

# Fulcrum loyalty rewards blockchain

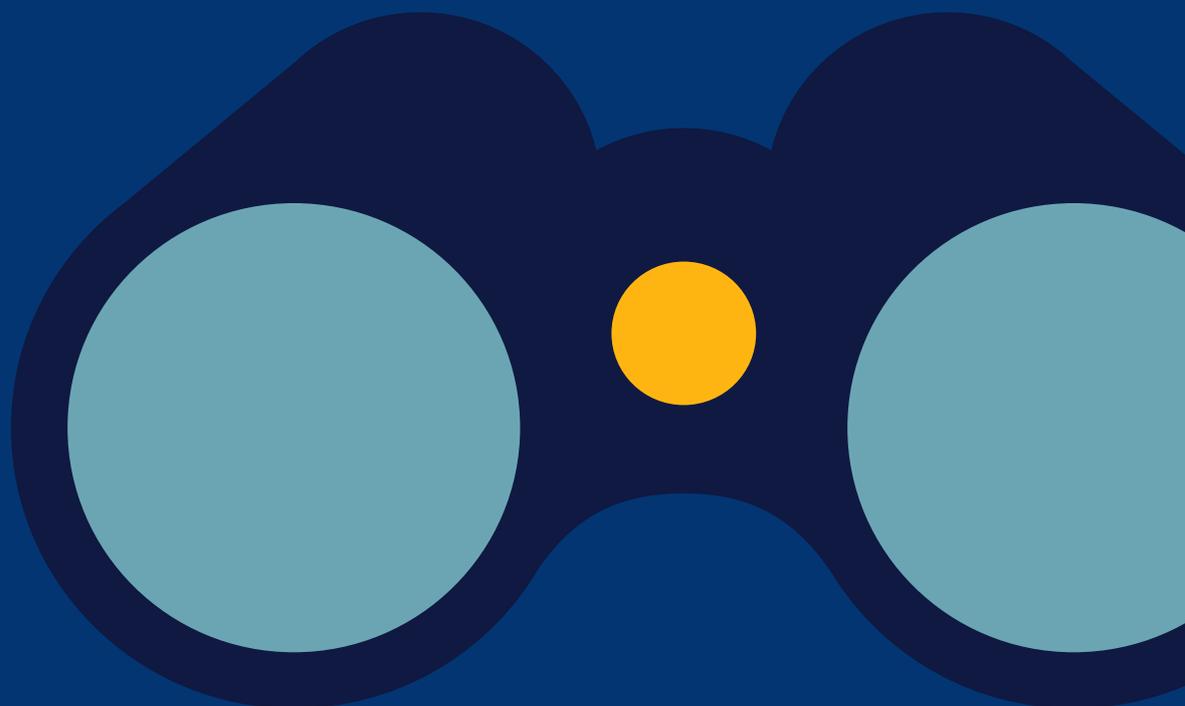
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A plug-and-play blockchain solution developed for  
the global loyalty management market.

[www.fulcrumchain.com](http://www.fulcrumchain.com)  
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# INTRODUCTION

The Fulcrum Blockchain Platform provides a managed, full stack blockchain-as-a-service (BaaS) offering a business-ready, end to end platform to enable institutions to activate a decentralized blockchain network in record time. providing the easiest, lowest-risk gateway to experimenting with distributed ledger technology. . We are building end-to-end customizable blockchains for loyalty rewards programs. An ecosystem that enables enterprises to reward their customers' purchases, friends' invited and other configurable actions with crypto-currency.

# Executive summary

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**Every year millions of retailers spend in excess of \$20 billion on software that improves the loyalty of their customers. They need to do that in order to stay competitive in the today's crowded marketplace. Loyalty programs are not only costly, but also time consuming and cumbersome to set up. Often times, customers get only more frustrated from participation in them, complaining about difficulty to earn points or bonuses and to redeem them. This results in the fact that most loyalty programs just don't pay themselves off, and shut down in less than 12 months' time.**

Loyalty is trust. Trust is called a new currency, much like the bitcoin, because the difference in trust between a company and its competitor directly translates into how much money each is going to make.

Loyalty and rewards programs are not realizing full potential, due to account inactivity; low redemption rates; time delays; high transaction and system management and customer acquisition costs; and low client retention. Blockchain, as a distributed ledger with a fundamentally new way to transact and maintain records in a secure, trustless, digitized interlinked network, will eliminate many inefficiencies. It reduces costs while benefiting the needs of different types and sizes of loyalty rewards programs, all while significantly improving customer experience by allowing customers to access most, if not all, of their loyalty rewards programs in one digital wallet.

