Flairr White Paper

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Abstract

Flairr is a platform-as-a-service (PaaS), offered by Flairr Labs (an advanced tech company), dedicated to solving two common problems: integrating and engagement with local communities and identity protection of the users. Through the deployment of a proprietary network available via desktop and mobile devices, Flairr enables communities, local businesses, and service providers to offer special promotions and other incentives to network users via redeemable digital utility tokens called "Flairrcoin" (flr). Moreover, business partners and service providers can post career opportunities while hosting Flairr nodes to generate, receive, send, or process their own Flairrcoin. By using the Flairr Network for promotions and user engagement, participating businesses and service providers can reach their target customers more efficiently while reducing costs associated with traditional marketing and promotions management. This cost savings will be mainly transferred to Flairr network participants creating a more effective and sustainable win-win relationship between users and business partners.

1. Introduction

Blockchain is a technology that was described by a group of researchers in 1991 with the intention of time-stamping digital documents to make them tamper-proof. This idea went mostly unused until the surfacing of Bitcoin [1]. Since its implementation, many new cryptocurrencies have been created and released, each with a different take on implementing the blockchain technology, which utilizes cryptography and the internet to allow for fast, secure, and decentralized transactions [2]. Essentially, the concept is to store records of transactions on digital blocks that are created by solving cryptographic puzzles; newly created blocks validate its predecessors, and the resulting ledger of blocks is distributed and updated by every node or user

participating in the network [3]. This process creates an accurate and decentralized ledger of transactions that every network participant can trust and use, hence eliminating the need for a centralized record-keeping entity. However, despite its groundbreaking role, the traditional blockchain structure has inherent limitations and deficiencies [4] that created a need for more advanced alternatives including the Directed Acyclic Graph (DAG) system and architectures derived from it [5]. The Block-lattice system is one of the major architectures among these newer technologies [6].

As a better alternative to the blockchain structure, DAG-based Block-lattice systems such as Nano have achieved near-instant transaction times along with unlimited scalability, near-zero transaction fees, and superior cost-efficiency because of its low energy consumption protocol [6]. The Nano DAG-based Block-lattice system is the basis and foundation for the Flairr Network, which has been further developed to feature capabilities that make it suitable and convenient to use for users and businesses alike.

Flairr App is a mobile application that currently features a marketplace, game hub with several single or multi-player games, map with a variety of functionalities such as showing partners, finding treasures, etc., mini social media, and more. Users can earn Flairrcoin in each game and can also spend them on real goods/services in the app's marketplace. They can also store their earned Flairrcoin on a personal digital wallet called Flairr Wallet.

For businesses, a platform has been developed which comprises of a mobile app called Flairr Partner App, as well as a set of web-based APIs and a business digital wallet. Flairr Partner app would give businesses the capability to post ads or offers of goods/services on the network. The digital wallet enables businesses to manage and store their coins, add employees to their account and give them different access levels (e.g., marketing, accounting, etc.).

2. Flairr Network

Flairr[1] is a distributed network built on Block-lattice technology [7], consisting of several mobile apps and a set of business-related APIs to issue Flairrcoin, a digital utility token, for use by Flairr Network participants. Flairr is developed by Dr. Ray Aria, a computer science faculty at the University of Central Florida, and his team at Flairr Labs. Flairr Labs is a technology start-up which is based at the University of Central Florida's Business Incubator. Flairr has a protocol that can be run on low-power hardware (e.g., mobile devices). The network achieves this by having a different approach to consensus than other regular Blockchain-based technologies; it uses a Proof of Stake (PoS) protocol where the participants vote on the current state of the ledger, and their voting weight is equivalent to the amount of cryptocurrency they own. Fig 1 demonstrates the components of Flairr Network.
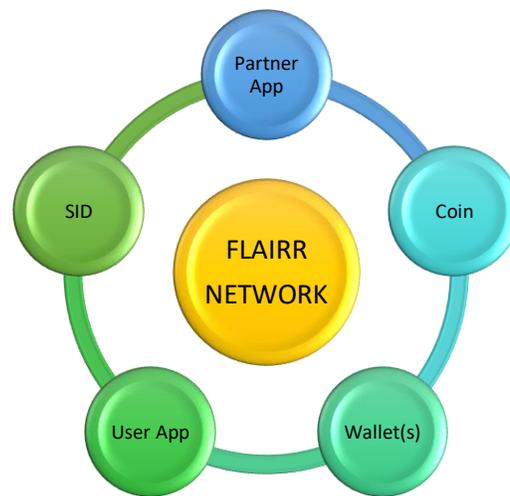
Fig 1. Flairr Network Components

