

White paper v 1.7



Limitless  
connectivity.

Unlimited  
potential.



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# Executive summary

We have identified an amazing and field-tested technology that will bring broadband internet connections to places, where it is impossible or uneconomical to build it traditional way. With a strong user base, we will develop, test, and deploy a blockchain platform that will allow tokenization of telecom services, revolutionizing the way we perceive and consume them.

Looking at the sheer number of industries blockchain is disrupting, it is only a matter of time it will take over the telecom industry. From privacy and security to the way we think about providing services can be questioned. We are proposing radical solutions to problems that everybody in the industry takes for granted, because they seem unsolvable under the traditional way of thinking.

Because such changes are a paradigm shift it usually takes a generation to adapt. It is not a question if it will happen but when. A new way of thinking, yet somebody has to start and make the transition from traditional models. We are building a platform based on blockchain technology that will firstly enable porting of traditional systems to the blockchain with minor improvements in security, traceability, customer care and privacy. This transition should not be hard, not for the ISP provider nor the user.

We will develop, test, and deploy new features outlined in this document, changing the way we think and look at providing subscription services on the internet in general, especially in the telecom industry.

To drive the adoption of our platform and make the transition easier we have decided to create our own customer base. One that has not much prior experience with telecoms, one that is eager to learn and one that is more and more relying on blockchain.

As Satoshi Nakamoto outlined in his work, Bitcoin and with it blockchain, should and will liberate people and empower them, especially the under privileged, suppressed by corrupt governments or institutions. We are adding the unconnected to the list.

We will help bring fast, stable broadband to cities of Africa, starting with Nigeria and DRC, bringing people the ability to have a reliable connection to the outside world and be included in the global educational, health, financial and business economies. Imagine what this means for the unconnected? If this is not the Blockchain mentality, then what is?

Connecting the unconnected will bring millions of new users to our platform and with growth comes power. Power to connect with others and power to make radical changes to an industry, together.

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# 1. Introduction

It is without doubt we live in the information era of humanity. We take our smartphones out of our pockets or spin up our laptops and we can access the world. We have instant entertainment, shopping, news, education, meetings, healthcare, finance, travel, social connections, and other areas of our lives that intertwine with word data. Connectivity so much infiltrated our lives that we don't even notice the complexity behind it until we have a malfunctioning router or a bad connection that tends to drive us crazy.

On the other side there are **countries that still lack proper broadband infrastructure**, with people that are still not able use basic financial instruments or even have a means of identifying themselves. **Tackling connectivity therefore means not only building out a telecom infrastructure but also providing means of identification and payment.**

Our lives as individuals are controlled by our connections but our communities as a whole even more so. Without connections world economy would not exist how we know it today and even though it comes with some pitfalls, it solves a lot more problems. Countries today cannot develop properly without having a connection highway to the world that can accommodate most of their populations.

Imagine your private or business life without a fast and reliable internet connection. Unfortunately, this is the reality of many people in developing countries. Now imagine the troubles of such for a country as a whole.

Development of a 3<sup>rd</sup> world country needs to focus on multiple areas including economic development, social development,

environmental protection, poverty eradication and others. Solving them is hard and occasionally conflicting but **solving them without information and connectivity is virtually impossible**.

Some even argue that information is the most important commodity of the 21<sup>st</sup> century (The Economist, 2017) (Madison, 2020). The biggest informational database to date is the internet. And without connectivity there is no internet. Good relationships and cooperation are now being built even over long distances with modern technology and each country development depends on it.

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We could argue that there is no optimal development of a country without proper connection to the world wide web.

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Today going to school or to the bank can be just getting out of bed and behind the computer. Imagine the value of proper education and banking in Africa.

### **The potential is enormous.**

Now even more than ever with the premise of delivering on Satoshi Nakamoto's idea of trustless finance (Nakamoto, 2008). The **1 billion unbanked people**, that right now do not have any tools to preserve their wealth, could finally start participating in the global economy, simply with a connection to the internet. If we want to bank the unbanked, we must first connect the unconnected.

#### **Broadband has the potential to:**

- reduce poverty,
- improve education,
- promote gender equality,
- improve health services,
- ensure environmental sustainability,
- provide a platform for global partnerships for development.

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3air is creating equal opportunities for people in Africa

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You can read more about on how broadband, and digitalization impact a society in [Appendix 1](#).



As it seems Bitcoin has done more for financial inclusion of El Salvador's population in 3 weeks than the traditional banking system in decades.

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## 1.1 Blockchain does make a difference

As we have seen recently with El-Salvador, global financial inclusion is possible. Since El Salvador declared Bitcoin legal tender (Renteria, Wilson, & Strohecker, 2021), they have seen an exponential raise in its adoption. Just 3 weeks after the new Bitcoin legislation came into effect, president Nayib Bukele stated: "Chivo is not a bank, but in less than 3 weeks, it now has more users than any bank in El Salvador and is moving fast to have more users that ALL BANKS IN EL SALVADOR combined." (Bukele, 2021). For comparison, despite the Central Reserve Bank of El Salvador being a member of Alliance for Financial Inclusion and signing a joint Maya Declaration Commitment in 2013 (AFI Global, 2017), there were only 30.4% of El Salvadorians owning a bank account in 2017 (World Bank, 2021).

As it seems the **next obstacles to overcome will be connecting and educating people**. The latest statistics show 60% of El Salvador inhabitants having mobile internet access (Holst, Statista, 2021) and only 8.14% have fixed-line broadband (Holst, Statista, 2021).

## 2. Problems and solutions



While providing opportunities to developing countries, broadband internet connectivity plays a big role in almost all major aspects of development.

To launch a successful ISP platform in developing countries, we need to look at the presence of ISPs within it and how the users are currently using their services. We then need to assess their ability to adapt to new technologies and other changes we plan to implement.

## 2.1 Broadband connections in urban areas of developing countries

While there are many mobile providers in developing worlds, there is virtually no broadband infrastructure existent within and outside of cities. Looking at Africa, over 99% of people do not have broadband internet connection or even proper TV signal. Comparing this to the world average where broadband market penetration is about 11%, or the 40% in developed countries, we can clearly see that those cities are severely underserved.

The reason for lack of infrastructure is the fact, that it is almost impossible to build it. The population density in cities is too high and options of closing roads for digging canals for cables are practically nonexistent. And even if it would be possible to put the cables underground, keeping them there is another story.

### Broadband subscriptions per 100 people, 1998 to 2017

Broadband subscriptions refer to fixed subscriptions to high-speed access to the public Internet (a TCP/IP connection), at downstream speeds equal to, or greater than 256 kbit/s.

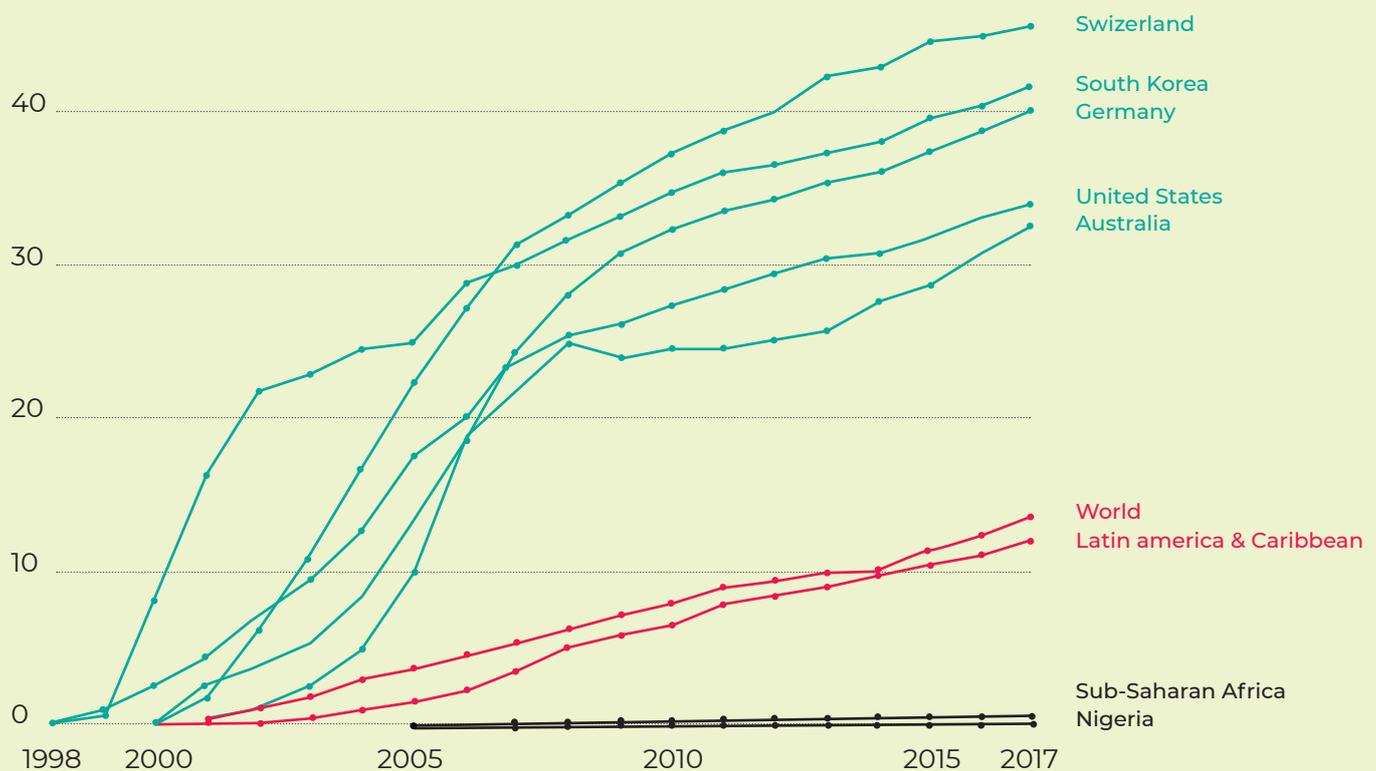
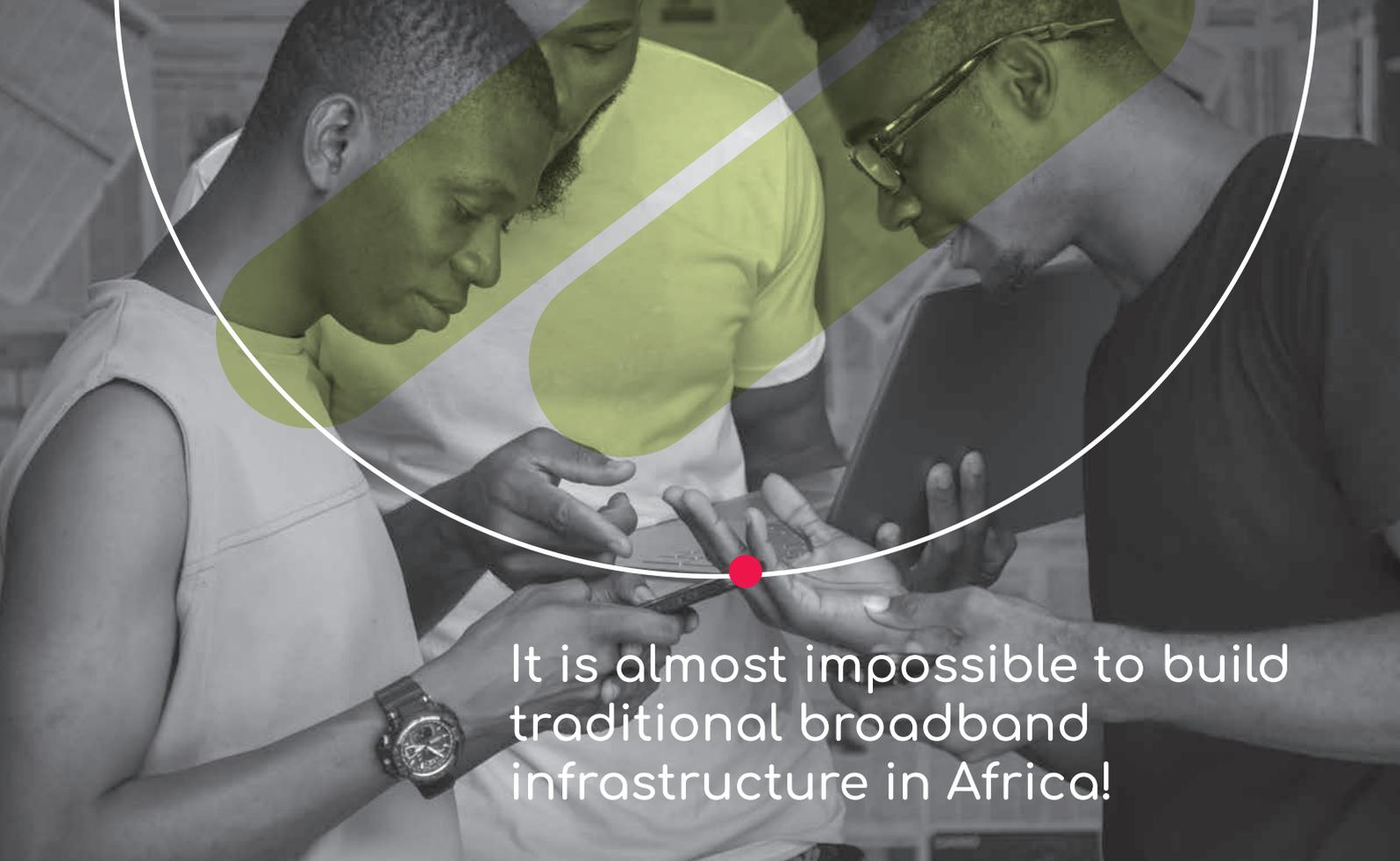


Figure 1 Broadband subscriptions per 100 people, 1998 to 2017  
(<https://ourworldindata.org/internet#broadband-access>)



## It is almost impossible to build traditional broadband infrastructure in Africa!

Combined with extremely high capital requirements for building such infrastructure, there have not been and will not be any major steps done going forward in this direction.

One could also argue that with mobile networks, broadband might be obsolete, but imagine your home or business without a cable broadband connection to the world. Now add weak coverage, reduced speed, instability, and low-end mobile hardware to it. **Broadband internet is not going away any time soon.** It is therefore important that we do not succumb to the challenges and strive in building out quality broadband infrastructure where it is needed.

## 2.2

# Acquiring services in developing countries

After successfully addressing the infrastructure issue there are 2 major drawbacks for people in developing countries while acquiring broadband services:

1. Means of identification
2. Means of payment

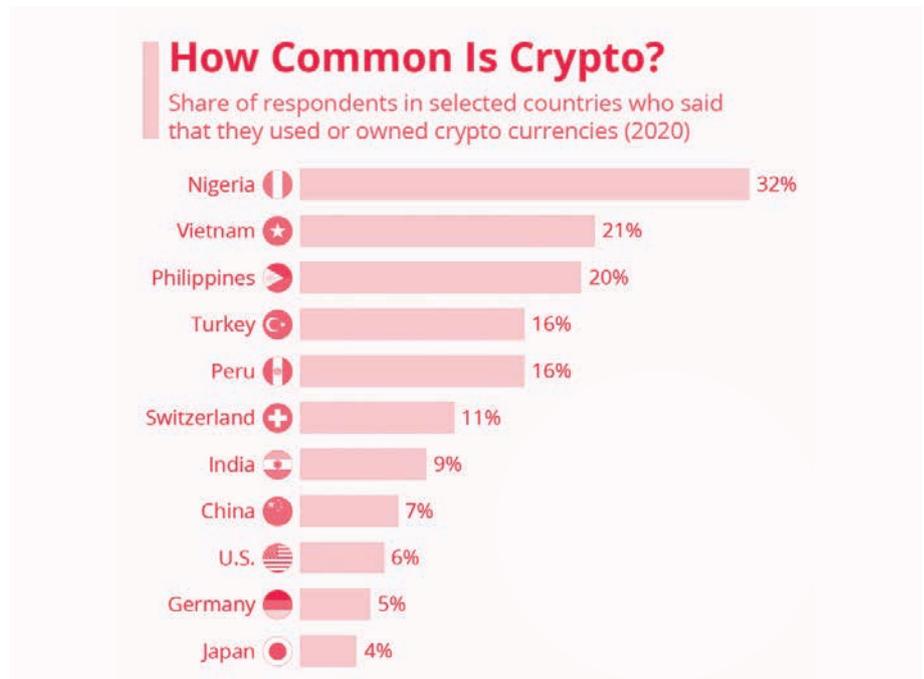


Figure 2 How Common Is Crypto? <https://africa.businessinsider.com/local/markets/nigeria-is-the-leading-country-per-capita-for-bitcoin-and-cryptocurrency-adoption-in/drv4121>

**There are over 1 billion people around the world without the means of identifying themselves** (Desai, Diofasi, & Lu, 2018) and that is a potential problem in acquiring services that include connecting to the internet.

**Over 31% of adults worldwide do not have access to proper banking** (Felsenthal & Hahn, 2018) meaning they also have limited options of paying for goods and services and no means of building a credit line.

What is surprising is the level of blockchain adoption in such areas with **Nigeria leading in global crypto currency adoption with 32%** of its population. In comparison, probably the most crypto friendly developed country, Switzerland, is at a mere 11% with only 6% adoption in the US. (Oluwole, 2021)

Even with limited connection and hardware, it seems that global financial inclusion is possible without the need for banks. This means that people are ready and long for such opportunities, but their main drawback in regular and efficient use is still **nonexistent or bad connectivity** and hardware.

---

## 2.3

### Our solution

To drive the adoption of 3air platform we have partnered with K3 telecom AG ([www.k3tele.com](http://www.k3tele.com)), a Swiss broadband provider specialized in building broadband infrastructure and providing quality broadband services in densely populated cities of developing countries. With this partnership we will kick off the 3air platform with our own market.

You can read more about K3 technology, proceedings, current operations, and future plans in [Appendices 5 through 9](#).

As our first stage, we will be constantly expanding throughout Africa thereby **providing broadband connectivity to the masses.**

Second stage is the 3air platform that will **provide easy access to services, identity management, payments, and credit line building.** This will give additional value to all parties involved.

Third stage is to change the way we consume telecom services with becoming the **world's first blockchain based decentralized, permissionless ISP service platform** that provides tokenization of bandwidth and other services, enables secondary markets, and adds to security, roaming, and IoT and connects providers globally.

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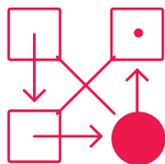
## 2.4

### Core objectives



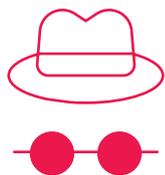
#### Provide broadband connectivity to cities in Africa

With our K3 partnership we will build broadband infrastructure in major African cities. K3 "Cable in the Air" system is already operational in Sierra Leone since 2019 and growing and DRC operations have already started. We will build the infrastructure first in DRC and Nigeria, and then expand to other countries.



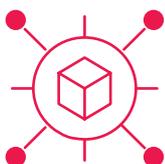
### **Create an easy-to-use system for acquiring ISP services**

Our platform will give the users and ISPs an easy-to-use system for onboarding new clients, tracking the subscription statuses and payment solutions through blockchain, that can be widely adopted even in countries without properly working banking system.



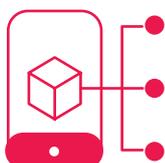
### **Give the users control over their identity and credit line**

We will utilize Cardano's Atala Prism system that allows for creation of digital identities called DID's, that can be used for identification and personal information tracking with privacy options to give our users their provable identities. This also allows for tracking credit scores for the user. With regular usage of broadband services and adding additional payment data, the user will slowly build his credit scores that can be used to take loans within or even outside the platform.



### **Allow ISPs efficient community building and loyalty programs**

Brand recognition and community building are important components of a successful business, as are loyalty programs. Tokens provide a particularly good use case for such activities if implemented correctly. Providing discounts and rewards for special activities creates a happy community and loyal customer base.



### **Provide cross collateralized and undercollateralized microloans to people in Africa**

It is getting harder and harder to comply with requirements and regulations in acquiring a bank loan. Now imagine you do not even own a bank account to provide your bank statement or show your income. With digital identities and financial tracking, we can safely, privately, and securely store important personal financial information that help in assessing your credit capabilities. Everything stored on the blockchain is immutable and does not

require authenticity proofing, meaning that credit scores can be calculated automatically, and loans granted instantly. This information can be used inside the ISP system to quickly acquire payday loans or use in connection with other microloans services outside the system.



### **Implement security and fraud prevention features**

Starting with digital identities and tracking acquired services on the blockchain, the platform will help in reducing fraud in an effective and privacy-controlled manner.



### **Providing secondary markets for bandwidth and other subscription services**

There is a lot of untapped potential in fully digitalizing subscription services and bandwidth. Secondary markets have the potential to level out pricing levels that are most beneficial for the providers and end users simultaneously. With IoT integration this creates a seamless roaming and device switching experience.



### **Build a robust IoT platform for ISPs**

IoT on blockchain enables devices across the internet to create tamper-resistant records of shared transactions. This on the other hand enables business partners to share and access IoT data without the need for central control and management. IoT devices track critical infrastructure and its maintenance, from core networks to base stations. This enables other partners or governments to access operational records or perform tasks on individual devices without the need of a central authority.



### **Connect ISPs around the globe and enable true seamless roaming**

With the IoT and digital identities in place and bandwidth tokenization roaming becomes seamless. Switching between networks is instant, secure, trackable, and easy verifiable.

### 3. Target Markets

Our short to mid-term focus is clearly on the emerging markets, especially Africa. With our K3 partnership and their proprietary technology we have the perfect solution to create our own market.

We can build broadband infrastructure where it is else impossible to build.

