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Siglo Protocol

WWW.SIGLO.COM

Contents

I. Abstract
II. Introduction
III. First Use Case: Pig.gi App
IV. The Siglo Protocol
  A. The Siglo Data Infrastructure
  B. The Siglo Ecosystem
  C. Two Tiers: dApp Coins and Siglo Token
V. The Role of Facilitators: Tools for Users, Developers, and Commercial Partners
VI. Token Generation Event
VII. The Siglo Community
VIII. Business Benefits
IX. Roadmap
X. Conclusion
XI. Team
XII. Appendizx 1: Proposal for SDI

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The purchase of the Tokens involve significant risks. Prior to purchasing a Token, you should carefully assess and take into account the potential risks including those described in the Documents and on our website at www.siglo.com.

Although there may be speculation on the value of the Tokens, we disclaim any liability for the use of Tokens in this manner. A market in the Tokens may not emerge and there is no guarantee of liquidity in the trading of the Tokens nor that any markets will accept them for trading.

This whitepaper describes a future project and contains forward-looking statements that are based on our beliefs and assumptions at the present time. The project as envisaged in this whitepaper is under development and is being constantly updated and accordingly, if and when the project is completed, it may differ significantly from the project set out in this whitepaper. No representation or warranty is given as to the achievement or reasonableness of any plans, future projections or prospects and nothing in the Documents is or should be relied upon as a promise or representation as to the future.

I. Abstract >

Abstract

Emerging markets are spearheading the burgeoning growth of a mobile-first digital economy. While it is estimated that forty-six percent of the adult population in emerging markets has never had a bank account, innovations aimed at lowering barriers to entry and access to internet have created new opportunities for them to be economically active in the global ecosystem. The digital mobile economy offers efficiencies and upward mobility for those who participate.

Siglo is a protocol that facilitates the use of mobile applications to accrue value and exchange it for increased mobile access and other goods and services. Users accumulate this value by sharing information, attention, and engaging with brand partners, and then exchanging it for mobile connectivity in the form of airtime top-ups. Mobile dApps (decentralized applications) built on top of the Siglo Protocol monetize the use of anonymized data, with the consent of users and pass these earnings back to that user.

The initial offering of Siglo Tokens will fund the expansion of the platform, which democratizes the monetization of anonymized interactions and demographic data, facilitates access to networks, and advances the Siglo ecosystem in new and existing markets. As the number of participating dApps and users grow, datasets become more robust and demand for this data increases. The Siglo Protocol will facilitate unbanked users' access to networks and the creation of decentralized mobile networks that are incentivized, encouraging access to populations which were not previously covered by mobile networks. Network providers without major infrastructure would have the ability to provide services and still charge customers without having a traditional OSS/BSS stack. The use of blockchain and smart contracts allows Siglo to redistribute the value to the creator of the data, the consumer, in a fair and transparent manner.

An active Siglo Ecosystem will exist from day one through the first use care, the Pig.gi app, which has 1.1 million registered users - mainly in Mexico and Colombia - and through the Siglo app, which will be available in June 2018. With the Siglo Protocol, the Siglo Ecosystem uses the blockchain and smart contracts to manage this relationship between the decentralized dApps (dApps), users, providers and brand sponsors. Siglo ensures the integrity of how this data is acquired and used.

Siglo is the key to accelerating the growth of digital economies in emerging markets.

Join Siglo on Telegram

Introduction

Smartphone penetration is growing an impressive rate, especially in emerging markets. However, despite the increasing number of people with a smartphone in their pocket, the high costs of data and connectivity make it impossible for a large part of the world to have consistent access to the network. Most smartphone users in emerging markets use prepaid phone numbers and buy airtime top-ups in small increments through local resellers. It is not uncommon for these users to turn off the data on their phones completely to save money. They become "wifi scavengers" in search of an open network to which they can connect. These barriers create an exclusive mobile economy that limits the participation of the masses.

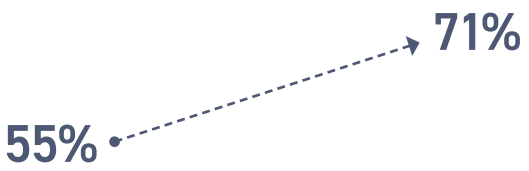
With the historically high cost of computers and limited access to a stable power grid and landline connectivity, much of the developing world was late to adapt to personal computers. Factoring in cost and the fast advances in functionality of modern smartphones, the emerging market has largely gravitated towards accessing the internet through their phones, rather than computers. In 2016, smartphones accounted for 55% of internet connections, a number which is expected to grow to 71% by 2020.

The explosive growth in smartphone adoption in markets like Latin American and the Caribbean has been driven largely by operator offerings of prepaid airtime and data. Research shows that consumers in these markets spent a total of $2bn USD on prepaid data and airtime. According to a GSMA Intelligence report from Q4 2016, 72% of the world's mobile connections are pre-paid.
Steady, affordable access to the internet is already bridging the "quality-of-life" gap in emerging markets at increasing rates. Access to mobile connectivity has been synonymous with socio-economic development, leading to cultural enrichment and efficient communication across larger geographical barriers.

Factoring in average wages and the cost of top-ups in Mexico and Brazil, it takes an estimated 8-40 hours of work for consumers to earn just 500MB of data. Using the Pig.gi app these same users were able to earn airtime top-ups during their commute, at home, or at any time their schedule permits them to interact with the app. This means that users are more connected than before and are able to use income otherwise used for mobile access for any multitude of other expenses such as education, better food, and even business investments. Studies have clearly shown the correlation between upward economic mobility in emerging markets and digital inclusion, including access to the internet.

As these developing markets continue to see economic growth and connectivity, brands are showing high interest in reaching these populations. However, they are challenged by the fact that they cannot reach emerging segments with the same level of efficiency as can be done in long-established markets such as the U.S.

and Western Europe. In these highly developed markets, brands have a plethora of historical data and active communication channels through which they can understand consumer preferences and advertise accordingly. On the other hand, access to data only continues to grow in the emerging world, as consumers in these regions become increasingly connected and the internet becomes an essential part of their day-to-day lives. As economies continue to develop and seek access to the internet, apps like Pig.gi provide brands with a solution for connecting with new consumers, while at the same time helping people in these markets gain reliable and affordable access to the internet.



In 2016, smartphones accounted for 55% of internet connections, a number which is expected to grow to 71% by 2020.

First Use Case: the Pig.gi App

The Pig.gi app was founded and launched by brothers Joel and Isaac Phillips, founders of Siglo Limited, to manage the tokenized protocol. It was an experimental model that sought to democratize the earnings from brands for attention and anonymized interactions by users. Development of the Pig.gi app began three years ago, when the brothers moved to Mexico to build and launch a pilot in a high-growth, emerging market. Mexico is representative of other emerging markets in that there is high Android penetration and prolific use of prepaid connectivity. They recognized the importance of working on the ground with users and understanding their current connectivity patterns and challenges. Building relationships with brands and mom-and-pop corner stores was imperative to building a model that could be scaled across similar emerging market populations.

In 2015, the Pig.gi team ran a pilot with users in Mexico with 100,000 downloads. Then, with the lead in-house software architect, Jorge Trujillo, they rebuilt the front and back-end, taking into account the learnings gleaned from the 1-year pilot. In June 2016, the public version was launched in Mexico and was followed by a launch in Colombia a few months later. Currently, the Pig.gi app has a 4.5 average rating in the Google Play Store and more than 1.2 million downloads in these first two markets. Pig.gi works with some of the largest brands in the world and continues to garner interest from new partners. These brands become sponsors of connectivity in emerging markets.

