RWRD - Loyalty Rewards Token

Rough Draft v.03

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Abstract.

The current loyalty rewards point system, although notoriously inefficient but economically useful, can be replaced by a cryptocurrency decentralized application (dapp) to enhance security and provide a better service to consumers. Adoption into the system will be easy for both Merchants and Consumers. The RWRD token acts as a universal currency that can be earned and redeemed with little to no friction on the merchant. Consumers earn RWRD tokens in multiple ways, such as a percentage "cash back" (in the form RWRD tokens) for shopping with particular merchants, as well as via contests, surveys, and other incentives. Consumers can redeem RWRD tokens for goods and services with participating merchants either online or in store, and Rewards.com will convert RWRD to fiat currency (e.g. USD, CAD, EUR, et.al.) off-chain to pay the program provider or merchant. These merchants include the world's largest brands such as Jet.com, Groupon, Expedia, Nike, Fossil, Gap, Lacoste, Walmart, Macy's, HomeDepot, and 7000 other brands. Finally, democratization of the reward program and community participation will be incentivized through decentralized voting contracts that can release new RWRD tokens into the market based on community proposals.

1. Introduction

Need and Value of Rewards Loyalty Programs Rewards Loyalty Programs provide tremendous value to businesses for various good reasons. Critical to any business is customer retention. The cost of maintaining a customer is 7 times lower than the cost of acquiring a new customer [1]. Loyalty programs are a great mechanism for keeping customers engaged with a business by creating relationships through personalized, compelling offers. In turn, this boosts the company's sales, increases the reputation through word of mouth marketing, and provides data for behavior analysis. Loyalty programs can be thought of as not only consumer engagement mechanisms, but also as experimentation methodologies. Providing exclusive deals through tactical and well controlled programs allows businesses to observe under what circumstances would customers want to make specific purchases. This in turn allows the merchants to make better decisions in developing their business.

Loyalty Programs are useful for consumers as well. Consumers can make more purchases and pay less through bonuses and promotions. Additionally, they get the satisfaction of being appreciated for their business by the merchant they interact with through customized offers and exclusive deals. Ideally, good loyalty programs gamify the interaction between the consumer and the business, allowing for a more enjoyable and fun consumer experience.

Issues with Rewards Loyalty Programs Most programs are generally inefficient and introduce significant financial risk and liabilities to the program provider. Additionally, current rewards platforms force customers to juggle multiple programs with little value. Some rewards systems lose their point values over time and/or the points themselves are not fungible. This environment creates little incentivization for the customer to be engaged or loyal to the program or merchant. Disengagement is further magnified by the fact that the customer has no control and say into how the loyalty programs

they are part of are functioning. There is a need for community participation in loyalty decision making.

Blockchain as a Potential Solution Blockchain technologies, if implemented correctly, can provide a compelling solution to the aforementioned problems. Firstly, transforming the point system into a cryptocurrency not only makes it fungible, but allows it to be traded for other cryptocurrencies, and, ultimately, traditional currencies. This has significant economic ramifications as it allows cryptocurrencies to be exchanged for goods and services without having to be exchanged for fiat currency first. Furthermore, through decentralized technologies, Rewards.com can democratize the marketplace through voting and community participation. Through smart contracts deployed on a blockchain network, Rewards.com can delegate certain aspects of decision making pertaining to the loyalty program to the community. Customers can now vote on their favorite brands as well as what features they want to see or even the distribution of tokens from community pools. Integration of cryptocurrencies with voting-type contracts expands customer engagement in the programs significantly.

2. Related Projects

Recent projects have also created or are creating blockchain-based tokens that represent loyalty points. Generally, these projects are either operated by a single merchant or benefactor (such as Softjourn or Burger King's tokens) or are platforms allowing many merchants to participate (such as Loyyal, Incent Loyalty, or Elements.)

Single-Merchant Blockchain-Based Loyalty Points Softjourn has developed an "in-house loyalty coin" earned by Softjourn employees and redeemable at company vending machines, with plans to expand the system off-premises [4].

Like Softjourn, Burger King Russia operates a blockchain-based loyalty rewards program redeemable only at the company's locations. Unlike Softjourn's coins, the program's "Whoppercoins" are hosted on the public Waves platform, and may be traded on exchanges; users earn Whoppercoins proportional to the number of rubles they spend, and may redeem the coins at participating locations [5].

Loyalty Rewards Blockchain Platforms Incent Loyalty[7] and Elements[8] are similar in approach but differ in implementation. Incent operates as a token on a public blockchain and offers merchants libraries in order to integrate the Incent platform with their services. Merchants specify a discount which customers will receive through using Incent. Incent also allows users and merchants to purchase Incent on various exchanges. Elements, however, hosts its own blockchain on which merchants must host a node which allows them to mine Elements' cryptocurrency. However, Elements has only provided a general-purpose wallet and seems to be inactive as there is only one miner is active as of November 2017 [9].

Whereas both Elements and Incent are hosted on public blockchains, Loyyal [3] is a loyalty platform based on Hyperledger (a private blockchain) which allows issuers to set a fixed exchange rate with other businesses. This allows a controlled level of interoperability with businesses that have established relationships with each other. Consumers interact with the platform through a cryptocurrency wallet on their mobile app. Businesses must set up and operate a node to participate. Additionally, Loyyal's points cannot be sold at exchanges.