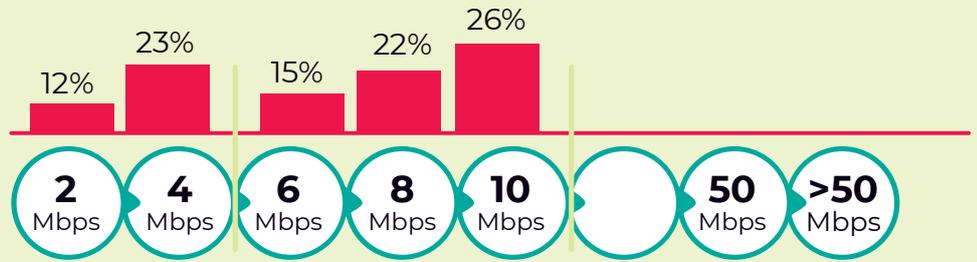
Our unique solution enables us to tap into a \$97 billion annual market (calculated at 12% broadband penetration rate)<sup>1</sup> that has yet to be claimed by anyone. **Because of our technology advantage, we see this as our best market to start early adoption of our platform and growth without having to face great competition.**

Currently Africa's broadband penetration rate is less than 1%. This is way below the world average of 12% or the average of 40% for developed countries (World Development Indicators, 2021). **The biggest obstacle for sure is lack of infrastructure.** As we are effectively solving this issue, we have years of headway to establish our market share before competition catches up.

Our own research survey with over 300 respondents from Nigeria confirms this. Only 2% of the surveyed that had internet access, had true broadband connections. They believe broadband internet is FASTER, BETTER, and more RELIABLE. There is a wide gap between the current Internet speed and the desired Internet Speed. 69% consumers desire speed of more than 10Mbps while none of them have more than 10 Mbps speed currently.

<sup>1</sup> Number derived as estimation from around 400 million households x 12% market penetration (SEA countries) K3 Sierra Leone ARPU.

## Current internet speed



## Desired internet speed

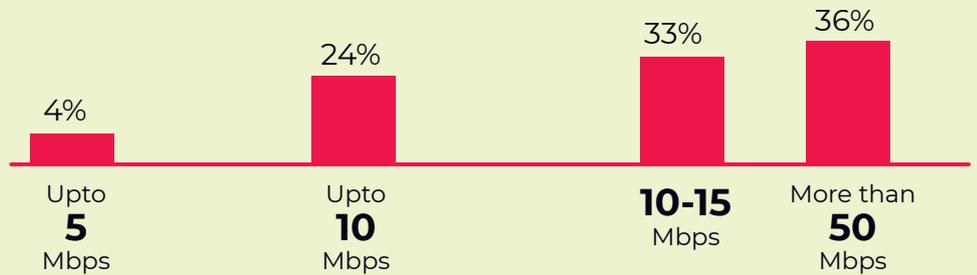
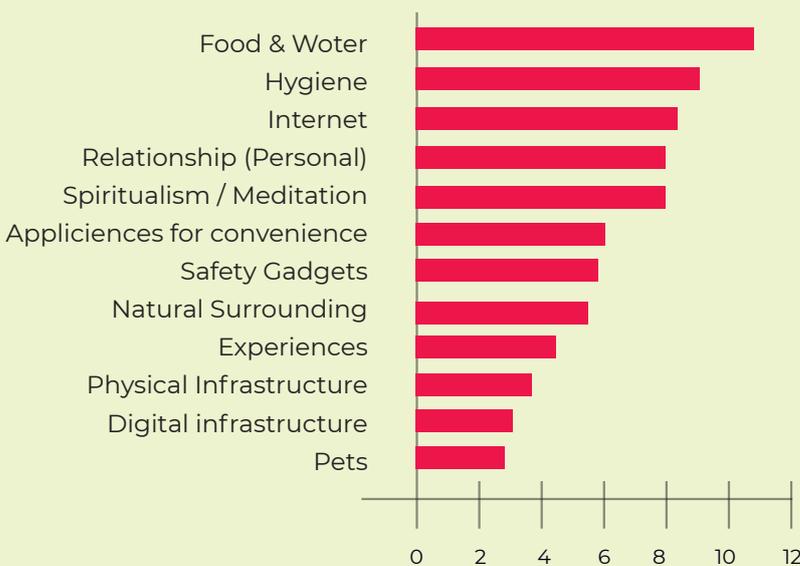


Figure 3 Current vs. Desired internet speed in Nigeria (source: internal research survey)

As predicted, our survey confirmed that African and especially Nigerian population is ready to accept cryptocurrencies. Over 90% of respondents are comfortable about paying and receiving rewards in cryptocurrency.

A bit surprisingly, internet ranks as the 3<sup>rd</sup> most important thing in life, just after Food & Water and Hygiene.

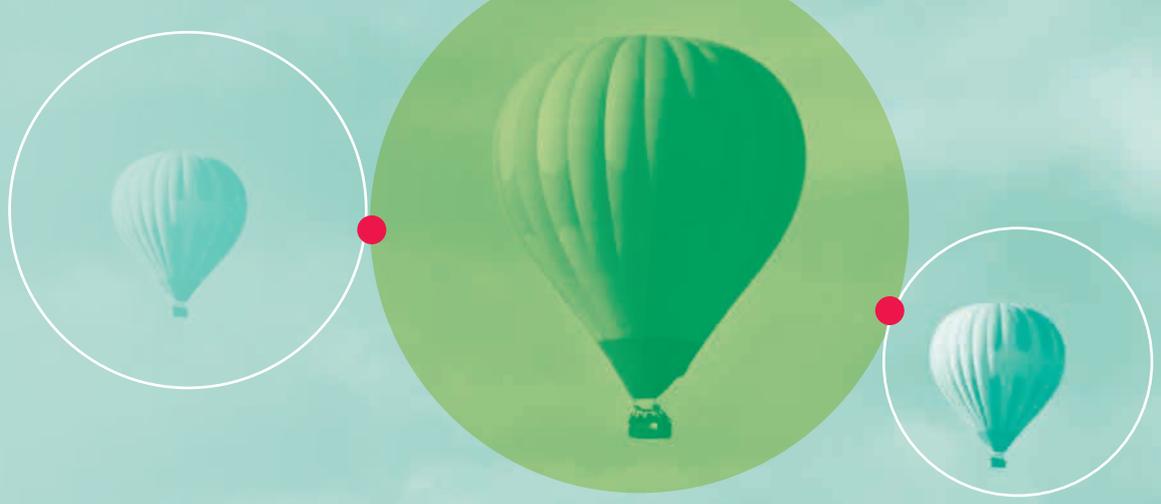
## Most important things for people in today's life



After the successful rollout in Africa, we will be looking into entering other emerging markets and creating partnerships with already established ISPs around the globe. This means we are entering a global market that was valued at \$1.6 trillion in 2020 and is expected to grow at a compounding rate of 5.4% annually, reaching \$2.46 trillion by 2028 (Grand View Research, 2021).

In the long term we are positioning our platform globally with a new way of handling subscription services and bandwidth. Our target is to become the go-to platform for managing services for ISPs.

Figure 4 Most important things for Nigerians in today's life (source: internal research survey)



## 4. Competition

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There are a few attempts to cover our market niche, but none have yet solved the broadband infrastructure problem.

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As we are building our own market to start the platform, it is important to investigate competition within the targeted ISP markets in Africa. Additionally, we need to acknowledge the competition and what has been done in the blockchain space regarding providing a platform catered to the need of offering and acquiring ISP services.

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### 4.1 Overview of the global T&M landscape

#### **Evolution is the key word on the global Telecoms & Media landscape.**

Increased competition, dwindling revenues and market saturation has forced players in the telecommunications industry to explore growth opportunities either via geographic expansion and/or new technologies, applications, or service offerings. Furthermore, growing Interconnections between technologies and devices (internet of Things or IoT) has driven the demand for data-intensive services thereby increasing the need for high-speed telecoms infrastructure. Globally, operators are investing heavily to expand and develop their fixed and mobile networks, thereby positioning themselves to take advantage of emerging technologies (5G) and meet the industries burgeoning demand.

## Global telecommunications industry financial performance



**\$2tn** ) **\$2tn**

Telecommunication revenues (2016 – 2025)

**\$341tn** ) **\$343tn**

Telecommunication CAPEX (2016 – 2019)

## Fixed connectivity



**931m**

Fixed Phone Subscriptions

**14%**

Fixed broadband penetration

**1.1bn**

Fixed broadband Subscriptions

## Geographic distribution

**50.4%** of internet users are in Asia.

However, internet penetration rates are still below the global average in Asia at **47%**.

Africa's penetration rates are at **24.4%**.

## Unique mobile users



**5,2bn**

@ 67% penetration in 2019



**5,8bn**

@ 70% penetration in 2025

## Smartphone penetration



**65%**

2019



**80%**

2025

## Access to Internet via mobile



**3,5bn**

Mobile Internet Users @ 49% Penetration in 2019



**3,5bn**

Mobile Internet Users @ 61% Penetration in 2025

**4G**

2019 - 2025 @ 52% - 56% Penetration



**5G**

2025 @ 20% Penetration

## Pay TV



**30,7m**

Total Pay Tv subscribers in Africa (2019)

**\$1,7tn**



**\$7,2 tn**

Africa PayTV revenues (2019– 2025)

## International connectivity

**485,000Gbps**

International internet bandwidth as at 2019

**400**

Submarine cables as at 2019

**4,987**

Satellites orbiting the Earth as at 2019

Figure 5 Sources: ITU ICT facts and figures 2019; The dynamic global mobile industry – Major trends & statistics; GSMA 2019 Mobile economy report; Telegeography.com; United Nations Office for Outer Space Affairs(unoosa.org)

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## 4.2

# General broadband technology comparison

### 4.2.1 Mobile Network based ISP connections

- o **Good for mobility but inherent capacity and reliability problems for fixed broadband use**

Due to lack of cable infrastructure, mobile players started to enter the ISP space by providing Wi-Fi devices for people to have Wi-Fi at home. These devices are good for mobile connectivity but are not good enough for fixed broadband connections at home or business use.

- o **240 times lower bandwidth per base station than K3**

Operates on 20 MHz to 40 MHz split between all people. This means you are getting **about 70 Mbps per base station**. For comparison, K3 operates on 600 MHz and has 17,000 Mbps per base station, providing **240 times the performance**.

Once a mobile network based set up connects more than 200-300 people to a mobile tower, the network collapses.

- o **Unreliable**

Cannot control how people move between base stations and who buys the SIM cards and connects to which tower. If a tower is overloaded, speed drops for everyone or stops working. Secondly, Africa in most places doesn't have sufficient mobile infrastructure to support even its current users.

- o **High Capex to reach many customers**

It needs a lot of base stations to distribute the load, and towers are not everywhere available.

- o **Coverage range**

Effective coverage only 1-2 km, while K3 covers up to 50 km.

- o **Less control**

It is impossible to assign different speeds and other parameters to different people. Individual control is not possible.

- o **Old technology in use**

In 2019 Sub-Saharan Africa mobile infrastructure was comprised of **(GSM Association, 2021)**:

- 2G networks - 46%
- 3G networks - 45%
- 4G networks - 9%

- o **User experience**

Easy to misplace the Wi-Fi device, batteries go empty, bad reach within the house.

- o **Costly IP TV**

Resulting in users buying Satellite TV. IP TV would require fast connections and lots of bandwidth that is mostly limited. Thus, users typically default to satellite TV that doesn't work while it rains.

#### 4.2.2 Point to Point and Point to Multipoint (such as Cambium, Ubiquity)

- o **Point to Point are fast but very expensive and not scalable**

Usually used for business connections, hotels, or VIPs. Set up costs over \$1,000 per customer and monthly costs over \$1,000. Not scalable as each client requires its own corresponding link to the tower; thus, you can only connect about 50 customers per tower.

- o **Point to Multipoint connections (other than K3): Unreliable, slow, and limited scalability**

Operates in free frequency bands, thus subject to disturbances. It can connect about 50 to 100 users to one base station. IP TV is expensive for operators as users are getting TV through IP TV which requires a lot of backhaul capacity (i.e., if 100 people watch HDTV at 5 Mbps, the operator requires 500 Mbps. While for K3 if 100 people watch HDTV, it doesn't cost anything as K3 broadcasts IP TV within a closed system).



Figure 6 Point-to-Point tower

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## 4.3 Current broadband alternatives in Africa

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Currently, broadband in Africa is years behind European or US standards.

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For instance, the competitive landscape in Kinshasa for the residential as well as the corporate market is predominantly delivering “broadband” services via the mobile network and point to point connections, both bearing inherent limitations. Even high-end residential or business districts do not have physical cable access for true broadband. As a result, pricing is high and performance not on par with western standards.

Costs for sim-card-based Wi-Fi hotspots hover around \$100 for 100 GB and for dedicated point to point connectivity, suppliers are asking between \$200 and \$800 per Mbps.

Satellite based TV ranges from \$7 to \$105 per month and doesn't work while it's raining.

IP telephony, important to enterprises and large corporations is absent.

### 4.3.1 Broadband Data

The big market participants: Africell, Airtel, Vodacom, Orange etc. are predominantly focused on the mobile phone sectors. However, given the lack of cable infrastructure and therefore the lack of fixed broadband in Africa, these players have started to merge into the ISP space via Wi-Fi hot spot dongles for residential customers and point to point solutions for enterprise solutions. As neither of these solutions provides fixed broadband services on par with western standards, these services are priced high and are limited in functionality and capacity.

### 4.3.2 TV

The two main providers are DSv and Canal+, which both operate on the satellite technology with its biggest disadvantage being signal disturbance from weather (rain). Both offer various channel offerings with prices ranging from \$7 per month to \$105 per month.

### 4.3.3 Fixed phone lines

Provided by some market participants for additional fee. These are not used often due the absence of IP phone functionality and inability to provide PBX systems which are critical for enterprise offerings and large corporations.

## Competitive pricing overview

Data Providers	Plan	Speed	Monthly Cost USD	Notes
<b>Sim-card based Providers</b>				
Vodacom	Limited: 30GB	LTE	75.00 \$	Only 1/5th data of avg. K3 customer uses
Vodacom	Limited: 100GB	LTE	100.00 \$	Less data than avg the K3 consumer uses
<b>Satellite Offers</b>				
Afrikanet Data	Limited: 100GB	20Mbps	300.00 \$	Has high latency, 10 seconds to open webpage
Afrikanet Data	Limited: 200GB	20Mbps	600.00 \$	Has high latency, 10 seconds to open webpage
Afrikanet Data + VoIP	Limited: 100GB	20Mbps	400.00 \$	Has high latency, 10 seconds to open webpage
Afrikanet Data + VoIP	Limited: 200GB	20Mbps	800.00 \$	Has high latency, 10 seconds to open webpage
<b>Dedicated Offers</b>				
Global Broadband Solution	Dedicated	1Mbps	700.00 \$	(plus installation cost \$1,500 - \$5,000) Global
Broadband Solution	Dedicated	3Mbps	2,100.00 \$	(plus installation cost \$1,500 - \$5,000) Global
Broadband Solution	Dedicated	5Mbps	3,500.00 \$	(plus installation cost \$1,500 - \$5,000)
Orion-RDC	Dedicated	1Mbps	320.00 \$	Orion-RDC Dedicated 3Mbps 960.00 \$
Orion-RDC	Dedicated	5Mbps	1,600.00 \$	
Orion-RDC	Dedicated	3Mbps	960.00 \$	
Airtel	Dedicated	5Mbps	5,104.00 \$	

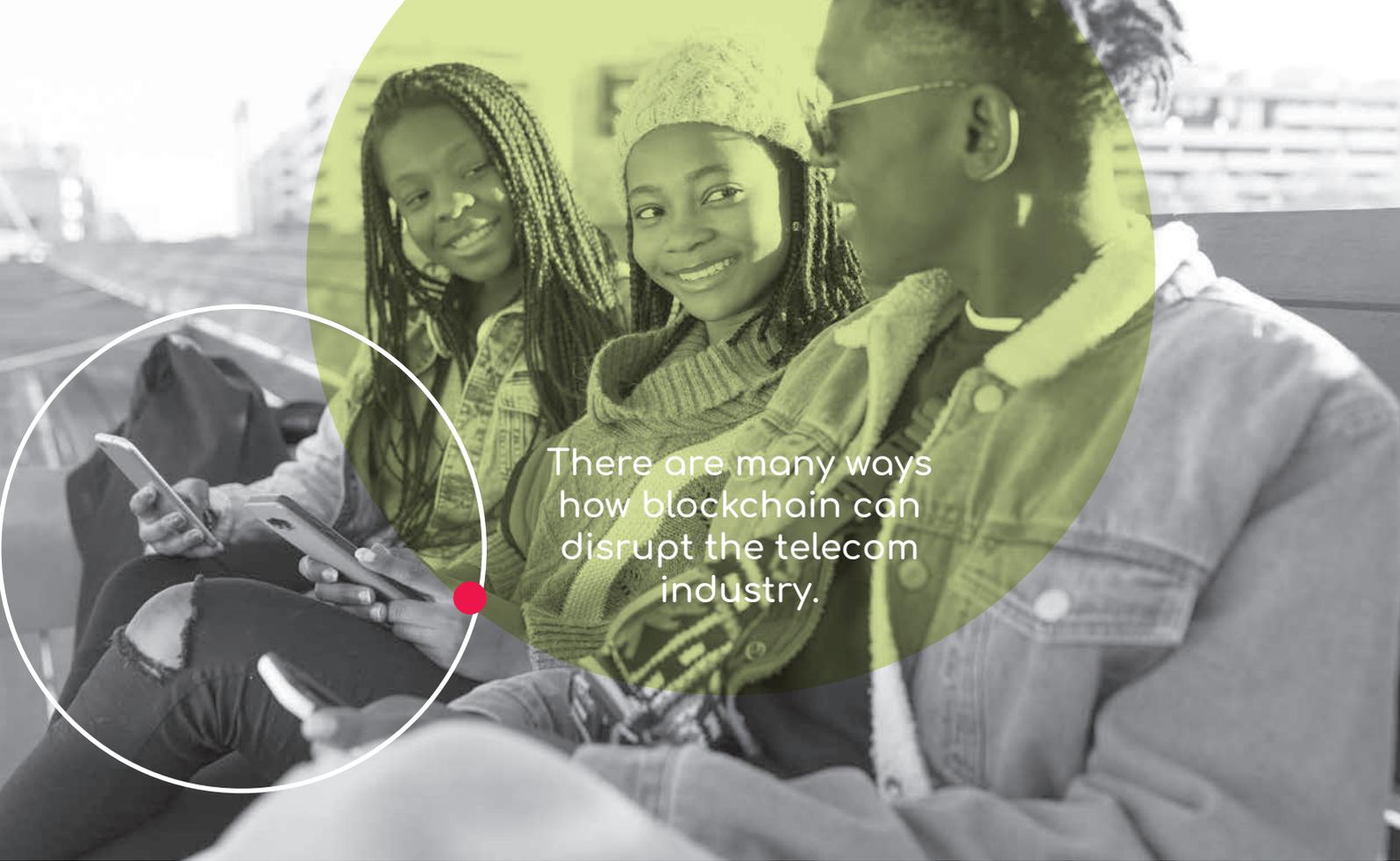
Table 1 Africa broadband competitive pricing overview

Given our hands-on data, **the average K3 customer in Sierra Leone uses 140 GB data per month**, thus Vodacom's largest package of 100 GB is not enough for regular broadband use. Additionally, above packages do not include TV and IP telephony. These are priced additionally if available at DStv or Canal+ from \$7 to \$105.

This situation represents all major cities in Africa.

Together with K3 we will set up an infrastructure that will allow up to 1,000 Mbps per user of dedicated bandwidth, over 150 Digital TV channels and IP telephony to residential, governmental, and business clients with prices expecting to range around 50% below competition.

There is no service even remotely comparable to K3 "Cable in the Air".



There are many ways how blockchain can disrupt the telecom industry.

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#### 4.4

### Competition in the blockchain space

Telecommunications is a lucrative market but heavily dependent on technology. Technologies with revolutionizing potential including blockchain will always try to penetrate and disrupt such markets and take their share. It is therefore normal to see many projects entering the space.

Most projects right now are focusing on providing mobile payment systems, digital identities, and additional security with none yet really working on many disruptive aspects blockchain can provide.

After reviewing the competition in the blockchain space we are confident to have a unique business model that makes us stand out amidst other projects in this space. We are creating our own market with a high competition entry barrier as discussed earlier.

#### 4.4.1 Telcoin

The most prominent project connected to telecoms in the blockchain space is for sure Telcoin. Although Telecom was first focused on Telecoms and expanding their business model it has since evolved into the “mobile money” market primarily, as it aims to become the most adopted mobile payment system. Telcoin is claiming easy fit for connecting into existing fee models of carrier billing and incentivizing low fee service that is attractive to end users but still profitable for networks. It offers pricing and exchange API for easy integration with carrier billing platforms.

Their aim for financial inclusion is also seen with their partnerships as for now there is no telecom partner added. With this focus they are aiming at a different market with a different business plan and market strategy as 3air.

At the time of writing Telcoin is ranked #58 on CoinMarketCap with a market capitalization of \$1,7 billion (down from over \$3B in the May 2021 bull run).

#### 4.4.2 Dent

Dent describe themselves as a revolutionary digital mobile operator offering eSIM cards, mobile data plans, call minutes top-ups and roaming free experience. They are using blockchain to create a global marketplace for mobile data. Their core business is offering an eSIM with data plans that can be used in 60 countries over the world, thus providing seamless data roaming experience.

As of now (July 2021) there is still no real use case for the Dent token as the marketplace has not yet been built. According to their roadmap they should launch their DENT Mainnet in 2022. Compared to 3air, Dent is aiming at global data roaming market and enabling voice calling over mobile data within their app. Dent is contracting different telecoms, not enabling them to sell their services to the end user directly. As such they are acting as their own telecom service provider. 3air focuses on bringing broadband to Africa, creating its own userbase and then expanding as a global platform for other telecoms and ISPs, enabling the exchange between them and the users. DENT coin is listed on Binance and KuCoin and has reached a market cap of over \$1B in April 2021.

[www.r3.com/  
customers/  
telecommunications](http://www.r3.com/customers/telecommunications)

### 4.4.3 Corda

Corda is a blockchain based platform, designed to help users build permissioned distributed solutions and networks. A part of Corda platform is dedicated to the telecom industry. They claim to provide a secure, scalable, and efficient platform on which multiple parties can share data, logic, and records. They streamline KYC, on-boarding of customers and improve clearing and settlement. They leverage digitalization to shift costs to Opex and deliver scalability. They enable atomic or deferred net settlement and 24/7 exchange.

