be made that Zilliqa already went through this phase, considering their ERC-20 alternative is already launched and so is their governance model, and is focusing to get to the next phase, which includes real-world adoption. However, Elrond Network has been outpacing Zilliqa, in the last 90 days, on different aspects such as social media, as we have seen in the growth section.

Ethereum ▪▪▪

Ethereum is arguably the most established blockchain network at the moment, considering the relatively high adoption rate by cryptocurrency projects and traditional businesses. However, Ethereum has some issues with congestion and this has negative consequences on the transaction costs and speed of the network. Ethereum 2.0 should solve major issues, including scalability issues and PoW issues. However, this upgrade is expected to be at least 18 months away, and on top of that, the uncertainty about the scale of the project is understandable.

Ethereum does not have a specific geographical target audience, as Zilliqa has, however, they are relatively established that disengaging with a specific geographical region is irrational. The network of partners of Ethereum is astonishing compared with other cryptocurrency projects, however, the market is still developing. Therefore, many opportunities are still accessible even for newly launched projects. To add to this, the probability of one chain ruling it all is incredibly slim considering that would imply a monopoly. Elrond Network is growing rapidly and is growing into a substantial competitor of Ethereum in the upcoming years.

Risks of Elrond Network

The risks of newly developed industries are diverse, furthermore, the blockchain industry had its fair share of issues and risks. These risks are various, technology issues, smart contract issues and hacks, and overall accessibility issues. Thereby, the risk of investing in a highly volatile market is considerably high in comparison with traditional financial products. Hence, to portray broad in-depth research of Elrond Network, the risks of Elrond Network should be analyzed and evaluated.

Competitor risks ■■■

The product of Elrond Network has arguably substitutes, this implies that the product is slightly undifferentiated. Elrond Network is targeting a market with a substantial pool of competitors, as highlighted in our research. A competitive market has dis- and advantages, a benefit is that in a competitive market a business has to become a better business to accelerate and gain market share. However, a disadvantage of a competitive market is that the market can get flooded and investors are distracted by relatively lower quality projects. In consequence, the market turns into an imperfect and inefficient market this means that the market cannot succeed to incorporate all available information into a true reflection of an asset's fair price. More importantly, a major disadvantage of a competitive market is that it is significantly harder to gain market share. However, considering the market is developing and is far from saturated, the opportunities for Elrond Network to gain market share are still open and wide.

Geographical audience ■■■

The geographical audience of Elrond Network is global, therefore is there no geographical target audience. In theory, this is advantageous considering a global audience has the biggest pool of potential investors. However, there are significant disadvantages of not having a target audience. Distinct geographical reasons do have specific needs and requirements, with a global target audience it is considerably harder to meet these regional needs and requirements. Therefore, it is more difficult to reach that distinct audience while it is significant to reach them considering Elrond Network is engaging in a developing market. On the other hand, if Elrond Network wants to meet regional specific needs while holding on to the global view, it is rather resourceful to meet these needs. Hence, a significant amount of competitors are focusing on an explicit target audience to build a foundation, avoid expenses, and form a loyal community. Therefore, if competitors are geographically targeting audiences and create a sufficient product-market fit, hence meet local requirements and demands are met. In the long term, this could lead to the situation where Elrond Network is not able to penetrate these distinct regional markets considering there is a product that has a sufficient product-market fit already.

Centralization ■■■

Elrond Network is running 1454 foundation nodes (Elrond Community Delegation nodes) of the 2169 total nodes. That means that 67% of the validator nodes are run by Elrond Network, which implies that the validating process is considerably centralized. Elrond Network will gradually reduce the foundational nodes to 0 over the upcoming 6 to 12 months, however, the concern of centralization is valid considering the high rate of foundational nodes.

CONCLUSION

Conclusion

Elrond is a high performing blockchain, with a focus on the scalability of the network with sharded state architecture. To ensure security, the network uses Secure Proof of Stake (sPoS) consensus mechanism while being relatively decentralized in the future.

The ecosystem has a theoretical supply of 31.4 million tokens, however, considering the deflationary nature of the ecosystem it is unlikely that this theoretical number will be achieved. The token issuance of Elrond Network is, if possible, offset by the transaction fees of the ecosystem. Hence, the supply is theoretical considering, if adoption increases, the theoretical maximum supply of Elrond Network decreases. A side effect of the deflationary mechanism is a potential upwards movement of the ERD token value while assuming the market cap is unchanged.

