AirToken (AIR)

The token for mobile access

Mobile accessibility using advertising and token-spotting on the blockchain

AirFox

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1 Executive Summary
AirToken (AIR) - The Token for Mobile access

- 1.8 billion people operate in a $10 trillion underground economy
- 2 billion people unbanked
- 4 billion people have yet to receive internet access due to mobile affordability
- 80% of the world is on a prepaid phone using on average 500MB of data / month
- Billions more underserved by their local banks, telcos, and governments

AirFox’s vision is to make the mobile internet more affordable and accessible and the biggest limitation for our customers is access to capital. AirFox is positioned to expand access to mobile data, benefitting advertisers, users, and carriers, using the blockchain. AirFox uses advertising and peer-to-peer token spots on the blockchain to unlock unrealized access to mobile data through a new cryptocurrency - The AirToken (“AIR”). AIR technology harnesses the decentralized power of the Ethereum blockchain using a digital ledger of the user’s mobile phone data as well as advertising and proprietary “return-grade” algorithms to reward and provide users with access to mobile data using AIR. AIR are redeemable for mobile data, and, eventually, physical and digital goods. AIR utilizes the user’s smartphone to reward the user for attention and good behavior while expanding the pie for the entire ecosystem that wants to further maximize on this audience (carriers, publishers, and advertisers).

AirFox quickly established itself as the leader in affordable data plans for US-based prepaid wireless carriers. Incubated at Harvard’s Innovation Lab, AirFox is a TechStars Boston alum and is venture backed by several leading organizations. Over the last year, AirFox’s business-to-business platform has enabled more than 2 million unique United States prepaid wireless subscribers to reduce their mobile costs while helping wireless carriers better serve their customers. AirFox has also delivered over 1 billion impressions to advertisers helping them reach a lower socioeconomic audience.

AirFox Android App Powered by the AirToken Blockchain

AirFox’s free Android app, AirFox Browser, enables any prepaid mobile subscriber on Earth to earn AIR. With both apps, users are rewarded in AIR for every ad impression on their device. Users can then exchange those AIR for mobile data or use them to send mobile data to others via 3.5 billion prepaid SIM cards and over 500 wireless carriers. Eventually users will also be able to spot one another AIR.
AirFox Browser - Browse, Buy, Save & Earn

- The AirFox Browser blocks outside advertising and trackers that traditionally consume over 50% of a user’s data plan. Once Android users download the AirFox Browser, they gain fast internet access and can use their mobile data more efficiently.
- Users can opt-in to non-incentivized (i.e. they aren’t rewarded for clicking them, only observing them) ads from AirFox and those will appear in the browser periodically. Users earn AIR by opting in to AirFox ads.
- Users can opt to view advertisements and complete offers (e.g. complete surveys, install apps, watch videos, purchase goods, etc) to earn AIR. The amount of AIR each offer is worth is displayed to the user before accepting the offer.
- Ads are periodically displayed on a user’s smartphone after certain events; for example, a call is ended or the phone is unlocked.
- Users can also purchase AIR directly within the AirFox Browser app using their local currency in certain countries where AirFox has integrated this service. For example, in the United States, a credit card could purchase AIR.
- Eventually this app will also allow AirFox users to spot one another AIR based on smartphone data.

AirToken Future & Use of Funds

AirFox intends to use the funds raised via the token sale to buy data in bulk, develop the AIR-spotting program, and expand its consumer-facing business worldwide. AIR will be used across all of our platforms and products. AIR will first be contained to the Browser and Recharge apps, eventually we expect to open up the token to external publishers and advertisers in order to directly enable mobile data access in their own properties using AIR. AIR will be a utility for mobile data, and eventually it should be further used as we roll-out the AIR-spotting platform and allow external AIR developers and advertisers to launch our advertising reward and spot system within their apps and properties.

AirToken “AIR” Creation Event

AIR will only be created during a single event commencing October 2017. AirFox aims to create up to $21 million of AIR for sale in exchange for ETH. The maximum number or AIR minted will be 1.5 billion (1,500,000,000).
AIR will be sold at a discount to early buyers at a rate sliding from 65 AIR : 1.00 USD equivalent in ETH down to 50 : 1.00 USD equivalent in ETH, finishing at the 1.05 billion minted AIR mark.

The “Bonus Tranches” will discount AIR, which increases the number of AIR for 1.00 USD equivalent in ETH, according to the following formula:

Tranche 1: $0 to $2 million, 65 AIR per 1.00 USD equivalent in ETH
Tranche 2: $2 million to $4 million, 60 AIR per 1.00 USD equivalent in ETH
Tranche 3: $4 million to $8 million, 55 AIR per 1.00 USD equivalent in ETH
Standard Tranche: $8 million to $15 million, 50 AIR per 1.00 USD equivalent in ETH (no bonus)

Following the $15 million mark, a 24 hour period will begin where an additional $6 million, up to $21 million USD equivalent in ETH, total will be raised, or until 1.5 billion (1,500,000,000) AIR is minted, whichever comes first.

If at any time, 1,500,000,000 AIR is minted, the token creation event will close. The number of available AIR to purchase during the ICO before and following the $15 million mark is variable, depending on the number of AIR pre-sold before the token creation event, and will never exceed 1,500,000,000.

2 Introduction

AirFox was co-founded by Victor Santos and Sara Choi aiming to make the mobile internet more efficient, affordable, and accessible for the billions of underserved mobile subscribers around the world. AirFox will unlock mobile accessibility using advertising and token-spotting on the blockchain.

We are launching AIR as an Ethereum ERC20-compliant token for a more efficient and decentralized mobile ecosystem across carriers, advertisers, publishers, and users.

1. Users: Access to mobile data via token-spotting and advertisers. AIR will be used as the ledger of record for the user’s smart-phone data and personal information. Users will receive AIR rewards for opt-in advertising (instead of the ads being an invisible burden on their data) and peer-to-peer spots of AIR based on our internal AirFox user “return grade,” (representing the recipient’s likelihood to return to providers the AIR spotted) furnished by AirFox for AirFox internal evaluation guidelines only. Users can redeem
AIR for mobile data recharges across prepaid carriers around the world, and eventually physical and digital products, across publishers and advertisers.