As a whole Corda seems like a good platform, but telecom is only one of their target markets. They offer a blockchain platform upon which the telecoms need to build their own dApp solutions. 3air on the other hand specializes in providing an out of the box solutions with minimal development and coding needs for the end customer.

[www.ammbr.com](http://www.ammbr.com)

### 4.4.4 Ammbr

Ammbr is developing a blockchain based wireless mesh network for internet sharing. It enables users to connect their routers to a wireless mesh network and share their bandwidth with others in a secure way without privacy breaches. The user can in a way resells his unused bandwidth.

Lately they have been focusing on providing on-chain financial services and are advertising as Quantitative Market Maker. They are also moving into the NFT space. This all takes their focus away from the telecom markets.

[qlcchain.org](http://qlcchain.org)

### 4.4.5 QLC chain

QLC is a Chinese startup built upon the NEO blockchain. They are providing mobile payments through SMS based billing system and integrate with telecom companies. They also provide digital identities and the QLC chain wallet.

Their roadmap shows end of development in 2019 and they have been stagnant since then.

[bitminutes.com](http://bitminutes.com)

### 4.4.6 BitMinutes

Is providing another option for mobile payments. They are connecting their BitMinute token to prepaid mobile minutes that can be used similarly as prepaid cards. Blockchain technology provides additional AML options and fraud prevention and tries to make the process of buying easier for the end customer.

They are entering the payment and DeFi space and are focusing on some third world countries like Nigeria, but their roadmap ends in 2020.

Their token is untracked on CMC and shows very low volume and market cap on Coingecko.

[fix.network](https://fix.network)

#### 4.4.7 FIX Network

Aim at providing blockchain based cellular security solutions. They allow for smooth transitions between different devices through digital identities and a digital currency.

They are operating in the IoT space and are aiming at mobile operators.

[worldmobiletoken.com](https://worldmobiletoken.com)

#### 4.4.8 World Mobile Token

World Mobile Token (WMT) is a new project, currently in prelaunch phase. It aims to bring affordable connectivity to rural areas of developing countries, using a mesh network on hybrid spectrum, renewable energy and blockchain technology.

WMT are building their own blockchain on top of Cardano that will help facilitate traffic through their nodes and Wi-Fi mesh network infrastructure, using solar powered routers and hotspots. This will allow affordable mobile services with peer-to-peer sharing and online payments.

WMT and 3air are not direct competitors as one is aiming at rural and other at urban areas of developing countries. The technology and userbase are different and there are potential for good collaboration, especially as both are one of the first projects to build on Cardano, building in Africa and in the telco space.

WMT have successfully completed their presale stage in August 2021. They have sold 10% or 200 million WMT tokens at the price of \$0,20 in the public sale and raised \$40 million. Additionally, a private round of 2,5% or 50 million WMT has been sold at the price of ~\$0,14 for a raise of \$7 million.

With the token supply of 2B WMT this would give a fully diluted market cap of \$400M at launch.

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## 4.5 Future competition

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It is highly unlikely traditional broadband infrastructure will be built in Africa within the next 10 years.

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The telecommunication space is developing at an exponential pace. We are following the developments. There are some new technologies emerging and some have already failed (for instance Google's Project Loon (Project Loon, 2021)).

There are still 2 key players that could potentially replace classical broadband and those are:

- 5G technology
- StarLink

Even if constructions would be possible, The World Bank estimates that, to cover Africa by 2030, it would require an investment of \$100 billion and *"no single actor will be able to meet Africa's 2030 target"* (Senges, 2019). Such facts also shed some light on statements about providing free internet, mobile networks, and TV in Africa from the likes of Facebook's Mark Zuckerberg or Virgin's Richard Branson. Right now, they seem like impossible tasks and look more like a clever marketing plot than true intentions. The fact that no steps have been taken in this direction for many years additionally supports this.

### 4.5.1 5G mobile technology

5G remains a hot topic in the mobile world. There have been many controversies and a lot of resistance in rolling out the new generation of mobile networks.

The main advantages of 5G are for sure high bandwidth and reasonable deployment costs. 5G has the amazing theoretical potential of 20 Gbps downlink and 10 Gbps uplink (Bhardwaj, 2021). Real world tests although show that current 5G download speeds reach between 160 and 350 Mbps and the upload speed is between 20 and 30 Mbps (Fogg, 2021). Although the throughput might be considered high enough, the real issue is the high response time that makes it almost unusable for certain businesses that rely more on low latency than throughput.

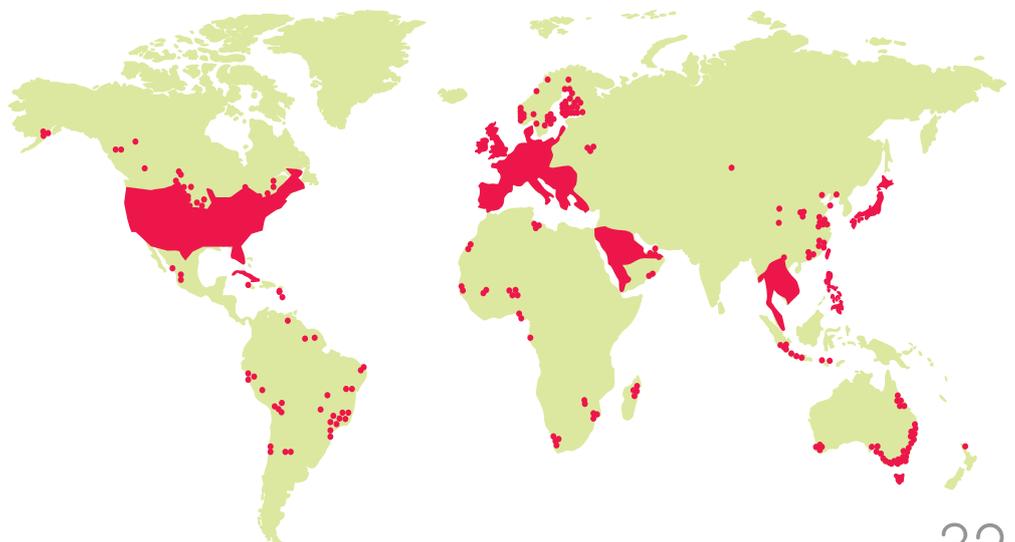


Figure 7 Global 5G coverage  
(<https://www.nperf.com/en/map/5g>)

One major drawback of 5G is that each cell/station can have only a reach of up to a few 100 meters while K3 technology can provide stable links and full speed up to 50 km. With fewer K3 towers required, infrastructure installation costs are decisively smaller. Also, 5G operational costs are up to 5 times higher than on K3's technology.

5G coverage in cities is growing and is at about 15%. Still, penetration in Africa and other third world countries is almost nonexistent and is not expected to play a major role in the next 5 years (it is estimated that by 2025 only 3% of the mobile connections in Africa will be on 5G (Kazeem, 2020)).

## 4.5.2 StarLink

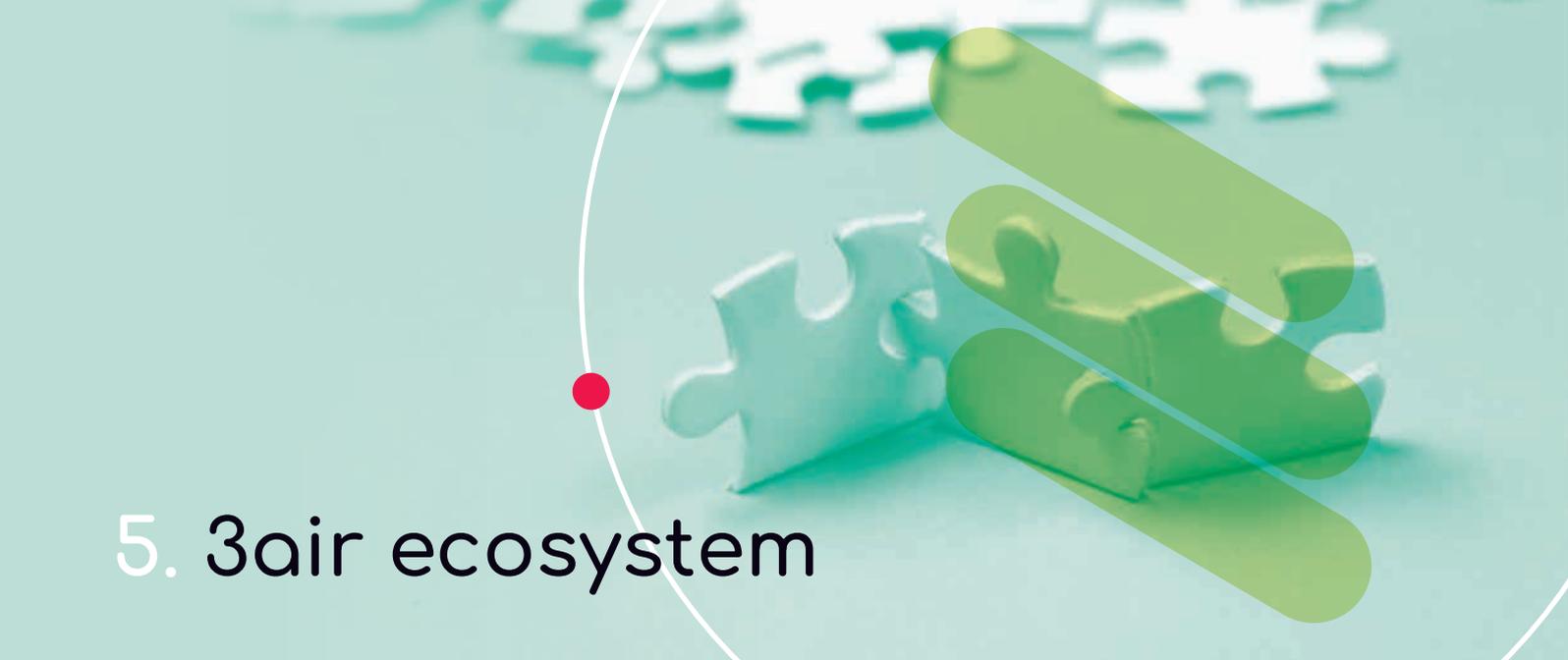
Starlink is a new technology aiming at providing global broadband internet coverage through a low orbit satellite mesh network. In its current beta stage, it promises up to 100 Mbps download and 20 Mbps upload speeds. Long term goal of Starlink is 1 Gbps download speed.

Although Starlink has the potential to disrupt the whole broadband market in the future, it is still in its infancies. As of now it is unreliable, inconsistent, and even foiled by nearby trees. Availability is very limited. Real world usage shows actual download speeds even below 25 Mbps. (Patel, 2021)

Starlink requires a near perfect line of sight with the satellite it communicates with. That becomes an issue within cities where clear view of the sky is obstructed by high buildings. Starlink's website states: "If any object such as a tree, chimney, pole, etc. interrupts the path of the beam, even briefly, your internet service will be interrupted" (Starlink, 2021). This in the end leads to poor user experience as many report interruptions and low quality in streaming video and online meetings seem to be almost impossible.

There is no doubt that future user experience will improve with more satellites in orbit but either way Starlink's aim is to cover rural and remote areas without proper broadband infrastructure. With this, Starlink is not a direct contender to K3 and 3air as we are aiming for densely populated urban areas. Also, Starlink is still years away from being fully functional and usable in contrast to K3 technology that has matured in the last decade and has been already filed proven.

If you are interested in our [RISK](#) and [PESTLE analysis](#) or [ESG narrative](#), see [Appendices 2 through 4](#).



## 5. 3air ecosystem

At first, 3air as a platform will enable ISP providers transparent, safe, and trustless interaction with its customers, service management, marketing, and community building.

3air blockchain platform will provide an easy to use, blockchain based, ISP management system with integrated proven security, transparency, and low fees, needed to operate a successful telecom.

### The whole project is divided into 3 stages:

1. Create a market with building out broadband infrastructure in Africa with K3 partnership.
2. Building the blockchain ecosystem.
3. Expanding the platform with additional functionalities and onboarding multiple ISPs.

Future development will aim at providing additional platform functionalities that will enable providing TV and bandwidth services directly through blockchain, enabling easy and instant access to services, security and fraud prevention, easy roaming, bandwidth sharing and bandwidth/subscriptions secondary markets enabling better peak demand distribution and other advanced features.

We are aware that even the best platform is only worth as much as it is used and therefore, we have started with building out our own userbase. We are aiming at underdeveloped markets of Africa, an untapped potential ready for change and adoption of new technologies.

We have identified a strong partner with a unique solution in building broadband where others can't. This will give us a competitive advantage and the ability to kickstart our platform with thousands of users right at the get-go. Up to 1 million users are being predicted to come onto the 3air platform in the first 3 years just from this partnership.

We are providing a detailed description of K3 technology and how it can achieve success, where others have failed in [Section 6: K3 broadband solution](#).

**It is important to point out that all agreements with K3 are already in place and will start immediately after successful token launch.**

After developing the platform and testing it with real users, we will open up to other ISP providers, aiming at creating a true global platform that will break local barriers of connectivity and grow the platform exponentially.

But let's not get ahead of ourselves and start with the core functionalities.

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## 5.1 Digital Identities

One of the main features of the 3air platform are Digital Identities (DID's). Identities are a cornerstone of our society, and a big part of Africa's population still lacks proper identification and provable records from different fields, such as finance, education, and health.

DID's can provide all of this in a trustless, secure, and private way, enabling credit scores, medical history, or proof of education verifiable directly on the blockchain.

Currently every client must sign up at a vendor and present their physical ID. They need to provide their personal information although most of the information is not needed by the vendor. If signing up online, multiple usernames and passwords are required, or third-party signup services are used. This incurs additional costs and has development, usability, and security flaws.

Although ISPs currently process a lot of relevant personal information about their customers, they are not part of the authentication and identity services in general.

With the 3air platform, ISPs could provide identity-as-a-service services and earn additional revenue streams or offer just additional value to their clients. ISPs are perfectly suited for as such a task. For 3air, each issued DID will incur a fee.

A properly issued DID will, in the best-case scenario, be recognized by governmental authorities and could replace even official means of identification. We will strive to achieve status of a licensed or certified ID issuer through our K3 partnership as Official governmental ISP licenses could pave the road in that direction although we do not expect that to happen instantly. Still, DIDs issued by a licensed ISP provider will have merit with other institutions and businesses, struggling with the low identification means of people in developing countries.

Such a DID will have many benefits for both the client and the ISP. For one, future identification on the platform will be easy, cheap, and trustless from anywhere in the world. 3air users will not need additional identification to use any services connected through 3air, taking away a major security hole and cost from ISPs that join the platform.

On the other hand, once DID's become mainstream they will be usable on other points of identification, including websites, webstores, shops, bars etc. With proper issuer certification it even has the potential of slowly becoming a mainstream means of identification.

3air will use Cardano's Atala Prism services for creating DID's as we are of the opinion, they are currently the most advanced and documented ID solution. To date, only Cardano has been able to get a governmental contract in place for issuing official documentation and identification on the blockchain.

Atala PRISM is a decentralized identity solution that enables people to own their personal data and interact with organizations seamlessly, privately, and securely.

On the 3air platform each user will have his DID. This DID will be used for all contracts between user and the ISP including granting ISP services, payments, rewards, marketing, microloans or similar.

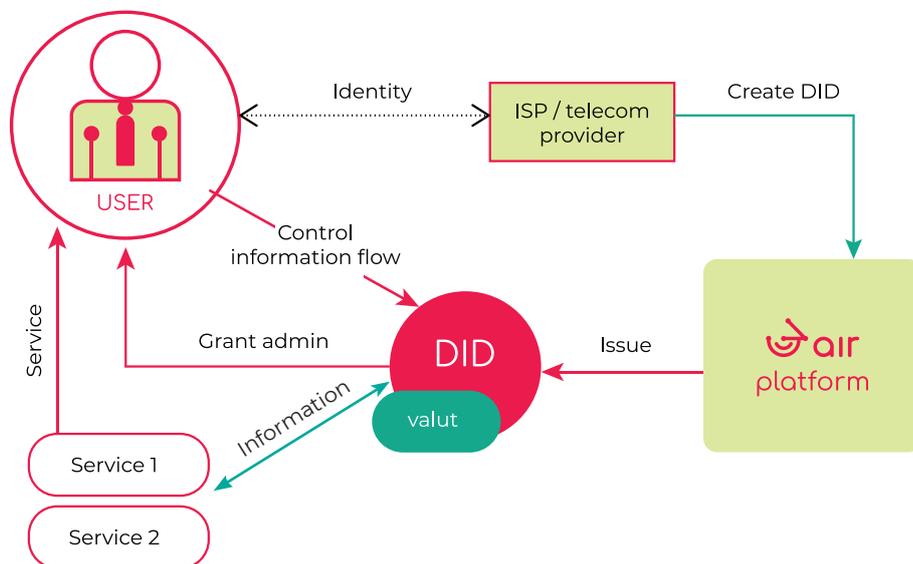


Figure 8 DID issuing and service interactions

## How DID issuing and DID interactions work?

*A user walks into an ISP or telecom provider that is able to issue a DID. He identifies himself and the ISP creates a DID on the blockchain with his information through the 3air platform. The information is stored in a digital vault. The user gets full control over his DID and can use it to access other services, either with the ISP or other parties that are accepting the level of DID he has been issued. The level is depended on the information provided and licensing of the issuer. With every DID interaction the user has full control over submitted information. Each interaction stores data to build a provable history that might be needed to access certain services in the future.*

Mid to long term this will lead to seamless KYC procedures, better customer experience and reduced cost for the ISP. The user will be in full control of who can see or use his private information with the use of Vaults integrated into Atala.

Vaults allow for sharing private information without revealing sensitive or unnecessary data to the other party. For instance, if you need to be of age for acquiring a service then the questions should be:

1. Are you older than XX years with the answer simply Yes/No.
2. Does this information belong to you?

There is no need for the other party to know how old you are exactly, nor what is your name and where you live but those are usually the information that come with regular IDs. As for the second question the digital identities indisputably match the provided information to the correct identity on the basis of biometric data.

The blockchain technology makes it impossible to fake the information or manipulate it from any party and biometrics present a barrier in identity theft.

The user will benefit from the DID with reduced need for constant identification and KYC procedures as well as easier obtaining new services inside the ISP and even outside of it. The same DID can be used on other websites, apps or similar, to uniquely and trustlessly identify a user. Payment records can be used for getting a positive credit score, making it easier acquiring financial services such as loans. A good track record also makes it easier for acquiring other services from different providers. The options are limitless and synergistic.

## 5.2

# Company token buybacks

If it is deemed beneficial to promote the usage of the 3air platform and incentivize, 3air may cause a buyback of 3air tokens periodically (e.g., quarterly) in amounts that could be around 20% or 30% of all collected fees. These tokens could be sent to a community pool and be either burned or used for funding ESG compliant community projects. Decisions related to tokens buy-backs and related use of bought tokens might be taken consensually with the community using surveys, polls or other opinion-gathering and voting mechanisms.

If a token buy-back occurs, 3air may not publicly announce any token buyback amounts or dates upfront but may announce them only after the event had occurred. For the avoidance of doubt, the above does not directly imply that 3air would buy tokens on open markets, if any.



Figure 9 Token buyback option

## 5.3

# Token burns

If it is deemed beneficial to promote the usage of the 3air platform and incentivize its users, 3air could potentially burn a determined number of tokens in regular intervals. Such amount could be, but does not necessarily need to be, around 200-250 million 3air tokens. If circumstances allow and suggest positive outcomes, 3air may cause or promote certain number of tokens to be burnt.

If a token burn occurs, 3air might not publicly set any exact dates or amounts but it might be consensually decided with the community using surveys, polls or other opinion-gathering and voting mechanisms.

In order to facilitate the above, community pool contracts give the possibility for voting on token burns within a certain percentage range of pool tokens being burned. If circumstances suggest, a contract may be set up that would allow for voting on how much tokens would be sent to a burn address on a specified range which could be, for instance, from 25% to 75%. Consequently, an average percentage would be calculated from the votes and used as the amount for the token burn.

The community token contract could also be changed after a certain milestone has been reached, with the aim to fully decentralize the decision on community pool funds usage.

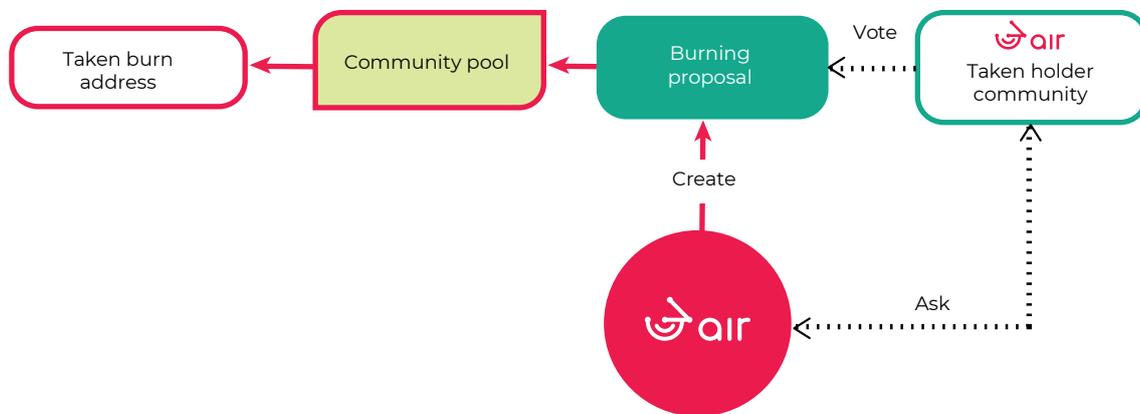


Figure 10 Token burning process

## 5.4 Payments

To drive the adoption of the token, all transactions on the 3air platform will need to be made with 3air tokens. With our aim of fast coverage of Africa's cities and the demand for broadband connectivity, we will work for the token to achieve a wide adoption. With time this could potentially lead to token adoption and inclusion even by third parties.