As a trustless distributed ledger, blockchain allows participating agents, which in the case of loyalty rewards programs include loyalty reward program providers, administrators, system managers, customers, etc. to intersect and interact in one system

without intermediaries and without compromising privacy or competitiveness. For loyalty rewards program providers, we also believe that blockchain has the potential to streamline execution and administration of their programs with near-real-time transparency, resulting in cost savings that can be realized in the medium term.

It has an absolute value for the customers, as they get for their purchases the liquid Ethereum-based tokens, which can be redeemed for purchases or transferred to another crypto-wallet or exchanged on internal or public crypto exchanges.

Blockchain has proved to be able to be deployed through social media and digital wallets, and can interact with existing loyalty rewards program platforms through smart contracts, which are "self-executing code on a blockchain that automatically implements the terms of an agreement between parties," and associated digital architecture.

We are a team of veteran software consultants with enterprise business expertise spanning across multiple domains. The majority of our careers was spent providing professional software

involved in the blockchain scene. Now, we combined skills, visions and networking to create plug and play blockchains for enterprise. One of our goals is using blockchain to disrupt loyalty rewards programs. Blockchain technology allows for introducing a novel approach towards loyalty and rewards market, which will create new value for customers, merchants and the community-at-large.

We are building end-to-end customizable blockchains for loyalty rewards programs. An ecosystem that enables enterprises to reward their customers' purchases, friends' invited and other configurable actions with crypto-currency.

A variety of blockchain startups are looking to employ the protocol's tokens to reinvent loyalty programs and envision a marketplace where loyalty points become a kind of cryptocurrency, exchangeable between the loyalty programs offered by brands.

Many loyalty program experts, including Howard Schneider, VP of loyalty strategy at Kobie Marketing in St. Petersburg, Florida, think such universal loyalty currencies are a bad idea for brands. "A universal loyalty marketplace where any points can be exchanged for any

## Executive summary (continued)

points can be exchanged for any points means that the brand doesn't get the benefit of a loyalty program, he said. It becomes a kind of discount program, where buying a \$4 coffee gets you 25 cents toward another coffee — which you might be able to redeem at Peet's coffeehouse."

In Schneider's view, that's not a loyalty program. "A loyalty program is not just a thank-you," he said. It's an incentive to "spend \$8 more at the [same] brand." With that in mind, we build enterprise specific permissioned blockchains for loyalty rewards programs. We work closely with our customers and integrate fully with their current enterprise systems.

Technically, we break down what loyalty rewards blockchain means to the smallest reusable components. We develop a modular toolkit of components and then we use the right pieces of the puzzle to the customer's needs. Universal currency exchange for loyalty points, you're working against the interests of brands.

# Loyalty & engagement programs

Customer loyalty and engagement can make or break companies, and as such, loyalty rewards programs represent strategic investments for all types of organizations. Loyalty programs have proliferated across travel, retail, financial services, and other economic sectors.

According to the Colloquy Loyalty Census:

- the average U.S. household participates in 29 different loyalty programs
- enrollment in loyalty programs across various industries in the US grew by 20 percent to 3.32 billion in 2015 from 2.65 billion just three years earlier

The breadth and variety of reward programs is mindboggling, ranging from Virgin Atlantic's tiered points program (Virgin Atlantic Flying Club), which connects to rental cars, airport parking, hotels, and massage services, to Amazon's upfront fee program (Amazon Prime), which provides free shipping and media services, to Patagonia's and eBay's joint loyalty program (Common Threads Initiative), which allow customers to resell clothing bought from the former on the platform of the latter.

The result is a maze of point systems and redemption options, with cumbersome processes for exchanging points among program partners. Loyalty programs are ripe for some kind of disruptive innovation that would make them easier to use.

# Key problems for loyalty and rewards solutions

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Encouraging loyalty is not an easy game. A lot of customer issues can result in problems for loyalty rewards providers. In our view, there are several reasons for these inefficiencies, but first and foremost is the paucity of uniform management systems across loyalty and rewards programs, which confuses customers and is a primary source of members' lack of activity. A potential solution would be to integrate disparate programs into an interlinked loyalty network, but such collaboration is not easy in an industry with inconsistent digital infrastructure and obligations to protect competitive proprietary information as well as customers' personally identifiable information (PII)

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## Account inactivity

With many loyalty programs, the need to take additional action and non-transparent reward schemes are perceived negatively by customers and lead to adoption decrease and customer inactivity. According to 3Cinteractive, 70% of consumers do not sign up for a loyalty program due to the inconvenience and time required to complete registration.