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[1] "Flairr" is a homonym of the English word "Flair", which means "style and unique attractiveness." It represents the advanced features of our cryptocurrency platform that differentiate it from Blockchain-based technologies.

The Flairr network consists of various components that include Flairrcoin, Flairr (user) app, Flairr Partner app, Flairr Wallet app, Flairr Smart Identity (SID), and Flairr Vault, a web-based digital token storage solution.

In its entirety, the Flairr network creates a two-sided market. Users can earn Flairrcoin by completing tasks and missions, overcoming challenges, or by playing games in the Flairr app. Flairrcoin can then be used to reserve and purchase attractive offers posted by local businesses who are interested in leveraging the Flairr network's features and opportunities.

Unique and innovative features are what make the Flairr Network special, and its integration of a privacy-preserving identity verification system. This feature, available for both Android and iOS, provides proof of users' identity and/or age without disclosing other sensitive personal information that viewers need not see.

For example, users can pull up Flairr app on their mobile devices to display their photo along with select personal information, such as age, as proof of identification to enter certain venues or to purchase restricted items. Any unselected personal information will remain hidden to the viewer, allowing individuals to only share private information on as-needed basis. Venues/vendors who use the Flairr Partner app or the Flairr Identity app can even eliminate the need for users to share *any* personal information with the vendor, by scanning a QR code or using a mobile phone's NFC (Near Field Communication) feature. In this scenario, the vendor will only see a person's photo along with certain badges for meeting certain criteria such as age.

Flairr's main goal is to enable individual users and businesses to connect and use our digital utility token, Flairrcoin, for everyday transactions in a way that both parties will benefit from cost savings that result in a direct and localized relationship.

The success of Flairr Network, however, will strictly depend on the collective efforts of Flairr Labs, Flairr users, and Flairr business partners, all together. As demonstrated in Fig. 2:

- Flairr Network will play its role by providing an infrastructure based on a superior new technology, as well as the benefits it provides for the business partners and users.
- Businesses will post attractive and usable offers in the network and deliver value to users.
- Users will play games, complete tasks, or overcome challenges, and earn Flairrcoin in the process. Later, they can use the earned Flairrcoin to pay for up to a certain percentage (e.g., 20%) of the price of offerings that Flairr Partners post in Flairr Network.
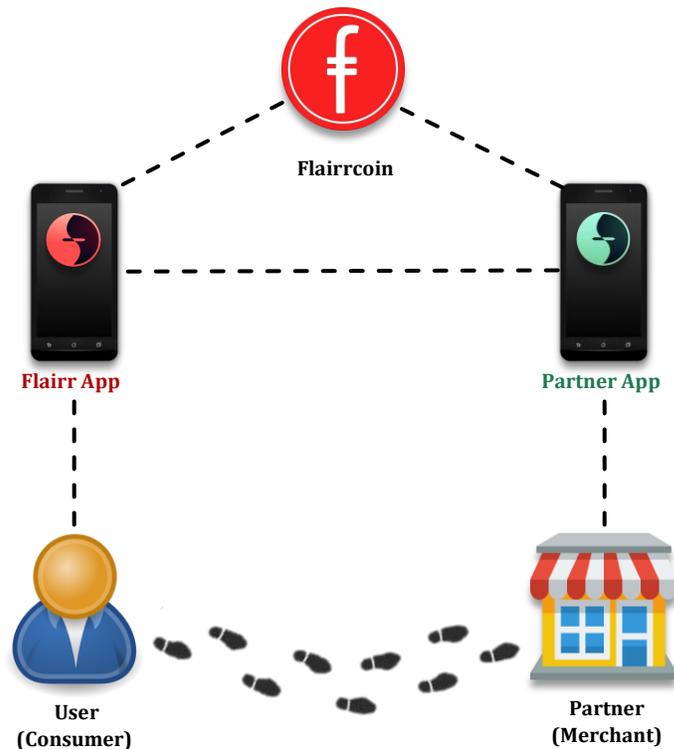
Fig 2. Flairr Network Schematic