On the other hand, considering fast user adoption, we need to think about the ease of use. Forcing an unknown payment system upon users unversed in blockchain technology might be detrimental in platform adoption. Therefore, we will aim to include other means of payment and exchange them to 3air tokens through the backend. Additional fees that might apply to such conversions will disincentivize payment means other than 3air tokens automatically.

To ensure stable income for the ISPs, 3air will not force setting prices in 3air tokens but recommend that prices be set in local currency. The final currency selection will be up to the ISP but limited to current 3air integrated currencies. At first 3air will allow for setting the prices in local fiat currencies and selected stable coins as well as 3air tokens but will strive to expand the integrations in the future.

This means fiat onboarding will need to be integrated into the platform and offered as an additional service to ISPs. This will be a third-party service that allows for buying crypto currencies online with credit cards or other means of payment. Clients will then be able to use those onramps to pay for services with these methods directly. Although this process will be seamless, in essence the user will facilitate the payment processor to exchange fiat in to crypto and then use crypto to pay through the 3air platform. We will strive to integrate 3air tokens with such providers but if no such direct conversion will be available, 3air platform may provide the exchange rate to a more widely adopted cryptocurrency. Any fees incurred by 3air may need to be included in the exchange rate itself.

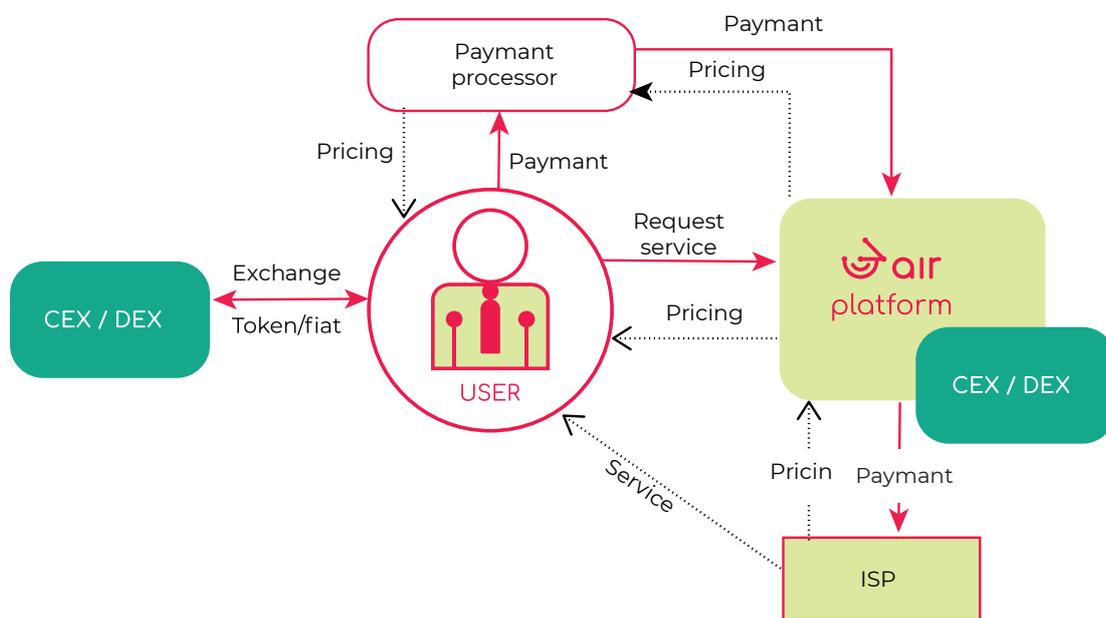


Figure 11 3air payments workflow

Let's look at two different case studies for a user from Nigeria that want's to pay for services with credit card.

### Case 1:

- Prices are set in Nigerian naira.
- Payment processor accepts Nigerian naira.
- Payment processor exchanges to 3air tokens directly.

In this case the user would see the price in Nigerian naira. 3air platform would feed the payment processor a price in Nigerian naira. At this point the payment processor would show the final payment price that could potentially include additional

third-party fees. The client would then pay with his credit card. The payment processor processes the payment and returns the client 3air tokens. These tokens are then used to pay for the services using the 3air platform.

## Case 2:

- Prices are set in EUR.
- Payment processor accepts USD.
- Payment processor exchanges to USDT.

In this case the user would see the price in EUR but would be able to select to see the live exchange rate to Nigerian naira. 3air platform would use its internal exchange rate and feed the price to the payment processor in USDT. The payment processor would then display the final price in USD, calculated with its exchange rate and potentially adding additional fees. If the user has Nigerian naira as the primary currency of his credit card, his bank will be in charge of the conversion from Nigerian naira to USD. The payment processor would process the payment and return USDT. The user would then use USDT to pay for services on the 3air platform.

As you can see there are multiple options in between these two use cases.

Once the payment has been made it will be sent to a smart contract that will:

1. Enable the service the user paid for.
2. If payment currency is different than 3air, it will exchange the payment tokens for 3air tokens using a third-party exchange.
3. Send the processing fee to the 3air wallet address.
4. Send the remaining amount to the ISPs wallet address.

Any additional fees incurred by 3air, including but not limited to exchange fees, transfer fees, or payment processor fees, may be included in the internal exchange rate or added as a surcharge and transparently presented to the user.

In the case ISPs do not want to deal with payments in crypto, 3air might partner with third parties offering an exchange service to fiat for ISPs if such a service is permitted by regulators. This service would be provided at an additional cost.

*The above are just examples. Once a payment provider is chosen, these details might change to accommodate their requirements.*

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## 5.5

# Rewards and loyalty system

3air platform will offer a full rewards and loyalty system based on the 3air token. It is to note that 3air will only provide the platform with the rewards functionality, but it is up to the users to opt in and configure it to their needs.

The 3air rewards and loyalty system will be evolving through time. As of now these functionalities have been identified and may be integrated:

- gamified ranks,
- cashbacks,
- airdrops,
- customizable, tier specific rewards,
- integrated social actions,
- referral marketing,
- reviews system,
- coupons as NFTs,
- campaigns and campaign management.

The system aims to provide a customizable rewards system, suitable for ISPs with integrated token-based rewards structure.

There are distinctive differences to traditional loyalty systems:

- Loyalty points are discarded and replaced by the token itself.
- Airdrops.
- Customer engagement can be multiplied by token holding.
- The platform itself can contribute to individual ISP loyalty programs.
- Referrals can be easily tracked through multiple providers or even platforms.
- Coupons can be potentially issued as NFTs, providing additional functionalities such as secondary markets (as this option might or might not be desired, it can be turned on or off per NFT).

The main difference to traditional rewarding is for sure the use of tokens as ponders. They can be used independently where they provide benefits directly just by holding tokens, or in combination with other rewardable actions where they are used to enhance the user rewards (a user holding more tokens could receive higher rewards for completing a task than a user not holding any tokens).

The user can potentially progress on the rewards ranks or acquire rewards with actions such as:

- accumulating purchases,
- being a long term, loyal client,
- holding x amount of 3air tokens pondered by the time of holding them,
- completing tasks, set up by the client,
- referring customers,
- sharing and promoting content,
- writing product or services reviews.

Rewards can be potentially given in forms such as:

- discounts on services,
- token and NFT airdrops,
- redeemable NFTs for specific services (can also be pegged to a specific user),
- token cashback.

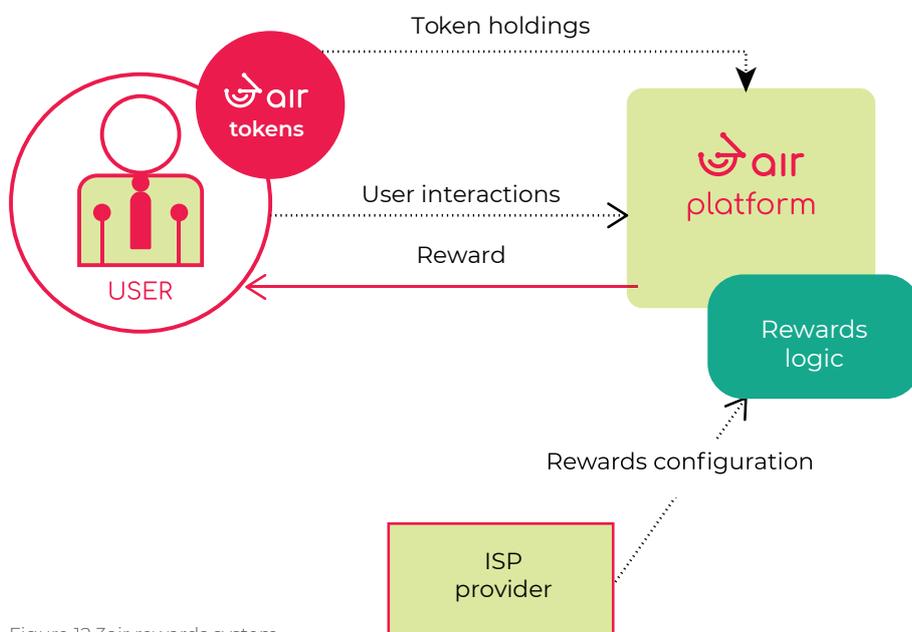


Figure 12 3air rewards system

We believe that such features should be appealing to any ISP provider and a must have in a modern business model. It is a powerful feature when used individually by an ISP but there is also a connection to other ISPs through the 3air token. The more clients use the rewards system the more token value is being created on the platform and with this, each token holder is gaining value. ISPs may have high average 3air token holdings as the payments will be processed in 3air, therefore, they could potentially be incentivized to use the token-based loyalty system as it could compound their returns. It will perform well in the traditional sense in obtaining new and retaining old clients.

To additionally stimulate clients to integrate our token-based loyalty system, 3air may subsidize clients 3air token-based rewards with a specified percentage of total fees (e.g., 5-6%) incurred by the client calculated each first day of a specified period for the previous period (e.g., monthly). For instance, if a client has during the previous month paid 10.000 3air tokens in fees and paid 1.000 3air tokens as rewards to its users, 3air would refund 600 3air tokens to the client. If the client would pay out only 500 3air tokens as rewards that month, the refund would be the whole 500 3air tokens spent on rewards. Each period the counter is reset. This process would be automated and governed by a smart contract that evaluates the transactions from each client and at specific timestamps.

Additionally, an API will be provided to allow integration with clients' current rewards system.

### **K3 has already agreed to use the full rewards system for its clients.**

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## 5.6 Referral system

Even though the referral system is a part of the rewards system, we mention it separately because of its specific implementation and the importance it has in each competitive retail business. From a marketing perspective, a referral from a current user is the golden ticket to a new user. It is even more important in the times of online shopping as the trust is harder to establish without personal contact. We therefore seek advice and this level of trust through browsing through reviews, and a recommendation from a trusted person makes the decision always far easier.

83% of people trust the recommendation from friends and family. (McCaskill, 2015)

There are numerous issues referral systems currently face that blockchain can solve:

- fraud,
- payment delays,
- lengthy disputes,
- unreliable tracking,
- privacy breaches.

Currently, affiliate and referral campaigns are plagued by fraud. From click fraud, cookie stuffing or typosquatting, the pay-per-click model is outdated. Moving to the blockchain model of referral marketing there are added benefits in fraud prevention as the use of smart contract automates the process and reduced the need for trust. Cookie spamming and artificially generated machine traffic can be constrained,

and honest publishers will receive better value. The use of digital identities makes it easy to uniquely identify a user and effectively prevents multiple user account or self-referrals.

Dispute events are almost nonexistent in the world of smart contracts, but even if they occur, the blockchain records all and each transaction that can be reviewed and proven. Disputes should not prove to be difficult to solve.

With the use of smart contracts and using cryptocurrencies as payments, user rewards can be automated and processed at the same time as the referral event occurs. Instant payments are for sure one of the great benefits of using blockchain for referral system.

Tracking is also made easy and can be done cookieless as each user is uniquely identifiable by a DID. Each transaction can be exactly timed and assigned to a specific user. As the DIDs are represented by a hash, user privacy is greatly enhanced and protected, effectively solving privacy breaches.

Each platform user will receive his unique referral link. The link will be connected to his DID. Once a visitor visits the 3air website through this link and registers, his DID will be connected to his referrer and each transaction made, can always be matched between them.

Platform clients can enable referral systems through the rewards system as described in the previous chapter.

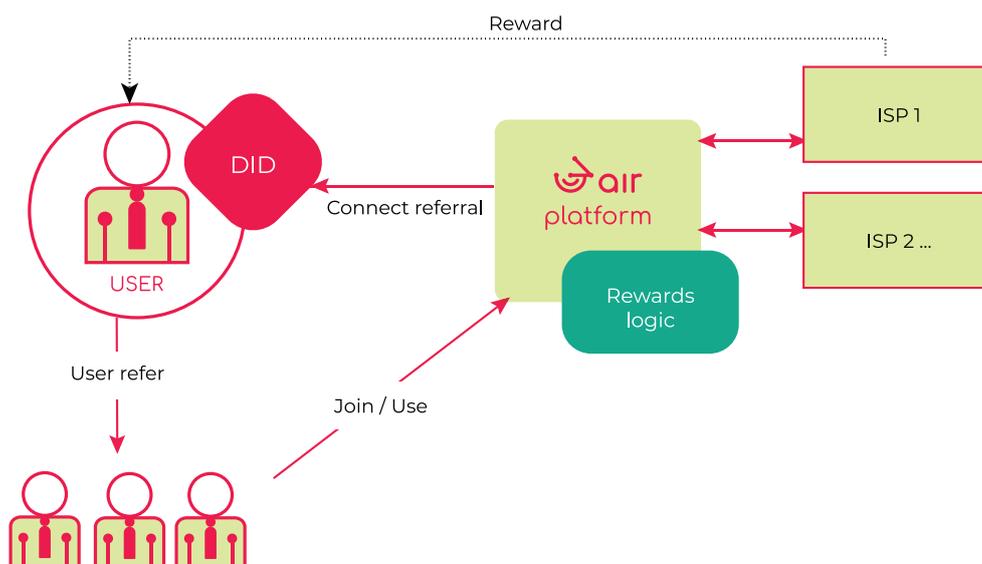


Figure 13 3air Referral system

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## 5.7

# Community building and governance

3air aims to be fully decentralized with time. Our role model is Cardano as its proving that even projects at the largest scale can become effectively decentralized and we fully believe this is the future of organizational structures.

The community pool would be our way into decentralizing 3air. 3air could regularly provide funds to the community pool. The funds may be provided through a smart contract as a fraction of the fees collected from the platform transactions as described in the chapter about token buybacks.

The aim of the community pool is to incentivize the community in participating in the decentralization of 3air, and to help develop the local social communities with funding projects that have development potential and are beneficial to the whole community.

Consequently, we hope to provide even more equality to developing regions and make their lives better. With a strong enough, engaging community, we can start progressing towards full decentralization of 3air.

Fortunately, Cardano has made great progress in decentralized treasury and governance. Their Voltaire upgrade aims to create a fully self-sustainable, self-manageable organization without the need for central authority. (Cardano, 2021)

Their academic research goes into great detail about the community controlled and decentralized collaborative decision-making mechanism for sustainable funding of the underlying blockchain development and maintenance (Zhang, Oliynykov, & Balogun, 2019). It has been successfully implemented into their Catalyst project.

Cardano is building a model and the pioneering technology that can be applied to any application, system or even society. It is a blueprint that will redistribute power, eliminate intermediaries, and improve the lives of all. (Cardano, 2021)

Cardano is making their model open source and make it easy for project to use their technology to decentralize their projects. We would use and build our governance system upon Cardano's proven blueprint, research, and examples.

The 3air community might at first have certain degree of influence over the allocation of funds within the community pool but may gain additional power with time and 3air token decentralization.

The community funds usage may be subject to voting or other opinion-gathering mechanisms and could potentially be used for burning tokens and funding proposed projects if it is beneficial for the development and adoption of the 3air platform. At first 3air could impose certain limits on the community decision-making power. Those limits are outlined in the chapter on token burning. With time the community

might potentially receive greater power on making decisions about funding and proposal. Until then, 3air may propose the projects that can be voted upon, to prevent misuse of governance power. Also, a specified percentage of the pool, which may be around 25%, or even more, could be used for funding projects.

A 3air selected board will receive and evaluate projects requesting funding. It will be to the board's sole discretion on the project choice. The project choice needs to be guided by the notion of helping grow the local society, infrastructure, and businesses with heavy tendency to the ESG narrative. Any selected project should not be in direct violation of 3air's vision, policies, and narratives.

Selected projects would have the chance to present themselves to the community to win their votes. A date would be set for voting and projects would receive funding in accordance with their acquired votes and other decision-making mechanisms. A quadratic funding model may be applied as discussed by Vitalik Buterin. (Buterin, Vitalik Buterin, 2019)

Token holders would have limited time to cast their vote. Each token would represent one vote. An application will be provided that will connect to users wallet to enable easy and temper-proof voting.

If a token holder does not want to vote himself, he can delegate his voting power to another user. Experts and leaders will arise within the community that could gain more power with their engagement. Such individuals could receive delegations from the general community.

Up to 10% of the community funds could potentially be set aside to incentivize users to vote if needed. These funds may be sent to all the wallets that have participated in voting in the amount that represents the tokens they used to vote. This could be done automatically through a smart contract.

The amount of tokens set aside for voters can be adjusted if it becomes unreasonable or unfair. The reward must be enough to incentivize participation, but it needs not to take away funds from the end goal that the funds are intended for. It needs to be made clear that voting is a right and obligation to help a greater cause.

The same process may be used to vote about token burning, if applicable.

Governance is a major part of the 3air platform and a major token use case. We believe it will help us build a great community, incentivize token holding and help a wider token adoption and decentralization.

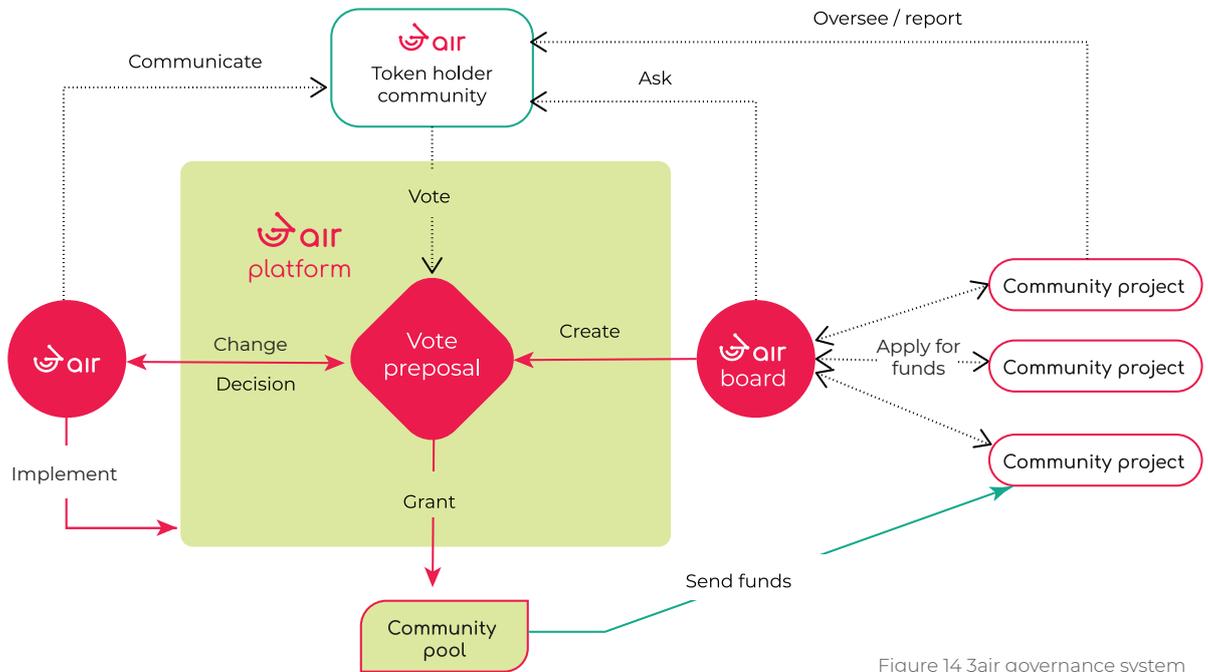


Figure 14 3air governance system

## 5.8 Own your own hardware incentive

It is usual that an ISP charges a first connection fee and leases the required hardware to the customer. The usual hardware includes a modem, a router, and a TV box. The connection fee is charged because a transceiver needs to be installed and usually some cabling is required at user end. These fees are usually waived when the client commits to a longer-term contract.

A token economy provides different solution to this problem and creates new value to all the participants. We propose the “Own your own HW” incentive, where users can become the owners of their hardware with the help of the company and the company gets long term clients.

When a client is first enquiring for a service through the 3air platform, he will get the appropriate hardware to be able to connect and use the provided services. At this point the HW is leased to him meaning he can use it but is not the owner. At the same time, the company (either the ISP or 3air) will provide the client with 3air tokens in the amount that is less than the HW value (this value is adjustable but should constitute a large percentage of the total value of the HW). These tokens need to remain locked for at least 12 months.

The client can use the HW freely as long as he has a valid subscription and the tokens remain locked. If after 12 months he decides to unlock tokens, he needs to pay for the HW to keep the tokens and become the owner of the HW. The unlocking of tokens is governed by a smart contract where the value of the HW is kept in a stable currency. At unlock the amount of 3air tokens needed to cover the HW expenses are transferred to the company and the rest is transferred to the client. If the

value locked is less than the HW value, the user can add the remaining tokens and proceed with the unlocking.

If the client discontinues his subscription to 3air provided services at any point during the 12 months, the locked tokens are returned to the company, and he needs to return the HW. With this the user potentially gets to become the owner of his own HW without having to buy it out of his own pocket. He also gets educated on how staking cryptocurrency works. And for the small additional initial investment, the company gets a long-term, crypto educated client and the reimbursement of the provided HW after a certain period of time. The whole token economy benefits as the total value locked (TVL) is climbing with each new user.

These locked tokens are not part of any staking pool or similar, so no yield is generated on them and they do not dilute any other rewards in the system.