2. **Carriers**: AirFox will programatically buy airtime and data in bulk from carriers. Carriers want to maximize spectrum and data usage from subscribers in order to maximize revenue. AirFox will purchase data at a discount in bulk across carriers. Users will be able to redeem their AIR into their carrier's pre-paid account to use for other services outside of mobile data. The carrier benefits from these extra micro-transactions that did not exist before as well as bulk data purchases.

3. **Advertisers**: Advertisers will have higher ROI, fewer intermediaries, better data targeting, less fraud and low-income user access. Advertisers and developers will be able to target and reach the unbanked prepaid subscriber. Advertisers and programmatic networks can also choose to directly sponsor all or a segment of users with AIR for opt-in, attention or engagement.

4. **Publishers**: Publishers will have new user reach and a better user experience. Publishers can implement our AIR reward, token-spotting, and advertising system to enable higher user output. Publishers can offer an in-app purchase and digital products. They can also allow users to one-click buy their services using their AIR balance. Advertising-based publishers can also reward the users with AIR for being active users or by creating an actionable moment within the publisher's application, website, or other software capable of AIR integration.

3 **The Problem**

Mobile internet is not affordable and accessible for the majority of the world’s population. 4 billion people, about 60% of the world, are still not connected to the mobile internet and remain offline. Lack of affordability prohibits the majority of the world from having unlimited access to the internet and the mobile ecosystem. For the 3 billion pre-paid mobile subscriptions in emerging markets, cost of data still remains the biggest constraint on usage. In places like Nigeria, just 500MB of mobile prepaid data can cost more than a family spends on its children’s education. Users in developing markets are spending 15.8% of their average gross national income for 1/10th (500MB) of the data consumption compared to developed markets like the United States. In countries like Mexico and Brazil an average consumer will work between 8 to 40 hours to earn just 500MB of mobile data.

To make matters worse, the default mobile ecosystem (trackers, apps and advertisers) consumes up to 50% of the average user’s mobile data for ads and trackers, which can cost as much as $23
a month. Not only is mobile data expensive, but also the mobile ecosystem itself is an extra invisible burden on the affordability of the internet. A user buying 500MB of data may only get 250MB of true access. To put this matter into perspective, a monthly prepaid data allocation of 500 MB will get someone only 8 minutes of web use a day and it will cost double what people in developing countries spend on healthcare. AirFox aims to increase the affordability and accessibility of the mobile internet through advertising and peer-to-peer spotting of AIR, while also cleaning up the waste of trackers, advertisers and apps in order to maximize data plans.

Accessibility to the mobile digital economy is another problem, if the user can afford data he/she may not be able to afford the brand, product or application shown by an advertiser or organically searched via his web browsing. Since most of these users are underbanked or underserved by the banks, they are left without a means to transact in their smart-phone. The entire value chain of the smartphone ecosystem is not properly designed to account for a prepaid user’s lack of affordability and accessibility to the mobile internet and mobile banking. It is estimated 2 billion unbanked subscribers exist across the world and many more are underserved by banks. Many of these subscribers are the same ones that cannot afford mobile data or have yet to come online. The unbanked mobile subscribers lack an established record of credit - often living in an underground economy. This prevents them from receiving loans, creating new businesses, and rising into the middle class. Hernandez de Soto described this as un-ledgered “dead” capital (See more in the “The Concept of ‘Dead’ Mobile Capital” section below).

### 3.1 User Scenarios

- **Prepaid Mobile Subscriber in Indonesia**
  - Aditya uses Indosat prepaid service and often has to pay over 10% of his income in mobile service, he uses a low-end android device. He does not own a computer and his smartphone is his primary method for payments, connectivity and communication. For him, the smartphone is an essential tool for work and his daily life. Aditya is very aware of the cost of his mobile service, constantly switching between carriers often multiple times per month by having multiple prepaid connections in order to maximize his value. With AirFox, Aditya can earn and purchase AIR in real-time via AirFox’s mobile apps. He is now earning AIR for simply using his phone, without much change to his smart-phone behavior. He can then use these AIR to claim data recharges for free or a highly discounted rate.
• **Indian immigrant in the U.S. sending AIR back to India**
  - Rohit is an Indian immigrant in the United States constantly sending money back home for his family. Remittance and exchange fees are often expensive. With AirFox, sending AIR back home becomes easier and cheaper. Rohit can send AIR that he has purchased, earned, or has been spotted to anyone in the world with a prepaid phone or with an AirFox account simply by inputting their phone number, all without the high remittance fees.

• **Unbanked user in Mexico**
  - Juan Pablo is a hard working blue collar worker in a factory. He operates in an extra-legal economy - cash only. His employer pays him in cash and banks prefer not to serve high-risk customers like Juan Pablo, it is just too expensive. Juan Pablo does not mind since the fees are just too high to justify being a banked customer. However, being unbanked precludes him from many capital benefits including access to leverage and interest rates. It also precludes Juan Pablo from ever making purchases online. With AirFox, Juan Pablo can be spotted AIR that can be used for investments and purchases. And never before, across AirFox’s direct ecosystem, Juan Pablo can also purchase digital and physical products from his smart-phone using AIR.

4  **The Solution**

AirFox’s solution harnesses the decentralized power of the Ethereum blockchain and advertising to give users AIR, a new token redeemable for mobile data, and eventually physical and digital goods. Users can then establish credit history through their opted-in device data, advertising behavior and browsing history, enabling AirFox to facilitate peer-to-peer spotting of AirTokens to any person with a smart phone.