## Low motivation by offered rewards

According to CardLinx's 2016 Card-Linking Industry Survey, 64% of consumers prefer cash-back payments as part of rewards, while only 12% prefer programs connected with the accumulation of bonuses, points or miles.

At the same time, loyalty programs are still one of the most effective solutions to generate more revenue among existing customers. According to the Talech Retail Technology Report, 87% of customers say they want loyalty programs. The outlined problems could be solved by an integrated loyalty system, which would provide customers with convenient tools to earn rewards and redeem them for valuable purchases

## Low client retention

Existing loyalty programs give insufficient motivation to encourage repeat purchases. According to COLLOQUY "Customer loyalty 2015 & beyond report", the top two reasons why consumers stop participating in a loyalty program are: the program did not provide offers that were of interest (56%), and it was too hard to earn points for rewards (54%).

## Blockchain based loyalty network

We maintain that blockchain will allow instantaneous and secure creation, redemption, and exchange of loyalty reward points across programs, vendors, and industries through a trustless environment using cryptographic proofs in lieu of trusted third parties and administrators. Through a rigorous online protocol, well-programmed building blocks, and smart contracts, blockchain has the capability to operate without intermediaries. The key elements of such a blockchain solution are a loyalty network platform (hereon referred to simply as a loyalty network), reward applications, and loyalty tokens

## Low redemption rates

According to The 2016 Bond Loyalty Report, the percentage of customers who were active members was only at 50 percent. Out of these members, 20% never redeemed their received bonuses and rewards. Also, according to this report, loyalty and rewards program members who do not make redemptions are 2.3 times more likely to defect from one program and join another.

## Increased costs for customer service

Retailers who want to set up their own in-house loyalty program, need to not only invest time, money and effort, but to also arrange a solid customer support service specifically aimed at the loyalty program, which incurs training and sometimes hiring employees, the implementation of internal practices and procedures, reporting, and analysis. The more sophisticated the loyalty program rules are, the higher the cost of customer service.

# Blockchain based loyalty network

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## reducing costs

Many managers of loyalty reward programs are hesitant to incur the cost of implementing new technology. This hesitation is understandable, given that they are being asked to switch to a fundamental overhaul of how transactions, customer acquisition, and systems management are executed. But, we maintain that this “overhaul” should be put into perspective. Despite the fundamental changes it promotes, blockchain is a system facilitator, not a replacement for an existing system.

One of blockchain’s attractive aspects is that it interacts with legacy systems through smart contracts that transmit transaction records accessible to permissioned users that integrate them into their systems. These legacy systems continue to perform functions outside of what they specifically need blockchain to enhance or improve on a transactional basis.

An existing loyalty rewards management system, for example, will still hold sensitive PII on a customer, as that data will not reside on the blockchain. Many managers of loyalty reward programs are hesitant to incur the cost of implementing new technology.

This hesitation is understandable, given that they are being asked to switch to a fundamental overhaul of how transactions, customer acquisition, and systems management are executed.

But, we maintain that this “overhaul” should be put into perspective. Despite the fundamental changes it promotes, blockchain is a system facilitator, not a replacement for an existing system.

With 5 levels of consensus offered by our architecture, enterprises can configure the level of trust and what data is shared. Also, as we can write our smart contract logic in any popular programming languages we can integrate and deploy faster the resulting enterprise blockchain.

This is not to say that blockchain implementation does not incur upfront expenses. However, we believe that the trade-off cost savings will be identifiable on three major levels—system management, transaction, and customer acquisition.

## a blockchain solution

A blockchain-based loyalty rewards program reduces system management costs with smart contracts that report secure, tracked, transparent transactions to legacy systems, reducing costs associated with errors and fraud. A favorable byproduct of reducing these costs permits loyalty rewards program providers to drop minimum points requirements at which customers are allowed to redeem points. For customers, the ability to use points more readily and quickly will increase redemption transactions, reducing costs per transaction. In addition, the cost of acquiring customers through methods such as direct mail, for example, should be significantly reduced through the exposure resulting from social media as blockchain-based loyalty rewards programs will operate on social media platforms.

Also, blockchain could take millions of dollars of unused loyalty point liabilities off of balance sheets because they reside in a shared network. But, this depends on company and the regulation in place.