Rewards.com's Approach Rewards.com's platform differs most significantly from other blockchain based loyalty platforms in that it adds a token to an existing platform. Customers of major retailers such as Lowe's, Macy's, and Target (among 7000 others) will immediately gain opportunities to earn and redeem RWRD with no change either to the merchants' or customers' user experience. Additionally this is achieved without requiring the merchant to bear the costs of hosting a node in order to facilitate their program. This is in contrast to Incent or Elements which merchants must buy or mine the coin before rewarding it. RWRD also acts a fully fungible token that places flexibility in the hands of the customer by allowing them to choose where and when they spend their earnings.

3. Architecture

The application will run on Ethereum and will consist of multisig wallets, smart contracts, and an off-chain ledger stored in a private database that will be published daily to IPFS whose hash will be stored on Ethereum.

Wallets Rewards.com will hold custody of three multisig wallets. The wallet ownership and signing mechanisms will be configured to maximize security. The Controller Wallet will be used for deploying the smart contracts and making calls that require authorization. The Earnings Wallet will be used for holding the tokens earned by users when they make purchases at participating merchants. The Redemption Wallet will hold the tokens that are transferred from the Earnings Wallet after a user has made a redemption with their tokens.

Smart Contracts Developing applications on Ethereum requires creating multiple contracts for each application. This paper will abstract each application as a single contract. Separating the logic into multiple smart contracts reduces the architecture complexity. Moreover, security testing and auditing are much easier to perform on isolated and well defined components. The Rewards Ethereum applications are split into the following five smart contracts: Token Contract, Token Distribution Contract, Community Voting Contract, Bonus and Promotions Contract, and IPFS Contract. The Token Contract is an ERC20 type contract that defines the RWRD token. The Token Distribution Contract will be used for selling the RWRD tokens to the public through multiple stages. Token holders will be able to vote on proposals through the Community Voting Contract. Lastly, the IPFS Contract is used for storing the hashes to the ledger information published to IPFS for auditing.

Figure 1[12]

Scalability Issues on Ethereum Currently, Ethereum can only scale to 500,000-600,000 transactions a day at maximum capacity. The maximum number of transactions ever executed in a day during the history of Ethereum has been 546,837 [12]. During peak times, Rewards.com receives tens of thousands of redemptions a day. Assuming more individuals will submit transactions using the RWRD token after launch and assuming the number participants executing transactions on the network will only grow, as shown by the chart in figure 1, it will not be economically viable to allow users to use their tokens directly on the network because of the competitive costs of submitting transactions to the network. The cost of executing transactions on Ethereum is based on supply and demand mechanism. The supply offered by the miners is capped at 500,000-600,000 a day while demand is growing, with overall costs growing as well, as shown in figure 2.

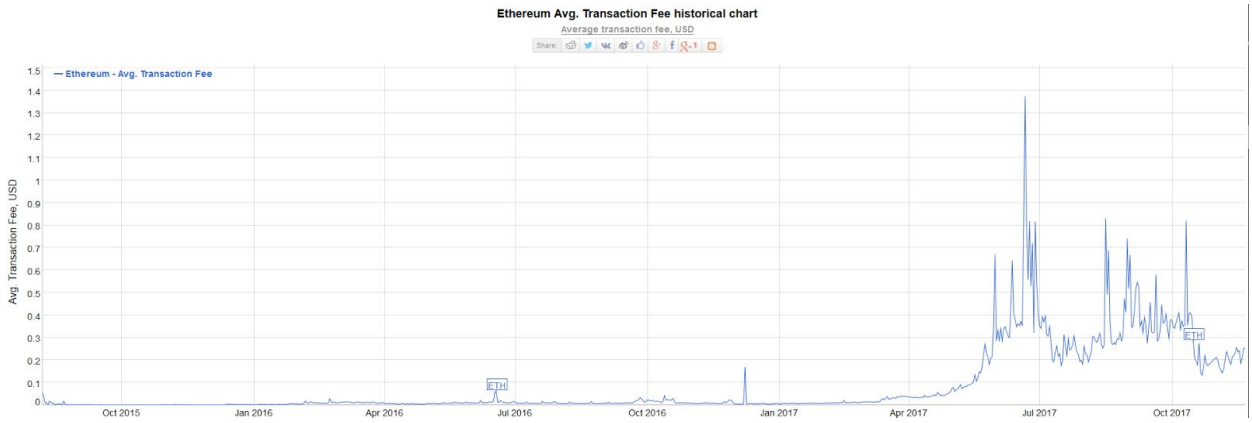


Figure 2 [13]

Furthermore, Serenity and Plasma updates and third party off-chain networks are years away from production readiness. Due to these constraints, Rewards will maintain an internal ledger of all the individuals that hold their RWRD tokens in the RWRD Application. Users will be allowed to participate with their tokens through this application.

Internal Ledger There will be an internal ledger that is stored on IPFS which will contain the account balances for all the token holders that have their tokens held in the RWRD Application. The internal ledger will be stored in a private database; however, for auditing, trust, and transparency purposes, this internal ledger will be published daily to InterPlanetary File System (IPFS) [11].

According to the IPFS White Paper: “IPFS is a peer-to-peer distributed file system that seeks to connect all computing devices with the same system of files. In some ways, IPFS is similar to the Web, but IPFS could be seen as a single BitTorrent swarm, exchanging objects within one Git repository. In other words, IPFS provides a high throughput content-addressed block storage model, with content-addressed hyperlinks. This forms a generalized Merkle DAG, a data structure upon which one can build versioned file systems, blockchains, and even a Permanent Web. IPFS combines a distributed hashtable, an incentivized block exchange, and a self-certifying namespace. IPFS has no single point of failure, and nodes do not need to trust each other”. Besides other relevant features, an important aspect of IPFS is that it handles file redundancy on behalf of the file owner for increased fault-tolerance, whereas applications like BitTorrent do not. As a result, files stored on IPFS are permanent and easily accessible to auditors and the public.