AirFox believes users can unlock the “dead” mobile capital of lower income, data-starved, and often unbanked mobile subscribers in emerging markets by using blockchain, advertising, and token-spotting through a connected global mobile wireless network. We will unlock dead mobile capital on users' smart-phones and give the ability for anyone to use their smart-phone data as leveragable and ledgered digital assets. AirFox created a carrier agnostic abstraction layer between wireless carrier’s infrastructure in order to facilitate affordable mobile internet for the pre-paid and unbanked smart-phone subscriber. AirFox is already integrated with hundreds of wireless carriers buying mobile data in bulk in order to have economies of scale. AirFox will be the default user mechanism (browser application) that connects to the carrier’s network and through the internet experience while at the same time providing users a way to earn via advertising and token-spotting built on blockchain technology.
AirFox will replace the current mobile ecosystem (applications, sites, advertisers and data purchases) with a more efficient new decentralized AirFox mobile ecosystem that is created around AIR, a decentralized blockchain technology, that enables instant more efficient communication and transactions between the wireless carriers, publishers, advertisers and mobile users. We believe this system is more efficient for the rest of the world: those who can’t afford the luxuries of a smart-phone and the power of its mobile economy. We want to enable anyone (users, carriers, advertisers and publishers) in the mobile ecosystem to have the ability to provide or receive AirToken spots, which will be used for mobile data recharges at first but will then soon expand to the wider ecosystem of transactions in the mobile web and application space. The users we are targeting do not have bank accounts or are underserved by banks. These users, however, do have a pre-paid account with a local wireless carrier, and although constrained by how much they use in mobile data, we can tap into billions of underbanked prepaid smartphone users who are hungry to expand their use of the mobile internet both from an affordability (“I can purchase data”) but also accessibility (“I can buy something via my
smart-phone”) perspective. Although the first phase is purely enabling affordability of the mobile internet, we see the final vision a more efficient free-flowing exchange in the pre-paid smartphone economy using advertising, telco infrastructure, AIR and token spots across an ecosystem of transactions between carriers, users, advertisers and publishers. We believe that this model will bring affordability and accessibility to the mobile internet.

5 Target Market:
Pre-paid mobile users who are underbanked or unbanked.

Approximately 6.5 billion people in the world do not have bank accounts and/or access to financial tools and services that developed countries frequently use.

The addressable market for the underbanked & unbanked is approximately $45.77B. Mobile money apps and smartphones are the gateway for the underserved population to gain transactional access.
6 AirFox Wireless

Our AirFox Wireless B2B (www.airfoxwireless.com) unit has served over 2 million unique subscribers across 3 different prepaid wireless virtual operators (MVNOs). AirFox is integrated with over 500 wireless carriers for airtime transfers, covering 4.5 billion pre-paid SIM cards and has relationships with over 20 programmatic ad networks covering thousands of advertisers. Our proprietary ads reward SDK bids across advertisers and networks for the best payout.

Since inception (2016) we’ve generated $600,000 of revenue in the first 10 months, delivered over 1 billion impressions and raised $1.1 million of venture funds from TechStars, Project 11, LaunchCapital, NXTVentures and other prominent angels. AirFox Wireless continues to grow with its carrier customers such as Life Wireless, i-wireless (Kroger Wireless), Primo App, Budget Mobile and Pareteum. We may consider expanding our blockchain technology to our B2B unit post-token launch. The same technology developed for AirFox Wireless is being used
in our consumer apps.

**US Mobile Data Usage**

*Mobile Data in billions of GB*

<table>
<thead>
<tr>
<th>Year</th>
<th>GB in Billions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
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</tr>
<tr>
<td>2017</td>
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<tr>
<td>2018</td>
<td>34.2</td>
</tr>
<tr>
<td>2019</td>
<td>52.6</td>
</tr>
</tbody>
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56% CAGR

90% of carriers stated: “monetizing increased data use” is their #1 or #2 most important business objective in 2016.
AirFox has one pending patent filed on its core technology. AirFox already has two production level applications in the Google Play Store that lets users earn pre-allocated AirTokens (which convert to blockchain AirTokens from the AirFox AIR reserve following the token launch) and then redeem the token into mobile recharges via 500 global carriers, reaching 5 billion pre-paid SIM cards. The company has signed a global partnership with Pareteum (TEUM) to offer AirFox’s technology as a module to their existing wireless subscribers. Pareteum’s customers include Vodafone Spain, Zain and dozens of other MVNOs.

The AirFox server architecture currently handles over 2 million users and over 150 million unique events per day. Built using cloud services, including Amazon Web Services and Digital Ocean, the system auto-scales to handle large amounts of traffic. See the “AirFox Server Architecture” section for more information.

AirFox Android applications are built to work on all Android version 4.4 and higher devices no matter their capabilities. AirFox software is optimized for low-end, resource constrained devices common in low-income regions. AirFox applications optimize memory, disk and network usage to ensure optimal user experiences.
7 The Concept of “Dead” Mobile Capital

“Dead capital,” originally coined by Hernando de Soto Polar, is a term for an asset that cannot easily be bought, sold, valued, or used as an investment. The concept of dead capital can be applied to users who have smart-phones. We call this dead mobile capital. A user with a smartphone has “digital” assets: their behavior, personal information, user lifetime value, pre-paid wallet, and attention. High data costs, lack of access to banking services and little digital purchasing power create a barrier to maximizing the mobile ecosystem for 80% of the world. It is a perpetuating cycle.

Hernando de Soto Polar’s theory was based on the lack of a ledger system that allows property owners in the shadow economy to use their property rights in order to acquire capital. AirFox believes there are trillions of dollars in wasted “dead” mobile capital that can be tracked, ledgered, and unlocked through the smartphone via a more efficient ecosystem using blockchain. The core concept is to unlock hidden potential by making the system more efficient and eliminating economic deadweight loss, while simultaneously expanding the pie to the underserved. AirFox will accomplish this by creating value that can be used in both data (the fuel) and the wider smart-phone mobile ecosystem (ads, purchases, etc.).

In economics, a deadweight loss (also known as excess burden or allocative inefficiency) is a loss of economic efficiency that can occur when equilibrium for a good or service is not achieved or is not achievable. Causes of deadweight loss can include monopoly pricing, externalities, taxes or subsidies, and binding price ceilings or floors. The term deadweight loss may also be referred to as the "excess burden" of monopoly or taxation. In the case of the emerging market mobile economy, the deadweight losses are negative externalities that create inefficiencies on the affordability of mobile data and accessibility to the full smart-phone experience. High bandwidth costs limit data access because of telcos monopolistic pricing models and advertisers excessive consumption of constrained bandwidth. As banks do not provide access to capital for most consumers, users’ demand curve will never match their true potential, leaving deadweight loss of mobile capital that cannot be tapped and fully maximized.