## making the process near real time

There are a number of reasons why loyalty rewards programs are not credited to customers' accounts in a timely manner. Some reasons are deliberate, such as a loyalty rewards program provider having specific policies in place before authorizing the release of "pending" points, but many are for logistical reasons, such as the lack of coordination between a loyalty rewards program issuer (a credit card, for example) and a loyalty rewards program provider.

Blockchain can enable a transaction to be recorded and accessed by multiple involved parties in near real time, increasing the chance that a loyalty rewards program provider can cut through coordination inertia to credit points faster. Customers are craving faster redemption, so that loyalty rewards providers that miss an opportunity to make this happen also potentially miss an opportunity to create a memorable customer experience that would enhance loyalty.

## providing a secure environment

Blockchain creates an immutable and time-stamped distributed database entry of every single transaction ever made, making each transaction and its record easily traceable, but also rendering them irreversible, preventing double spending, fraud, abuse, and any other type of manipulation of the transactions.<sup>20</sup> In short, blockchain-based loyalty programs are not only inherently tougher to hack, but also have the ability to provide security on multiple levels that were not possible previously.

First, all points are tokenized, which gives them unique identities that are extremely difficult to counterfeit. Second, to access or corrupt information recorded on a blockchain, more than 51 percent of its nodes must be hacked. Loyalty programs are already a source of vulnerability from a security perspective due to PII and other quasi-identifiers and pseudo-identifiers that they collect about their customers.<sup>21</sup> Blockchain does not hold this information, but, instead, records the transaction of it in a secure, irreversible manner.

## creating unique business opportunities

At the onset of building an interlinked loyalty network, large loyalty rewards program providers with well-developed programs will have unique opportunities to offer value-added services to other businesses. For example, a small business for which a bank provides merchant banking and treasury management services will gain access to the bank's flexible (smart) loyalty rewards interlinked network. In addition, the bank can now offer the merchant the opportunity to join the overall interlinked network as a provider on the merchant's own terms through its own tailored rewards app.

Now the merchant, which previously did not have a loyalty program with scale, would have the option to offer its clients loyalty points that could be redeemed within a wider network. The bank is adding a value-added service to its small business client while the loyalty network gains another vendor that can interact with other loyalty rewards programs to which they previously did not have access. The local coffee shop that was afforded entry into the network by its merchant banking provider, for example, will have flexibility to offer its customers opportunities to use their "bean points" towards accommodations at a business or a hotel in another state in which it previously had little to no brand recognition.

## leveraging existing infrastructure versus creating own infrastructure

Whenever a business decides to implement an operating system based on new technology, it must weigh the costs and benefits of "build versus buy." For loyalty programs, we argue that "buy" is the logical choice for a loyalty rewards program provider because it is prudent to prioritize and concentrate its operational resources on its customer base expertise (and expansion) in lieu of building a new technology platform. An optimal scenario would be to leverage 3rd-party expertise through some type of partnership.

## permissioned versus non-permissioned blockchain

Loyalty program service providers can theoretically base their platform on either a permissioned or a non-permissioned distributed ledger. The non-permissioned blockchain is not a viable option in that it is open-sourced, precluding the control that loyalty program providers would want as rewards issuers. Unlike Bitcoin, which is the poster child for the non-permissioned blockchain, loyalty rewards are issued by an organization. Bitcoins are created, and transactions validated, by miners who solve a proof of work.

Reward points do not require mining as they are issued by the loyalty rewards program providers. Instead, encrypted proofs by several designated agents on separate nodes within a defined network is sufficient, so that the permissioned blockchain (with smart contracts that can provide links to permissioned users to secure, proprietary database-with smart contracts that can provide links to permissioned users to secure, proprietary databases, provides the necessary fraud-proof record of transactions. Within a permissioned blockchain, loyalty rewards providers achieve degrees of openness and control depending on the trade-offs desired for scalability and cross-company and cross-industry participation.

## improving front-end capabilities for customer experience

This is not so much a strategic choice as it is a strategic necessity. For blockchain-based loyalty programs to succeed, loyalty rewards program providers will have to establish an omnichannel presence. Besides traditional channels, such as email and contact centers, providers must consider building a presence on mobile and social media channels, paying close attention to those that are gaining the most acceptance by, and experiencing the most traffic from, their customers. In The 2016 Bond Loyalty Report, only 30 percent of respondents reported being satisfied with their program's website experience, including the website's mobile view.<sup>24</sup> A blockchain-based loyalty rewards network will be accessed through a digital wallet, both on a smartphone and online.