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## 5.9 Staking

Additionally, to already mentioned “hodling” incentives, 3air may provide a staking pool where users may potentially be able to receive rewards through staking their tokens.

### 5.9.1 Early staking

The early staking incentives are referred to the transitional time that is needed to provide full staking in a Proof of Stake (PoS) system following the sidechain development planned for V2 of the 3air platform.

During this time the purpose of the staking pool is to prepare for the easy transition to full staking that will require staking tokens to operate a node. For participating in this transition period, the participants may be rewarded additional 3air tokens from the provided staking pool.

10% of the initial supply, or 100 million 3air tokens, could be placed on a separate wallet that would be governed by a smart contract. This would be the initial staking pool which may provide rewards intended for the early backers of 3air.

It is planned that early staking will start 3 months after TGE (Token Generation Event), and rewards would potentially be distributed weekly. Staking rewards would be linear for 160 weeks (~3 years) in the amount of 625.000 3air tokens weekly, divided among all staked 3air tokens.

To prevent centralization of the token, staking rewards may be capped at 50M 3air tokens maximum per wallet. This means that rewards may be distributed only for up to 50M tokens per wallet. If a wallet holds more than 50M tokens, the rewards

over cap limit may not be sent to this wallet but distributed to other staked tokens equally. This will incentivize wider token distribution and decentralization, making the overall ecosystem more stable and secure.

Only unlocked tokens can be staked, meaning that vested tokens cannot.

As the rewards structure is linear this should incentivize early adoption. The process of staking is gradual for many reasons, one of the biggest being that, at the start, fewer tokens may be in circulation. This means that with the gradual increase in tokens in circulation also staked tokens could increase. The linear rewards are calculated per token staked meaning that the less tokens are staked, the higher the rewards per token could be. This should incentivize early adoption and token staking because of higher rewards.

Unstaking period for tokens will be 8 weeks.

3air will provide an easy-to-use application governed by a smart contract that will enable staking. The user will connect his wallet and insert the amount of tokens he wants to stake. The tokens will be locked within a smart contract until the user decides to unstake them. The smart contract keeps track of the amount of staked tokens from each wallet. The rewards may be rewarded to the users on a weekly basis. Users can claim the rewards to the same wallet as they staked the tokens with at any point in time without restrictions. Rewards are not compounding the staked tokens but can be restaked manually.

Once the user decides to unstake his tokens, he again interacts with the smart contract. He inputs the number of tokens he wants to unstake and the process of unstaking is initiated. After the unstaking period unstaked tokens are transferred back to the wallet address they have been staked from. No staking rewards are distributed for the tokens in the unstaking period.

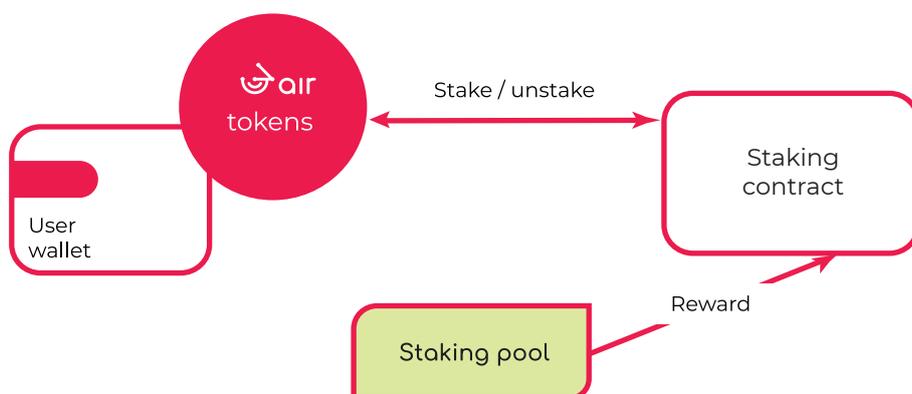


Figure 15 3air staking system

## 5.9.2 Full staking

To support the advanced features described in [5.12 Future development](#), may build its own sidechain that will eventually power the 3air platform 2.0. The sheer data needed to successfully operate an ISP exceeds the capabilities of current layer 1 blockchains. Building a sidechain specifically designed for the telecom needs, it will provide performance and fees optimization for the special use cases of an ISP.

Services that may be powered by the 3air chain include but are not limited to:

- Privacy enabled data (information) sharing with authorities,
- Privacy enabled data (information) sharing with third parties (for instance repair teams),
- IoT integration,
- Data roaming,
- Bandwidth sharing,
- Bandwidth tokenization.

3air chain will be based on the PoS consensus mechanism and will require nodes to process the transactions and store data. To incentivize the node operation and staking of needed 3air tokens, the node operators and stakers may receive rewards based on fees.

The staking pool for early staking may add to those fees until all the tokens from the pool are distributed. After that, the system should be able to sustain itself and will only be powered by generated fees.

A separate document will be published explaining the 3air chain and its node ecosystem.

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## 5.10

# Bandwidth sharing

With the lack of proper infrastructure in our target countries, there is almost no public Wi-Fi present. Shopping malls, restaurants, bus stations and shops all lack shared connectivity.

K3 is already testing a technical solution that allows for sharing bandwidth through special access points, and 3air will provide the right interface and blockchain solution for it.

There are 2 main issues with bandwidth sharing:

1. Local regulations.
2. Terms and conditions from the ISP provider.

Each country wants to control the usage of the internet in some manner. That's why ISPs are regulated companies and require a license to operate. Each user needs to register so that there is a track record in case of any criminal activities. The same goes for mobile operators. There are a few exceptions to the rule with public Wi-Fi connections and similar, but even there it's usually at least one authentication method in place.

Secondly, ISPs don't allow for commercial or uncommercial sharing the bandwidth with others. This is especially true if on a shared connection plan that are by far the most popular type of broadband connectivity today. The ISPs that operate a shared network, sell your bandwidth cheaper than they buy it as they resell it multiple times. They operate on the premise that not everybody will use the full bandwidth at the same time and apply a fair usage policy. So, no bandwidth sharing is allowed on such connections and the ISP has the right to decline you services if your bandwidth usage is excessive.

There have already been raised concerns in the communities of such sharing economies about the long-term feasibility and potential crackdown from ISPs. (Is anyone concerned about what happens when ISPs get wise to the game re: internet usage?, 2021)

To avoid these issues, we are allowing for differentiation of services on our platform, where ISPs can choose to allow bandwidth sharing and charge a premium for it. When the user acquires such a package, he will get provided with a proper access point hardware, preinstalled with a software solution that allows for multiple, payable, or free connections. The user can also decide to share the bandwidth for free. This is especially desirable for shopping malls, restaurants and similar places that can market themselves better with such additional service.

To avoid the regulations issues the users will authenticate with their DIDs or they will use the internet under a short-term public connection policy that requires light authentication only.

### 5.10.1 Types of users

There are 4 types of users in the 3air bandwidth sharing model:

- ISP, providing original bandwidth,
- Access point operator, sharing his own bandwidth,
- Consuming user, connecting to the shared access point.
- Insurance provider, ensuring sustainable system maintenance.

These users incentives are not aligned and must be managed carefully.

#### ISP

The ISP's basic business model is making revenue from selling bandwidth as its primary service and main revenue stream. ISP's goals in a sharing economy are:

- Create an additional revenue stream from selling bandwidth to transitory users (tourists, shop visitors, etc.).
- Create an additional revenue stream from upselling existing users to be able to use roaming.
- Promote themselves with providing exceptional services in public places, therefore gaining new customers.
- Offer roaming possibilities on fixed connections to their clients and clients from other networks.

ISPs are strongly opposed to sharing bandwidth as it:

- Promotes unnecessary network loads and unfair data usage.
- Clogs up broadband infrastructure, especially at peak times.
- Causes additional costs in needing to buy more bandwidth from the backbone providers.
- Reduces their main revenue stream.

ISPs will therefore never allow bandwidth sharing **without being additionally incentivized**. Because of the sharing nature of most retail internet connection plans, ISPs will deny service if they notice unfair bandwidth usage. If you are constantly utilizing 100% of your shared connection, the ISP has the legal right to deny you service, even if you did not share your connection.

## Access point operator

The Access Point (AP) Operator's motivation in running an access point will vary greatly but can be summarized as one of the following:

- Additional revenue stream from providing a connection point as a service.
- Better customer experience within their business therefore building out the brand name and providing an edge over competition.
- Attracting more transitory customers, such as tourists.

Someone from a developed country, where quality Wi-Fi or mobile data is available everywhere, it may be difficult to comprehend the advantages of being able to provide quality connectivity in public places or businesses.

Good connectivity in developing countries is hard to come by so providing such a service can have a big competitive edge. Shopping malls, restaurants, tourist centers, bus stations, banks, they all would benefit from providing public internet services.

Also, other users may be incentivized by earning additional revenue from providing a connection spot.

## Consuming users

The consuming user has the following incentives to use the public access points:

- Roaming capabilities on his fixed broadband.
- Cheap, short-term access to quality Wi-Fi in public and semi-public places.

## Insurance provider

The insurance provider takes on the risk of a HW failure and needs to be compensated by an appropriate reward. The Insurance provider incentives are the rewards from the Staking and Access Point pools.

There are different approaches to building out an IoT sharing economy and allowing bandwidth sharing. Some are using blockchain technology, like Helium<sup>2</sup> and World Mobile Token<sup>3</sup> and others are cloud based or similar, the biggest probably being Xfinity<sup>4</sup>. Some of these models have already been applied and seem to tackle the tragedy-of-the-commons (Hardin, 1968) situation well, while the others still need to deploy and be tested in the real-world setting.

<sup>2</sup> <https://www.helium.com>

<sup>3</sup> <https://worldmobiletoken.com>

<sup>4</sup> <https://www.xfinity.com/overview>

## 5.10.2 Sharing model

There have been many papers published on the topic of fair bandwidth sharing (F. P. Kelly, 2003) (D. Shah, 2011) (Lautenschlaeger, 2014). Those papers are intended for ISPs to set up a sustainable, cost effective and fair-use shared bandwidth model, but on a smaller scale they are also relevant for broadband sharing on public spaces. The challenge here is, how to provision bandwidth to the connected users to fairly distribute the available bandwidth without compromising on the quality of the connection for each user. This calls for a basic decision model and validating and finetuning it in a real-world setting. 3air plans to tackle this with the help of K3 expertise and experience in the shared broadband model at the ISP level. We believe that this is not a problem that blockchain needs to solve. The provisioning and fair usage does not need to be managed in a permissionless and decentralized way. Standard models allow for greater efficiency in this type of transactions and does not contribute significantly to the security or privacy as this data is not sensitive, attributed to a specific user or in general desirable to hack.

Blockchain-based micro-economies thus seem well designed for enabling bandwidth sharing (Bello, Muhammad, Binta, & Ahamed, 2021) (de Vos & Johan, 2018). They can work well in regard to rewarding its users and encouraging them to behave well and honest in the game theory. They enable financial incentives that help resolve the tragedy-of-the-commons situation. Financial data and financial transactions benefit greatly from the transparency, security, privacy and permissionless nature of the blockchain. A pool of funds, called **Access point pool**, may therefore be set up, to provide incentives for good behavior in the 3air sharing model.

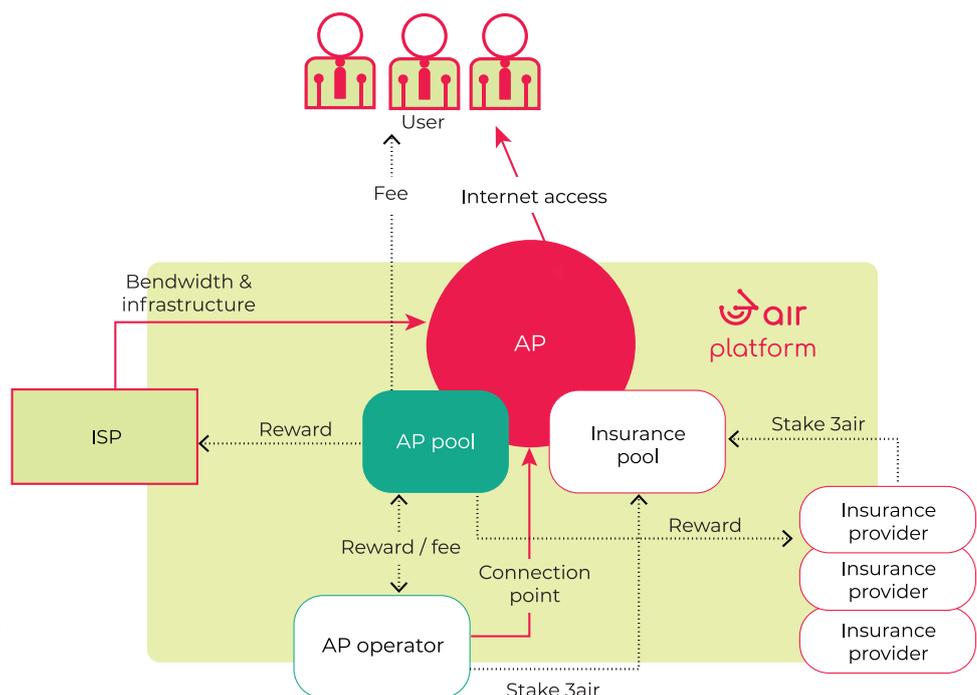


Figure 16 3air bandwidth sharing model

### 5.10.3 Access point insurance

For a successful operation of an access point a certain amount of 3air tokens need to be staked in a smart contract. These tokens are used as insurance in case of access point HW damage, failure or other event that need maintenance or replacement of the access point or supporting infrastructure. The required amount is to be determined at a later stage and will be adjustable. At least 25 percent of the minimum needed tokens must be provided by the access point operator to incentivize good care of the infrastructure.

In the case of any maintenance or replacement needed the insurance tokens will be reduced by the amount needed for repairs or exchange of the access point. Until the 3air platform v2 is online, this procedure will need manual involvement of the operating ISP. Information about the errors and consequent repairs will be shared and the insurance token holders will have the right to file a dispute. The final decision may be taken by a vote from all insurance token holders.

3air platform v2 will be IoT and blockchain powered allowing self-reporting and automatic payments from the insurance pool to the maintenance team once the node is back on-line. Staked tokens will have access to all relevant IoT information and will be able to veto the maintenance team decisions to prevent exploitation of the system. If no consensus will be formed, insurance tokens from other access points will be able to vote on the dispute. Such a permissionless insurance system is complex and warrants a more in-depth analysis and review that will be provided with the 3air platform v2 documentation.

There will be a list of all issued access points provided and represented by a smart contract. Any token holder will be able to stake his tokens into such a smart contract and pledge them as insurance. In the time of “early staking” (see section [5.9.1 Early staking](#)) tokens staked for insurance will also get distributed rewards from the staking pool.

To additionally reward insurance providers, these tokens may get distributed extra rewards from the Access point pool.

The amount of tokens staked in the insurance contract drives additional speed to the access point.

Once 3air v2 is operational, the reward structures will change as the bandwidth sharing model will switch to operate on the 3air chain.

## 5.10.4 Accessing shared services

There will be professional Access Points (AP) available, provided by the ISP and preloaded with the 3air software. The AP will be selected considering the business type and will have a radius of 50 to 100 m and be able to serve up to 500 users simultaneously.

Each user connecting to an Access Point (AP) will need to authenticate himself. There are 2 ways of authentication:

1. Full authentication, using a DID.
2. Light authentication, using the public use policy.

The identification with a DID is almost seamless as the only thing needed is to allow the connection to the DID. The system then checks on the blockchain if the user is a 3air customer and if he has roaming services enabled and allows or denies access to the internet accordingly.

If the user is not a 3air customer, he has the option to buy a voucher code to access the public internet. The public internet usage policy sets the level of authentication, usually through validating the users email address or phone number. The voucher allows the user to connect to any 3air provided AP. Vouchers have usage limitations and automatically disconnect a client after the conditions are met.

The AP operator can choose to allow free access to the services if this is more suitable for his business model. In this case he forfeits the related rewards from operating an AP.

Internet access interface will be branded by the AP operator and the ISP providing services. The user can see the availability of a 3air connection in his home area and can apply for services.

## 5.10.5 Access point pool

The Access point pool is intended to incentivize all the parties needed to provide bandwidth sharing services to the end user. The Access point pool will be fueled by:

- Premium fees, paid monthly by the end user for roaming.
- Premium fees, paid monthly by the access point operator.
- Access fees, paid by transitory users who pay online or buy a voucher.

## 5.10.6 Rewards distribution

The rewards from the Access Point pool are distributed on a weekly basis.

There are three parties that need to be incentivized to operate the bandwidth sharing system so the end user can connect to it.

The AP pool is split:

1. 10% - Access point operators.
2. 50% - ISPs providing the bandwidth.
3. 40% - Insurance providers.

**Access point operators** are distributed 10% of the total AP pool. These 10% are distributed to each pool in accordance with how many users have connected to it in past week. To calculate each AP reward, we use the formula:

$$R_{ap} = R_t * U_{ap} / U_t$$

Where:

- $R_{ap}$  (Reward of selected AP)
- $R_t$  (Total rewards for all AP)
- $U_{ap}$  (Unique users connected to the selected AP in the week)
- $U_t$  (Total users connected in the week, calculated as the sum of all  $U_{ap}$ )

The reasoning behind such a split is simple as it incentivizes the AP operators to promote the services and connect as many users as possible. This generates revenue stream in the system.

**ISP's** are bearing most of the costs in this model. They provide the initial AP, infrastructure and provide ongoing bandwidth. Therefore, they are awarded the majority of the AP pool funds. The funds are split based on connected users with a similar formula as AP operators:

$$R_{ISP} = R_t * U_{ISP} / U_t$$

Where:

- $R_{ISP}$  (Reward of selected ISP)
- $R_t$  (Total rewards for all ISPs)
- $U_{ISP}$  (Total users served by ISP in the week, calculated as the sum of  $U_{ap}$  that the ISP provides service to.)
- $U_t$  (Total users connected in the week, calculated as the sum of all  $U_{ISP}$ )

To ensure fair rewards distribution, another option would be to split the rewards by bandwidth usage. At the same time, this opens up the potential for system exploitation with ISPs

intentionally spending bandwidth. Additionally, the bandwidth tracking and calculations provide a more difficult and complex system. We have also restrained from calculating on total users as it is again easier to exploit in both the AP and ISP rewards calculations. We believe the suggested system is the best balance between fairness and complexity with the least exploiting potential.

**Insurance providers** also carry some potential risk and are therefore awarded 40% of the rewards. To prevent token centralization and equal distribution between APs, a system of diminishing returns will be integrated. The goal is to have as balanced AP insurance as possible. Each AP needs to be fully insured before it can become operational.

The rewards for the insurance providers are set up so that they have diminishing returns on the additional tokens staked. The formula to calculate the total insurance reward per AP is:

$$R_{i(ap)} = R_{i(t)} * f / AP_n + ((R_{i(t)} - (R_{i(t)} * f)) / T_s * T_{s(ap)})$$

Where:

- $R_{i(ap)}$  (total insurance reward for AP)
- $R_{i(t)}$  (total insurance rewards)
- F (distribution factor between 0 and 1)
- $AP_n$  (total number of operational AP)
- $T_s$  (total tokens staked in all AP)
- $T_{s(ap)}$  (total tokens staked in current AP)

The distribution factor (F) regulates how much power the diminishing system has. A lower value means returns are less diminishing and higher values mean that the rewards on additional tokens will be more diminishing. With adjustments to this factor we can balance the AP insurance pools.

To calculate the reward per user, we first calculate the reward per token in a specific AP:

$$R_{t(ap)} = R_{i(ap)} / T_{s(ap)}$$

Where:

- $R_{t(ap)}$  (Reward per token of a specific AP)
- $R_{i(ap)}$  (total insurance reward for AP)
- $T_{s(ap)}$  (total tokens staked in current AP)

The reward per user is then:

$$R_{u(ap)} = R_{t(ap)} * T_{s(uap)}$$

Where:

- $R_{u(ap)}$  (Reward per user in a specific AP)
- $R_{t(ap)}$  (Reward per token of a specific AP)
- $T_{s(uap)}$  (Total tokens stakes by user in the AP)

Such a system should provide a fair and competitive rewards structure with minimal centralization and exploitation options. It should incentivize all the key players to provide quality services to the end user.

The tokens are paid to the wallets that have staked the tokens.

In the time of early staking rewards, users can also decide to stake the tokens in the normal staking pool. Such staked tokens are also distributed early staking rewards.

### 5.10.7 Providing Free internet

An AP operator can decide to provide the internet to his clients for free. This is especially desirable in restaurants, bars, shops and similar, as it might attract new customers and tourists.

If an AP decides to deliver free internet, he also forfeits his right for the AP operator reward distribution. These rewards go back to the AP pool, to be used in the next distribution. The AP operator is still eligible to standard insurance staking rewards.

3air or an ISP can decide to set up a free internet AP in areas of interest. In such cases they must follow the rules of a normal AP operator.

### 5.10.8 Maintenance request cases

In the case of maintenance costs, the amount of tokens is deducted from the AP pool where each contributor gets deducted the proportional amount of how much he has staked.

For instance, if a user holds 5% of the total staked tokens in the AP, his contribution to the repairs will be 5% of total costs.

### 5.10.9 Staking and unstaking

Staking will be done via a browser application that will allow connecting a wallet in the dApp. A full list of APs will be shown but only the ones with minimum self-delegation will be active for delegating the tokens to. The AP's will have statistics included such as total tokens staked, self-delegation percentage, maintenance request, cost incurred and current APY. Additional statistics may be included.

To delegate his stake, the user will need to select an AP and

the amount of tokens he wishes to delegate and interact with a smart contract to stake them.

At unstaking the user again interacts with a smart contract. Unstaking takes 2 weeks, and no rewards are distributed during the unstaking period. After 2 weeks the user gets his tokens returned into the wallet he staked the tokens with.

Staking and unstaking to APs and the early staking pool can be done at the same if desired, but it needs to be noted that they are two different staking contracts and they have different unstaking requirements.