For privacy reasons, not all the information will be published to IPFS. What will be published to IPFS is a csv-type file, where each row has the following format: <account id>, <ethereum public address>, <account balance>. The usage of the ethereum public address will be discussed when deposit and withdrawal processes are covered.

RWRD Application An application will manage the internal ledger and user activities. The functionality of the application is similar to how exchanges function in terms of how users deposit and withdraw their RWRD tokens into the system. The application integrates with the Rewards.com platform and offers the following functionalities for the users:

- Vote on community proposals,
- Deposit their RWRD tokens from their personal wallets into the system,
- Withdraw their RWRD tokens from the system into their personal wallet,
- Redeem their RWRD tokens for goods and services,
- Earn RWRD tokens when making purchases with their traditional currencies (e.g. USD, EURO),
- Participate in other functions that are already part of the platform or will be added subsequently.

Controller Wallet Rewards.com will own a multisig wallet in order to deploy all the platform contracts. This multisig wallet is called the Controller Wallet. The Controller Wallet will only hold funds for paying for transaction fees and for deploying and executing the smart contracts that require authorization.

Earnings Wallet Tokens used by customers through the RWRD application will be stored in the Earnings Wallet. These tokens are added to the Earnings Wallet when a user:

- Deposits tokens into the RWRD Application from their Ethereum wallet
- Makes a purchase in traditional currencies at a participating merchant. The tokens are added from the Redemption Wallet
- Receives tokens based on bonus and promotion programs

The tokens are added to the wallet, but the balances are updated individually in the internal ledger.

Redemption Wallet The RWRD tokens owned by Rewards.com will be stored in what is called the Redemption Wallet. These tokens are added to the wallet based on the following activities:

- A user redeems the RWRD tokens for an actual product or service. The tokens are added from the Earnings wallet
- Rewards.com purchases RWRD tokens from an exchange to satisfy its allocation balance.

Token Distribution Wallet There will be multiple token distribution events. At the end of each token distribution event, the Ethereum tokens raised will be transferred from the Token Distribution Contract to the Token Distribution Wallet.

Token Contract The RWRD token will implement the ERC20 token interface with minor modifications. The token contract will contain a total supply of 1 billion RWRD. A percentage of the tokens will be distributed to team members and token purchasers; the remaining tokens will be maintained by the Community Voting and Bonus and Promotions Contracts. The initial distribution of tokens will be done through the deployment of the smart contract by Rewards.com. The tokens to be distributed will be sold through a multi-stage token distribution event as part of the launch of the Rewards.com program for each planned country.

Token Distribution Contract A set amount of tokens will be held by the Token Distribution Contract. This amount depends on the amount of tokens that are sold to token buyers during the private sale. They will be released through multiple stages to the public. The contract will offer functionality to freeze tokens in case any technical difficulties arise during the sale and refund the Ethereum tokens to purchasers. During the sale itself, the contract will work off of a set discount schedule to entice users to participate.

Community Voting Contract Three hundred million RWRD tokens will be stored in a Community Voting Contract. The Community Voting Contract will be used for release of tokens into the market for reasons proposed by Rewards.com and approved by the community. For example, a proposal might be placed to send relief funds for disasters. As the owner of the community pool contract, Rewards.com will be able to use tokens stored in the contract to fund and deploy ballot contracts. Rewards.com will not be able to withdraw funds freely from the community pool contract; it will call a function on the contract which deploys and funds the ballot contract.

Any account with a non-zero token balance as of the time of contract deployment will be allowed to vote on each deployed ballot. At the time of creation, a ballot contract will have tokens allocated to it from the Community Voting Pool. When voting is complete according to the ballot contract's stipulated rules, the ballot contract deploys and funds the proposal if a majority of votes have been in favor. (Otherwise, the ballot contract self destructs, sending its tokens back to the community voting pool.) Once a vote is cast, it cannot be withdrawn. The winning proposal is based on a quorum.

The proposal that is executed may also be a smart contract. If the proposal's logic can be encoded entirely in a smart contract (for example, if the proposal is to distribute tokens to all token holders), this approach will be preferred. Otherwise, if the proposal cannot be automated, funds will be passed to a trusted custodian as defined by the proposal. This custodian will fulfill the obligations of the proposal.

Bonus and Promotions Contract A set amount of tokens will be maintained by the Bonus and Promotions Contract. This contract's functionality is very similar to how the Community Contract operates, with the distinction that the tokens released from the

bonus and promotions pool will be sent to token holders in the RWRD application.

IPFS Contract Every day the internal ledger information file is published to IPFS, its hash is computed and submitted to the IPFS Contract. The public and auditors will be able to use these hashes to verify the integrity of the published files of the ledger on IPFS.

4. Architecture Flow

Private Sale A private sale occurs prior to the USA launch, which allows private token buyers to place money into the platform and receive back RWRD at a discounted rate.

Deployment of Contracts During the deployment process, the Token Distribution and Community Voting contracts will get deployed through a temporary wallet. Afterwards, the ownership will be transferred to the Controller Wallet for increased security. The Token Distribution will not be started upon deployment. It will be started by the controller wallet after the Token Contract has been deployed. The aforementioned contracts are deployed first in order to get the contract addresses and pass them to the Token Contract during initialization. After these two initial contracts are deployed, the Token Contract is deployed. At this stage, the tokens for public sale distribution are passed to the Token Distribution Contract, the community pool tokens are passed to the Community Voting Contract, and the Bonus and Promotion tokens are passed to the Bonus and Promotion Voting Contract. The Token Distribution can now be started.