Therefore, it behooves loyalty rewards program providers to establish front-end capabilities, if they haven't already, to operate smoothly in these environments. Also, loyalty rewards program providers should take advantage of the customer data collected regarding transactions on digitally networked platforms to improve personalization; only 22 percent of the respondents in The 2016 Bond Loyalty Report were satisfied with the level of personalization in the loyalty rewards programs to which they belonged

# Market overview

**The global loyalty management market was valued at USD 2,1 Billion in 2017, and it is expected to reach a value of USD 6,8 Billion by 2023, at a CAGR of 21.13% during the forecast period (2018-2023).**

## industry verticals

- BFSI (Banking, Financial services and Insurance )
- Retail
- Travel & Hospitality
- Manufacturing
- IT & Telecom
- Media & Entertainment
- Healthcare
- Others

## loyalty systems

Loyalty systems are designed to reward customers for their past conversion activities or other useful actions and to provide them with incentives for making future purchases. A rewards program enables activation, retention, up-selling and referrals, along with providing strong value offer to the customer. A typical loyalty management system is comprised of operational parameters, such as transaction types, program design and funding options. It further includes value parameters such as redemption options, redemption thresholds, and earnings rates.

And businesses are actively adopting loyalty programs:

- **63.7% of small businesses plan on using a customer loyalty program in 2016 (Belly)**
- **38% of executives have a dedicated budget for customer experience (Leapfrog Marketing Institute)**

There's approximately another \$1 billion in digital gift cards, and at least \$11 billion in referral solutions. On top of that, more than \$50 billion loyalty points are issued globally each year. According to a Deloitte report, enrollment in loyalty programs across various industries reached 3.3 billion memberships in 2015 and has more than tripled since 2000. Despite this rapid growth, customer loyalty rewards programs are not realizing their full potential.

According to the 2016 Bond Loyalty Report, North American consumers belong to 13.4 loyalty programs on average, but are only active in about half of those. Moreover, only 44 percent of consumers said they are "very satisfied" with the loyalty program experiences.

## universal currency solutions

The majority of existing players in the market providing blockchain based loyalty management are proposing the use of a single currency for loyalty points across brands. But, this approach is against the interest of brands as it becomes more of a general discount program and it dilutes the brand.

Universal currency solutions creates a centralized marketplace where both consumers and brands are invited to collaborate. They usually target only the retail sector as it is easy to create a single set of components, e-commerce widgets and wallet to cater to retailers. But, this general approach leaves little room for brands to customize their loyalty strategy or perform deeper integration in brick-stores, .etc. Also, many brands are part of loyalty networks, have in place an existing rewards programme and switching to an early, not proven single currency loyalty rewards solution would be difficult.

## Fulcrumchain way

We are building end-to-end customizable blockchains for loyalty rewards programs. We are developing a toolbox of reusable loyalty rewards components and protocols to enable us flexibility in building custom solutions for our customers, from requirements, development, integration and deployment. We aim to integrate closely with their systems, and provide an easy swap transition from existing solutions to a blockchain based one to reap the benefits of cost reduction, increased loyalty /conversion and visibility.

## Targeted Markets

There are untapped markets of loyalty rewards verticals that Fulcrum is aiming enter:

### BFSI (Banking, Financial services and Insurance )

Banks are obligated to protect competitive proprietary information as well as customers' personally identifiable information. We have experience and the right framework to build custom permissioned blockchains to suit this need and respect regulatory laws.

### Retail

The e-commerce market has grown consistently every year, and, according to Statista data, the market will increase more than 70% in the US over the next five years (from \$360 billion in 2016 to \$638 billion in 2022).

The rapid growth of e-commerce, the automation of purchase processes and delivery have made this market extremely competitive. Today customers are more price sensitive, expect more from brands, and compare prices on a regular basis. Customer loyalty, measured in repeat purchases and referrals, is the key driver of profitability for online businesses, even more so than for offline companies, according to a series of joint studies in online retail by Bain & Company. User acquisition today is one of the most costly activities of any retailer.

Statistics say that the average conversion of traffic into purchases in e-commerce comes to 3%, however the real figures are 1% and less. And it is clear why: our attention span today is 8 seconds - less than that of a goldfish. Businesses spend an increasing amount of resources wrestling for customers' attention, and this is only half the task: they also have to retain their attention.