### 5.10.10 Roaming

Roaming within the 3air system is easy and desirable for all parties involved. There is no need for in depth contractual relationships between different providers. All the premiums and voucher funds are collected in a separate pool and distributed according to usage. Fair and permissionless. With the use of Digital Identities, that are as of now perceived unhackable, the users can connect to an AP and provably and permissionlessly authenticate themselves.

This goes for roaming between different providers as well as between cities or countries. Roaming is instant and fair priced.

It is to note, that ISP can also join the 3air platform with roaming function alone and just participate with allowing the setup of APs within their networks. This may create many access points around the world. It is important, that there is an agreement in place between 3air and the ISP before a setup of an AP is allowed. This is the only sustainable way to build a sharing economy in the future. The ISP have their economic model that does not include an uncontrolled sharing of bandwidth. As of now the sharing communities are still small and mostly unnoticeable but to become mainstream, ISPs will need to be included.

### 5.10.11 Closing thoughts

It is tricky to get the details right in such a system of complex interactions. The game theory provides good insight of how different actors will act as it is in their own self-interest. We believe we have tackled all the exploit loopholes but will be monitoring the system closely once implemented to adjust the parameters of rewards distribution and insurance staking. This is by no means a closed and final model and will be evolving in the future.

At this point we would also like to ask ourselves the question, does such a system warrant a whole new second layer blockchain. There are many projects developing their chains without any real purpose or in depth thought. We agree that a side chain

might have some advantages, but there are also downsides. They involve security concerns, compatibility issues, additional development time, adoption, recognition and others. There is the decision to be made how much transactions need to be recorded on the blockchain. Authentication events should be timestamped and recorded, and logs can be aggregated and recorded at certain times. We believe with data optimization a full sidechain may not be needed. That said, a sidechain might be warranted if more data want to be recorded on blockchain in real time.

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## 5.11 Microloans

There is enormous potential in providing additional financial services in third world countries, but they come with their own scope of issues. The still unsolved problem are low repayment rates unless strict selection processes are implemented, or a good enforcing mechanism exists.

As a platform for ISP providers and DID issuer we will be exploring the options of providing microloans to customers for acquired services. With a valid payment track record and other personal information, we can enter low risk micro loans in the scope of previously acquired services. Additionally, 3air tokens can be staked as collateral for loan repayment.

With time, large amount of data should enable us to build a sound credit score model that could potentially allow the 3air platform to expand microloans beyond the ISP providers, giving customers options of financial inclusion and standard banking services. A working microloans system could attract outside capital into developing countries allowing for their faster growth. A good system could also allow for undercollateralized loans in the future.

A special team will be assigned to the area of general microloans system development, focusing on the anonymous data analysis, collected from ISPs with the purpose of building an advanced AI algorithm for autonomous microloans approval and processing.

We will build upon experience of existing projects such as Kiva<sup>1</sup> and published academic papers<sup>2</sup>.

3air will devote resources and form a special team to research microloans and seek partnerships with current leaders in this field. A separate white paper on the subject of microloans may be published at a later stage.

<sup>1</sup><https://www.kiva.org/protocol>

<sup>2</sup>Papers like Tchakoute-Tchuigoua and Soumaré: The effect of loan approval decentralization on microfinance institutions outreach and loan portfolio quality (<https://www.sciencedirect.com/science/article/abs/pii/S0148296318304715>) and Dushimimana, Wambui, Lubega and McSharry: Use of Machine Learning Techniques to Create a Credit Score Model for Airtime Loans (<https://www.mdpi.com/1911-8074/13/8/180>)

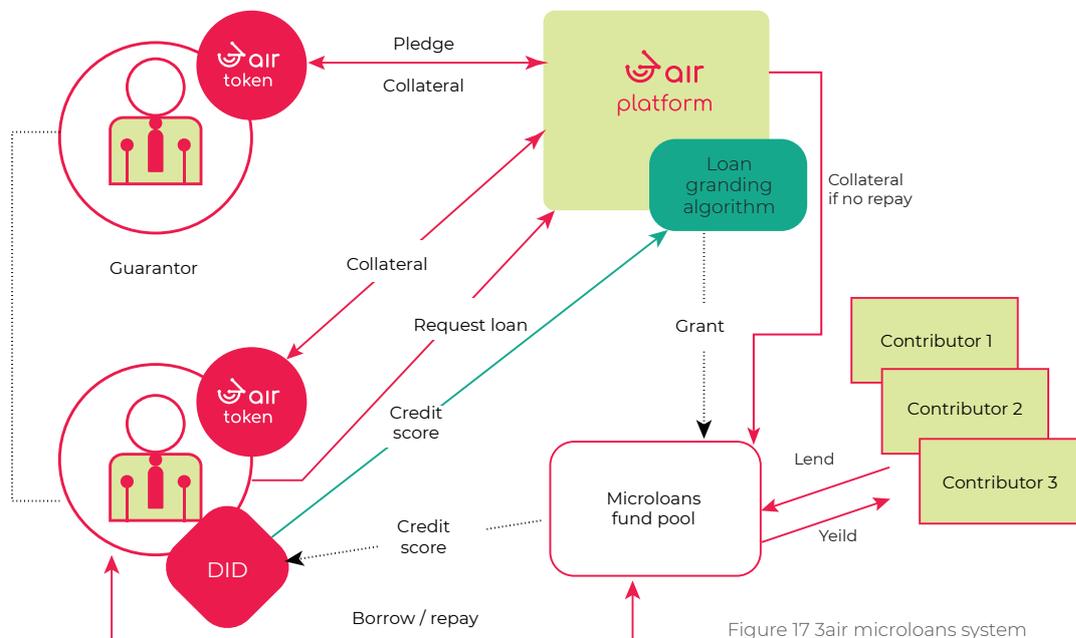


Figure 17 3air microloans system

## 5.12 Telecom Management System (TMS)

TMS is a unique all-in-one software solution for telecom operators. The idea behind TMS is to have a single software solution for every company function. Single solution that everybody knows how to use. Single workplace for every employee. Providing each employee with exactly the information they need, without overwhelming them. Allowing them to do their job without having countless spreadsheet files across departments.

TMS is also more than just some service software because it includes proven procedures for completing common telecom tasks like activating a customer, handling support tickets, organizing networking department, or day to day planning of field installation teams. The system must also be secure and protected against fraud. All this makes building TMS upon a blockchain platform easier, effective, and secure.

Customers will be assigned individual accounts connected to their DIDs and that will allow them to use the service. Each account will be connected to a blockchain wallet that can be recharged by the customer. Customers can approve automatic spending through smart contracts, or they can choose to pay for services themselves. With the use of a smart contract the remaining credit can be used for phone calls or other on demand services. Smart contract interactions can always be canceled by the user. Additional bonuses, discounts and rewards are automatically calculated through on-chain data.

The use of DIDs also helps prevent fraud.

Key characteristics of TMS are:

- easy management of every aspect of telecom business,
- simple to use and scalable,
- carefully designed process framework for telecom startup,
- system supported company growth (processes grow as company grows).

A one-click, modular, White label, TMS solution will be developed. The modules will include metering, billing provisioning, controlling, community building, loyalty building and others, especially designed for use in the telecom industry. Connections with accounting software providers will be automated.

With platform development, TMS will also be upgraded with new modules enabling features like:

- services and bandwidth tokenization,
- loans options,
- IoT and device management,
- seamless roaming.

These features are further explained in other parts of this document.

An API will be provided for businesses to easily integrate the 3air platform into their existing TMS.

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## 5.13 Future development

In the third phase, 3air platform should become the go to platform for ISPs as it will provide them not only with identity, payment, community, governance, and marketing solutions but also potentially solve other issues all ISP providers are facing today.

The main benefits 3air should provide for ISPs in the future are:

- fraud prevention,
- IoT platform (device connectivity),
- service accessibility,
- bandwidth distribution,
- roaming capabilities.

With usability in mind K3 TV boxes may be programmed to contain a 3air wallet app with staking and voting capabilities.

While the TV boxes are idle, selected blockchain nodes could be run on them providing users with additional income.

### 5.13.1 Fraud prevention

Each telecom company faces fraudulent attempts to exploit loose security or security holes. Some users might abuse telecommunications products and services to steal money from customers or their communication providers. In the UK alone there have been over 25 million fraudulent call attempts in 2018, costing millions of pounds (BICS, 2020). Scammers can hack into systems and force high charges that usually become payments directly to them

This form of Traffic pumping schemes can happen to mobile and landline phone or internet providers. Many different fraud techniques exist, including dial-through, International Revenue Sharing Fraud, the Wangiri fraud (One ring and cut), Call forwarding fraud, Multiple transfer fraud.

Telecom Service Providers are particularly vulnerable to fraud as fraudsters are able to manipulate regulatory systems in a way that are difficult to detect, trace, and prosecute.

One of the newest is called Wholesale SIP trunk fraud where fraudster actually sell wholesale trunking services using stolen credentials. Others include Toll free fraud that can affect any business that uses a toll-free number, False answer supervision, Location routing number fraud, Toll bypass fraud and Inter/intrastate tariff bypass fraud.

Schemes conducted over the telephone include Account takeover, Telecom denial of service and Vishing.

This can take a major drain on ISPs and mobile operators, not only in the form of chargebacks or other direct financial damages but also service outages because of infrastructure overload and reputation damages. Scams erode trust and decrease usability of data driven networks in general.

Blockchains unique properties are ideal for fraud prevention. Their distributed ledger is designed to be:

- **Trustless** – no trustworthy middleman is needed to prove the accuracy and truth of the stored information. Whatever is read from the ledger is considered the whole and only truth. The trust is provided by the code.
- **Integral** – there is a verifiable record of every transaction that has been made and those transactions can never be altered.
- **Transparent** – the blockchain ledger is public and can be read by each party that has access to it. It's worth nothing to mention that data can at the

same time retain a high level of privacy.

- **Secure** – with the decentralized design there is no one point of failure. This also means that no single participant can add, delete or in any way alter data.

With the combination of blockchain digital identities, service tokenization and IoT, security reaches a whole new level, easily preventing most of the existing fraud methods.

### **How blockchain digital identities help users prevent users from being exploited?**

A common point of failure for customers are authentication services. Still the most common authentication system is the classical (archaic) username & password method. This method is not considered safe anymore and is also inconvenient. Users usually opt for using the same and unsecure passwords for multiple access points, making it easy for hackers to steal their identities. There are attempts for 2, 3 or n-factor authentications that are fairly secure but are becoming burdensome.

Blockchain DIDs allow for provable and easy authentication just with connecting your private wallet. At the current state of technology blockchain wallets are considered un-hackable. The drawdown is only the storage of private keys that will become easier with time and general blockchain user education.

### **5.13.2 IoT platform**

IoT platform on the blockchain enables devices across the Internet to send and read data from tamper-resistant records. These data can be shared seamlessly between different devices and their users. Blockchain enables business partners and third-party contractors to share and access IoT data without the need for central control and management. Each transaction can be verified to prevent disputes and build trust among all permissioned network members.

There are many instances where ISPs can benefit of such a system and fraud prevention is one that we already mentioned. Another example are third-party repair contractors that can monitor devices for preventative maintenance and record their work directly on the blockchain. Also, operational records can be shared with government entities to verify compliance.

### **5.13.3 Service accessibility, tokenization and roaming**

Each ISP provider or mobile operator needs to run its own database of users and their acquired services. Exchanging the existing centralized databases with distributed blockchain ledgers opens up additional value capture for the users and providers.

Automation of service acquiring and connectivity without the need of in-person authentication, authorization, and accounting. Not even a third-party trustee is needed as trust is built into the blockchain.

With a public ledger each party can verify previous transactions. This leads to less customer service request and mostly prevents expensive lawsuits.

Tokenization of services and bandwidth provides a revolutionary method of service and subscription acquiring and usage. With this our thinking of on-line services changes and completely disrupts traditional systems.

Tokenization of services and bandwidth provides ISPs and mobile operators with the ability to always sell all their services and bandwidth on the open market, thereby maximizing income and leveling usage spikes. Pricing is easier as the market can determine best value not only on monthly or daily timeframes but also intra-day lows and highs.

On the other hand, users get more control about their acquired services and fair pricing that is impossible to achieve with current models. Users can share or resell unused services and bandwidth to friends or on secondary markets. Device switching is easy on the blockchain.

Blockchain and tokenization renders additional roaming agreements obsolete as bandwidth and other services can be acquired on the open market. IoT allows for permissionless usage of the infrastructure connected to the tokenized service. Such services can be obtained by ISP providers, reselling them to their customers within packages or they can be obtained by the customers themselves on the open market.

It is a bold idea that can completely change how we view on-line services in general.

3air will set up a dedicated team of specialist to explore this area and develop a cutting-edge platform for on-line service providers.

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## 5.14

### Business model

3air will operate on a fee basis for the provided platform services. Fees will vary depending on the type of services used and client total turnover.

The standard transaction fee is currently set at 1% of the total transacted amount. Pricing for other services such as creating a DID, evaluating a client credit score, granting a microloan and others will be set at the point of implementation.

**3air has already a signed Letter of intent from K3, stating the interest of using 3air as the platform of choice for all K3 current and future operations. Because of the nature of the 3air-K3 relationship, K3 could potentially pay a 200% premium on the standard fee and potentially process all transactions through the 3air token.**

# 6. Broadband infrastructure



3air has formed a partnership with K3. At this time, we believe K3 has the best potential to kickstart the 3air platform because of its proprietary technology that enables them to build true broadband in densely populated urban areas of developing countries. Their technology and vision align with that of 3air and should bring equal opportunities to Africa's cities with providing stable, secure, and affordable broadband, TV, and telephony.

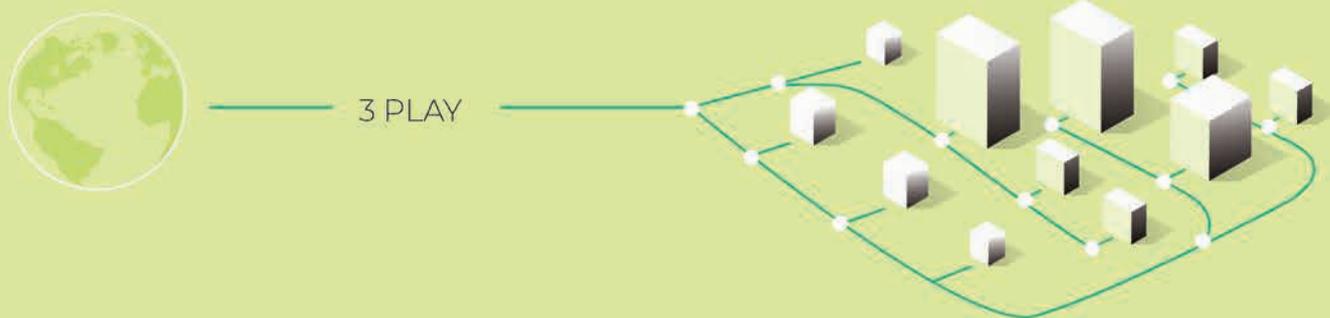
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## 6.1 Broadband infrastructure

K3 should build broadband infrastructure in urban African areas providing broadband internet connection, digital TV, and IP telephony to millions of people. 3air may coinvest in K3 broadband infrastructure. With this infrastructure alone there is potential of bringing over 1 million users on the 3air platform within 3 years and north of 10 million users within 10 years.

K3 Lastmile solution is a patented wireless technology for broadband data transfer over great distances with the throughput and performance equaling that of a cable network. K3 Lastmile solution is a wireless infrastructure with the only technology worldwide that can completely replace any wire connection.

## Standard technology



## K3 technology

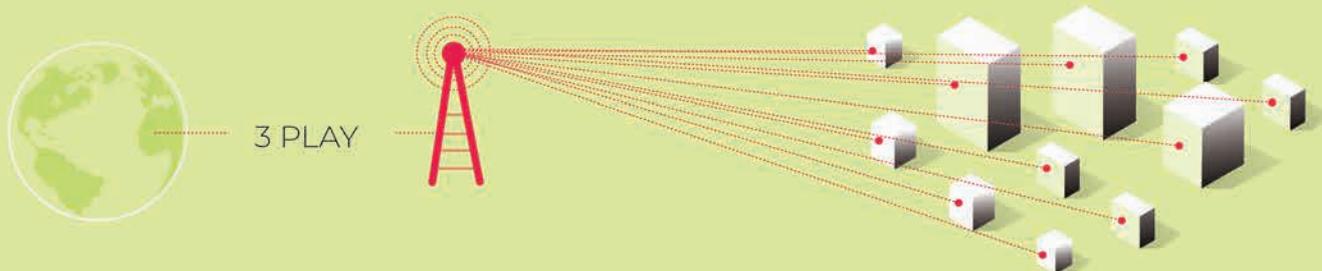


Figure 18 Technology comparison: Cable broadband vs. K3 Lastmile solution

The system also provides the possibility of providing content like remote healthcare, E-government, virtual schools, automatic meter reading, remote work, and others. Standards used in the system are well known and world certified, like DOCSIS, EuroDOCSIS, TDMA DVB-C, DVB-T and similar. ut and performance equaling that of a cable network. K3 Lastmile solution is a wireless infrastructure with the only technology worldwide that can completely replace any wire connection.

### K3 provided services:

- **Ultra-High-speed Broadband Internet** (up to 1.000 Mbps per end user).
- **OTT Services** (Netflix, Apple TV and other TV, streaming services, Timeshift, VoD functionality, 150+ SD and HD digital TV channels, for unlimited number of TV users because TV signal is broadcasted)
- **VoIP Content** (Full premium functionality services: Caller ID, Call Transfer, Fax, Voice Mail, Simultaneous Multiple Line use...)

Up to 17.112 Mbps per Base station delivered.

Up to 15.000 users/customers per base station served.

Up to 1.000 Mbps per end user/customer.

## 6.2

# Case studies

Key use cases, delivered across different user groups and jurisdictions are summarized below.

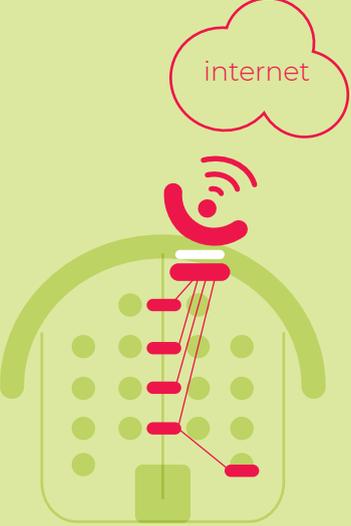
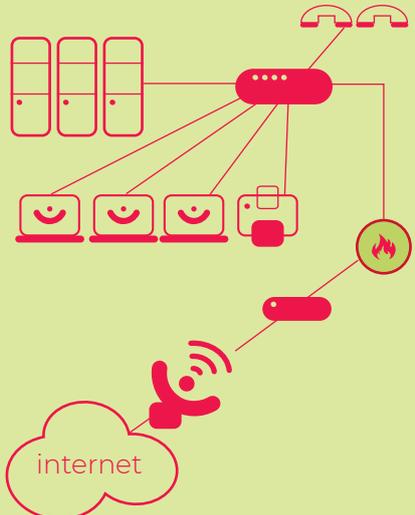
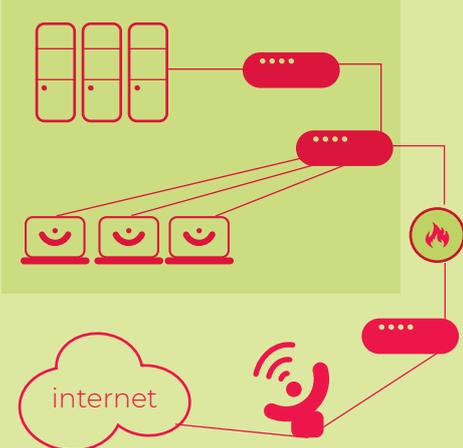
User group	Retail market	Enterprise market	
Scenario	<p><b>Households &amp; residential</b></p> <p>28 apartment complex in Monrovia required an apartment-wide internet service</p> 	<p><b>Small, medium enterprises</b></p> <p>A private enterprise in Spain with 25 clients required reliable internet connectivity for seamless business operations</p> 	<p><b>Large corporates</b></p> <p>A state owned bank in Liberia required a dedicated back-up internet services provider to peer up with BGP (an existing ISP) in servicing the bank for redundancy purposes.</p> 
Results	<ul style="list-style-type: none"> <li>All 28 apartments were successfully connected via one anchor customer's LNB with each customer having high quality triple play services with the added flexibility of individual TV plans and uninterrupted speeds.</li> </ul>	<ul style="list-style-type: none"> <li>K3 delivered on this promise with speeds of 20/5mbps achieved with static public IP address,</li> <li>Solution architecture employed involved use of DOCSIS 3.1 in bridge mode connected behind the Company's corporate firewall using a basic bridge configuration and package.</li> </ul>	

Figure 19 K3 Lastmile solution key use cases

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## 6.3

### Future plans

K3 in cooperation with 3air should bring broadband internet, digital TV, and IP telephony to the following countries:

- **Democratic Republic of the Congo (DRC),**
- **Nigeria,**
- Guinea,
- Congo Brazzaville,
- Ethiopia,
- Ivory Coast,
- Ghana,
- Sudan,
- Mozambique,
- Zimbabwe,
- Kenya,
- Senegal.

Licenses and contacts have already been established in most of mentioned countries with DRC and Nigeria being ready to start immediately.

K3 is already present and fully operational in Sierra Leone and has started the investment process in the Democratic Republic of Congo in September of 2021. Once the 3air platform is ready, K3 may move all their existing clients to the 3air platform, thereby guaranteeing fast adoption in the early stages of the platform.

K3 provides all needed services in house. 3air may bring all their services to the blockchain.

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## 6.4

### New technologies for low-income areas

K3 and 3air are developing an IoT platform in combination with a low-cost Wi-Fi mesh network. This will be included in the future services and will provide broadband services at ultra-low prices for areas that cannot afford high quality, dedicated, or shared broadband services.

This project is already in the pilot phase in Sierra Leone.



# 7. Milestones and metrics



We put a lot of thought and planning into 3air to make it a successful long-term project. Please note that the below is subject to change due to business, economic and other circumstances.