Token Distribution Process After all the smart contracts have been deployed and linked together, the token distribution is started through the Controller Wallet. Ethereum token holders can purchase RWRD in exchange for Ethereum. There will be multiple token distribution events, based on the number of countries Rewards.com wants to launch in and/or the amount of tokens that remain to be sold. The smart contract will manage each such event. The first distribution event will have the most favorable discount. Subsequent events will have their discount reduced with every event until it reaches zero. Each token distribution event will be open for a limited amount of time. After each event ends, the ethereum tokens will be moved from the smart contract to the Token Distribution Vault.

The token distribution will be conducted in multiple phases based on the release of the Rewards.com platform in different regions of the world. The first phase will be the USA launch during Q1 2018. Purchase of RWRD tokens will be done through Rewardstoken.io. Participants will be able to purchase tokens through a queue process as described below.

Queueing Process Users will pre-register for the crowd sale during which they will provide basic personal information. Before the opening of the sale participants will be allowed to join a digital lobby which will then place them into a queue upon the opening of the sale. Users that are waiting in the lobby will be randomly assigned a place in line. Those at the front of the line will make purchases and buyers will continue to cycle through in a organized fashion. This method ensures all participants are served in a fair and organized manner.

Token Acquisition Besides through the token distribution, there are four other primary ways people can acquire tokens through the system: through the Rewards.com ecosystem (e.g. bonus and promotion programs), private sale, purchase from the open market, and making purchases at participating merchants. Users can use these tokens to make redemptions once they have deposited them into the user's Rewards.com wallet.

Deposit Token holders will be allowed to deposit their RWRD into their Rewards.com wallet so that they can make redemptions. During a deposit, the token holder sends tokens to a “deposit wallet” smart contract created and owned by Rewards. On a recurring basis, Rewards will withdraw tokens from each deposit wallet and update the token holder’s balance in the account ledger. This mechanism can be visualized in Figure 3.

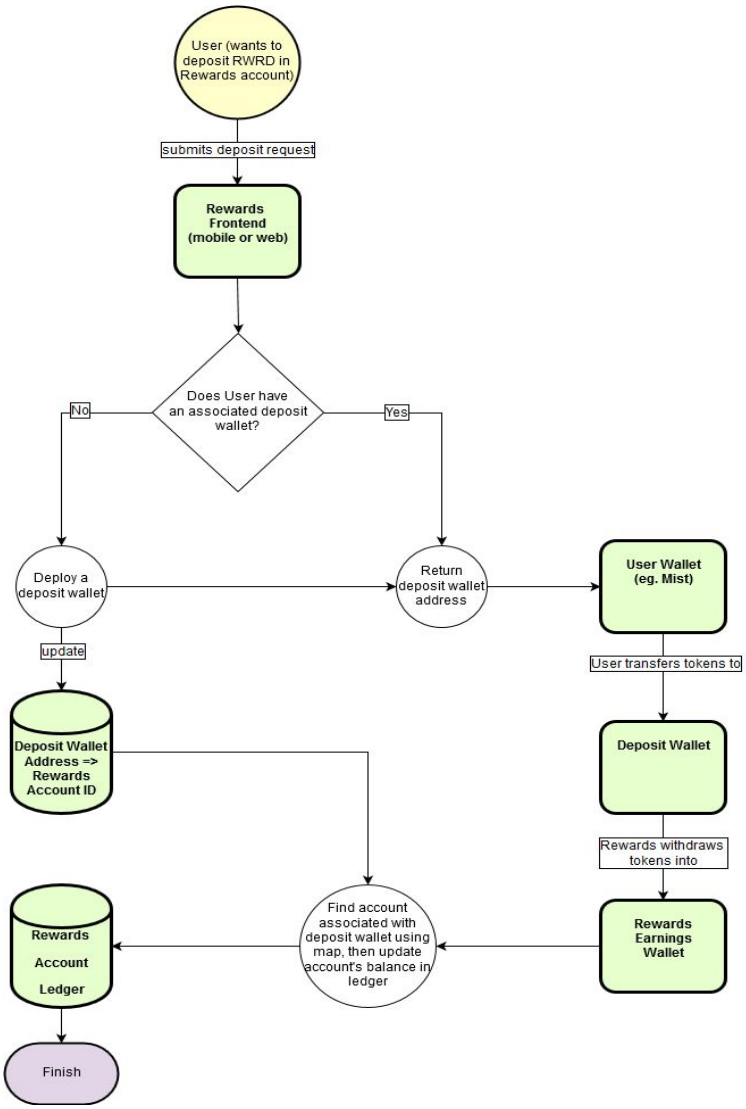


Figure 3

Withdrawal Token holders will be allowed to move their RWRD tokens out of their Rewards wallet into a personal ERC20 wallet of their choosing.

Earnings and Redemption Process Users earn and use their RWRD at retailers. When a user makes a purchase, a percentage of their purchase will be returned to them in the form of RWRD. This is deposited to the user's Rewards.com wallet, which they can either use during the redemption process or transfer into their personal wallet. Users redeeming their tokens will exchange the requisite amount of RWRD tokens in order to pay for the good/service provided to them.

On a recurring basis, Rewards.com either sells or purchases tokens in order to maintain the balance between tokens maintained in the earnings wallet with the tokens maintained in the redemption wallet. If there is a shortage of tokens in the redemption wallet, then Rewards.com will purchase more tokens from the open market. On the other hand, if there is an excess amount of tokens in the earnings wallet, then tokens will be sold to the open market.