AirFox will transform and shift transactions from cash, offline mechanisms and an underground economy to a decentralized mobile system that formalizes a digital blockchain technology (AIR), removes dead mobile capital and expands the pie by generating additional leverage using pre-paid accounts, advertising sharing and proprietary user “return grades” intended for internal AirFox purposes. AIR will create a formal ledger of transactions using blockchain and an ecosystem for carriers, advertisers, and publishers to connect to prepaid subscribers more efficiently and unlock each subscriber's individual “dead” mobile capital.
Deadweight Loss of the underserved visualization:

In the above graphic, "price" represents the cost of mobile access and "quantity" represents the number of people with some access to mobile capital. “Supply curve” represents mobile access to the mobile economy. The “negative externalities” can be summarized by several inefficiencies in the mobile market for the underserved:

- Mobile Internet Affordability - Costly telco pricing and invisible “pollution” burden on data plans from advertisers, trackers, etc.
- AirFox creates efficiencies by having economies of scale when buying data from telcos (see “Telco Incentives and Bulk Data Purchases” section below) and giving users mechanisms to save data and earn AIR from advertisers.
- Cost and access to banking - The unbanked and underbanked customers in emerging markets are left to live in an informal underground economy without access to capital although they have troves of data that can be used as “property rights” to create value.
  - AirFox creates efficiencies by ledgering the user’s device digital assets and allowing users to spot one another AIR, providing data access to users who otherwise would have no capital options with local telcos and banks.
Airfox aims to not only improve negative externalities but instead create positive externalities in order to move the supply of mobile access to an optimal equilibrium with a higher output, lower price and higher quantity of mobile capital.

8 Company

8.1 Management Team
AirFox, TechStars Boston 2016 Alumni, was founded by Ex-Googlers, Victor Santos and Sara Choi, and incubated at Harvard’s Innovation Launch Lab. AirFox is headquartered in Cambridge, MA and has a team of 8 full-time employees.

Victor Santos - Co-Founder, CEO
Victor is an ex-Googler, UC Berkeley alum, and telecom entrepreneur. He began working with VoIP at iWorldServices, opening their LatAM division, then co-founded Ciao Telecom where he launched a platform for VoIP entrepreneurs and an advertising-based mobile virtual network operator (MVNO). After growing Ciao Telecom to double digits million in revenue, he joined Google working on product and marketing for AdWords agencies program.
Sara Choi - Co-Founder

Sara is a Harvard alum, and award winning product manager and marketer. She began at YouTube where she launched a new product feature that increased CSAT by 545%. She went on to become Google’s youngest Media Lead managing YouTube’s Media Team and $72M budget, launching campaigns like YouTube’s Comedy Week. Sara led Product at Ciao Telecom where she and Victor launched a mobile network virtual operator.

James Seibel - CTO

James is formerly a Software Architect at Lola Travel (Founded by Kayak founders), Head of Engineering at Apperian (acquired by Arxan Technologies), MS and BA in Computer Science from Boston University. James has architected and developed a range of technologies, including mobile app hardening using algorithms to rewrite compiled application binaries to automatically add crypto for US and German governments (US Patent WO2014159883 A1). James is a Blockchain engineer and Ethereum contract author.
**Emanuel Moecklin - Chief Software Architect**

Emanuel is formerly a mobile technology entrepreneur with 1gravity (founder and CEO) and software architect/manager at PostFinance. Emanuel has architected, designed and built large-scale transaction systems for the biggest payment processor in Switzerland and has worked in numerous big software projects across the globe for the management consulting business unit of PricewaterhouseCoopers. He’s an expert in mobile advertising and the mobile development wizard of AirFox responsible for designing and implementing the AirFox mobile client architecture.

**Christine To - Director of Business Operations**

Christine is formerly a business strategy and operations consultant at Ericsson, UC Berkeley alum, and business development/sales professional. She began her telecom career working at Ericsson in the US consulting tier 1 telecom operators. After years of outstanding performance, she was one of four (and the only female) chosen from the US and Canada to build Ericsson’s business strategy consulting unit in the Middle East, Africa, and Southeast Asia. Prior to Ericsson, Christine held sales and finance roles at various firms such as Cisco, Microsoft, Coldwell Banker Commercial, and late stage venture debt fund, Gold Hill Capital.
Tiago Passinato - Principal Software Engineer

Tiago is formerly a long time entrepreneur and consultant in software development and infosec. He worked with highly regulated industries in Brazil, including government offices and international logistic companies, architecting server infrastructure and full-stack projects. Tiago was a senior engineer and architect at Ciao Telecom and various start-ups working with AdTech and telecom infrastructure. He has been working with Airfox since its inception as a co-founding team-member responsible for architecting the platform to scale to millions of users.

8.2 Investors

AirFox is backed by TechStars, Project 11, NXT Ventures, LaunchCapital, RightSide Capital and other prominent investors in Boston.
9  AirFox Pillars of Mobile Access

The 4 pillars of mobile accessibility:

1. Mobile Sponsorship
   a. Users earn free mobile internet by engaging with advertisers via the AirFox Browser application
   b. Users receive periodic “free” mobile internet passes from select sponsors based on quality of user scoring
   c. Data spotting to enable more access
2. Mobile Efficiency
   a. AirFox Browser enables consumers to use their smartphone the most efficient way possible. Maximize mobile data
      i. Dynamic Throttling
      ii. AdBlock / Tracking Block
      iii. Caching
      iv. Blocking background services
      v. Compression of media
b. AirFox will hedge data negotiations (buying in bulk, timing, spectrum capacity etc) with wireless carriers and create the perfect plan or recharge for the right subscriber.

3. Mobile Decentralization
   a. AirFox users can purchase mobile data for themselves or send mobile data and AIR to other users with over 500 carriers (5 billion SIM cards)
   b. AirFox will create its own mobile decentralized ecosystem of advertisers, publishers, carriers and users that operates more efficiently via the blockchain and maximize the mobile capital for the prepaid consumer.

4. Mobile Blockchain Use
   a. The goal is to expand AIR into a widely used token beyond mobile data, reaching across apps, websites, advertisers and m-commerce. Most people lack bank accounts, but they do have wireless cell-phone service and AIR can enable commerce of the unbanked.
   b. AirFox will create its own proprietary user scoring algorithm based on telco data, wireless billing, device usage, web-sites browsed, applications used and AirFox apps’ internal behavior in order to determine the qualification of a user being “accepted” as a token-spotting recipient. Spots are made in AIR that can be used for data or across our mobile ecosystem.