The model behind Pig.gi was an experimental one, with the following results:

- A successful, disruptive model was built that decentralized the earnings from user data and distributed this revenue across the base of users that created the value.
- The Pig.gi app has accrued a user base of 1.1 million verified accounts to date. There are individuals who understood the value of their attention, the value of their data, and the value exchange with brand sponsors who paid for their increased connectivity.
- A platform for two-way communication with users in emerging markets was built that allowed for incentivized, fast crowd-sourced information gathering and micro-task completion.

Although a valuable model was built, the Pig.gi experiment also fell short of a fully democratized network in the following ways:

- The earnings were decentralized, however, the data collection, management, and storage was still centralized in a traditional way that did not offer users control over their data and with whom it is ultimately shared. This is part of the larger issue of a broken internet that dominates the world today. While steps were taken to build a secure and private database, the new internet must

also be characterized by transparency and a user's control and management of their own data and monetization. Pig.gi had the monetization piece, but not the rest.

- Pig.gi was one specific model, but many models and dApps could benefit from a decentralized network where users could monetize their own data and be more connected to mobile internet.

Siglo is the evolution of the Pig.gi experiment. Still, the Pig.gi app is important to the launch of the Siglo Token for two reasons: First, it proves the business case for the model that the Siglo Protocol will serve. A real, proven use case is much more compelling than a theoretical model developed in absence of an on-the-ground understanding of how emerging markets function today. Second, the Pig.gi app gives instant utility for the Siglo Token, with its critical mass of users who are already anticipating integration with Siglo. Pig.gi users, who are largely unbanked and new to the online economy are being taught about token models and the potential for efficient online transactions. They are being given the opportunity to be the first users of this new ecosystem, as Pig.gi will be the first app to become a dApp integrated on the protocol.

The Pig.gi app is a project of Farrow Ventures, Inc., a Delaware Corporation founded in 2014. Farrow Ventures, Inc. has received financial investment from several venture capital funds in Mexico, Colombia, and the U.S. More than 50 angel investors have participated worldwide. Where Siglo Limited will manage the token economy, Farrow Ventures will continue its commercial endeavors with brands and providers. These relationships and tools will be made available for other developers, making participation in the Siglo ecosystem easy.

To facilitate the growth of this transparent and efficient mobile economy, the Siglo Token will be launched, creating the first-ever token to connect dApps, their users, providers (like mobile operators), and brands that directly reward these consumers for engaging with them.

The Siglo Protocol

The Siglo Protocol is inspired by and built upon a proven model with a critical mass of users. Blockchain technology offers a way to build a truly decentralized model where participants are properly incentivized. The Siglo token is can be transferred in a secure, transparent, and frictionless way across this ecosystem.

There are three main components of the Siglo Protocol:

1. A token that is efficiently transferable across the ecosystem and used for protocol transactions.
2. A system of databases for both private information and anonymized interaction and demographic data, providing a transparent and consensual exchange of user information.
3. Smart contracts that define transactional relationships and escrow accounts between participating parties.

In June 2018 the Siglo App MVP will be released, as a first user-facing interface with the Siglo Protocol. Farrow will open its commercial assets (SDK, APIs, and top-up services with mobile operators) to other developers who wish to create new models or integrate them into an existing app. Pig.gi will then be the first commercial dApp using these tools to interact with the Siglo blockchain protocol. As a public protocol, developers could also chose to build on it directly.

From its inception, the Siglo Ecosystem will have sizeable participation through the Pig.gi user base, and it has already begun work with other dApps that will be early adopters of the protocol. Upon reaching the milestones outlined below, the Siglo Protocol will be released for other applications that offer an exchange of value between users and brands and have digital and financial inclusion as their modus operandi. Siglo's value proposition is unique in that it is being launched with existing partnerships, like Pig.gi and other dApps, that already have significant bases of engaged users.

Siglo's Github can be found here.

It is anticipated that, with time, the Siglo token will increasingly become a medium of exchange for digital transactions in emerging markets, as these same users leapfrog traditional banking solutions, arriving at more inclusive and accessible ways to transact online.

The motivation for creating a blockchain based token is twofold:

1. Transfer of value: In an ecosystem where value is created, monetized, and transferred among users, providers (like mobile operators), and brands - a blockchain token becomes necessary. This secure token is part of an immutable, auditable ledger and can be transferred easily between stakeholders.
2. Funding: An initial token sale will take place during which 36% of Siglo Token will

be available for contributors. Funds raised in the Token Sale will be used to develop protocol functionality and promotion of the ecosystem.

An additional 30% of the token will be released in the future in order to increase circulation as the network grows and to minimize volatility in the token market. This pool is important as more participation in Siglo through Pig.gi and other dApps takes place. Further details of the token allocation is provided on page 19.

The following stakeholders participate in the Siglo Ecosystem:

- Users own a valuable asset or property that has previously been monetized almost exclusively by centralized organizations like Google and Facebook. In the Siglo ecosystem, a user's anonymized interactions and demographic data is monetized on their behalf, when they choose to do so. This revenue is shared with the user by paying them with Siglo Token or an off-chain app coin that is backed by Siglo Token. Users may hold this value, spend it on products, or transfer it to other users. This could include cross-border remittance payments. (This will likely be done, at least initially, through external cryptocurrency exchanges as direct user-to-user transactions.)
- Brands and other entities or sponsors spend billions of dollars annually on mobile advertising and communication with users. Brands have two challenges. First, how can they reach people that are under-connected or not connected at all? Second, a significant part of their spend is lost to fraud in the existing advertising ecosystem. With Siglo, these transactions are written to the blockchain and tokens are used to track transactions from campaign inception to user engagement to payout to publishers and users themselves.
- Providers, like mobile operators, can participate in the ecosystem, taking advantage of the efficiencies of tokenization and distribution through dApp marketplaces. Over the last decade, mobile operators' revenue has migrated from unique packages of value-added-services (VAS) to the commoditized offering of megabytes and gigabytes. This has contributed to operators sharing infrastructures like towers, radio access networks (RAN), backhaul, and evolved packet core. Commoditization of the pipes for the world's information is inevitable, and airtime connectivity is the world's most traded digital commodity. 72% of the world's phone uses prepaid top-ups to stay connected, and a decentralized infrastructure brings trust between consumers and operators. The first Siglo "facilitator" is Farrow, which has already processed hundreds of thousands of top-ups (connectivity) in Mexico and Colombia, where Pig.gi sends top-ups to all mobile operators in these markets including Telcel, Claro, Telefonica, Tigo, Virgin, and AT&T. Farrow has built one example of this kind of relationship, however, in the future other dApps could use these same connections or build their own models directly onto the Siglo Protocol.
- Decentralized Applications, like Pig.gi, can integrate with Siglo using developer tools and monetize in a fair way - where most of the revenue

is passed on to the creators of the value, their own users. dApps may have their own in-app coins that can be earned by users and either spent within that same app or transferred across the ecosystem via the Siglo Token.

- Siglo will collect minimal fees from transactions to maintain the protocol.