Studies show that acquiring a new customer is anywhere from 5 to 25 times more expensive than retaining an existing one. And customers are also easily switching brands, particularly when the competition is a click away. So retailers must invest in their customers' loyalty. Lots of data shows that loyal customers stay longer, buy more and more often, cost less to process, help in price competition, tell their friends about their experiences, and provide valuable feedback.

Fulcrumchain aims to develop tools and blockchains to enable coalition loyalty programmes. The Governance platform enables enterprises to collaborate, pool funds, vote on new features, sponsor development, create token exchanges, .etc

Fulcrumchain unique selling proposition is providing fully customizable, cross channels tools and components for retailers to take advantage of blockchain enabled rewards loyalty programmes.

### Travel

Loyalty programmes in the travel industry continue to evolve, moving from a proprietary programme model to including more partnerships or even partnering with a coalition loyalty programme. With strong competition in the travel industry, these programmes can serve as a point of differentiation and start a dialogue with a company's most lucrative clients.

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# Value proposition

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## what we deliver

We are building end-to-end customizable blockchains for loyalty rewards programs. An ecosystem that enables enterprises to reward their customers' purchases, friends' invited and other configurable actions with crypto-currency. A variety of blockchain startups are looking to employ the protocol's tokens to reinvent loyalty programs and envision a marketplace where loyalty points become a kind of crypto-currency, exchangeable between the loyalty programs offered by brands.

In most cases, brands would have to participate in the marketplace, supposedly because it makes their rewards more valuable. Many loyalty points reportedly go unredeemed.

Many loyalty program experts, including Howard Schneider, VP of loyalty strategy at Kobie Marketing in St. Petersburg, Florida, think such universal the loyalty currencies are a bad idea for brands while yes, acknowledging they may be a good deal for consumer. After all, it would mean, for example, that consumers who had extra loyalty points from Starbucks could easily exchange them for discounts at Walgreens.

"A universal loyalty marketplace where any points can be exchanged for any points means that the brand doesn't get the benefit of a loyalty program, he said. It becomes a kind of discount program, where buying a \$4 coffee gets you 25 cents toward another coffee — which you might be able to redeem at Peet's coffeehouse." In Schneider's view, that's not a loyalty program. "A loyalty program is not just a thank-you," he said. It's an incentive to "spend \$8 more at the [same] brand."

With that in mind, we build enterprise specific permissioned blockchains for loyalty rewards programs. We work closely with our customers and integrate fully with their current enterprise systems. Technically, we break down what loyalty rewards blockchain means to the smallest reusable components. We develop a modular toolkit of components and then we use the right pieces of the puzzle to the customer's needs.

## technology stack

We are a team of veteran software consultants involved during the last few years in the blockchain scene, particularly helping enterprises develop proof of concepts projects around blockchain. This brought us intricate knowledge of the problem domain, proficiency working with state of the art blockchain frameworks like DragonChain, HyperLedger, Corda, .etc We use a variety of stack from our toolset depending on the need of our enterprise customers.

For enterprises obligated to protect competitive proprietary information as well as customers' personally identifiable information the type of blockchain suitable for loyalty rewards programme is of non-permissioned type. In this use case our framework Fulcrumchain a modified fork of Dragonchain is a good fit. It enables us to build a non permissioned blockchain due to its flexible 5 levels of network consensus and the capability to write smart contracts in any programming language. Also

FulcrumChain currently provides a commercial platform for application developers to rapidly develop, integrate and deploy real business applications onto a block-chain. Features include easy integration, protection of business data and operations, currency agnosticism, and multi-currency support. Furthermore, tremendous costing and speed to market advantage is achieved by enabling developers to write smart contracts in their language of choice (Java, Python, Node, C#, Go).

Fulcrumchain enables us to interact with other blockchains (Ethereum, Bitcoin, Neo) through interchain smart contract libraries. Hence the majority of our reusable components will be written using Fulcrumchain framework. We are also building some bridge components for enterprise customers already using HyperLedger. For example should enterprise customers want an ERC20 loyalty reward token we are gonna integrate with their systems using Fulcrumchain components to protect sensitive data and develop an L5 module and smart contracts to bridge with Ethereum network bringing the best of two worlds.

## the product

The platform enables merchants to reward shoppers with their custom tokens for their and their friends' purchases and other valuable actions with configurable rewards. The decentralized rewards management on blockchain makes the solution unique and delivers great value to all platform members and their customers:

- for the retailers – an end to end blockchain loyalty management system
- for the customers – cryptocurrency rewards, which they can turn into real money or redeem for purchases and which do not expire and tend to go up in price.