## 7.1 Roadmap and milestones

### **November 2020**

- Initial idea

### **January – March 2021**

- Idea development
- Strategic partnerships

### **April 2021**

- K3 cooperation agreement

### **May 2021**

- Core team selected
- First market analysis

### **June - September 2021**

- White paper
- Business plan
- Marketing plan
- Second market analysis
- Seed funding acquired

## **October 2021**

- Private sale start
- Start of community building

## **November 2021**

- TGE
- IDO completed and all funding acquired
- First DEX listing
- Start of infrastructure building in DRC

## **January 2022**

- Nigeria works starting
- 3air platform test-net ready
- Tier 2 exchange listing

## **March 2022**

- Platform beta testing

## **April 2022**

- Fully operational in DRC
- Platform 1.0 launch
- First 3air platform users
- Tier 1 exchange listing

## **June 2022**

- Inclusion of K3 Sierra Leone in the platform

## **July 2022**

- Fully operational in Nigeria

## **December 2022**

- Microloans beta testing
- 20.000 platform users

## **2023 - 2025**

- Service tokenization
- IoT platform
- Bandwidth distribution through blockchain
- Roaming through blockchain
- Full microloans implementation
- 3M users

In cooperation with K3 we are aiming to provide infrastructure and services to new locations every 4 months with the following plan:

- **DRC,**
- **Nigeria,**
- Congo Brazzaville,
- Ethiopia,
- Ivory Coast,
- Ghana,
- Sudan,
- Mozambique,
- Zimbabwe,
- Kenya,
- Senegal.

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## 7.2 Metrics and Key Performance Indicators (KPIs)

KPIs are a must to help guide projects towards scalability and sustainability. They measure efficiency and must be constantly updated. They also need to be evolving, adapting, and growing with the project. These are by no means the final KPIs 3air will use.

### **Sales:**

- New clients signed.
- Revenue per client.
- Total platform users.

### **Customer support:**

- Number of tickets created.
- Open and solved tickets.
- Average ticket closing time.
- Average reply time.

### **Marketing:**

- Media coverage.
- Social media following.

### **Development:**

- Downtime.
- Codebase code coverage %.
- Code commits.
- Sprint and release burndown.

There are other metrics we will follow to track the efficacy of implemented services. For instance, fraud events prevalence, bandwidth usage distribution, OPEX changes and general customer satisfaction.



## 8. 3air Tokenomics

Blockchain and token economies are a young but fast evolving field. Tokens are forming complex economies and their usage needs to be educated. We encourage you to read more on the field of token economics to educate yourself in the matter. You may start with our [Appendix 10: General token managing mechanism and token economies](#), but you should not stop there and continue to dive deeper into this amazing field.

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### 8.1 Token supply, distribution, and release schedule

One of the most important metrics of the token is its total supply. It is not the most important one though as the real information comes from how many tokens are in active circulation and that on the other hand depends on how the already created tokens are distributed to the public. With a **known and transparent release schedule**, some of the disturbances caused in changes of the supply stated by Keynes (Keynes, 2016), can be effectively priced in early.

**The initial and max supply of 3air tokens will be 1 billion. The initial 3air supply is also its final supply. No more 3air tokens will ever be minted.**

All tokens will be pre-minted and token vesting governed by smart contracts. This removes the need for trust and best utilizes the blockchains trustless characteristics. Once the initial token distribution is complete, 3air will not have the power to change token releases or manipulate token pools.

## 8.1.1 Initial distribution and token vesting

	#tokens	%	price	raise	vesting
<b>Total</b>	<b>1,000,000,000</b>	<b>100%</b>	<b>\$ 0.0519</b>	<b>\$ 16,600,000</b>	
Seed sale <sup>(filled)</sup>	10,000,000	1%	\$ 0.01	\$100,000	10% on TGE then linear for 12 months
Private round 1*	30,000,000	3%	\$ 0.03	\$ 900,000	20% on TGE then linear for 12 months
Private round 2*	40,000,000	4%	\$0.04	\$1,600,000	20% on TGE then linear for 12 months
Private round 3*	40,000,000	4%	\$0.05	\$2,000,000	20% on TGE then linear for 12 months
Public/IDO**	200,000,000	20%	\$0.06	\$12,000,000	20% on TGE then linear for 4 months
Farming/staking	100,000,000	10%		\$-	2,5% per month starting 3 months after TGE
Airdrops	50,000,000	5%		\$-	2% at TGE, 98% 6 months after TGE
Team	80,000,000	8%		\$-	linear for 12 months starting 12 months after TGE
Marketing	50,000,000	5%		\$-	5% per month starting 5 months after TGE
Advisors + influencers	50,000,000	5%		\$-	linear for 12 months starting 10 months after TGE
Ecosystem	300,000,000	30%		\$-	4% per month, starting 1 month after TGE
Initial DEX liquidity	50,000,000	5%		\$-	100% on TGE with 3-year liquidity lock

Table 2 3air initial token distribution and vesting

\* Private rounds allocation limits: maximal 15M 3air tokens; minimal: round 1: 1.6M, round 2: 1.2M, round 3: 1M 3air tokens.

\*\* Public sale allocation limits. minimal 20,000 3air tokens; maximal 830,000 3air tokens.

To ensure broad distribution of the 3 air tokens, there is a limit of maximum 15M 3air tokens or 1.5% of max token supply per user on private rounds and a limit of 830,000 3air tokens (0.083%) per user in the public sale.



Figure 20 Pie chart: 3air initial token distribution

There will be 113M 3air tokens in circulation at TGE. At the IDO sale price this would translate to a market capitalization of \$6.78M.

### Token release schedule

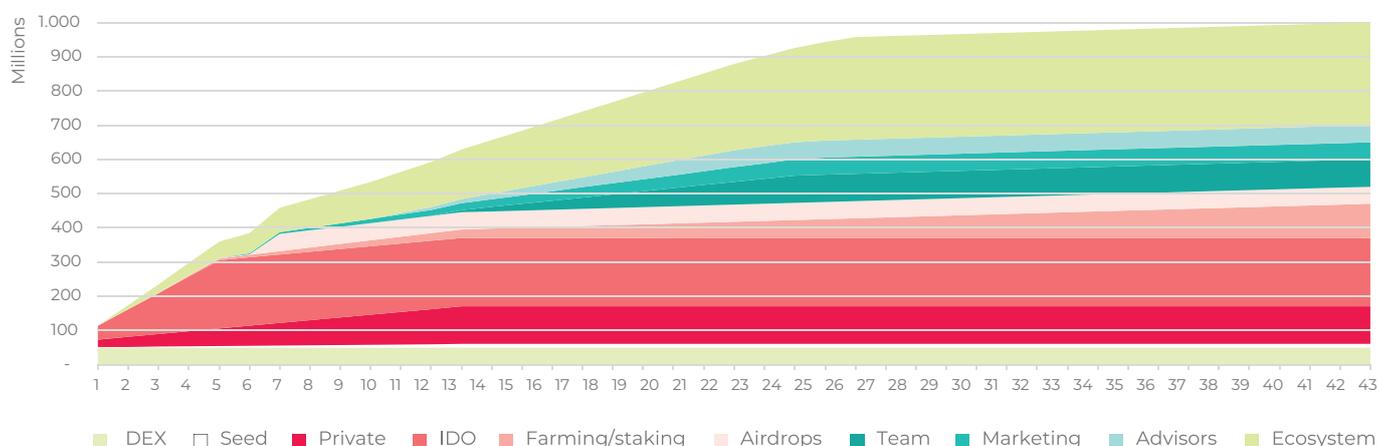


Figure 21 3air token release schedule

TGE circulating tokens	
Seed	1,000,000
Private	22,000,000
IDO	40,000,000
Airdrops	1,000,000
Dex Liquidity	50,000,000
<b>Total</b>	<b>114,000,000</b>
<b>TGE circulating MC at \$0.06 (IDO price)</b>	<b>\$ 6,840,000</b>

Table 3 3air circulating tokens and market capitalization at TGE

A soft cap of \$12.5M and a hard cap of \$18.7M is set for the combined seed, private rounds and public/IDO sales. If at the time of the public/IDO sale start any private round allocated tokens remain unsold, they can be added to the public/IDO token allocation. If public/IDO tokens are not sold, they can be transferred to the last open private round and the private sale extended.

In the unlikely event that the soft cap is not reached, collected funds may be returned minus incurred costs for launching the project, starting with the public/IDO round, followed by private

round 3, private round 2, private round 1 and the seed sale. Each round could be refunded in full if the funds permit. If a round cannot be refund in full the remaining funds shall be split to all its participants equally depending on their contribution within the round. All costs incurred by project proceedings shall be reasonable and thoroughly documented and presented to sale participants.

**Participation in the TGE is subject to acceptance of the Terms and Conditions for the 3air Public Distribution. Strict KYC and AML procedures will be followed for all seed, private and public sales.**

---

## 8.2 Token generation event (TGE)

At TGE, tokens will be minted on the Cardano blockchain. Bridges to other blockchains might be potentially available to help the adoption of the token.

Seed sale, Private sale and IDO participants will be provided an easy-to-use application where they will be able to claim their tokens and transfer them to their whitelisted wallet address in accordance with their vesting schedule, governed by a smart contract.

3air, its affiliates or third parties may provide first liquidity in the amount of 50M 3air tokens at IDO price. If it is in the interest of 3air and the community, this liquidity could potentially remain in place for a long period of time, such as 3 years. Because of the fast development of the blockchain space, an appropriate DEX might be selected at a date closer to the TGE. 3air, its affiliates or third parties might choose to list on multiple DEXes and multiple blockchains at TGE. Such choice may be made taking into account Cardano native DEX development progress and traction as well as traction of other blockchains. At the time of writing there is no DEX on Cardano yet and blockchains with most tractions are Ethereum and Solana, thus they are looking like a viable option for initial DEX listing.

In the event that 3air sees additional benefits, tokens might be primarily generated and distributed on the Ethereum blockchain as ERC-20 tokens or on the Solana blockchain as SPL tokens. A bridge to the native token on Cardano should be provided at first convenience.

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## 8.3 Token lifecycle

Token lifecycle begins with its minting. 3air, its affiliates or other third-parties would be responsible for token minting and initial distribution as described earlier. Token releases are governed by smart contracts.

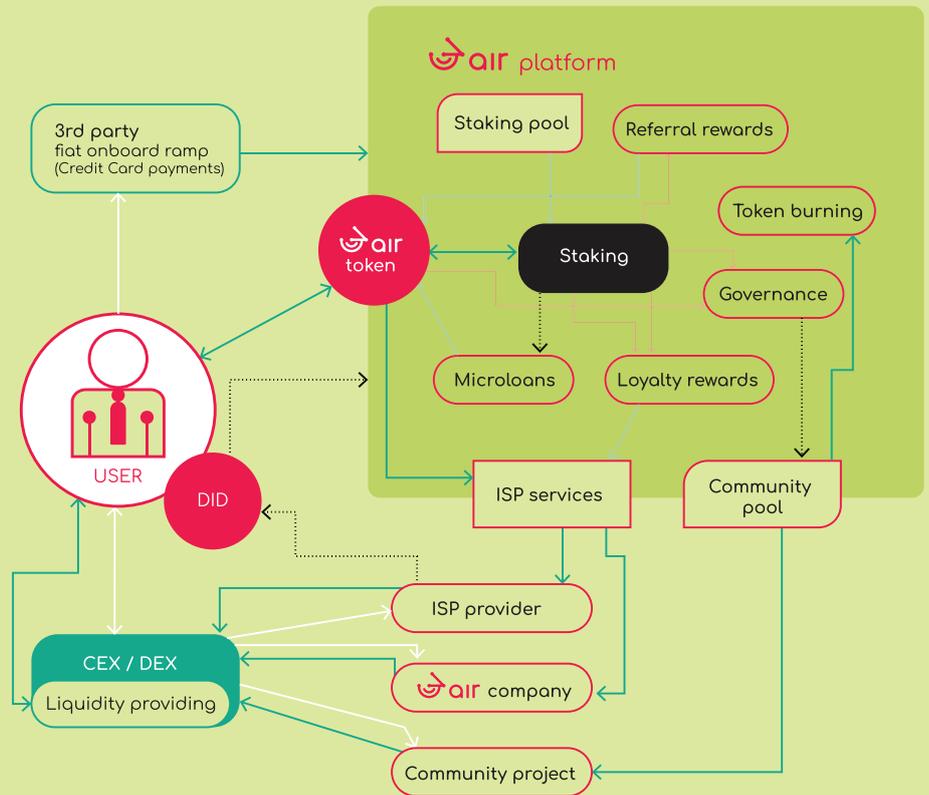


Figure 22 3air ecosystem token interactions

The user interacts with the 3air platform through his DID and the 3air token. DID's can be issued by the ISP provider or a 3<sup>rd</sup> party service. DID uniquely identifies the user and accompanies all token transactions on the platform. 3air tokens can be connected to the platform with a crypto wallet. Tokens can be spent on ISP services or transferred into staking, governed by a smart contract. Stakers receive staking rewards from the staking pool.

Either token holding or token staking could have an impact on referral rewards, loyalty rewards, microloans, and governance. Referral rewards are distributed to the referrers. Loyalty rewards are distributed either in tokens or as a different type of reward (discounts, freebies) and impact ISP services.

The user can pay for the ISP services with tokens or with the help of a 3<sup>rd</sup> party fiat onboard ramp. Once a service is paid, tokens are transferred to the ISP provider and a fee is paid to the 3air company wallet. The service provider grants service access to the user through his DID.

Users may eventually use their tokens for voting. The community pool would be under the governance of the token community that may give their opinion on matters such as token burning or funding local community projects.

All participants (token holders) can use centralized or decentralized exchanges to either buy or sell 3air tokens for other cryptocurrencies or, where permitted, for fiat.

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## 8.4 Staking

3air aims to create strong incentives for the usage of the token. Initiatives are as follows (described in more details in [Section 5: 3air ecosystem](#)):

- **Staking pool.** A special staking pool could be set up for staking rewards, with potentially higher rewards for early adopters.
- **Governance.** Each token could represent one vote in the governance of the platform and could give user the ability to cooperate in the decision-making of funding projects, token burns and other important changes to the platform.
- **Rewards.** A certain amount of tokens may be required to unlock different VIP statuses and with-it special discounts, promotions, airdrops, cashbacks, and upgrades.
- **Referral bonus.** The amount of staked tokens could determine the referral bonus.

Microloans collateral. To get a loan, 3air tokens could be needed as collateral, either personal or pledged.

Own your own hardware incentive. The company will provide each client with locked tokens that can be later used to purchase the leased hardware required to use the provided services.

We believe these incentives could be of interest especially for the millions of 3air platform users acquiring services through K3 and other future ISPs joining the platform. Some early adopters may potentially be able to enjoy lifetime free services just by staking enough tokens and taking advantage of all the rewards connected to holding tokens.

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## 8.5 Token Supply

We have chosen a fully transparent model with a limited maximum supply. That should take away the uncertainties that exist when tokenomics are not fully disclosed or poorly defined. Having a limited supply and token burning mechanism, our token model could eventually become deflationary.

Token buybacks and token burning are described in detail in the [Section 5: 3air ecosystem](#).

Even if a deflationary supply on its own is not a guarantee of good token economics, it does contribute in a positive way.

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## 8.6

# Decentralization mechanisms

Only a maximally decentralized token is a stable and secure token. 3air will do its best to decentralize 3air holdings with the following tools at hand:

- Private round sales are capped at max 15M token (1.5% of total supply) per user and public sales are capped at 830.000 tokens (0.0083% of total supply).
- All platform users could be incentivized to hold tokens with staking, discounts, and rewards. With expected over a million users in 2025, 3air could potentially be one of the most widely distributed tokens even in the short period of time.
- Part of the fees could potentially go to community pools and could be distributed outside of the current network, incentivizing the increase of token holders.
- Staking rewards could be capped to a maximum of 50M tokens to disincentivize “whale” holdings.
- Majority of our presale should be public with small allocations, making the initial distribution spread to as many users as possible.

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## 8.7

# Building community and raising token awareness and expectations

We are fully aware that today's projects live and die with its communities and its marketing. We will not use this as an excuse to build a poor product though.

We have teamed up with Amazix to create a full, crypto specific marketing strategy, build our community and raise the awareness and expectation of the 3air project. Amazix are a huge player in the marketing of crypto projects and have been working with many top 20 projects in the crypto space.

We will start a full marketing campaign with adds, influencer marketing, PR, community building and other proven tools.

We strongly believe in our mission to bring equal opportunities to people in Africa and to build the best telecom services platform, and we will make everybody believe in us as well. This is a perfect opportunity to help make the world a better place and feel good about it.

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## 8.8

# Airdrops

5% of the total supply, or 50M 3air tokens are intended. 2% of this amount or 1M 3air tokens will be released into circulation at TGE and the remaining 98% 6 months after that. These tokens will be dropped into wallets of participants that will fulfill set requirements. These requirements will be known upfront and published on the 3air official website. These might include joining social channels, participating in AMAs, participating in bounty hunts, or simply standing out in the community.

Airdrops cannot be bought; they must be given out for free or as a prize reward. The purpose of the airdrops is to reward the community and for marketing purposes.

## 8.9 Growth predictions

### 8.9.1 Users

App users are expected to grow exponentially. First users could potentially come to the platform through the K3 partnership. There are already over 2000 active customers using K3 services, who could potentially be ported to the 3air platform once it's operational. With building out infrastructure throughout Africa we should expect an exponential growth in users even through this partnership alone. This partnership may help with having certain traction once the platform is operational and could potentially bring 400.000 active users to the platform by 2026.

Expected user growth from K3 partnership, according to the roadmap and real-world data from Sierra Leone:

	2022	2023	2024	2025	2026
Potential users from K3	19,500	68,200	154,300	276,800	413,700

Table 4 3air user growth prediction

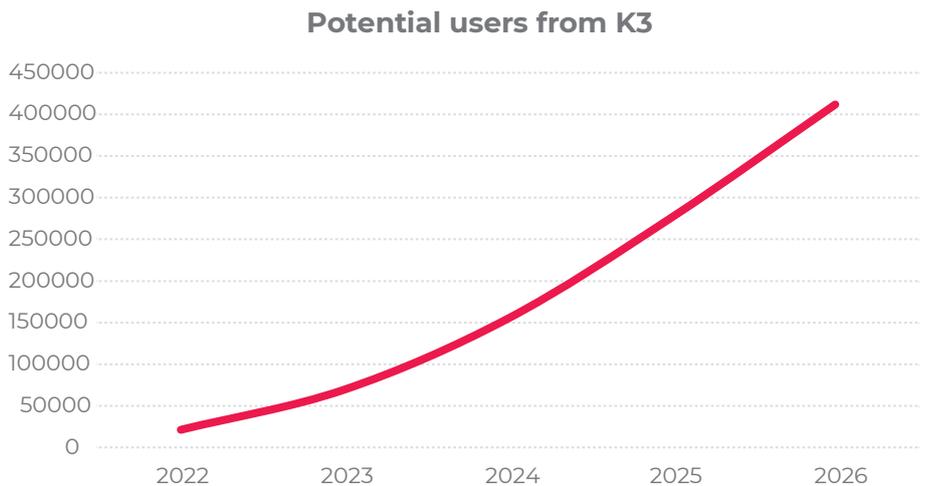


Figure 23 3air user growth prediction

Note, that these numbers include only our K3 partnership. We aim at onboarding other ISPs on the platform, and potentially reach 1 million users by 2025.

This is highlighting only the potential of active users on the platform.

## 8.9.2 Revenue

Using real world data from K3 Sierra Leone, the average revenue per user sits around \$130 per month. As Sierra Leone is one of the lower income countries even for Africa's standards, we are certain that the average revenue in other African countries will not be below this mark.

With a 3% fee on the turnover, only with K3, 3air could grow fast and sustainable. With other ISPs joining the platform, revenue could potentially grow exponentially.

	2022	2023	2024	2025	2026
Potential 3air revenue from K3 partnership	\$0.9M	\$3.2M	\$7.2M	\$13.0M	\$19.4M

Table 5 3air revenue growth prediction

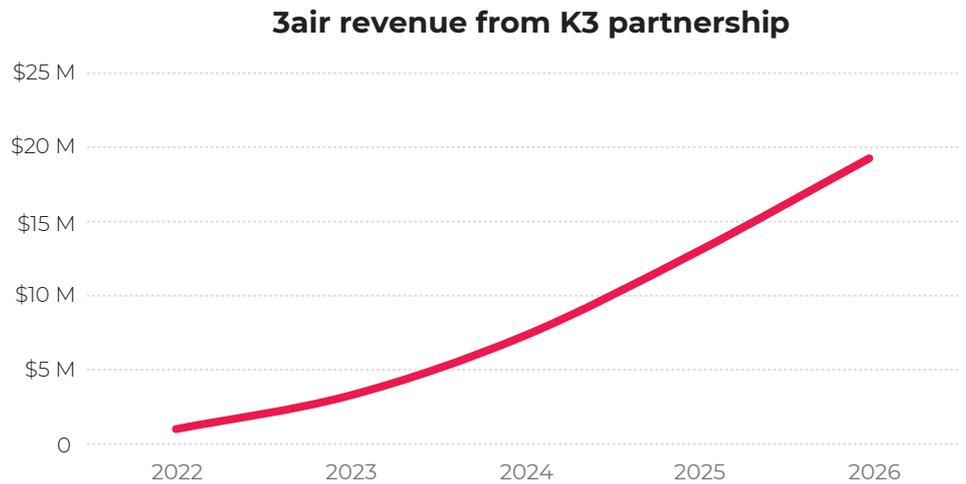


Figure 24 3air revenue growth prediction

**If 1M users is reached by 2025, 3air revenue could potentially be \$180M.**

### 8.8.3 Project valuation

Evaluating a token economy is challenging. As of yet there is no distinct formula that can be used to determine the value of a crypto project. That is why we have turned to traditional models to determine the potential value of the 3air platform and tried to compare it to similar projects in the crypto space.

Most widely used metric to value telecom companies is EV/EBITDA method. **Only considering K3 partnership**, the 2025 valuation of 3air could potentially be over \$2,1B.