10 Business Landscape

10.1 Prepaid Market and Internet Affordability

More than 60% of the world’s population remains offline. Without removing crucial deterrents to Internet adoption, little will change—and more than 4 billion people may be left behind. Mobile connectivity is lagging because of the combined effects of poverty and income inequality. While poverty on the whole is falling (both in absolute numbers and as a percentage of population), there are still over 2 billion people living in absolute poverty across the developing world (i.e., on less than $3.10/day), many of whom live in developing markets. You have users that have yet to come online (4 billion+ mobile subscribers - 56% of the world) and prepaid emerging market subscribers who are data constrained, spending an average of 15.2% of their gross national income on mobile service. The UN Broadband Commission defines broadband as affordable if an entry-level (500MB) package is available at 5% or less of average monthly income (i.e., GNI per capita). Yet, in 2014, the average cost of a 500MB prepaid bundle was 15.2% of GNI per
capita in LDCs and 6.5% across developing countries. Internet prices appear to be dropping, and affordability, as defined by the UN, is increasing — last year the ITU reported that 67 out of 116 developing countries had actually achieved the UN’s 5% affordability target.

Developing countries now account for the vast majority of Internet users
10.2 The Unbanked and Underbanked

2 billion people worldwide remain unbanked without access to capital and a means to have a formalized economy. There is also a high percentage of the total banked customers in emerging markets that although have an account with a bank, they are constrained by high fees and low access imposed by governments and financial institutions limiting their total access to capital. 89% of adults in high-income economies report having an account at a formal financial institution; in developing economies, only 41% of adults do. AirFox aims not only to serve the unbanked, but also the underbanked. These are people who have poor or unreliable access to formal financial services – for example, customers who open a bank account to receive government payments, but withdraw all of the money immediately and thereafter operate in cash. In the United States, there are roughly 28 million unbanked individuals but as many as 51 million adults are considered underbanked. Without access to a formalized capital, the underbanked and unbanked are left to transact in an underground economy in often deprecating, risky, wasteful and inconvenient ways. Unbanked and underbanked citizens waste time waiting in line to pay for utilities, bills and children's school fees in cash. Entrepreneurs turn to shark...
lenders who charge very high rates. Cash savings get depreciated with high emerging market inflation as most people don’t have a form to earn interest outside of saving their money under the mattress. Digitizing payments, ledging capital and unlocking a new mobile ecosystem using the blockchain will create more access and capital for those who have, until now, been unable to join the global marketplace.

10.3 Mobile Economy Accessibility

The global app economy will be worth $6.3 trillion by 2021, up from $1.3 trillion last year. The user base will almost double from 3.4 billion people using apps to 6.3 billion, while the time spent in apps will grow to 3.5 trillion hours in 2021, up from 1.6 trillion in 2016. Today, the 3.4 billion app users, on average, spent $379 in apps last year, or $0.80 per hour, per person. This will grow to $1,008 per user by 2021. However, most of that growth is driven by developed markets like Japan ($13.98 per hour), UK ($4.60 per hour), US ($2.36 per hour) and China ($2.01 per hour) compared to India ($0.03 per hour) and globally.
($0.80 per hour). Developing markets access to capital is often prohibitive or too costly and centralized across governments, banks and telcos. A lot of times the centralized system of a government, telco or bank just makes it economically unfeasible to give access to mobile data to the majority of the population. Smartphone mass adoption and the blockchain allows us to decentralize this process by bypassing telcos, big banks and governments. AirFox can use a blockchain based mobile ecosystem that rewards users for their digital assets and personal information. In addition, we can use the data we collect to facilitate peer-to-peer data spotting that can be used across the wider mobile ecosystem without the need of a centralized entity controlling this process, making these micro-transactions extremely efficient at scale and cost effective for the masses.

![Mobile App Total Spend Forecast](source: App Annie)
11  AirToken Platform

11.1 Android Application

11.1.1 AirFox Browser App
The AirFox Browser Android app is the way users can opt-in to ads, purchase AIR directly, complete offers to earn AIR, and redeem their AIR for digital goods and services.

Users can opt-in to ads displayed on their device in order to earn AIR. Ads are displayed on the smartphone after various device events, such as post-unlock and post-call. The ads displayed change dynamically in real-time based on a user’s individual profile and the current profitability of the programmatic ad networks. Users may choose to see more or less ads at any given time and earn proportionately more or less AIR.

Users can complete offers to earn AIR. Offers include but are not limited to completing surveys, installing apps, watching videos and purchasing goods. How many AIR an offer is worth is displayed to users before they accept the offer.

Users can purchase AIR directly using their local currency in certain countries where AirFox has integrated this service. In the United States, users can use a credit card to purchase AIR. The exchange rate of local currency to AIR is set by the market and changes dynamically (see “AirToken Exchange Rate” section).

Users can redeem AIR for mobile data, digital services and physical goods inside the AirFox Browser app. The amount of AIR required to purchase any product is set by the AIR exchange markets and changes dynamically.

The AirFox Browser Android app is a fork of the open-source Lightning Browser. AirFox code additions to Mozilla-licensed files, and any other files and libraries that require modifications to be open-source, will be released on a public Git repository. AirFox specific additions will be closed-source. The AirFox proprietary Ad Serving SDK that is currently connected to over 20 programmatic advertising networks will not be open-sourced.
The AirFox Browser blocks advertising and ad trackers that consume over 50% of a user’s data plan. Periodically, ads from the AirFox ad network will appear over the browser. Users will be rewarded in AIR for every ad impression on their device.

The AirFox Browser prototype is currently available on the Google Play store for immediate use.

11.2 AIR-Spotting

AirFox may use the following high-level data signals to determine if a user is eligible to seek to be spotted AIR, how long the user would have to return the AIR spotted, the amount of compensation due the provider, and total amount of AIR the user can be spotted.

1. User Behavior within AirFox apps (Loyalty, activity, purchases of AIR, quality of user)
2. Wallet Balance of AIR
3. Pre-Paid carrier balance and transactions
4. Browsing history via AirFox Browser
5. Engagement with AirFox Advertisers and AdNetworks
   a. (CTR, clicks, post ad action, post-click action, attention to ads)
6. Applications on the device
7. Contacts / Social network
8. Inbound / Outbound calls
9. AirFox token-spotting return data
10. 3rd party data

Initially, for a user to qualify to be spotted AIR they must be an active user with AirFox for a total of 90 consecutive days and earn or purchase at least 1,750 AirTokens and have at least 1,750 AirTokens in balance while receiving an AIR spot. AirFox will then collateralize a percentage of the user’s AIR and offer a few different AIR-spotting options to the user based on our proprietary data sources and user scoring. The larger AIR balance a user has, the more he or she can be spotted in AIR at any given time. Users that return the AIR they were spotted on time will also “level-up” within our system earning loyalty status while increasing their internal “return grade” enabling better provider-compensation options, longer lengths of time, and more access to AIR.