Community Voting Process Proposals are submitted exclusively by Rewards.com to the smart contract with a set time interval for voting. Users can only vote if they own a wallet that had a non-zero token balance at the commencement of the voting session.

Bonus and Promotion Process Through this process, retailers looking to promote their goods or services can entice users with additional earning opportunities. A retailer will submit a promotion through Rewards.com. Tokens from the Bonus and Promotions pool will then be used to fund the promotion. Other bonuses, such as registration bonuses and referral bonuses can be included in this process.

Open Market Token holders will have the option of taking their RWRD tokens out of the Rewards.com ecosystem and selling their RWRD at exchanges. Any interested party can also purchase RWRD through an exchange. Actors in this component will not be able to participate in redemption and earn tokens through purchases as the RWRD token is only redeemable and earnable within the Rewards.com ecosystem. Users who purchase RWRD tokens from the market would need to transfer their tokens their Rewards.com wallet in order for the tokens to be redeemable.

5. Economics

Rewards.com operates an established loyalty program which revolves around offering discounts for customers through established relationships with merchants. A merchant pays Rewards.com to provide consumer engagement. In return, Rewards.com distributes rewards to

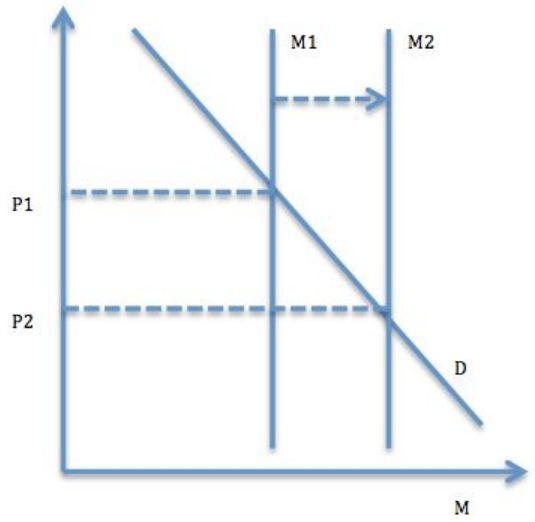
the customers in the form of “rewards cash,” a point which enables the user to make a purchase through Rewards.com.

The token-based system described in this paper retains Rewards.com’s redemption and reward model, but replaces “rewards cash” with the fungible RWRD token. Consumers earn RWRD tokens in multiple ways, such as a percentage "cash back" (in the form RWRD tokens) for shopping with particular merchants, as well as via contests, surveys, and other incentives. Consumers can redeem RWRD tokens for goods and services with participating merchants, and Rewards.com will convert RWRD to fiat currency (e.g. USD, CAD, EUR, et.al.) off-chain to pay the program provider or merchant.

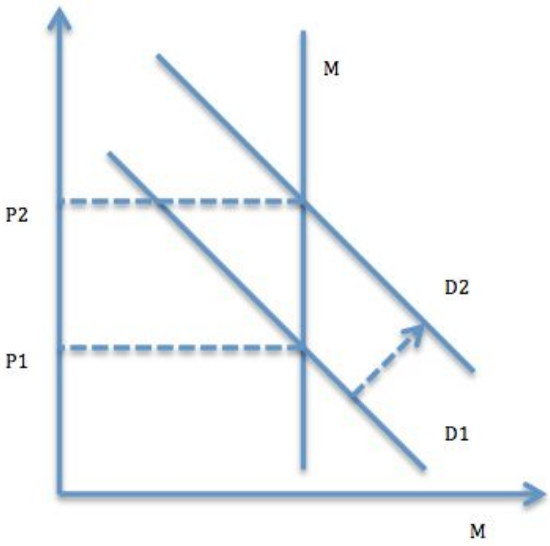
RWRD tokens are fungible with fiat currency and cryptocurrency. Consumers will be able to trade RWRD for other cryptocurrencies, as well as purchase RWRD tokens directly using fiat currency or other cryptocurrencies.

The Rewards economy begins with an initial distribution of Rewards tokens (RWRD) and an initial exchange value or price (*P*) of $0.30USD. The total permissible supply (*M*) of RWRD is limited to 1,000,000,000 (one billion) tokens. The initial token sale distribution of 300,000,000 will be issued at launch. Any unsold tokens will be available for distribution in future events, such as the addition of new countries to the Rewards ecosystem.

RWRD tokenomics mirror many aspects of monetary and currency economics, with numerous factors affecting the price of RWRD tokens. For example, increases in token supply (*M*), such as new token distributions in conjunction with adding a new country to the platform, can temporarily decrease the RWRD token price (*P*) as the token supply increases from *M1* to *M2* as illustrated in this supply and demand model:



In contrast, growing demand for RWRD tokens will shift the demand curve outward and increase the RWRD price as illustrated in this supply and demand model:



Numerous factors can raise demand for RWRD tokens and thus increase the RWRD token price, including increases in the number of:

- Consumers desiring RWRD tokens to participate in the deals and discounts on the Rewards.com platform;
- People seeking RWRD tokens as part of a basket of cryptocurrency instruments; and

- Programs and merchants participating in the Rewards platform and/or the quality and quantity of deals and discounts offered, which will drive a virtuous cycle of consumer demand for the platform in the manner of Say's Law.

The Rewards platform and token also stand to benefit from Metcalfe's Law (a.k.a. the network effect), in which the value of the network is proportional to the square of the number of connected users of the system (n^2). Such networks include social networks (e.g. Facebook, Tencent, et.al.) as well as other online marketplaces (e.g. eBay, Amazon, et.al.). In the case of the Rewards platform, the platform becomes more valuable to consumers as the quantity and quality of programs, merchants, and deals increases, and more valuable to suppliers (programs and merchants) as the number of consumers increases, due to the potential of increased sales, margin, customer retention, and data. Since Rewards.com has both program relationships and consumer accounts from its existing business, the network doesn't need to be created *de novo* but instead already possesses significant size.