The Elrond Network is running on validators and delegators, these are crucial for Elrond Network to keep the ecosystem secure, scalable, and vigorous. The number of shards, created by validators, should be able to match the demand in TPS. The number of validators in the Elrond network is currently fixed at 2,169 Validators, split into 3 execution shards and a meta-chain, which is similar in functionality to Ethereum 2.0's Beacon Chain. The validators are getting EGLD tokens in exchange for their node, the current adjusted APY is 33,2% for mainnet validators. The delegators on the Elrond Network help secure the network by delegating their stake to node operators, i.e. Elrond Community Delegation. The delegators are getting EGLD tokens as reward for their delegated stake, the current adjusted APY is 16,4% for mainnet delegators. The Elrond Network ecosystem creates value by the adoption of beneficial partners. Therefore, 30% of the transaction fees directly associated with a smart contract, e.g. dApps, will go to the developer to accelerate developer adoption. Elrond Network managed to partner up with sizable partners such as Samsung, Chainlink, Matic Network, Binance, and fiat-onramps.

The ecosystem went through substantial growth in the last 90 days. Elrond Network outpaced Bitcoin in spot price growth and outpaced direct competitors by social media exposure. Elrond Network has one of the most active public GitHub repository in the cryptocurrency industry. To add to that, Elrond Network is consistently achieving its roadmap releases without delay. In 2020, Elrond managed to release more than 80% of their major releases without delay.

The ecosystem is exceptionally accessible to retail investors and developers. The interoperability of Elrond Network, allows users to use various blockchains while holding specific native ecosystem characteristics i.e. low transaction costs and speed. It allows for an effortless transition in financial assets which lowers overall financial risks and especially liquidity risks. The accessibility of Elrond network is reflected in Maiar.

Maiar is the first app that will leverage Elrond network natively, and it does meet specific needs within the financial industry. It provides financial services such as payments, investments, and passive earning, therefore providing near-instant transfers all over the world is essential. Maiar aims to become the decentralized version of PayPal, Revolut, offering similar features, however, without collecting personal information, while charging negligible fixed fees instead of a percentage of transacted value. Maiar is arguably cheaper than traditional payment products. Therefore, the accessibility of Maiar is extremely high considering anyone can use it without having to worry about potential financial and usage constraints.

The developer accessibility is shown in Elrond Virtual machine and the ESDT token. To ensure a high standard of accessibility to developers, Elrond Network has a dedicated smart contract, Elrond Virtual Machine, execution engine built on WASM. It expands the family of languages available to smart contract developers to include Rust, C/C++, C#, and Typescript. The Elrond Standard Digital Token (ESDT), Elrond their equivalent of ERC-20, will enable blockchain developers to issue their tokens. Furthermore, developers can create a smart contract in the Elrond Blockchain and issue tokens, or without a smart contract and use WASM instead.

The risks of newly developed industries are diverse, furthermore, the blockchain industry had its fair share of issues and risks. These risks are various, technology issues, smart contract issues and hacks, and overall accessibility issues. Thereby, the risk of investing in a highly volatile market is considerably high in comparison with traditional financial products. Hence, to portray broad in-depth research of Elrond Network, the risks of Elrond Network should be analyzed and evaluated.

The product of Elrond Network has arguably substitutes, this implies that the product is slightly undifferentiated. Elrond Network is targeting a market with a substantial pool of competitors, as highlighted in our research. A competitive market has dis- and advantages, a benefit is that in a competitive market a business has to become a better business to accelerate and gain market share. However, a disadvantage of a competitive market is that the market can get flooded and investors are distracted by relatively lower quality projects.

The geographical audience of Elrond Network is global, therefore is there no geographical target audience. Distinct geographical reasons do have specific needs and requirements, with a global audience it is considerably harder to meet these needs and requirements. Therefore, it is more difficult and more resourceful to reach that distinct audience while it is significant to reach them considering Elrond Network is active in a developing market.

Elrond Network is running 1454 foundation nodes (Elrond Community Delegation nodes) of the 2169 total nodes. That means that 67% of the validator nodes are run by Elrond Network, which implies that the validating process is considerably centralized. Elrond Network will gradually reduce the foundational nodes to 0 over the upcoming 6 to 12 months, however, the concern of centralization is valid considering the high rate of foundational nodes.

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APPENDIX

Appendix

Road Map	Development	Status
Q1 2020	**App in Samsung dApp Store**	*Completed , No delay.*
	Economic & Governance Model	*Completed , No delay.*
Q2 2020	**Elrond Bootstrapping Phase 2** - Genesis block - Select validator staking program	*Completed , No delay.*
	Native Elrond Wallet	*Completed , No delay.*
Q3 2020	**Token Swap: ERD to EGLD conversion**	*Completed , No delay.*
	DeFi initiatives	*In Progress, Delayed.*
	Economics v2	*Completed , No delay.*
	eGold Elrond Bootstrapping Phase 3 - Progressive feature activation	*Completed , No delay.*
Q4 2020	**Elrond Bootstrapping Phase 3** - Smart Contracts - ESDT Token	*Completed , No delay.*
	Staking: direct & delegation	*In Progress.*
	Elrond Governance: Voting system	*In Progress, Delayed.*
	Development Toolkit	*Completed , No delay.*

Figure 10 *Roadmap of Elrond Network of 2020*