The Siglo Company is developing the following to facilitate aforementioned functionality:

1. A smart contract will be created for the Siglo Token, which will be an ERC20 token. (While an ERC20 token makes the most sense for now, it will likely be necessary to migrate to another blockchain with higher throughput and lower cost.)
2. A secure, private yet transparent, decentralized protocol by which a user can create a profile compiled of information with differing levels of privacy.
3. Smart contracts that define relationships and payout structures between stakeholders.
    - Users <> Siglo: Data belongs to the person who produces it, which a users acknowledges in a smart contract that is written to the blockchain.They also agree to give limited access to their non-private, anonymized interactions by third parties who pay them in Siglo Token.
    - Siglo dApps <> Siglo Company: dApps that use the Siglo protocol will agree to abide by the terms and conditions set forth by Siglo granting them limited access to user profiles and data and forfeiting their ownership over any user's data.
    - Brands/Sponsors <> Siglo dApps: Using fiat from these brand sponsors, Siglo Tokens will be purchased and used to secure product inventory (like airtime connectivity) and placed in escrow with a fixed number of asset backed reward tokens (like Pig.gi Coins). These coins are distributed to users as they contribute attention, opinions, content, or complete tasks, and then exchanged for the products that were set in escrow. This reduces fraud for advertisers, accelerates remuneration of publishers, and increases transparency in the ecosystem. All of these reward tokens are always backed 100% by an inventory of product, like mobile connectivity (airtime top-ups). This allows dApps to offer their own off-chain in-app coins, backed by an asset of value. The dApp could receive Siglo Tokens from brands, if those brands choose to purchase Siglo Tokens themselves.
    - Information Miners: Non-private, anonymized interaction data will be available publicly and will be minable by any third party for a cost in Siglo Token. These tokens will be distributed among users whose data contributed to the mined data set.
    - Other relationships may exist and will be managed through smart contracts on the blockchain.

At the time of issuance, the Siglo token will have immediate utility in three ways:

1. Tokens will be exchangeable for connectivity (airtime top-ups) in the user facing, Siglo mobile application. This will begin with mobile operators in Mexico and Colombia and be expanded rapidly.
2. Tokens will be exchangeable for reward coins (used in participating applications) which can be used to purchase in-app products. The size and number of transactions per day will be limited per user to effectively eliminate the risk of misuse.
3. Tokens can be exchanged by brands for attention and engagement through Siglo dApps, as described above.

In the future, tokens can also be used to query user generated, anonymized interactions and demographic data from the publicly accessible database. A panel will be launched that allows these third parties to build queries. An amount of Siglo Token will be charged, based on the size and complexity of the data set. This Siglo Token will be distributed amongst the users whose anonymized information was used.

Any Siglo Token can be exchanged for fiat currency on third-party exchanges, assuming such exchanges will exchange Siglo for fiat, or be held. As the user-base increases, the aggregate value of users' data increases, and brands' demand for these tokens for advertising and data increases.

Before allowing public access to the Siglo Protocol, the following milestones must be met:

1. It must be shown that brands are willing to be sponsors of users' connectivity in exchange for their attention and data insights.
2. It must be shown that individuals are willing to participate in a model of sharing their attention, data, and opinions in exchange for tangible value like increased connectivity and other rewards.
3. The Siglo Protocol must be shown to be stable and operating efficiently with 10 million registered users.

Currently, milestones 1 and 2 have been completed. The open source protocol will be available for use to the public after all 3 are met. Prior to that, potential partners will be evaluated on a case by case basis.

There are 6 pillars that Siglo will uphold as we create an ecosystem and framework for user data.

- **Ownership**: A user must own her/his data and have a clear understanding that this is their property to which access they control.
- **Privacy**: a user must be confident that her/his information is secure and private.
- **Right to Share**: As such, they should have the right to share or not share any information with a dApp or a client (like a brand) of that dApp.
- **Monetization**: If that data is shared, they should have the right to a significant portion of the monetization that their information generates.
- **Transparency**: A transparent history of who has had access to that data should be accessible, in any easy-to-read format to each user.
- **Permissions**: If a user wishes to grant or revoke the access that any dApp has to their data, they should have an easy and efficient way to do that.

Note that all of this is not immediately feasible on a blockchain. Siglo will develop a transparent, hybrid model in phase 1 and work towards completing all aforementioned characteristics of a private, monetizable user data model. More details about this below.

The Siglo Data Infrastructure (SDI)

At the core of the Siglo Protocol is a data infrastructure that gives the basis for monetization providing connectivity through that monetization. The long term goal of the Siglo Data Infrastructure (SDI) is to build an infrastructure that upholds the aforementioned 6 pillars for user data. Blockchain holds the promise to be able to best meet these goals for the "future internet." However, there has yet to emerge a blockchain that could sustain large amounts of micro transactions at low or no cost, and that has a proven record and large scale developer buy-in. Siglo is committed to building towards the end goal. Initially, the data infrastructure will be a hybrid model and during the next 12-18 months, will transition increasingly on-chain as Siglo either develops a solution catered around these needs, or a clear leader emerges that supports the requirements.

An MVP of the hybrid infrastructure will be available before the token generation event. The key elements of this SDI will be providing a secure storage of personal, private data and the storage of anonymized interaction data that is monetizable by dApps, brands, and other third parties. Truly anonymized data cannot be used to identify a specific person.

One of the most stringent regulatory standards for the processing or exportation of personal data is currently the General Data Protection Regulation (GDPR) in the European Economic Area. This serves as a high standard that Siglo will work to attain. It should be noted that when GDPR was written, it did not take into account blockchain technology. While many of its goals can be reached using a blockchain, there is a lot of gray area that regulators should define.

GDPR applies to personal data, or information relating to an identified or identifiable natural person. When data is rendered completely anonymous, GDPR protections are no longer extended to the data, as it no longer contains any personally identifiable information. The Siglo Protocol will build its infrastructure to ensure that personal data will be secure and private, accessible only by the user with a private key, in accordance with GDPR requirements while allowing anonymized data to be publicly accessible to third parties willing to pay for this it. (Tokens are then distributed to these users who contributed their data to a third party's query.)

To best comply with GDPR in its current state, and because of the limitations of blockchain's throughput and high costs, Siglo will build a hybrid system where private data is encrypted and stored off-chain but linked to the blockchain with a hash.

In the future, we believe both blockchain efficiency will advance and there will be more clarity on GDPR and other regulations to provide a framework that can be resolved by a blockchain solution. Siglo will be very involved in pushing forward user data technology that provides the highest protection and monetization opportunities while complying with applicable regulations.

6 Pillars	MVP	Mid-Term
Ownership	Blockchain Smart Contract	Blockchain Smart Contract
Privacy	Off-chain with private keys	Blockchain with private keys
Right to Share	Blockchain Smart Contract	Blockchain Smart Contract
Monetization	Off-chain	Partially Blockchain
Transparency	Off-chain but publicly accessible	Blockchain
Permissions	Hybrid chain permissions	Blockchain