Like monetary systems but unlike traditional point programs, RWRD tokens are not "burned" and do not disappear when redeemed for products or services. When a consumer redeems RWRD tokens, Rewards.com converts the token value into fiat to pay the sponsoring program or merchant. In turn, Rewards.com re-issues the redeemed tokens to consumers in conjunction with new consumer earnings for purchases, contests, and surveys. In this manner RWRD tokens do not expire or cease to exist but instead remain in circulation through the continuous and infinite earnings and redemption cycle.

Given the similarity of the Rewards token ecosystem to conventional monetary systems, it is appropriate to model the ecosystem using the equation of exchange, which is M*V = P*Q, where
M = token asset base (tokens issued)
V = velocity
P = price
Q = quantity

To this equation we add R, the value of the RWRD token:

$$R = PQ / MV$$

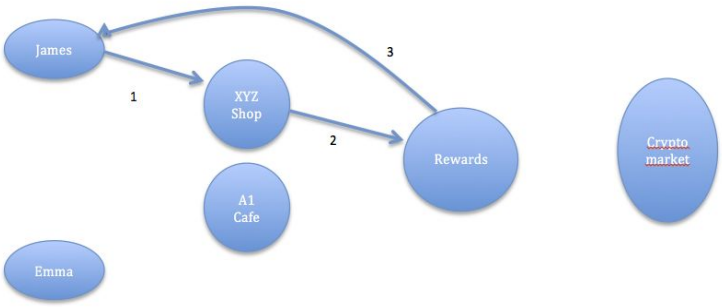
In other words, the value of the RWRD token is the product of demand (P*Q) divided by the token supply times the rate (velocity) at which tokens are redeemed, re-issued, and re-spent.

Data from the existing business indicates that current Rewards members earn rewards 4.5 times per year, on average. As it's likely that the Rewards membership base after the re-launch onto a blockchain platform will be a mix of general consumers along with cryptocurrency enthusiasts, velocity may slow if the cryptocurrency enthusiasts show more of a preference to hold instead of redeem RWRD tokens relative to the existing general consumer membership.

Existing business data also indicates that every 100,000 active consumer accounts generates approximately $5,000,000 in reward fulfillment demand. To illustrate the token flow through various earning and reward scenarios, consider a sample world comprised of two consumers, James and Emma, two merchants, XYZ Shop and A1 Cafe, Rewards.com, and the cryptocurrency marketplace. For simplicity of illustration, assume that:

- 1 USD = 5 RWRD;
- Rewards.com begins with a balance of $50 USD and 150 RWRD; and
- 1,000 RWRD tokens are in circulation in the crypto market.

Example 1: (1) James spends $500 at XYZ Shop, and earns 5% "cash back" through a Rewards program. (2) XYZ sends Rewards $25, and (3) Rewards sends James 125 RWRD tokens.



Rewards Ledger	USD	RWRD
Opening Balance	50	150
(2)	+25	
(3)		-125
Closing Balance	75	25

Example 2: James sees another Rewards deal on a widget at XYZ Shop, this time for 50 RWRD tokens. Around the same time, Emma celebrates with friends at A1 Cafe. (1) James redeems 50 RWRD; (2) Emma spends $100 at A1 Cafe, earning 10% cash back; (3) A1 Cafe sends Rewards $10; (4) Rewards sends XYZ Shop $10; (5) XYZ Shop sends James the widget; (6) Rewards sends Emma 50 RWRD.

Rewards Ledger	USD	RWRD
Opening Balance	70	50
(1)		+50
(3)	+10	
(4)	-10	
(6)		-50
Closing Balance	70	50

Additional examples can be found in the Index.

6. Client Integration

Users will interact with the their Rewards.com wallet through an online portal and mobile wallet application. Both interfaces will allow the user to spend and control their RWRD tokens.

Online Portal The Rewards.com online portal will act as an interface for users to shop and manage their tokens. This allows users to enjoy the luxury of shopping online at discounted rates at thousands of merchants. The token management portion of the portal will act in a similar way to Coinbase, a popular online cryptocurrency exchange. Users will not be burdened to control their own private keys but rather will rely on Rewards.com to secure the user's tokens. If users so choose they will have the ability to transfer RWRD to their own personal wallet outside the Rewards.com ecosystem.

Mobile App The mobile application will allow Rewards.com to extend the functionality that exists with the online portal. The mobile application will facilitate in-store point of sale transactions using RWRD tokens. While using the mobile application in store, users will select the merchant they are purchasing from and the amount of the purchase which will generate a barcode that the merchant can scan. The user will also be able to earn RWRD in store by paying with a credit card saved in the mobile app.

7. Future Work

In 2019, Rewards.com will implement an additional phase by launching a standalone Blockchain platform providing the ability for other

loyalty reward programs to white label their respective programs using RWRD as the underlying rewards token. The white label program will allow merchants to maintain their brand integrity and control the flow of their currency, while taking advantage of the larger underlying RWRD ecosystem.

Conclusion

The system proposed in this paper aims to have an impact in multiple areas of the current loyalty system. Firstly, the Rewards.com system will allow usage of cryptocurrencies in the current market without significant overhaul of current financial infrastructure. Not only will the RWRD token make the loyalty token fungible, but individuals will be able to trade the token for other cryptocurrencies and, subsequently, fiat currency. Secondly, this system allows users to redeem and earn their loyalty points at multiple merchants. The system also grants the token holders the ability to vote on proposals for special bonus and promotion programs as well as sets aside a pool of tokens for the community to use for causes such as disaster relief funding or other charitable donations.