3. Flairrcoin

3.1   What is Flairrcoin?

Flairrcoin (used in both singular and plural) is a digital utility token generated by network operators for distribution and use solely by network participants in accordance with applicable terms of service. As with traditional reward points, the value of Flairrcoin comes from the willingness of network business partners to offer goods or services that can be fully or partially paid for with Flairrcoin. Since Flairr Labs is the first and primary network operator, it introduces Flairrcoin into circulation by granting tokens to network participants according to the terms and conditions of their specific subscription agreement(s). Partners will also be rewarded with Flairrcoin when they make product/service offerings available to network users. The business partners can also use their Flairrcoin to redeem products and services offered by other network participants. Alternatively, network participants may redeem their own Flairrcoin for products and services offered by Flairr Labs itself. In addition to offering products or services, partners who invest resources to operate nodes on the Flairr Network will obtain an ability to issue and distribute an amount of Flairrcoin into circulation that is less than or equal to the value of products and/or services they offer on the network.

Flairrcoin are generated for use on the network and may be stored by node operators, partners, or users in their specific Flairr Wallets. Flairrcoin that have been used to redeem an offer, according to their programmed terms, are returned to the issuing partner or the network. Flairrcoin, however, may be freely shared among network participants. Flairrcoin are not available for purchase or exchange outside of the above-described Network. They do not represent an interest in Flairr Labs (or its business partners), nor do they have any value outside of Flairr

Network. Flairrcoin have no inherent or assigned value, and no profit can be achieved by their acquisition or use. Consequently, Flairrcoin are not a vehicle for investment.

3.2 What's the Value of Flairrcoin?

The value of Flairrcoin to business partners is access to Flairr Network of users, and the tools made available for in-app advertising, the management of promotions, and job boards. As an additional feature, Flairr Labs has developed specific features for its business users (partners) that enables Flairrcoin sharing, and gamification of partner businesses to engage users in business offerings. The value to regular users is access to smart identity protection tools (SID), offers made available by partners, connecting to other like-minded users, playing games, and opportunities for employment.

3.3 Flairrcoin Denominations

Flairrcoin (flr) It is the base and the most used denomination in the network. Flairrcoin has other denominations in the network as following:

- **K-Flairrcoin (kflr)**: 1 kflr = 1000 flr, or 1 kflr = (1e3) flr
- **Mega-Flairrcoin (FLR)**: 1FLR = (1e6) flr, or 1 FLR = (1e3) kf
- **Raw (raw)**: 1 flr = (1e24) raw

3.4 Flairrcoin Distribution Channels

3.4.1   Pre-registration and Invitation Rewards

The initial distribution of Flairrcoin will be done through pre-registration. The users who pre-register prior to the Flairr App's launch will receive an allotment of Flairrcoin for free

as a reward. Individuals who refer new users of the Flairr network will also receive Flairrcoin as an additional incentive.

3.4.2   Ambassadorship Program

Flairr Ambassadors are tech-savvy individuals who are interested in our technology and are eager to play a role in shaping its future. Flairr Ambassadors will be rewarded for their help in promoting Flairr app before, during, and after its launch while raising public awareness of Flairr, its products, and related services.

3.4.3   Distribution in Flairr App

The majority of Flairrcoin will be distributed through Flairr App. The app will distribute Flairrcoin as rewards, for completing a variety of tasks, overcoming challenges, or playing games.