We will estimate reasonable costs to recipients and will adjust such costs dynamically based on country, cohorts, and other factors. If the user fails to return the AIR on time and in accordance with the AIR-spotting agreement, he or she will be blocked from receiving new token spots with the option to be re-enabled if the user eventually returns the AIR as required by the agreement. If a user defaults and never returns the AIR, the user can still use the services within the AirFox app, including earning AIR and buying or sending money, but we may take earnings of AIR to make up the difference of the AIR the user still has not returned.
All details described herein regarding AIR spotting are subject to change based on regulations and product decisions. This text is a proposal for the spot system, which may change when implemented. Spotting is not available in the United States to U.S.-based providers and recipients.

Spotting is not available in the United States to U.S.-based providers and recipients.

**AirFox Risk-Rating factors**

1. **Internal Return Grade**
   a. AirFox will have an internal AIR user “return grade,” similar to a credit score. This grade is based on data via our applications and external partners that are not considered consumer reporting agencies. Through gathering data on the browsing history, device and the user we are analyzing the user's behavior and determining their risk profile and their return grade.

2. **Collateral**
   a. The more AIR collateral a user has the more he can seek to be spotted. The AIR collateral also goes into account when calculating expected loss and determining the appropriate provider compensation for the spot.

3. **Character**
   a. AirFox will programmatically use social networks, MDN and other data points in order to assess if this user has malicious intent or is a high risk user across other apps and web-sites. If one of our data sources tells us the user has a high probability of default or fraudulent behavior it is likely that the user won’t qualify for an AIR-spot unless further information is provided. The user can also earn loyalty points for returning AIR on-time, completing multiple spots, being active and having a good user score. By building their loyalty levels they are increasingly likely to be able to obtain AIR-spots with better provider compensation levels.

4. **Conditions**
   a. AIR market conditions, and local economic externalities may cause an impact on the risk-rating for AirFox’s spots of AIR. We may apply a discount or premium depending on seasonal or regional factors.

### 11.3 Telco & Advertisers Integrations
AirFox is integrated with over 500 carriers through direct and indirect partnerships and with over 20 programmatic advertising networks giving our technology instant access to billions of prepaid SIM cards and hundreds of thousands of advertisers. Our proprietary SDK manages the telco and advertising integrations, bidding and exchanges.
11.4 Opt-in Ads AirToken Reward Algorithm

AirFox is currently integrated with over 20 different ad providers. Each has their own internal representation of what constitutes an impression, click-through, and other analytics that affect publisher revenue.

AirFox has built an internal eventing system that unifies the definition of valid impressions across all providers and tracks them per-user, per-network, per-placement. Our big data analytics solution is built atop Apache Spark and currently analyzes over 150 million events daily.

Using this system, AirFox figures out the portion of revenue each user earned, and rewards them with the equivalent market value of AIR.

For example, if a user had 100 impressions split among 5 ad networks, on a daily basis AirFox calculates the value of each impression based on the daily ad revenue per network, per placement (PNPP):
Impression Value PNPP = Total Revenue PNPP / Total Impressions PNPP

AirFox then sums the total AIR earned for a user across all ad networks and placements, then rewards them on a daily basis.

AirFox does not reward based on click-through rate, as this would incentivize ad fraud and encourage mindless clicking of ads. AirFox rewards based on impressions, which are served over time. The user earns more AIR by passively opting into AirFox ads on their device, using the AirFox browser, and completing offers which reward AIR.

### 11.5 AirToken Protocols

In order for AIR to be fully decentralized, we will ensure that even if the CarrierEQ, and all subsidiaries such as AirFox and AirToken GmbH, fails, AirTokens maintain value as a utility token. Therefore, CarrierEQ will create and publish open protocol standards that interact with the AirToken Ethereum smart contracts. Any company could implement those protocols in their software to conform to the standard and enable the use of AIR. For example, if a telecom company wanted to accept AIR for mobile data, they would implement an API that conforms to the AIR protocol, and they could then accept AIR and interact with the Ethereum smart contracts supporting it. This ensures that AirToken can maintain its utility in the decentralized Ethereum blockchain without any company being responsible for its development. Any company or open source project implementing the AIR protocols will be able to use AIR.

### 12 Product Roadmap

There are three phases of the AIR platform.

1) In the first phase we will enable users to earn free AIR via advertising for mobile recharges across 500 wireless carriers. Users can earn AIR via the Android AirFox Browser and / or Recharge App.

2) The second phase is enabling qualified active users to be spotted AIR by collateralizing their prepaid account and using our own internal AirFox user grading. We will also expand the use of AIR for items outside of mobile recharges. Users will be able to use spotted AIR for physical and digital products across our ecosystem. We may have to modify our implementation to satisfy legal and regulatory requirements on a regional basis.

3) The third phase is extending the use of AIR and our advertising / token-spotting blockchain system outside of our own applications and across a direct network of publishers and advertisers. Publishers and advertisers can reward their users with AIR via advertising moments and use our token-spotting system to enable in-app purchases. This would be an external library via an API and SDK that publishers can integrate into
their applications or websites.

Mobile Application Roadmap

1. AirFox Browser App - Browse, Save and Earn
   a. Phase I - August 1st, 2017
      i. Users can use AirFox browser to access the internet faster and more data efficiently
      ii. Users can earn AirTokens for browsing the internet
      iii. Users save data compared to normal browsers via Adblocking mechanism
      iv. Light personal data collection
      v. Users can earn AIR via advertising and use tokens to redeem mobile data
      vi. Users can purchase mobile data using AIR
      vii. Users can send mobile data using AIR to 5B prepaid SIM cards and over 500 wireless carriers.

   a. Phase II - Q1, 2018
      i. Create a smaller and “Lite” version of the browser that is less than 25MB in size
      ii. Add monetization search partner
      iii. Heavier personal data collection for spotting of AIR
      iv. Publishers can opt-in for AirTokens and earn
      v. Direct Advertisers can opt-in to AirTokens and launch campaigns
      vi. AdNetworks can opt-in to AirTokens via AirFox
      vii. AIR-spotting proprietary user-grading algorithm deployment
      viii. Users can apply to be spotted AIR

   b. Phase III - Q2, 2018
      i. AirFox users can save data on their smart-phone by enabling AirFox’s VPN opt-in
      ii. AirFox users can purchase (more carriers) time-based application data-passes with AIR
      iii. AirFox users can purchase affordable (to select carriers) time-based application data-passes with AIR (i.e. 1,000 tokens for Unlimited FB between 10pm-4am)
13.1 AirFox Internal AIR Ledger
In order to prevent excessive micro-transactions from overloading the *mainnet* Ethereum blockchain, AirFox will maintain an internal ledger of how many AirTokens each user has earned and their transaction history.