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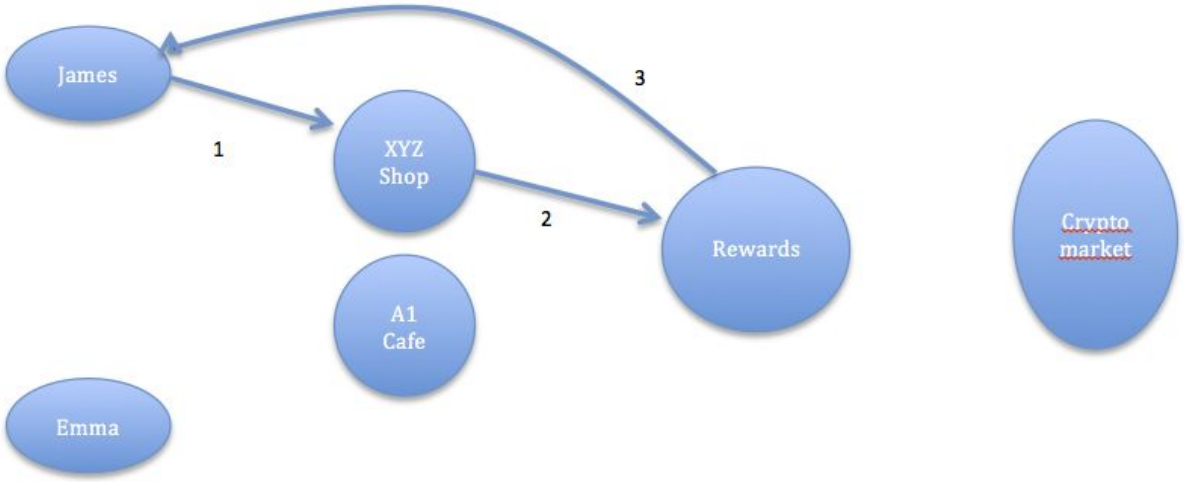
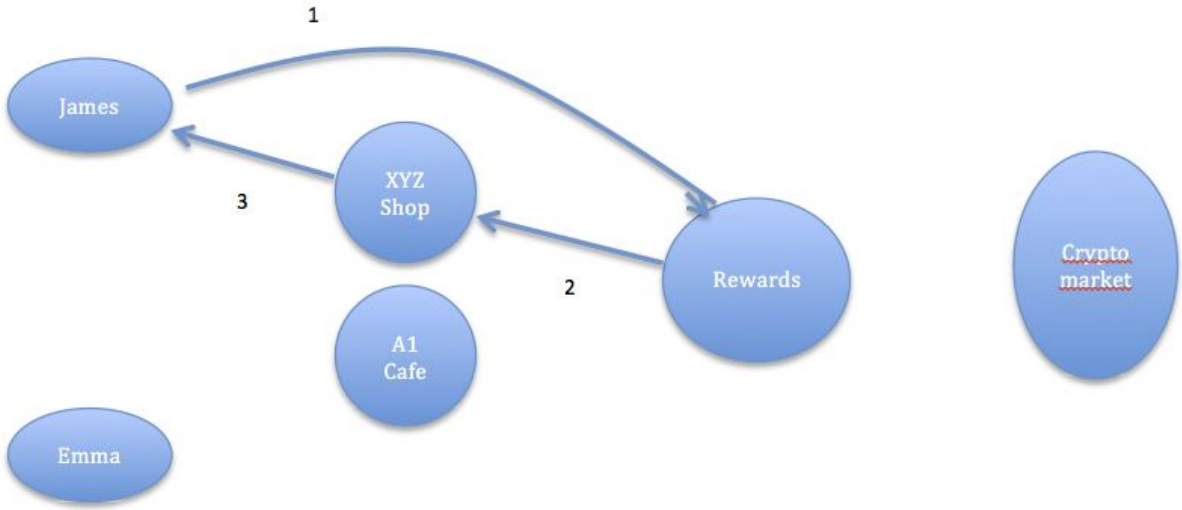
Rewards.com Platform Examples

Example 1: (1) James spends $500 at XYZ Shop, and earns 5% “cash back” through a Rewards program. (2) XYZ sends Rewards $25, and (3) Rewards sends James 125 RWRD tokens.



Rewards Ledger	USD	RWRD
Opening Balance	50	150
(2)	+25	
(3)		-125
Closing Balance	75	25

Example 2: James sees a Rewards deal on a widget at XYZ Shop for 25 RWRD tokens. (1) He redeems 25 RWRD; (2) Rewards sends XYZ shop $5; (3) XYZ Shop sends James the widget.