3.4.4   Distribution by Partners

Partners who expend resources to operate nodes on Flairr Network, as well as provide offers of products/services in the Network will also issue/distribute Flairrcoin that can be circulated into the network. However, the total amount of issued Flairrcoin by the partner shall not be larger than the value of the offers (and the portion that can be paid by Flairrcoin) they provide on the network.

4. Network Specifications

4.1   Block-lattice

Block-lattice is a version of a Directed Acyclic Graph (DAG) network that aims to fix the problem of slow transactions which results from the heavy processing needed for regular blockchain

mining. In this block-lattice structure, the nodes hold a single transaction and for that transaction to be submitted to the ledger for verification, that node must have verified the two previous transactions. This process allows the network to be infinitely scalable and achieve instant transactions once the network reaches a certain size. Each node also has its own blockchain. Each block in a node's blockchain will hold a single transaction from that node. Thus, each node will have a blockchain that contains its full transaction history [7].

4.2 Flairr Accounts & Apps

We offer the following types of accounts and apps for earning and spending Flairrcoin as well as safekeeping it.

4.2.1 Flairr App

Flairr App is a mobile app that individual users can download on both Android and iOS devices. The app contains a game hub that currently contains easy games for the users to play and earn Flairrcoin. More games (including third party games) are planned to be added in the future. Users will earn Flairrcoin when they play any of these games in either single or multi-player modes. Users may also earn coins by completing specific assignments, tasks, or overcoming challenges (e.g., treasure hunt, etc.). Flairr app also gives users access to their Flairr Wallet account.

This integration allows earned coins to be automatically deposited into a user's Flairr Wallet while enabling users to spend them on goods or services. However, users cannot transfer their coins to other individuals within the Flairr App. Such transactions can only take place within the Flairr Wallet. In addition, the app also gives them access to identity protection tolls, NFT tools, social media to connect with like-minded users, and job board.

NFT is also a part of Flairr app. Users will have a chance to make two types of NFTs in Flairr app: gNFT (general NFT) which users would make out of any type of digital asset, and uNFT (utility NFT) which users can make for specific reasons, for example, they will be able to use them for identity protection. In addition, it contains a marketplace in which users can find attractive offers from nearby businesses and users.

4.2.2   Flairr Wallet app

Flairr Wallet is a secure personal mobile app that allows people to keep and use their Flairrcoin. Individuals can use their coins to buy goods or services, send them to other wallets. Flairr Wallet is easy to use and creating an account on it only requires a valid email and a phone number. There are also a variety of security measures in place to ensure the safe storage of Flairrcoin in this wallet.

4.2.3   Flairr Partner app

Flairr Partner is a mobile app for both Android and iOS devices that only our business partners will use to post offers on the network. The posted offers will be viewable by individual users or businesses. Flairr Partner app also provides the business version of Flairr Wallet to our partners. Flairr Business Wallet is the business version of the Flairr wallet that allows our business partners to do transactions in Flairrcoin. The Business Wallet has special features such as multiple access levels (for employees in different roles) that is necessary for businesses to be able to accept cryptocurrencies in their transactions. In addition, Partners will also have access to NFTs (both general and utility), and they also can make and use those for their own purposes.

4.2.4   Flairr Vault

Flairr Vault is a secure web-based wallet that uses long-string public and private keys to safely store users' Flairrcoin. It employs a variety of security measures to keep funds safe and is one of the most secure ways of storing Flairrcoin online. However, Flairrcoin cannot be spent/used on the offers (on the network) while they are stored in Flairr Vault. To use them, users must transfer their Flairrcoin to a Flairr Wallet first.

4.3   Business API Interface

The Business API Interface is a set of APIs developed specifically for our business partners. It enables our partners to connect their own IT systems (accounting, advertising, etc.) to the Flairr network and enables them to interact with the network by posting offers, accepting, sending, and/or trading Flairrcoin.

4.4   Non-Fungible Token (NFT)

There are two types of NFT in the network, each of which are being stored on a separate Blockchain, with a different level of encryption:

- **gNFT** (general NFT): users would be able to make a gNFT out of any type of digital asset. gNFTs are not encrypted, and the original creator's name will be on them. They could be swapped, traded, exchanged similar to any digital item.