FulcrumRewards is a customizable loyalty rewards blockchain, the center-piece of the ecosystem which includes the FulcrumRewards Electronic-wallet. This ecosystem provides enhanced value for both loyalty rewards issuers and users across all parts.

## how does FulcrumRewards solve the main problems of loyalty systems?

### a) account inactivity

We mentioned in the paper previously that single currency loyalty rewards marketplace/ platform might not be in the interests of brands, but provides greater flexibility for customers. Single centralized wallet with the option to exchange tokens across services.

Fulcrum develops loyalty rewards blockchains for brands. Our client is the brand. Some may say that there is going to be a proliferation of wallets, keys, tokens, .etc. That is true but we want to provide value to the end user as well and make the experience as frictionless as possible.

In order to do that we aim to create a interoperable protocol between all Fulcrum rewards tokens. This enables us to create an token exchange to offers end users the possibility to buy, exchange, sell their loyalty rewards tokens. Enterprise customers may opt in or not for their resulting reward token to be available in Fulcrum's Loyalty exchange.

The interoperable protocol paves the way for us to devise a single wallet for users. Additionally, we enable users to keep it's registering details in Fulcrum Identity Vault and we bridge details to offer automatic registration for enterprises that opt in. eg. (Sign in with Fulcrum Identity Vault)

### b) low redemption rates

Unlike the existing loyalty systems that give points, Fulcrum transfers value into tokens and credits them directly to the customer's wallet. The value of the rewards denominated in crypto-currency is poised to go up along with the growth of the crypto-economy and the market share of the blockchain based services and infrastructure, which will make customers want to spend their tokens for additional purchases. The users will also be receiving regular reports and offers from the stores where they made their purchases, which will also serve to incentivize further actions.

### c) low motivation by offered rewards

Customers will perceive the received crypto-currency as being "for free". It will spur their additional interest in cryptocurrencies and initiate demand for valuable rewards from the places they will shop at.

# Architecture overview

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## loyalty blockchains

We create custom loyalty rewards blockchains for every enterprise. To achieve maximum flexibility every blockchain runs on its own. Blockchains can use different technology or frameworks depending on the need of the customers. But, every blockchain will respect a series of protocols to be able to build upon services on top of the network of blockchains to benefit enterprises and end users.

Companies may opt in for different consensus protocols for their blockchains:

- Proof of works
- Proof of stake
- Proof of authority

The tokens generated for plug-and-play blockchains can either be valued by speculation, or can be fixed-value utility tokens—no speculation, no trading. The fixed-value tokens will be designed the merely for the end-goal of the client.

By using a fixed-value system, a business can rely on the tokens that have been distributed amongst their customers to be solely used for the intended use case.

## loyalty network exchange

We realized creating multiple blockchains without the possibility for them to interact would not be flexible and in the benefit of the end-user. We see value in having a flexible strategy. Enterprises/Brands can opt or not to collaborate and create networks based on their loyalty programs. On top of the different blockchains we are going to build a token exchange programme to facilitate conversion and exchange of users points/tokens.

## loyalty tokens

On initiation of a loyalty transaction—issuance, redemption, or exchange—the blockchain protocol creates an algorithm-generated loyalty token, which is a base for all types of rewards, including points. The loyalty token's existence and unique identifiers are updated on each participant's ledger and made available across the network. Depending on how regulators choose to view the scenario, digital tokens housed on blockchain also have the potential to distribute the liabilities across participating merchants in the loyalty network, possibly reducing the liability of any one program owner.

To reiterate, loyalty rewards program providers control the nature of their customers' interactions in a loyalty network by embedding certain parameters—such as how loyalty tokens value and disperse points, and how points are exchanged with those of other programs—in the reward applications. Hence, the due diligence that governs rewards transactions is executed during the upfront architecture programming in a blockchain-based loyalty network.

## rewards applications

The reward application, via a digital wallet, is the point of entry into the loyalty network. Rewards applications contain identities in the form of digital signatures, which store value in the form of loyalty tokens. The loyalty program provider will have the ability to program its reward application that connects it to the aforementioned loyalty network and is the building block to record and execute loyalty rewards transactions for the program's particular customers and validators.

Program providers can program their rewards applications in a manner that they deem best preserves their competitiveness or strategic agendas; in other words, they control exactly how their customers access and redeem their rewards.

# Ecosystems and integrations

For blockchain-based loyalty programs to succeed, loyalty rewards program providers will have to establish an omnichannel presence. Besides traditional channels, such as email and contact centers, providers must consider building a presence on mobile and social media channels, paying close attention to those that are gaining the most acceptance by, and experiencing the most traffic from, their customers.