The Siglo Ecosystem

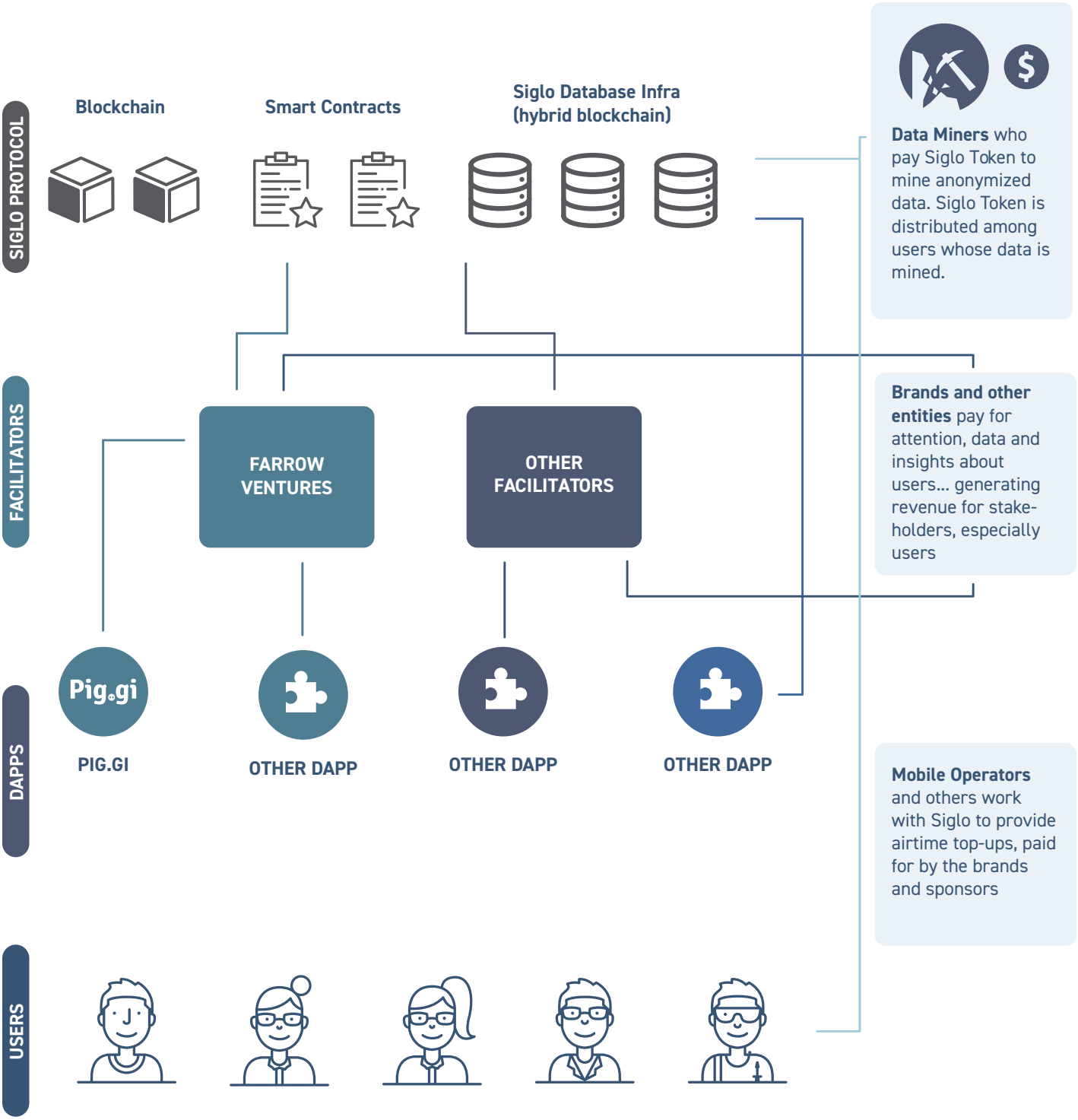
The mission of Siglo Limited is to develop, grow, and maintain the Siglocosystem. Creating profit from user data is not part of its mission, although transaction fees are required to cover network costs. Siglo Token collected from the public for mining non-personal data will be distributed amongst users who supplied this data. Marketing to and building a community of developers is key to the long term success of the ecosystem. Siglo will work closely with developers to integrate their models with the Siglo Protocol.

Users of Siglo dApps will digitally sign a smart contract that entitles them to the ownership and rights to their data and information collected by the Siglo Protocol. To begin using a Siglo dApp, a user must:

- Provide basic information for the creation of his/her profile, and to comply with KYC requirements.
- Sign a smart contract that entitles him/her to ownership of this data and gives the user the right to monetize this data.
- A minimal deposit of token is required to establish this smart contract and a wallet associated with this user profile.
    - For the first 10 million user profiles created, one Siglo token (1 SGL) will be deposited into the new user's wallet on creation.
    - Thereafter, this initial deposit can take place in one of two ways:
        - A new user could purchase a minimal amount of tokens.
        - The app that onboards this user could deposit a minimal amount, as part of their user acquisition cost. This is a more likely scenario.

Farrow is the company that originally developed the intellectual property (IP) for Siglo and runs the Pig.gi application. IP for Siglo will be transferred to Siglo Limited within the first year after the tokens are issued. Farrow has developed a number of commercial relationships with other brands, programmatic partners and airtime top-up providers. Farrow will continue to play an important, albeit completely independent, role from Siglo Limited. Farrow will work as a dApp "Facilitator" to develop tools that users and developers can utilize to interact with the Siglo Protocol. This drives significant value to the Siglo Ecosystem by creating an easy on-ramp for developers to integrate their existing dApps or new ideas with Siglo. By extending the same commercial relationships to these new players, developers are incentivized with a monetization model that is shared with their own user base. The independent relationship model between Farrow and Siglo can be replicated with any other dApp developer.

Diagram 1: the Siglo Ecosystem



Tww Tiers: dApp Coins & Siglo Token >

Two Tiers: dApp Coins & Siglo Token

The challenge of a token economy is balancing the volatility of a free-floating token with the need for a stable user-facing currency in markets where the cost of advertising and cost of mobile connectivity and other products is variable. We address this problem by allowing participating platforms to continue to use their own stable app points / coins. Many dApps and platforms already have their own models and in-app economies and may wish to maintain that branding and model. These off-chain points are the data connectivity "coins" that are given to users when they interact with content and brands, perform a task, or earn them in some other way. An example of this today is the Pig.gi Coin, but this could be any reward coin or point distributed in different markets.

The relationship between the blockchain based Siglo Token and off-chain app data connectivity coins is defined by a smart contract and escrow accounts that regulate exchange rates, allocate product inventory, and designate stakeholders (app owner, users, providers, etc). Any app using the Siglo protocol can then offer a stable coin that is backed by the underlying asset or product, like connectivity (airtime top-ups), offered in app. The total value of these app coins is always less than or equal to the value of inventory held. The amount of time it takes a user to earn a certain value may vary between markets, since the rate of redemption is a function of local fiat and advertising cost.

Users can purchase products and top-ups from local mobile operators by using their app coins. In Phase 2 of the roadmap (see below), users can also redeem Siglo Token with their coins. In Phase 3, Siglo intends to build an exchange for inter-protocol exchanges and peer-to-peer transfers.

Even as the Siglo Token price on the open market (if such market for Siglo Token develops) may fluctuate, the price for local products, like top-ups designated in app coins (e.g., Pig.gi Coins) stays stable, which is desirable for users. This is desirable for transactions by users, especially in emerging markets, where less understanding of financial dynamics exists. On the other hand, there are market forces that may drive the price of the Siglo Token up, like increase in demand by brands and data miners, increase in velocity, and the increasing value of the aggregated consumer data that these users possess and share. By separating the user-facing connectivity coins and the Siglo on-chain token, we can insulate end users from volatility and inflation of the open market token.

When a new brand or sponsor is on-boarded by a dApp or a dApp facilitator (like Farrow) a new wallet is created and an escrow is set up as a smart contract. At this point, the app coins (i.e. Pig.gi Coins) are created and added to a brand wallet and distributed to users as attention and opt-in, anonymized data is provided back to Siglo.

Wallet Protocol:

1. Brand fiat is exchanged for Siglos. This can be done by the brand themselves or via the facilitator.
2. Siglo Tokens are used to incentivize the stakeholders and to purchase product, like connectivity (airtime top-ups) from mobile operators. An escrow account is set up with the following features:
    - An amount of app coin (i.e. Pig.gi Coins) is designated for distribution to users in a given market.
    - Product is set aside and directly exchangeable as users trade back their earned app coins (burning these app coins).
    - Monetization is divvied up between users, dApps, and possibly a facilitator who acts as an intermediary between sponsors and dApp publishers (Farrow would play this role when providing tools and clients to other 3rd party dApps). Users earn app coins and facilitators earn small percentages of a Siglo token.
    - The sponsor gets a transparent report made up of non-private, anonymized user interactions being generated in exchange for the user attention, interaction, or shared data.
3. Wallets gets updated as each stakeholder performs its role culminating in all assets being given out and the contract fulfilled.