- **uNFT** (utility NFT): users can make them for specific reasons, for example, they will be able to use them for identity protection. They are fully encrypted, and users will be merely able to use them for their specific defined purpose(s).

4.5   FlairrNodes

A FlairrNode (i.e., Flairrcoin node) is software that is running on machines that participate in the Flairrcoin network. The node keeps either the entire ledger of the network (P-FlairrRep or FlairrRep) or a pruned history of the accounts (NV-FlairrRep). It also holds the accounts that it has control over. Any person or entity can set up a node and participate in the network. The following are types of nodes in the Flairr Network.

4.5.1   Flairr Representative Node (FlairrRep)

FlairrRep is a FlairrNode that is setup to vote on the network. If a FlairrRep has *less than* 0.1% of online voting weight delegated to it (read Proof of Stake), it would be a Flairr Representative node. These nodes will validate and vote on transactions on the network; however, other nodes on the network will not rebroadcast their votes [8].

4.5.2   Flairr Principal Representative Node (P-FlairrRep)

Any FlairrRep holding at least 0.1% (or more) of voting weight, is called P-FlairrRep. A P-FlairrRep participates more broadly in shaping network consensus because they send votes to their peers which are subsequently rebroadcast. These nodes have the most impact to the security and availability of the network [8].

4.5.3   Flairr Non-voting Representative Node (NV-FlairrRep)

A FlairrNode may be configured as a non-voting node; such nodes would not have the capability to participate in voting on transactions. This type of node is common and is mostly used for integration and security purposes of the network [8].

4.6   Proof-of-Stake (PoS)

The network uses the Proof of Stake (PoS) protocol. This means that the more cryptocurrency an account has, the more voting weight it will have. As a result, individuals with a higher financial investment in the Flairr Network and Flairrcoin, will have more power and influence, and thus they will want to keep the network honest. Using the PoS protocol also means that no active mining is required; instead, all the cryptocurrency is set at its genesis and then distributed through different faucets, including the Flairr App, Coin-Sale Events, etc. Using Flairr App will be the alternative to active mining which will allow users to earn more coins.

4.7   Proof-Of-Work (PoW)

We use a small version of the PoW algorithm that is used in Bitcoin. It requires substantially less computation and is only utilized as an anti-spam measure. It also contributes to the verification of transactions.

4.8   Voting

To reach consensus, the network has accounts that are representatives with voting rights to confirm transactions. Users can choose which representatives (P-FlairrRep or Flairr-Rep) they want to vote on their behalf, and representatives vote on conflicts to keep the network honest.

4.9   Transaction Verification

Since the network is DAG-based, transactions will be verified by the nodes themselves; however, a transaction is only valid if it is verified by two voting nodes. With this methodology, transaction speeds in the network will remain high regardless of how large it gets. This architecture eliminates the need for expensive machines to verify transactions [9].

4.10 A Decentralized Crypto Network

At the very beginning when there are not many FlairrNodes on the network, Flairrcoin is going to be launched as a centralized cryptocurrency to maintain the security of its users and the integrity of the network. Any business partner joining Flairrcoin must contribute at least one and up to 100 FlairrNodes to the network. The FlairrNodes that are run by partner businesses will be designated as Safe FlairrNodes. After substantial growth in the number of Safe FlairrNodes, the network will be opened to the public and it will be fully decentralized. At that point, anyone can have a FlairrNode on the network from anywhere in the world.

4.11 Attacks to Decentralized Networks

After becoming a decentralized cryptocurrency network, Flairrcoin is potentially vulnerable to two specific types of attacks. Transaction flooding is a type of attack where a party sends a large number of transactions with the intent of saturating the network and causing it to crash. Another type of attack is the > 50% attack. In this type of attack, a malicious party gets hold of more than 50% of the cryptocurrency supply which would give them complete voting control over the network because of Flairrcoin's Proof of Stake protocol. There are also other types of attacks to which Flairrcoin may be susceptible. However, various types of measures have been implemented on FlairrNodes to deal with such threats, including a mandatory Firewall, IDS, Obfuscation, and more.