At first, the internal ledger will be a traditional relational database. Eventually, AirFox will transition this internal ledger into an internal blockchain that is fully auditable. This will potentially be the Raiden Network off-chain technology, Hyperledger from the Linux Foundation, or another internal blockchain technology. These technologies will need to mature and be battle-tested for production use cases before being used at AirFox.

### 13.2 AirTokens in an Ethereum Account to the AirFox Internal AIR Ledger

Anyone with an AIR balance in an Ethereum account will be able to send it to a user’s account in the AirFox Internal AIR Ledger (see the “AirFox Internal AIR Ledger” section). As the AirFox Internal AIR Ledger technology is subject to change depending upon the evolution and success of internal blockchain technology, the exact mechanism of this process could change as well.

The AIR Contract will contain a function that will transfer AIR from an Ethereum account to the AirFox Reserve Ethereum account. The function will take an additional piece of data, which is the phone number (Mobile Directory Number, or “MDN”) of the AirFox user the AIR should be transferred to. The AirFox Internal AIR Ledger will then be updated to reflect the additional AIR held by this user. If no user with that MDN exists in the AirFox system, the AIR are held until a user with that MDN is added to the system.

### 13.4 AIR Exchange Rate

Users will obtain mobile data, digital goods and services, and physical goods using AIR. The value of AirTokens, and thus how many AIR are used to obtain a product, will change dynamically based on the floating exchange value of AIR in the Ethereum network.

In order to prevent rapid changes in AIR floating market value from swinging prices and enabling users to time AIR transactions to maximize value, an average exchange rate value will be calculated periodically and used to price goods and services for users. This will smooth out fluctuations in the AirToken market.

AirFox will maintain an internal reserve of AIR, beginning with the AIR unsold from the Initial Coin Offering, and continuing with regular purchases from the market (see the “AIR Market Mechanics” section).
In summary, AirFox will allow the AIR free-floating market value to determine the AIR exchange rate and product pricing. AirFox will not artificially prop up the value of AIR. AirFox will stabilize internal product pricing to prevent rapid AIR market price changes from affecting users, but not in any significant way that alters the fair market AIR value.

13.5 AirToken Market Flow

AIR circulate in the following way. **Users** install the AirFox Browser app and begin earning AIR. They earn them for displaying ads, redeeming offers,
accepting spots of AIR and directly purchasing AIR in countries where this is integrated. AIR held by users are stored in the AirFox internal ledger.

AIR earned by users are immediately assigned to the user, which reduces the number of unassigned AIR in the AirFox Reserve. AirFox replenishes the AirFox Reserve AIR by purchasing them from the Ethereum Network on a periodic basis from the AirFox Reserve Ether balance, initially daily, although this is subject to change. Because users earn AIR via microtransactions, many users’ transactions are batched into the same AIR purchase from the Ethereum network.

**Fiat Income** is earned by AirFox from ads, offers, and direct AIR purchases. We anticipate that 10% of the fiat income earned will be kept by AirFox to pay for business, legal, hosting, salaries and administration fees, and the remainder will be periodically converted into Ether to replenish the AirFox Reserve Ether balance.

Users obtain mobile data, digital services, physical goods and other products using AIR. When this occurs, the AirFox Internal Ledger is updated to reduce the user’s AIR balance, and increases the AirFox Reserve AIR balance. These products are often paid for in fiat currency, which the AirFox Reserve Fiat Currency balance pays for. When the AirFox Reserve Fiat Currency balance is low, Ether is sold to replenish it. When the AirFox Reserve Ether balance is low, the AirFox Reserve AIR balance is sold on the Ethereum Network to replenish it. The AIR sales will happen as-needed.
**13.6 AirFox Server Architecture**

AirFox is a microservice, cloud-based architecture hosted in AWS and Digital Ocean that auto-scales to the number of users in the AirFox system.

Clients interact with microservices via the AirFox Browser mobile apps. Clients fetch ads directly from ad networks via the AirFox ad network SDK and from the microservice backend. Administrators, such as for direct telecom integrations and when we enable direct ad purchases, will communicate with the microservices via the admin dashboard.

Purchases and transactions are logged in multiple places - the eventing system, the AirFox Internal AIR Ledger, and our internal RDBMS databases. The microservices communicate with
third-party services, such as Stripe for purchases of AIR and telco carriers for direct mobile data purchases.

The Ethereum network is communicated with securely using a hot-wallet containing minimal amounts of ETH and AIR. A microservice built specifically for interacting with the Ethereum network will be isolated from other pieces of the AirFox architecture and securely protected. The main AirFox AIR reserve and Ethereum reserve are held in wallets that transfer to the hot-wallet on an as-needed basis.

14 Competitors

There are no competitors that use mobile technology with a combination of advertising, token-spotting and blockchain to provide a more affordable mobile internet. However, there are several other companies attempting to provide more affordable internet in a variety of different segments using advertising. We believe that LotusFlare and Jana are the closest competitors that can match in terms of market, product and vision. AirFox believes that although there are merits to all competitors attempting to solve the problem of mobile internet affordability, LotusFlare lacks advertising and data rewards, and this makes it a less compelling solution for the unbanked and underbanked. However, their deeper integrations with carriers allow them to zero-rate and dynamically sell app bundled data plans. Jana’s product closely resembles AirFox without the token-spotting platform and blockchain ecosystem. However, Jana is heavily dependent on a pure advertising rewards model vs. a blockchain ecosystem that encompasses purchases, token spots, and advertising rewards.

In summary, none of our closest competitors currently have a blockchain and token-spotting system implemented that compliments an advertising model of earning money towards your prepaid wireless account. We believe that the decentralization and implementation of a blockchain technology with the ability to extend extra capital to mobile users not only to enable internet affordability but also accessibility of the mobile ecosystem is the core strategic difference between AirFox and its competitors.