The governance processes for these brand escrow accounts are established by smart contract as part of the Siglo Protocol.

V. The Role of Facilitators >

The Role of Facilitators: Tools for Users, Developers, and Commerical Partners

An important part of the Siglo Ecosystem is a developer community that will bring their own ideas and existing models to Siglo. The relevance and market value that the Siglo Token attains over time will be largely driven by the extent to which this developer buy-in takes place. However, the purpose of the Siglo Ecosystem is not to build out user-facing products. As the first facilitator, this is where Farrow plays a key role, especially in the early days. Farrow will provide these developer tools and user products. Once the protocol is open, any person or company could compete with Farrow to offer user and developer facing products that directly interact with the Siglo Protocol. By allowing Farrow to play this role from inception, significant value is brought to every Siglo Token holder.

Farrow is working to build solutions for:

Users. A user facing app for mobile and web for individuals to create and manage profiles, permissions, and their Siglo wallet. This app also will include a way for users to exchange their Siglo token for increased connectivity (airtime top-ups), beginning with current providers in Mexico and Colombia.

Commercial Clients. A panel will be built that allows brands and advertisers to purchase user attention, non-private data, opinions, and tasks through Pig.gi and other dApps using these tools.

Developers. An SDK for the using the aforementioned monetization methods.

Leading up to the token launch, the Farrow team has led on the design and development of the Siglo Protocol. Once the Siglo Token is launched, the current team will split into two, as Farrow continues to build commercial and user facing products, and Siglo works to fulfill its mission of building a sustainable token ecosystem.

Diagram 2: Relationship with Siglo, Facilitators, and dApps

SIGLO

FARROW VENTURES

OTHER FACILITATORS

Pig.gi

PIG.GI DAPP

OTHER DAPP

OTHER DAPP

OTHER DAPP

Facilitator: Farrow Ventures, previously founded by the Phillips brothers, ran the Pig.gi App and will offer its commercial relationships to any developer to help them integrate with the Siglo Protocol. Farrow will also build tools to make this integration easy and monetizable.

Pig.gi is owned by Farrow and was the first experiment in democratized monetization providing increased connectivity via top-ups with mobile operators. Pig.gi will be the first dApp built on Siglo.

In the future, any other third party could build tools on top of the Siglo Protocol to be used by other dApps.

Other apps can use the tools and existing relationships with brands and providers (like mobile operators) that Farrow already has. This makes onboarding easy and drives value to Siglo Token.

Token Generation Event

A private pre-sale of Siglo Tokens will take place for "accredited investors," as defined under the U.S. securities laws. The public sale of Siglo Tokens will be available for participation by "accredited investors" in the United States and non-U.S. citizens.

Key characteristics of the token generation event (TGE):

- A total of 8 billion tokens will be created. This is roughly one token per future potential user (total available market) and the value (price) of 1 Siglo Token will tend towards the NPV (net present value) of all the potential data, attention, and engagement from that user. The set of all Siglo Tokens is a proxy representation for the totality of all users' attention, addressable through any of the related ecosystems and applications, over time. The value of each Siglo Token on the open market then represents a useful quantity: it is a proxy for the net present value of all future attention for a single user, as addressed by any and all applications that use Siglo. The supply of dApp data coins (like Pig.gi Coins), unlike the supply of Siglo, is "elastic" in order to maintain price stability in terms of app coins as the user base grows, and in order to discourage the hoarding of app coins as would be the case with a fixed-quantity (hence appreciating) asset.
- 36% of the Siglo Token will be released in the token generation event
- Hard cap of funds that will be raised: $25M

The token allocation will be as follows:

- 36% to eligible investors during token generation event
- 30% future release: after reaching 10 million registered user profiles, Siglo will release 1 token for each new user profile created, in blocks of 1 million tokens.
- 15% Siglo team and advisors
- 19% reserve

Funds from the token generation event and pre-sale will be used to build out additional features of the protocol, and propel the ecosystem forward, through growing the user base and markets for dApps that use the protocol.

Allocations for funds raised in Token Generation Event:

- 45% Protocol Development
- Funding for continued development of the Siglo Protocol.
- 25% Market Development
- User and customer acquisition through dApps to grow the Siglo ecosystem. Promotion, events and other incentives for developers who build on the protocol.
- 30% Operational Overhead

Diagram 3: Token Allocations

- 36% TOKEN SALE
- 30% FUTURE RELEASE
- 19% RESERVE
- 15% SIGLO TEAM / ADVISORS

Diagram 4: Allocations for Funds Raised in Token Generation Event

- 45% PROTOCOL & APP DEVELOP
- 30% OPERATIONAL OVERHEAD
- 25% MARKET DEVELOPMENT

VII. The Siglo Community >

The Siglo Community

Building a community around the Siglo Ecosystem is paramount to the success of a token generation event and, more importantly, the long term success of the token economy. This has already begun and the community can generally be divided into three broad categories. These three groups will tend to converge over time.

Token Enthusiasts

The Siglo team began a roadshow in January of 2018 by hosting memorable dinners in key cities. The purpose of these dinners was to create awareness of what Siglo was all about - the need for democratized monetization of data that could be a catalyst for increased connectivity. Over 1,200 influential women and men in the blockchain space, as well as those curious to learn more, attended these events in Davos, Zug, New York City, Paris, London, Los Angeles, San Francisco, Cancun, San Juan, and Miami.

In addition there are Telegram channels in English and Spanish.

Siglo Telegram in English: https://t.me/Siglo
Siglo Telegram in Spanish: https://t.me/SigloES

Users of Siglo dApps

Siglo will launch with at least one dApp already using the protocol. This is the Pig.gi app that has 1.1 million registered and verified users. These mostly unbanked users are already anticipating Siglo's launch and are being educated about blockchain based economies and the benefits that Siglo will offer them. They are being mobilized as promoters and ambassadors. Many Whatsapp and Telegram groups have organically started by users as discussion platforms about Siglo. These users will become the first profiles on the Siglo Protocol and will receive token as initial account holders.

Developers

Several other platform developers are in talks with Siglo about being early integrators with the protocol. Some of these may lead to announcements soon after the token generation event. In addition, the Farrow company is building tools, like an APK, APIs, and monetization methods that make it easy for developers to participate. Parts of this will be released prior to the token launch.

VIII. Business Benefits >

Business Benefits

The Siglo Ecosystem involves the following players that will benefit from its existence:

Siglo Limited, a Gibraltar company: The company promotes increased access to the mobile economy by increasing connectivity through subsidizing costs with brand money and facilitating online transactions in emerging markets. Siglo Limited develops and maintains the infrastructure for user profiles and data, owned and managed by each individual user. The Siglo Tokens have value correlated with the lifetime value of an average user's monetizable data. Minimal fees are charged to cover operating costs.

Facilitators: Entities that play the role of "facilitator" can make use of Siglo and open their own models to other developers. Farrow is an example of this as it provides a link with brands and mobile operators and develops APIs and SDKs giving access to other developers to partake in the monetization model. In this case, Farrow plays a role not unlike a traditional ad network. Facilitators earn a portion of the revenue generated by these commercial agreements.

Decentralized Applications: dApp developers can monetize their user bases and share revenue with their users. Apps may give out their own asset backed reward points or coins to users in exchange for attention, opinions, data, and other opt-in sharing by users.