5. Flairr Business Model

Flairr's business model is designed to benefit both our business partners and consumers (users). Flairr business partners can post offerings in the network to gain new customers and increase

their sales while increasing foot traffic. By allowing our partners to improve their customer share of the wallet through presented opportunities to cross-sell their other products. At the same time, Flairr users can perform simple tasks or play various games to earn Flairrcoin. These earned Flairrcoin can be used toward purchases in Flairr network and enable our users to save on those purchases. The following are the different plans for Flairr business partners and consumers (users).

5.1   Flairr Business Partners

The network is specially designed with business users in mind; there is a business digital wallet to be specifically used by our business partners (merchants & vendors). While a personal wallet is accessible by the owner alone, the business wallet provides access to multiple people with different access and permission levels. We have built an API Interface that allows our business partners to seamlessly connect their IT systems (Accounting, e-commerce, etc.) to the Flairr network and enjoy faster, more secure, and more reliable transactions than any blockchain-based system. Flairr Business Partners will have the following plans and options to join our network and offer their products and services to our users:

5.1.1   Basic Plan

In this plan, the business partner will join our network and offer their products/services to our users, without any upfront costs or monthly payments, but they must allow a specific percentage of their offerings to be paid with Flairrcoin in addition to a small fee for the Network.

5.1.2   Silver Plan

This plan includes all the features from the Basic plan plus a job board. The job board will enable the partners to post employment opportunities that will be seen by the users. There will be a monthly subscription fee that would depend on the type of business/offers as well as the number of a partner's participating business locations.

5.1.3   Gold Plan

This plan includes all the features from the Silver plan plus advertising and targeted promotion tools. These premium features come with a premium monthly subscription fee per business location. Table 1 summarizes our partner membership plans.

Table 1. Partner Membership Plans		
Tier/Plan	Features	Cost
Basic	Earn and issue Flairrcoin with general promotions	fee per transaction
Silver	Basic plan + access to job board	fee per transaction, plus monthly subscription fee
Gold	Silver plan + advertising and targeted promotion tools	fee per transaction, plus premium monthly subscription fee per business location

5.2   Flairr Users

Flairr Users will also contribute to the success of our network through the following:

5.2.1   Basic Plan

Flairr app will be free for users, and they have access to games, identity protection tools, NFTs, partner promotions, and the job board. However, users will encounter ads on the platform.

5.2.2   Silver Plan

This plan includes all features from the Basic plan, plus special offers/bundles, and access to more on-map gifts and rewards.

5.2.3   Gold Plan

This plan includes everything from the Silver plan without advertising. Table 2 summarizes our user plans and their features.

Table 2. User Revenue Model		
Tier/Plan	**Features**	**Cost/Mo.**
Basic	Games, Identity Tools, NFTs, Partner promotions, and Job Board	Free – Must watch ads
Silver	Basic plan + Special offers/bundles and more on-map gifts and rewards	Fixed monthly subscription fee
Gold	Silver plan + no advertising	Fixed monthly subscription fee

6. Flairr Deployment Plan

Our ecosystem of apps and their native cryptocurrency has been fully developed. The following are the phases of deployment for Flairr.

6.1   Phase 1

In phase 1 of deployment, we will make Flairr app and Flairr Wallet available on both Apple Appstore and Google Play in late 2021 or early 2022. Users will receive Flairrcoin immediately after performing any tasks or playing any game in Flairr app.

6.2   Phase 2

In the second phase of deployment, Flairr will sign contracts with different business partners to join the network. Over time, more and more businesses will join and make the network stronger. Businesses can post offers through the Flairr Partner app or the Flairr Business API Interface. The offers will be visible to the users in both Flairr app and Flairr Wallet app. However, users will only see offers from businesses that are reachable (either geographically or otherwise) for them. Users may choose to use these offers and will be able to pay a percentage of the price in Flairrcoin.

6.3   Phase 3

In phase 3 of deployment, businesses can also advertise to users in their geographical vicinity. We aim to avoid any intrusive advertising on our platform and ensure that ads remain relevant and create value for our users.

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