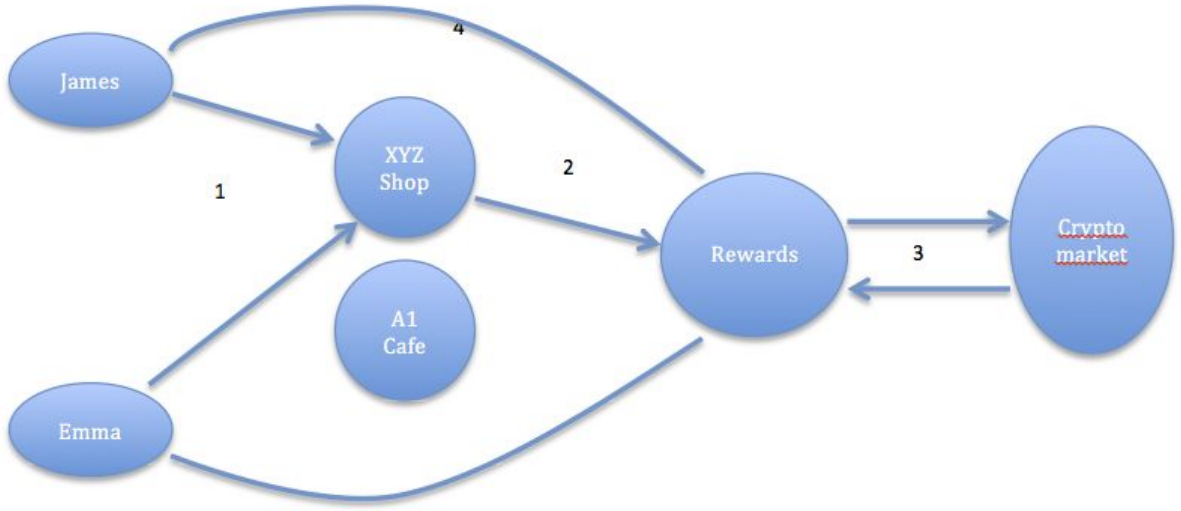


Rewards Ledger	USD	RWRD
Opening Balance	75	25
(1)		+25
(2)	-5	
Closing Balance	70	50

Example 3: James sees another Rewards deal on a widget at XYZ Shop, this time for 50 RWRD tokens. Around the same time, Emma celebrates with friends at A1 Cafe. (1) James redeems 50 RWRD; (2) Emma spends $100 at A1 Cafe, earning 10% cash back; (3) A1 Cafe sends Rewards $10; (4) Rewards sends XYZ Shop $10; (5) XYZ Shop sends James the widget; (6) Rewards sends Emma 50 RWRD.

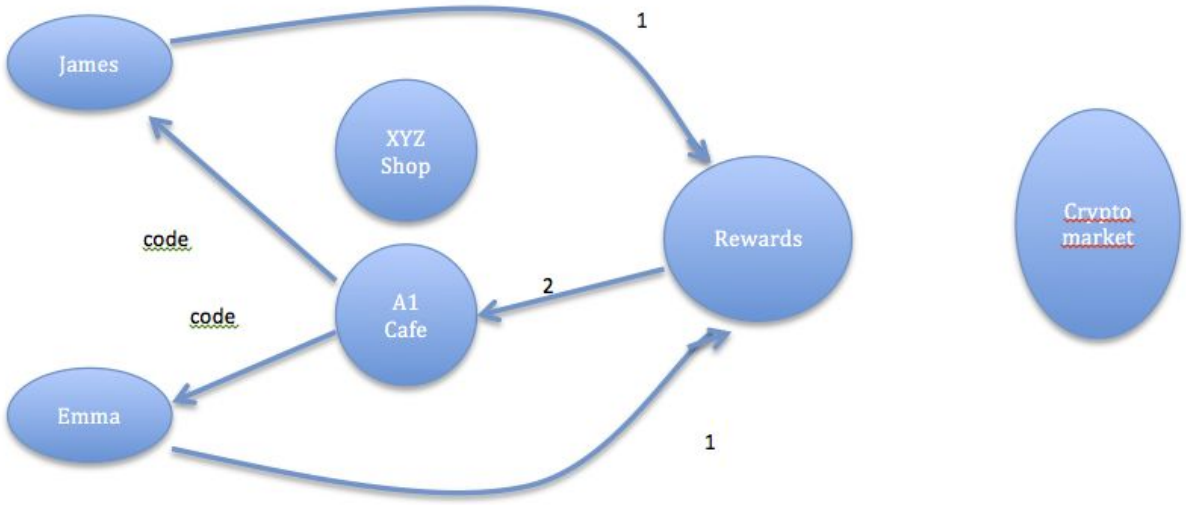
Rewards Ledger	USD	RWRD
Opening Balance	70	50
(1)		+50
(3)	+10	
(4)	-10	
(6)		-50
Closing Balance	70	50

Example 4: (1) James spends $400 and Emma spends $600 at XYZ Shop, each earning 5% cash back; (2) XYZ Shop sends Rewards $50. Rewards needs to send James and Emma 250 RWRD, but Rewards only has 50 RWRD on its ledger, so (3) Rewards exchanges $50 USD for 250 RWRD in the cryptocurrency market. (4) Rewards sends James 100 RWRD and Emma 150 RWRD.



Rewards Ledger	USD	RWRD
Opening Balance	70	50
(2)	+50	
(3)	-50	+250
(4)		-250
Closing Balance	70	50

Example 5: A1 Cafe runs a dinner promotion through Rewards for 100 RWRD. (1) James and Emma each redeem 100 RWRD; (2) Rewards sends A1 Cafe $20USD. A1 Cafe sends James and Emma a code to scan for payment.



Rewards Ledger	USD	RWRD
Opening Balance	70	50
(1)		+200
(2)	-20	
Closing Balance	50	250

Example 6: Rewards needs to pay $80 USD of operating invoices, but Rewards has a USD balance of $50. Rewards (1) exchanges 200 RWRD in the cryptocurrency market and (2) receives $40 USD.

Rewards Ledger	USD	RWRD
Opening Balance	50	250
(1)		-200
(2)	+40	
Closing Balance	90	50

Example 7: James and Emma decide to explore the broader cryptocurrency market. (1) James exchanges 25 RWRD for BTC and (2) Emma exchanges 50 RWRD for ETH.