## wallet

We enable different enterprises to highly customize their wallets and blockchains. This will lead to a diverse ecosystem. While individual wallets can be standalone in order to achieve greater user experience we aim to create what we call a Ecosystem Wallet. A program and app that will hold a repository of other brand wallets. Similar to Slack and bots or Steam client and games.

Users are going to sign in to the Ecosystem Wallet using Fulcrum Identity Vault. Brands have complete control whether their wallet appear in the Ecosystem Wallet, is standalone or both.

## web integration

We are developing the necessary infrastructure for the loyalty management system: modules or plug-ins for all popular online trading platforms (OpenCart, Shopify, WordPress, Magento, etc.), and extensions for browsers.

Plugins for online shopping platforms are widgets, which can be set up as the loyalty program of the retailer, and to pay loyalty tokens as rebates to customers as rewards for their and their friends' purchases.

merchant's dashboard

A merchant's dashboard is set up when creating the loyalty program. This allows merchants to view metrics, KPI's and details about their blockchain.

## loyalty tokens

- A "cart protection" tool: incentivizes the completion purchases, which increases the amount customers spend and reduces the amount of abandoned orders
- A referral system integrated with social networks Net promoter score calculator and Customer's reviews module
- Digital gift cards solutions, which enables customers to send gift cards via email, SMS, Facebook, etc.
- Points-based loyalty system: Customers earn points for their actions and retailers can define which of the points they put into the their tokens and at what rate.
- API for integration with the existing loyalty programs of retailers are include

## mobile integration

The mobile apps on the iOS and Android platforms, which replicate the functionality of the web apps will also have the following features:

Crypto-wallet

Merchants' special offers

Scanning and storage of loyalty cards

(making plastic cards redundant, the inconvenience of which is one of the main reasons customers stop using loyalty systems)

Gift cards

Geofencing

Program providers can program their rewards applications in a manner that they deem best preserves their competitiveness or strategic agendas; in other words, they control exactly how their customers access and redeem their rewards.

## auxiliary parts of the system:

- Mobile SDK for the integration of the Fulcrum crypto-wallets into the merchant's apps.
- Triggered notifications system (email, SMS, push, messengers).
- Corporate personnel loyalty system.

# Go to market plan

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The Fulcrum ecosystem is designed to enable and incentivize the participation of multiple reward issuers which increases value for both issuers and consumers. To deliver on the vision for Fulcrum, we recognize the need to aggressively grow the number of issuers and users. To achieve this goal, a portion of FLC is reserved for attracting more loyalty reward partners to the ecosystem and grow redemption options for users.

Being enterprise software consultants for the better part of our careers we cultivated a large network of contacts in the enterprise sector. We leveraged that network to find pain points and potential enterprise clients, Everything in our roadmap is backed by actual enterprise requirements and pain points that we plan to solve through blockchain. For the loyalty rewards programme our initial pool of enterprise clients: BFSI (Banking, Financial services and Insurance ) Retail & Travel.

## Retail

One of the founders provided professional consultancy and development services to e-commerce retailers for the last decade providing scalability professional services for large retailers for important e-commerce events such as Black Friday or Cyber-Monday. Through his ecommerce development company he provides professional services to Gambio powered store retailers. He has access to a large pool of customers.

Gambio was founded in 2005 and is the German market leader for e-commerce software with more than 25,000 active merchants using Gambio's software, generating annual store revenues of more than 2.3 billion Euros (approx. 2.7 billion U.S. Dollars). The company leverages a global network of strategic partners, including tech and logistic giants such as Google, Klarna and DHL

Also right now we are in talks with 2 large retailer brands interested in our customizable permissioned blockchain to provide loyalty rewards programmes. What makes our offering attractive is speed of integration (through our framework we can develop smart contracts in any language) and the possibility to keep customers data private while enabling access to integration with public blockchain networks.

## BFSI (Banking, Financial services and Insurance )

According to Amdocs's research, 61% of customers like the ability to manage their loyalty programs from a mobile wallet, but only 21% of financial providers offer this feature. 6 forward-looking banks are interested to invest in our pilot to have access to:

- a customizable wallet app designed for loyalty card management and reward redemption.
- Blockchain powered credit card points-earning programs

At the moment we cannot disclose the name of the banks. As we demonstrate the value and the utility of our products and pass through the proof of concept stage we can move on the next contract stages and reveal the partnerships publicly