Brands and other Entities: In emerging markets, consumer data is scarce. However, a major part of the world is made up of these individuals who account for a large part of projected economic growth in coming years. In addition to consumer insights the anonymized information that users opt to share, these brands receive tremendous benefit from advertising or sponsoring content on dApps that use Siglo. By compensating users with real, valuable tokens, these brands position themselves as advocates who value users' opinions and privacy and by showing the users that they are willing to compensate them in a transparent and fair value exchange.

Mobile Operators and other providers: Operators have a high incentive for building directly on the Siglo ecosystem or indirectly through other dApps or services. Siglo drives higher mobile participation and facilitates payments from subscribers to the mobile operators. This increases ARPU (Average Revenue Per User). By decreasing friction in connectivity for consumers in emerging markets, decentralized mobile networks are incentivized.

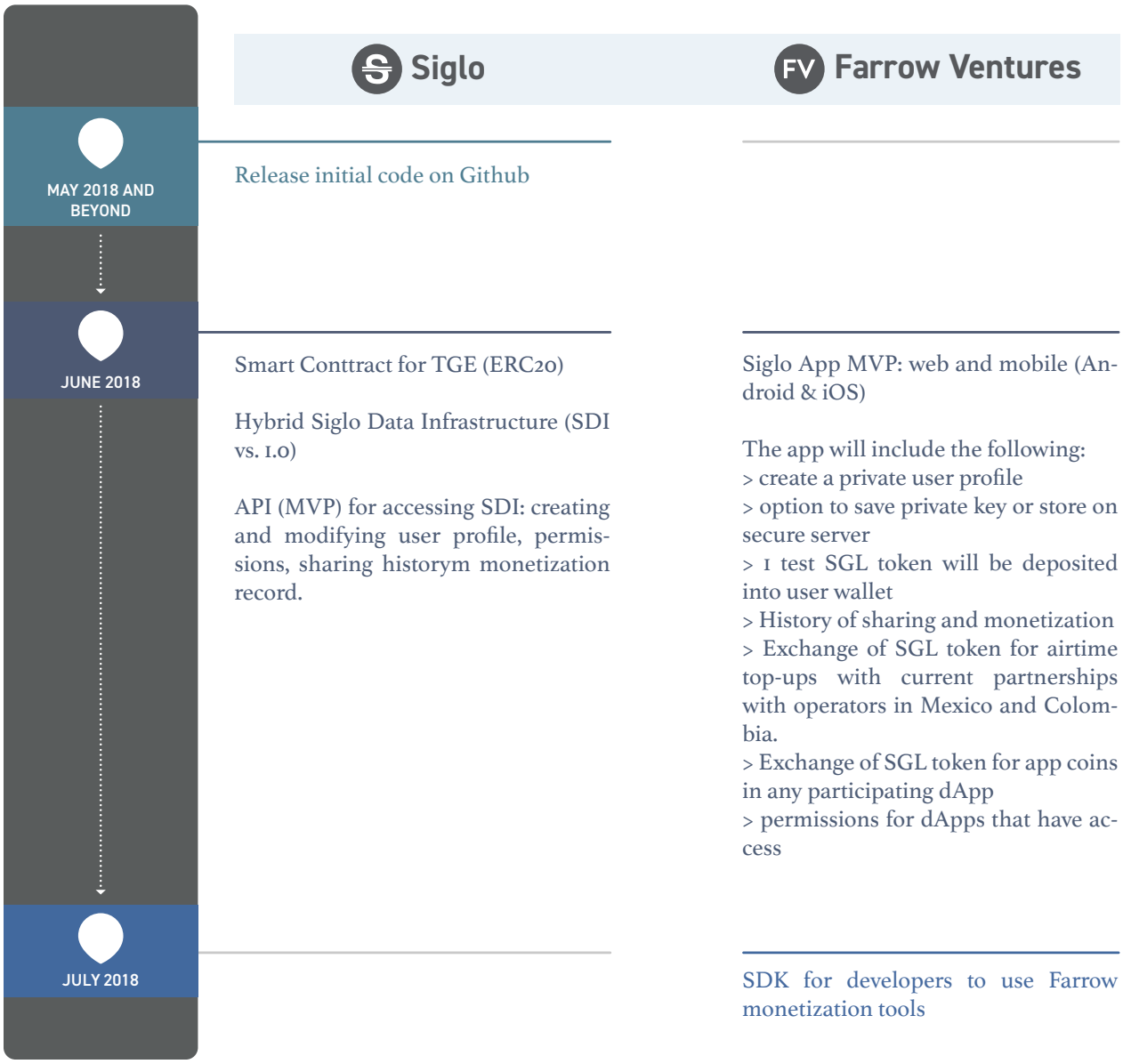
Social benefits and other externalities: these include increased connectivity and access to networks, upward economic mobility, access to information, digital inclusion, financial inclusion, leapfrogging traditional and obsolete banking alternatives, frictionless P2P transactions, transparency and non-corruptible

IX. Roadmap >

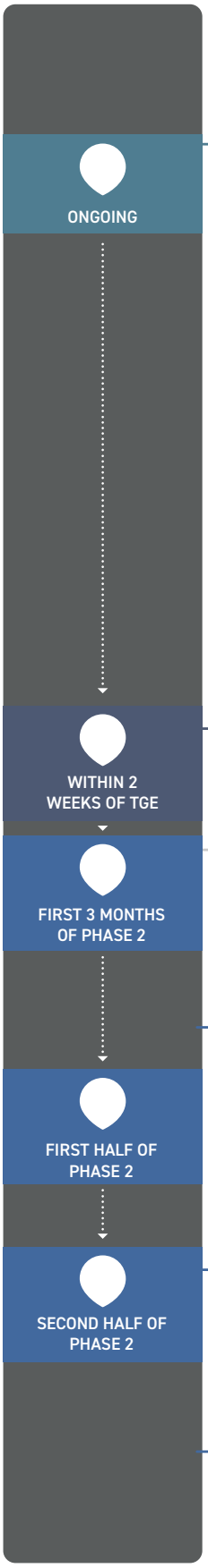
Roadmap

The product roadmap is divided into three phases: pre-token generation event (TGE), the 12 months following the TGE, and the subsequent 12 months. The exact dates will be made public after the completion of the private pre-sale. Because Farrow is also working on products that compliment Siglo, the Farrow roadmap is also shown below. As stated elsewhere in the paper, Farrow is an independent company but will work to build some of the first developer tools and user interfaces for the Siglo ecosystem. By phase 3, any entity could have the same access. This isn't meant to give a business advantage to Farrow but to stimulate early growth of the ecosystem while building out a stable protocol. All contributors and stakeholders will benefit from a stronger, more accessible ecosystem that Farrow will help to create.