Direct Competitors

- [LotusFlare](#) - DataEye provides users with application specific data plans in addition to data saving capabilities

- [Jana](#) - MCent, Jana’s browser and rewards application gives users free mobile airtime.
Indirect Competitors

- **Tala** Micro-Loans in Kenya and Philippines
- **Unlockd** - Unlockd is similar to our AirFox Wireless business, providing wireless carriers with an advertising rewards solution.
  - **Boost Dealz** App
- Google (Triangle App) - This is a google experiment in the Philippines. We don’t take this as a serious attempt but more as an experiment
- **Syntonic** (ASX: SYT) - Syntonic Freeway provides a data rewards platform for advertisers, wireless carriers and consumers that focuses on application specific campaigns.

15 Telco Incentives and Bulk Data Purchases

Wireless carriers have the incentive to sell data ahead of time in order to maximize revenues from spectrum that is underutilized. Carriers spend billions of dollars in spectrum and it is a fixed cost with a peak valley capacity curve. This allows AirFox to not only buy bulk data and airtime but also use times, spectrum capacity and seasonality to drive better promotions for the end-user. Carriers have wholesale divisions that interconnect with other carriers and companies like AirFox in order to maximize data revenues. The carrier is incentivized to work with AirFox and it does not pose a threat to their business; in fact, it compliments their revenues and core strategy to maximize as much data as possible from the user.

16 Token Launch

Token Sale Terms: http://www.airtoken.com/paper/AirFoxICO_TC.pdf
We will sell a maximum of 1.5 billion AirTokens to raise a maximum of $21 million USD. The exact amount of ETH raised will change based on the value of ETH in USD at the time the AIR contract is deployed.

Please note that Airfox GmbH’s parent entity, CarrierEQ, Inc. will now be conducting the Airfox Airtoken Creation Event. We have posted an Amended and Restated AirFox Airtoken Creation Event Terms & Conditions http://www.airtoken.com/paper/AirFoxICO_TC.pdf to reflect the new entity as well as changes to reflect US law instead of Swiss law. If you do not agree to these amended terms, please contact us at corporate@airfox.io by October 9th and we will refund your contribution; otherwise, your acceptance of AIR on will constitute your acceptance of such modification and the Amended and Restated AirFox Airtoken Creation Event Terms & Conditions.

• **Token contract address**: TBD (Published through various channels 48hrs before crowdsale launch date).
• **Launch date and time**: October 2017
• **Token launch time-frame**: 31 days.
• **Token launch completion**: Token launch will end when either the maximum number of AIR is issued or 31 days from the token launch has passed.

**Token Distribution**

• **AirFox Reserve**: 30% of max: 450 million (450,000,000) AirTokens
• **User Growth Pool**: 10% of Reserve AirTokens
• **Token-Spotting Reserve**: 10% of Reserve AirTokens
• **AirTokens available to public at launch for sale**: 1.05 Billion (70%)
  
  1,050,000,000 (corresponding to the ETH raised at token launch)

**Initial Token Budget Allocation**
These percentages are subject to change based on AirFox’s needs, and should be considered a proposal for the token allocation.

17 AirToken FAQ

What is an AirToken?

The AirToken (symbol: AIR) is a token based on the Ethereum blockchain technology. It is the core asset in the new AirFox decentralized digital rewards and token-spotting system described in
this document. Users possessing AIR can exchange them for mobile data, digital services and physical goods.

**What do AIR represent?**

AIR are Ethereum-based tokens in the AirFox rewards and token-spotting platform as described in this document. They are not refundable, nor are they securities or for speculation. There is no promise of future performance. There is no suggestion or promise that AIR have or will hold a particular value. AIR give no rights in the company and do not represent participation in the company. AIR are sold as a functional good. Any value received by the company may be spent without conditions. AIR Initial Coin Offering purchases are meant only for experts in cryptographic tokens and blockchain-based software systems. There is no guarantee that AIR or the AirFox advertising rewards and token-spotting platform will be successful and have any long-term value whatsoever.

**What amount is being raised? What’s the cap of tokens? Will there be a follow-on offering?**

We are targeting a raise of as much as $21 million USD and a cap of 1.5 Billion (1,500,000,000) tokens. We do not plan to have a follow-on offering.

**What crypto-currencies are accepted in the crowdsale?**

ETH will be accepted in the crowdsale. You will be required to have an Ethereum wallet pointed at the token/crowdsale address to participate in the crowdsale. AirToken are Ethereum derived tokens. If you hold BTC or some other crypto-currency it can be exchanged for ETH via third-parties and used to participate in the crowdsale.

**When will the crowdsale happen?**

The crowdsale will happen in October 2017. The exact day will be dependent on finalizing the contract and completing the full audit, and may be changed by AirFox. The contract will be made available on the AirFox Official public Github repository once it is finalized.
What is the price of AIR?

AIR will be sold at a fixed ratio to ETH. The goal is to raise up to $21 million USD equivalent in ETH for selling 1.05 Billion AIR, which will determine the exchange rate, and will be set immediately before deploying the contract.

How will AirFox use ETH raised during token launch?

The ETH received in the crowdsale will be used by AirFox to improve our advertising reward ecosystem, build out a token-spotting system, and launch emerging markets as explained in this document.

Are AIR transferable?

Crowdsale purchased AirTokens are transferable once the token sale event finishes. AIR can be transferred into the AirFox Internal AIR Ledger as described in this document. AIR can be redeemed through the AirFox Browser Android app for mobile data, digital services and physical goods. AIR themselves have no inherent value and can only be redeemed at rates determined by AirFox, which will use token exchange pricing to set rates.

Which white paper is considered the “final version”?

The latest English version of this white paper when the ICO begins, posted publicly at http://www.airtoken.com/, is considered the final version. All prior versions and translations into other languages are for informational purposes only. ICO purchasers should be familiar with the English final version of the AirToken white paper before purchasing AIR.

Will AirFox follow this document exactly following the token sale event?

At the date this document is published, AirFox intends to follow through as described herein. However, it is impossible to predict the future, and changes in business strategy, the regulatory environment, technologies and other unforeseen circumstances may necessitate deviations from the described plan. AirFox intends to faithfully follow through on execution of the business plan and AirToken system but retains the right to deviate from this document as needed to succeed. This document should be considered a proposal.
18 Citations

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