PHASE 1 (PRE-TGE)

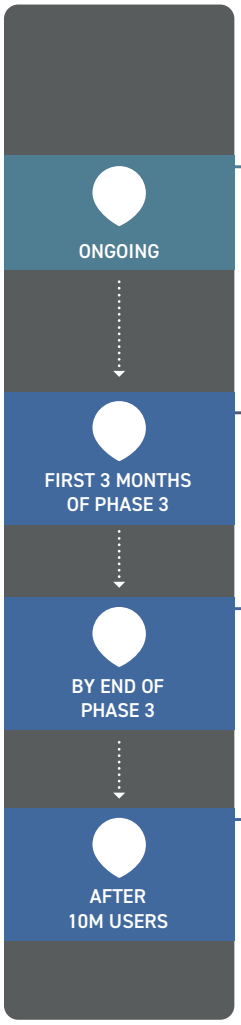


PHASE 2 (FOLLOWING 12 MONTHS)



Siglo	Farrow Ventures
Begin working with dev community Establish partnerships with 2-5 other dApps/platforms to be early users of the Siglo Protocol Build a robust development team Evaluate alternative blockchains for continued development Version 2.0 of the Siglo Data Infrastructure, focusing on complying with GDPR standards. The intention is to push increasing amount of functionality towards blockchain, as technology development permits API upgrades	API upgrades
Issue Siglo (SGL) token	
Smart Contract for sponsors and users interacting with the protocol Escrow protocol for brand wallet	Siglo App - move to production chain and SDI
	Develop tools for migrating existing user bases to the SDI Develop self service sales panel where brands and other entities can purchase data and insights from dApps that use the Farrow toolset for monetization.
Panel for third party data miners to access and search public user data - this access/mining is paid for in Siglo token and distributed (minus fees) amongst users whose data was mined.	P2P transfers between wallet holders

PHASE 3 (SUBSEQUENT 12 MONTHS)



Siglo	Farrow Ventures
Ongoing development of ecosystem, marketing, and community building	
Explore ways to establish community nodes that could become fiat onboarding in emerging markets, facilitating greater financial inclusion	
Open the protocol to any dApps that wish to build on it and that agree to the terms and conditions signed via smart contract	
Reach 10M users	
Begin releasing tokens from the "future release" pool	

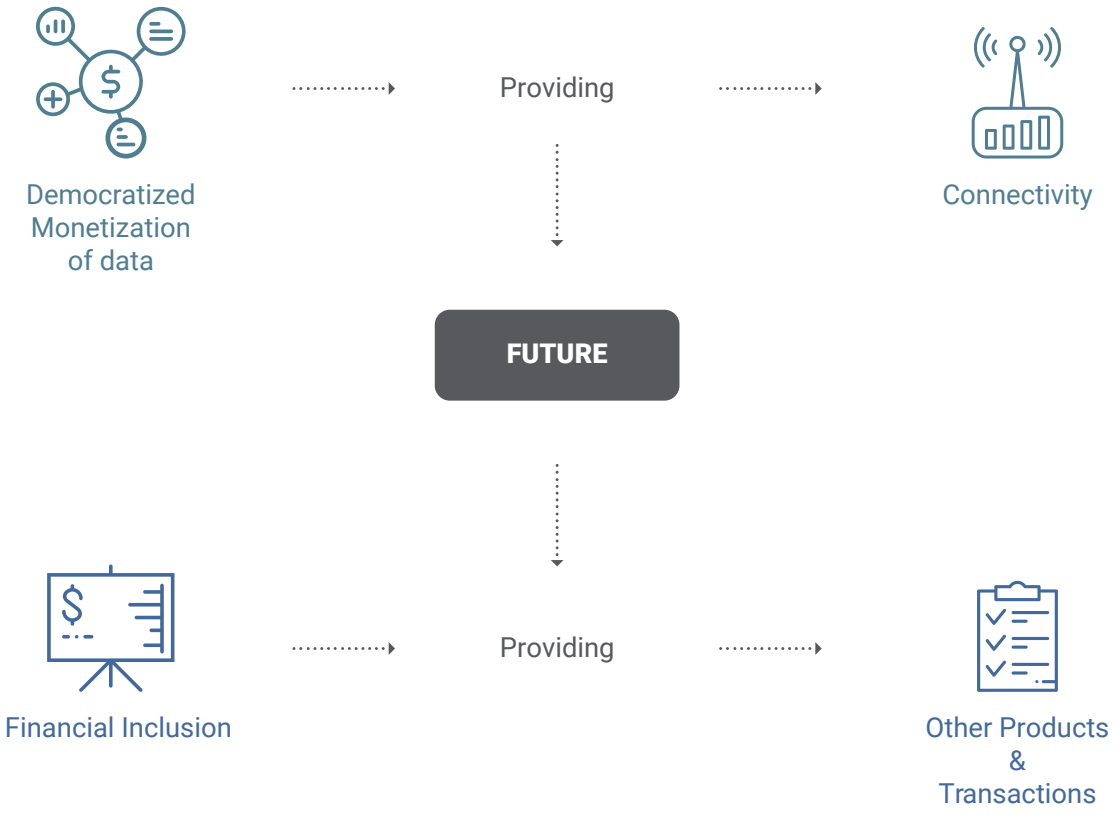
IX. Conclusion >

Conclusion

The internet, in its current form, is broken. Recent events have demonstrated the shortcomings of an internet that has grown extremely centralized since its creation. It has also been seen how new models have emerged that leverage property and assets that are not owned by the company (e.g. Uber, Airbnb). This trend towards democratized models and decentralized assets will continue, forming the foundation for a better internet.

The Siglo founders pioneered the idea of democratized monetization of data through the Pig.gi app, but times are calling for an even more robust, more transparent model. Everyone owns valuable information about themselves - opinions, tastes, behavior, and attention that brands and other entities are eager to pay for. If this value can be put in the hands of the people and be easily exchangeable for increase connectivity, then a model emerges that can literally change the way the internet works, an inclusive model where all have access and accrue value.

Where does this lead in the long run? Digital inclusion is the first step made possible by monetization of one's attention and data, but financial inclusion follows. Most people in the world today still have little access to basic financial services, let alone in the digital world. Individuals earning and transacting in a crypto token have the opportunity to save, to invest, to transfer that value, or to spend it on a necessity like airtime connectivity or, in the future, anything else imaginable. The long term vision of Siglo is to see this more inclusive world become a reality, breaking the barriers between on and offline, and to become a catalyst for a more connected world.



IX. Team >

Team

Joel and Isaac Phillips are brothers and the co-founders of Siglo. Jorge Trujillo is CTO. They have spent the last 3 years living and running a company with operations based in Mexico City. It was important to go beyond theory and be on the ground in an emerging market and to understand how users live, think, connect, and consume internet. They experienced how working with providers, brands, and even "mom & pop" stores in emerging markets is vastly different than in the highly developed ones. The Siglo team is made of 10 full time people, spread across 5 countries, including top developers, UX/UI, content, investor relation, and operations teams.

Joel Phillips__Founder Siglo
Blockchain and token economist who studied at Columbia University. Founder of multiple mobile apps and marketing startups. First worked in encryption in emerging markets in 2010. Previously studied digital media and user face interface production. Founder of Pig.gi, the first app to run on Siglo. Blockchain speaker.

Isaac Phillips__Founder Siglo
Cross-border, digital entrepreneur in mobile marketing, digital rights, telecommunications, & cryptography. Round table organizer for journalists, diplomats & crypto visionaries. Columnist at Entrepreneur. Consultant for telcos. Mobile app builder since 2009. Finance at University of Denver. Founder of Pig.gi, with his brother Joel.

Jorge Trujillo__CTO
Self-trained full stack developer, devops maestro, and practiced security veteran. Developer of over 20 mobile apps. Passionate about Solidity, React Native, and crypto trading algorithms.

Alix Gallardo__Product Manager
Formerly worked for Claro Media, Grupo Carso. Expert in user interface and user experience. User acquisition and retention strategies. Growth Hacker.

Diana Palacio__Business Dev
Leader of business development with institutions and enterprises interested in building DApps on the Siglo Protocol. Investor relations. Former VC fund manager with focus on fintech and innovation.

Antoine Delanglade__Business Dev
Founder of Blooswell LLC. Ex-VC with OneRagtime, studied business and finance at University of North Carolina.

Team

Tania Pimentel__Project Manager
Has experience working as a PM across a wide variety of industries within the Mexican startup community and international design studios such as Coop Himmelb(l)au and Baumraum

Marcelo Echeverri__Senior Developer

Java and React Developer. Information Engineering at Universidad Pontificia Bolivariana.

Andrea Hernandez__Editor
Journalist and editor with a decade of experience at Reforma newspaper and other online portals, specialized in Spanish-language content creation for Siglo apps and communities with an emphasis on blockchain education, financial inclusion, and digital rights.

Zev Bimstein__Marketing & Strategy
Fintech product manager. Experience as a capital asset trader. Management Science with a concentration in operations research from MIT.

Lance Eduardo__UX/UI Designer
Lead designer for Siglo, with more than 5 years previous work creating user interfaces and experiences in mobile apps and gaming platforms, with special expertise optimizing mobile apps for maximum functionality in earlier devices common in emerging markets.

Mariana De La Isla__Community
Focused on app communities in Mexico and Colombia, leading outreach to users on various platforms, often leveraging AI, to better understand online communities in emerging markets.

Advisors

Anish Mohammed__Chief Advisor & Token Economist
Doctor / cryptographer / Hacker. Serves as Dean of Blockchain at Exosphere, Co-founder Obol & Openeth. Advisor -Ripple, Adjoint, Arteia, Collider-X, Privacyshell, IEET & Hyperloop TT; formerly worked in security for HSBC and Vodafone. Singularity University alumni.

Jeffrey Guy Bone__Technical Advisor
Early cypherpunk who was CTO of three startups with exits. Angel investor in Coinbase, founding partner of Archipelago Global, and sits on Farrow board.

Advisors

Diego Vargas__Advisor
Founder of Variv Capital; pioneer fintech and telecom investor based in Mexico City who has invested in more than 60 startups; sits on the Pig.gi Board

Brittany Kaiser__Advisor
Co-founder of the Digital Asset Trade Association (DATA) and of Bueno Capital; human rights advocate, digital diplomat, whistleblower, and expert on consumer data rights and marketing

Mark Moline__Advisor
Founder of Seraph VC, an angel syndicate and early crypto investor, Partner of Archipelago Global fund

Ernesto Vargas__Advisor
Co-Founder & Managing Partner at VARIV Capital, Co-Founder of Polygon Fintech Group, Co-Founder of MAXA Camp & Puertas del Cielo Tulum
MBA from NYU Stern

Vlatko Gigov__Advisor
Expert in blockchain ecosystems, token economics, and application of new technologies and telecommunications for social development through digital services. Consultant for various ICO's and PaaS blockchain integrated projects

James Haft__Advisor
Founder of CryptoOracle & PAL Capital; CEO of Climate Coin; Co-Founder of NXTP Labs; ex Bear Sterns & ING

Gary Ross__Legal Counsel
Gary is legal counsel and based in NYC at Ross & Shulga. His clients include AngeList, CoinList, Steemit, Gaze Coin and many venture capital investors

Appendix I
Proposal for SDI

The Siglo team is proposing the following model to be considered as an initial framework for the Siglo Data Infrastructure (SDI).

In a hybrid model, some elements are written to the blockchain. Smart contracts granting ownership to users is on-chain. Data is stored off-chain. Blockchain smart contract contains a hash referencing the off-chain data. This setup seriously reduces costs involved in blockchain usage, and of course, allows the private data to be stored in a way more in line with current GDPR requirements. The off-chain elements are encrypted and still require private and public keys for access. Siglo does not have access to private user data.

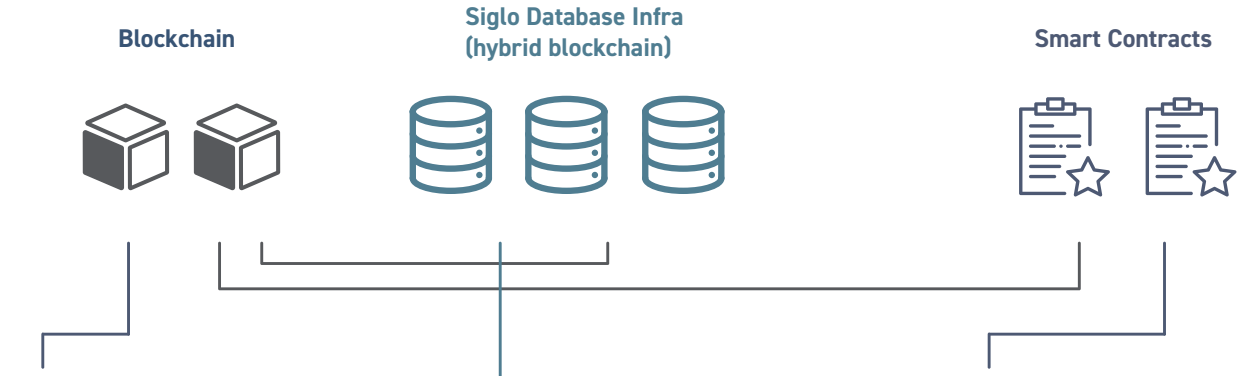
Users holding private keys is a particular challenge, especially for new users in emerging markets. Siglo will give users options while clearly communicating the risk associated with each one. These will include storing one's own key offline, storing their key on Siglo's secure server, or using a third party service to manage keys. Ideally, each user would store their own key, but users must be willing to accept the permanent loss of access if the key were to be lost.

User data on Siglo falls into 3 categories:

1. L1 - highly private information that identifies a person (email, phone numbers, etc). GDPR applies here.
2. L2 - this is a bucket of user data associated with a specific dApp, but hosted on the Siglo infrastructure. This bucket is made up of L1 data that the user granted access to and anonymized L3 data that is publicly queryable. A user's data may be in multiple L2 buckets (having granted permission to multiple dApps). A user has a right to revoke permission, thereby removing all of their information from any dApp (L2 bucket) at any time. However, the more anonymized interactions and demographic data a user contributes, the more that user could potentially earn from third party data queries. A bucket of data (L2) is not actually owned by a dApp, it simply has access, as long as a user grants it.
3. L3 - public, non-private, non-identifiable information that is minable by 3rd parties who pay Siglo token to do so. 100% of those funds (minus transactions fees) are spread among the users whose data was mined.

A user has a high incentive to want dApps to use Siglo. They own their data, grant and revoke access at will, and have a transparent history of who the data was shared with. Furthermore, users will monetize their data as property and earn a token that can be used for increased connectivity of sold for fiat (the later if third party exchanges offer this in the future) .

dApps have an incentive to use the Siglo Data Infrastructure because users demand this kind of protection and monetization of their data. In addition, dApps take advantage of the monetization model and earn revenue for themselves. Lastly, dApps benefit from using an infrastructure optimized and built for their use, without having to build this. It is important to note, that any dApp that violates the smart contract agreement with Siglo, outlying the proper and acceptable use of data, will be immediately denied access and a derogatory record of that dApp's misconduct will be recorded to the blockchain.



The Siglo Protocol will use the ethereum blockchain and the token will be an ERC20 token. In the future, as Siglo transitions more and more of the database infrastructure onto a blockchain robust enough for large amounts of data at an economical price, another chain is probable.

L1

L1 data is the personal, identifiable information about a user. Access to this data is only available to the user with their private key.

L2

dApp1

dApp2

dApp...N

L2 data is a combination of L1 and L3. Each dApp using the Siglo Protocol will have its own L2 bucket with data from users to whom permission was granted.

L3

L3 data is the general, non private, non identifiable data that a user generates. This data is publicly minable, creating revenue in SIGLO token that is distributed back to users whose data was mined.

USER: A smart contract is generated with each new user profile created and associated with a wallet. This contract grants each user exclusive rights over their data and the right to monetize it in exchange in exchange for payment.

DAPPS

BRANDS and other sponsor entities

DATA = $$$$ FOR USERS