	2022	2023	2024	2025	2026
Valuation	\$148.2M	\$518,3M	\$1.17B	\$2.10B	\$3.14B

Table 6 3air valuation prediction

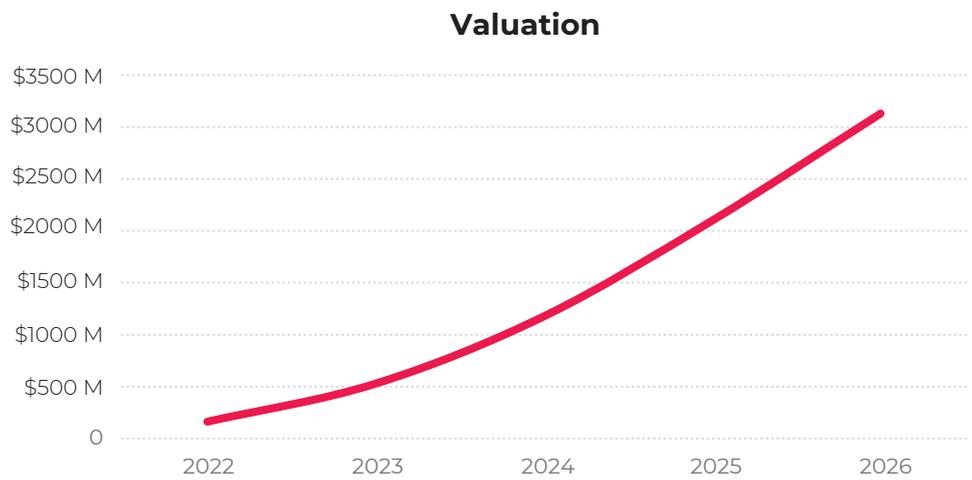


Figure 25 3air valuation prediction



## 9. 3air Team

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### 9.1 Company

3air platform is developed and operated by 3air Tech DMCC and its affiliates. 3air tech DMCC is a company registered in the Dubai Multi-Commodities Centre with a business license to provide Distributed Ledger Technology Services, with license number: DMCC-816017.

3air token issuance, token distribution and token marketing are conducted by 3air tech Ltd. within the jurisdiction of the British Virgin Islands. BVI company number: 2075729.

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### 9.2 Team and Advisory board



#### Sandi Bitenc

**CEO**

<https://www.linkedin.com/in/sandi-bitenc-40228686/>

Sandi is a serial entrepreneur and a computer geek. His professional computer career started already in his teens when he was part of a hosting and domain registrar startup company that went to become the biggest in the Adriatic area and branched to software development and a fully-fledged marketing agency. He has leading experience in the gaming industry and the health industry. He is part of many blockchain communities and devotes most of his time to the industry. As a WR holder in 24-hour apnea diving he is well goal oriented and relentless in its pursuit.

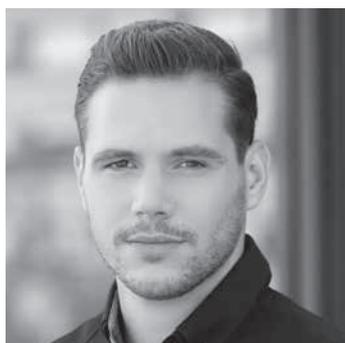


## Davor Žic

### CTO

<https://www.linkedin.com/in/davor-%C5%BEic-43889419/>

Davor has over 20 years' experience in the telecom and IT industry. He founded many successful companies and is involved in development, planning, deployment and security of various system integrations and telecom networks. He has worked as CTO and CEO in various SE Europe companies in system integration and renewable energy sectors. He is the CTO of K3 and responsible for the patented wireless K3 Lastmile solution technology.



## Nejc Bukovec

### Chief Token Relations Officer

<https://www.linkedin.com/in/nejcbukovec/>

Nejc is a founder of multiple successful blockchain companies and projects. He keeps close connections to multiple crypto exchanges and blockchain projects. He holds a master's in business economics and has founded multiple successful business. He is an investor and an FX trading professional.



## Rok Mihailović Krpan

### Head of development

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Rok has over 7 years of experience in IT and programming and over 3 years of experience in leading various development teams with products ranging from web platforms all the way to the low-level embedded system. He's always on track with latest technologies available to the development community. He's proficient in Go, Java, JavaScript, C++ and different web technologies and frameworks. He is also behind the development of most of K3 Telecom proprietary software solutions including IPTV and multiple telecom infrastructure management solutions. He is involved in advancing IoT infrastructure around Africa with some custom LoRa based solutions that can be provided by ISPs to their users.



## Domen Leš

### Lead developer

<https://www.linkedin.com/in/dle%C5%A1/>

Domen has over 2 years' experience on developing a crypto exchange. He holds' a bachelor's degree in Informatics and Communication Technologies from University of Maribor, Faculty of Electrical Engineering and Computer Science. He is a Certified Ethical Hacker (CEH Master). He is a senior developer with over 6 years' experience including IT and security. He's proficient in Java, Kotlin, Golang, Haskell, Reverse Engineering, Security, Pentesting, Software development, Software Integration. He's currently working on his master's thesis in innovative solutions for tomorrow.



## Samo Zorger

### Operations Associate

<https://www.linkedin.com/in/samozorger/>

Samo is helping in daily operations of 3air and devotes 100% of his time to it. He has over 5 years of experience in the financial markets and more than 3 years experience in project management and operations. He is a highly organized individual with strong attention to detail as well as passionate about the cryptocurrencies space and digital assets in general.



## Laura Pompe Sterle

### Lead designer

<https://www.linkedin.com/in/laura-p-sterle-7a7397211/>

Laura is a senior graphics designer with over 20 years of experience in design for corporate identity, trademarks, business publications and online communications. She has experience in designing as a freelancer and being a part of big advertising agencies and business publications.



## Ruba Aramouny from SOLID

### Social Media Manager

<https://www.linkedin.com/in/ruba-aramouny/>

Ruba has over 10 years' experience in online marketing and has been running SOLID Marketing, an online marketing agency since 2014. She holds' a double Master's in Strategic Marketing and Entrepreneurship & SME Management.



## Anita Mlakar

### PR

<https://www.linkedin.com/in/anita-mlakar/>

Anita is a PR and communication specialist. She has her own online PR Academy and develops full-length PR strategies. She's been a journalist at the no. 1 national radio station and a television presenter at the no. 1 national TV station.



## Denis Bolčina

### Telecom advisor

<https://www.linkedin.com/in/denis-bolcina-232203b5/>

Denis is the co-founder of K3 Telecom and its main visionary. He is an experienced serial entrepreneur with demonstrated success in the energy industry. He is the co-founder of a major producer and manager of renewable energy in the Adriatic region and is an investor in different real estate projects in the Adriatic region and Russia



## Markos Lemma

### Africa focused Strategic Advisor

<https://www.linkedin.com/in/eweket/>

Markos Lemma is CEO and Co-founder of iceaddis, Ethiopian first innovation hub and tech startup incubator. Founder of SelamCompany – an edutech venture working on primary education and literacy. Also co-founded high potential ventures 3BL Enterprises and DBR Technologies. Markos works with high potential startups in East Africa. Representing Ethiopian innovation ecosystem on the international stage. He has been organizing Blockchain community events since 2013. He actively supports startups and tech communities in Africa on Cardano ecosystem working closely with John O'Connor. Seats on board of advisors on GIG network and also the founding member of i4policy. Co-establishing logic and strategy for a literacy and technology project in highly remote Ethiopian villages with MIT, OLPC & Tufts University with direct supervision of Nicholas Negroponte, Dr. Cynthia Breazeal & Maryanne Wolf. Based on the experience xPrize launched a \$15mil literacy project award in 2015. Developed a concept and implemented a ePrivateSectorDevelopment, project which ran on export oriented companies under German Development Cooperation (GIZ). Speaker on TEDx 2014. His work has been mentioned on different media such as The Economist, BBC, VOA, CCTV, Al Jazeera, TechCrunch, Capital Magazine, El Pais. Graduated in computer science from Royal Melbourne Institute of Technology (RMIT).



## Oliver von Wolff

### Strategy and Financial Advisor

<https://www.linkedin.com/in/oliver-von-wolff-63146639/>

Oliver von Wolff is Managing Director of CV VC & CV Labs Dubai, an early-stage venture capital investor and blockchain ecosystem builder, headquartered in Switzerland with branches in Liechtenstein, South Africa and Dubai. Prior, Oliver was Group CFO & Equity Partner of a global crypto asset management and blockchain-focused venture capital group and Managing Director of a joint venture with a stock listed equity company on the Xetra Frankfurt. Oliver has over 15 year's management experience, as CFO and Co-Founder responsible for different start-up's and management buy outs. He has a proven track record in company transformations in different industries and is well connected in Dubai and the GCC region. Oliver holds an MBA in international management, degrees in economics and business and attended New York University to study international corporate finance. With an abundance of global experience, Oliver has a strong understanding of various markets and industries, particularly throughout Europe and Middle East.



## Julius Glöckner

### Strategy and financial advisor

<https://www.linkedin.com/in/julius-gloeckner-mba-cpa-cia-cfe-a061a31b/>

Julius brings deep strategy to 3air and K3 expansion. Previously he worked at Deloitte in New York on engagements for IBM and Microsoft. He also worked for a Boston based entrepreneurial strategy consulting firm Keystone Strategy. He has an MBA in the US and completed his CPA, CIA, and CFE designations. Currently he is the K3 CSO. As a former record holding NCAA Division I athlete, Julius also adds tremendous level of energy and passion to the project.



## CV labs Global

We are proud to be an important partner to CV Labs Global. CV Labs is the ecosystem business of CVVC. They combine coworking, a variety of events and advisory activities to create a unique global blockchain ecosystem. In their offices in Zug, Vaduz and Dubai they accommodate more than 130 of the leading blockchain projects in the industry. CV Labs is currently focused on expanding to Asia, Latin America and especially Africa, where 3air will be a strong partner.

<https://cvlabs.com/cvlabsglobal>



## CV Labs Dubai

CV Labs is the largest ecosystem for cryptography, blockchain and DLT. It is a unique place in Crypto Valley where great minds and new ideas come together to discuss and innovate. They recently expanded to Dubai where they offer incubation programs for promising crypto startups, providing them with guidance, marketing, and legal support.

<https://cvlabs.com/>



## IceAddis

IceAddis is Ethiopia's first innovation hub and tech startup incubator established in May 2011. It facilitates technological innovations, creative projects, and startup support. IceAddis provides young entrepreneurs, local and visiting creatives with professional support and consultancy. They have an experienced team focused on tech innovation and they have recently acquired partnership with Cardano IOHK. Right now, they are in the process of expanding to other countries throughout Africa. The partnership is valuable both ways as it brings new contacts and customers to 3air and provides startups with the needed connectivity to become competitive and grow.

<https://www.iceaddis.com/>



**K3Tele.com**

## K3 Telecom

K3 Telecom AG is a Swiss based global telecommunication operator with unique wireless K3 Lastmile solution technology. They are engaged in the business of co-investing and establishment of telecommunication networks and offering ISP provider services on various global markets.

<http://www.k3tele.com/>



## IT TIM

IT TIM offers IT services and solutions as server & network, security, support, and software development. They are over 15 years on the market with over 40 employees.

Their excellent and professional development team is excellent in custom app development, and they have a team designated for security and penetration testing.

Additionally, they have experience in developing Telecom Management Systems (TMS) and will provide valuable experience in development of systems suitable for telecom and ISP providers.

Our current scope of collaboration includes partial website, webapp and TMS development, security testing and advisory.

<https://it-tim.si/en/home-2/>



# 10. Financial overview

3air is being funded partly through private funds with majority of its funds coming from 3air token seed, private and public sales.

All use of funds will be 100% transparent and used solely for the purpose of expanding connectivity through Africa and building the best ISP platform.

All vested tokens will be locked in smart contracts as will be the initial liquidity provided at DEX listing. We want to make our token holders feel safe and secure without the need for trust, after all, this is the premise of blockchain technology.

## 10.1 Use of funds

**In principle, there should be 3 main drivers of cost:**

- 1. K3 Lastmile infrastructure in Africa.**
- 2. Platform development.**
- 3. Marketing.**

It is to note, that majority of acquired funds should be initially used to fund broadband infrastructure building in Africa. With our partner K3 we should start building the K3 Lastmile solution proprietary technology infrastructure in DRC and Nigeria once all the needed funds have been acquired. K3 has experience and detailed financial plans, confirmed in similar projects in Africa. The required funding for covering DRC and 2 major cities in Nigeria (Abuja and Lagos) is \$25 million. Even if this might seem tiny in comparison to traditional broadband infrastructure costs (same project would cost at least \$500M), K3 technology could allow for such extreme cost reductions. This has been proven with the already operational

infrastructure in Sierra Leone. Detailed financial plans and Sierra Leone operations are available for registered interested investors on request.

**Funds usage per initial token distribution is planned to be as follows (subject to change due to business, economic and other circumstances):**

- Personal funds: Market analysis, document preparation, incorporation.
- Seed sale: document preparation, legalities, private sale preparation, Pre IDO marketing.
- Private sale: 100% DRC and Nigeria operations.
- IDO: post launch marketing, platform development.
- Airdrops: dropped to the community on DRC and Nigeria operations launch.
- Ecosystem: DRC and Nigeria operations, Platform development, infrastructure for additional countries.

Other distributed tokens usage should be self-explanatory.

**K3 Lastmile solution infrastructure (DRC and Nigeria) could include but is not limited to:**

- Acquiring a license.
- Initial infrastructure setup.
- User inventory.
- Staffing.
- Marketing.
- User support.
- Infrastructure maintenance.

**Platform development could include but is not limited to:**

- Development of smart contracts.
- Integration and updating of the existing metering and billing system.
- Integration with third party services.
- Development of proprietary API.
- Secure wallet creation.
- Implementation of the voting/governance system.
- Implementation of microloans.
- Development and integration of staking services.
- Frontend development of ISPs.

### **Marketing could include but not be limited to:**

- Strategic development.
- Website listings.
- Influencer outreach.
- Brand development.
- Email campaigns.
- Content creation (textual, visual, audio).
- Social media publishing and community building.
- Website authoring, design, and development.
- Link building.
- Adds creation and placement.
- PR.
- Analytics.

### **Additional areas of funding are:**

- Legalities and regulations
- Client support
- ISP support
- Exchange integration

## 10.1.1 Plan nedmonthly costs

### General costs overview

month	Total	General	Platform	Marketing	Other	DRC	Nigeria operations	Congo Brazzavile operations	Ivory Coast operations	Chana operations	Sudan operations	Mozambique operations	cumulative
August 2021	\$110,000	\$10,000		\$60,000	\$40,000								\$ 110,000
September 2021	\$90,000	\$10,000		\$40,000	\$40,000								\$ 200,000
October 2021	\$100,000	\$110,000		\$40,000	\$50,000								\$ 300,000
November 2021	\$175,000	\$120,000	\$25,000	\$70,000	\$60,000								\$ 475,000
December 2021	\$2,115,000	\$120,000	\$25,000	\$40,000	\$30,000	\$2,000,000							\$ 2,590,000
January 2022	\$1,115,000	\$20,000	\$25,000	\$40,000	\$30,000	\$1,000,000							\$ 3,705,000
February 2022	\$645,000	\$ 20,000	\$25,000	\$40,000	\$60,000	\$500,000							\$ 4,350,000
March 2022	\$3,640,000	\$20,000	\$50,000	\$40,000	\$30,000	\$500,000	\$ 3,000,000						\$ 7,990,000
April 2022	\$3,180,000	\$20,000	\$50,000	\$80,000	\$30,000	\$2,000,000	\$1,000,000						\$ 11,170,000
May 2022	\$1,970,000	\$20,000	\$50,000	\$70,000	\$30,000	\$800,000	\$1,000,000						\$ 13,140,000
June 2022	\$3,850,000	\$20,000	\$50,000	\$50,000	\$30,000	\$700,000	\$1,000,000	\$2,000,000					\$ 16,990,000
July 2022	\$4,750,000	\$20,000	\$50,000	\$50,000	\$30,000	\$600,000	\$1,000,000	\$1,000,000					\$ 21,740,000
August 2022	\$2,150,000	\$20,000	\$50,000	\$50,000	\$30,000	\$500,000	\$1,000,000	\$500,000					\$ 23,890,000
September 2022	\$2,150,000	\$20,000	\$50,000	\$50,000	\$30,000	\$500,000	\$1,000,000	\$500,000					\$ 26,040,000
October 2022	\$5,745,000	\$45,000	\$120,000	\$50,000	\$30,000	\$500,000	\$1,000,000	\$2,000,000	\$2,000,000				\$ 31,785,000
November 2022	\$3,445,000	\$45,000	\$120,000	\$50,000	\$30,000	\$400,000	\$1,000,000	\$800,000	\$1,000,000				\$ 35,230,000
December 2022	\$2,445,000	\$45,000	\$120,000	\$50,000	\$30,000			\$700,000	\$500,000				\$ 37,675,000
January 2023	\$2,345,000	\$45,000	\$120,000	\$50,000	\$30,000			\$600,000	\$500,000				\$ 40,020,000
February 2023	\$4,745,000	\$45,000	\$120,000	\$50,000	\$30,000			\$500,000	\$2,000,000	\$2,000,000			\$ 44,765,000
March 2023	\$2,545,000	\$45,000	\$120,000	\$50,000	\$30,000			\$500,000	\$800,000	\$1,000,000			\$ 47,310,000
April 2023	\$1,945,000	\$45,000	\$120,000	\$50,000	\$30,000			\$500,000	\$700,000	\$500,000			\$ 49,255,000
May 2023	\$1,805,000	\$45,000	\$180,000	\$50,000	\$30,000			\$400,000	\$600,000	\$500,000			\$ 51,060,000
June 2023	\$4,805,000	\$45,000	\$180,000	\$50,000	\$30,000				\$500,000	\$2,000,000	\$2,000,000		\$ 55,865,000
July 2023	\$2,605,000	\$45,000	\$180,000	\$50,000	\$30,000				\$500,000	\$800,000	\$1,000,000		\$ 58,470,000
August 2023	\$2,005,000	\$45,000	\$180,000	\$50,000	\$30,000				\$500,000	\$700,000	\$500,000		\$ 60,475,000
September 2023	\$1,805,000	\$45,000	\$180,000	\$50,000	\$30,000				\$400,000	\$600,000	\$500,000		\$ 62,280,000
October 2023	\$4,805,000	\$45,000	\$180,000	\$50,000	\$30,000					\$500,000	\$2,000,000	\$2,000,000	\$ 67,085,000
November 2023	\$2,605,000	\$45,000	\$180,000	\$50,000	\$30,000					\$500,000	\$800,000	\$1,000,000	\$ 69,690,000
December 2023	\$2,005,000	\$45,000	\$180,000	\$50,000	\$30,000					\$500,000	\$700,000	\$500,000	\$ 71,695,000
January 2024	\$1,805,000	\$45,000	\$180,000	\$50,000	\$30,000					\$400,000	\$600,000	\$500,000	\$ 73,500,000

Table 7 3air monthly costs overview

Detailed financial plan is available for interested investor upon registration and request.

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## Appendix 1: Broadband and digitalization and social impact

Assessing the impact of digitalization on societies is complicated because of lack of universal metrics. A Gini coefficient is often considered to look at the level of inequality within a society, but in emerging economies, alleviating poverty means also sparking economic growth.

**Numerous studies show the positive impact of digitalization on a nation's prosperity.** The key attributes that determine a country's digitalization are (Sabbagh, El-Darwiche, Friedrich, & Singh, 2012):

- **Ubiquity.** That is the universal access to digital services by consumers and enterprises.
- **Affordability.** Is a level of pricing that makes them available to the majority of people.
- **Reliability.** As the quality of available digital services.
- **Speed.** With real time access to digital services.
- **Usability.** So that users can adopt and use the services with ease.
- **Skill.** Is the ability of users to incorporate digital services into their lives and businesses.

Looking at these factors, broadband is the cornerstone of digitalization as it directly impacts all key attributes except for skill that is influenced indirectly by increasing usability and providing the means to educate.

Digitalization leads to positive changes in key economic and social areas of life.

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3air community will strongly influence the development of whole countries it is going to connect.

---

## Economic Growth

We probably don't need to explain that digitalization leads to higher productivity and that that would impact a nation's economy but looking at the numbers it becomes clearer how deeply intertwined it actually is.

A 10% increase in broadband penetration in low- and middle-income countries can result in a 1.38% increase in economic growth. (Barnes, 2015)

A 10% increase in digitalization triggers a 0.5% to 0.62% gain in per capita GDP and reduces the nation's unemployment rate by 0.84%.

---

From 2009 to 2010, digitalization added around 19 million jobs to the global economy and has been steadily rising.

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This is important especially for the emerging markets that will need to create additional jobs and get global economy inclusion to ensure that a booming population of young people can contribute to their national economies. (Sabbagh, El-Darwiche, Friedrich, & Singh, 2012)

A 10-point increase in digitalization results in a 6-point increase in the countries score on the Global Innovation Index (Sabbagh, El-Darwiche, Friedrich, & Singh, 2012) and that would suggest that as countries become more digitalized, they also become more innovative.

There is a connection to infrastructure investments as network effects of universal broadband access could have a multiplier of 1.17 on the investment in infrastructure. (Katz, International Telecommunication Union, 2017)

With the current COVID-19 pandemic showing us that working from home is an acceptable model, **companies will more and more be on the global online talent lookout.** Good internet connectivity will be a prerequisite in catching those opportunities.

## Standard of living

With economic growth there will be an increase in standard of living. This is also the first step to raising the quality of life within a society.

Introduction of broadband to a household yielded an increase of 3.67% in its average monthly income. (Katz, International Telecommunication Union, 2017)

In a developing country this leads to better covering the basic needs, such as food and shelter, and brings about exponential growth in satisfaction and life quality.

## Education

Online education is powerful because it essentially breaks down the barriers put in place by traditional education. While traditional education has its benefits it is decidedly outdated. With its global reach and cost effectiveness, online education provides more equal opportunities, especially to people in developing countries.

The technology-related productivity gains in education could reach from \$30 billion to almost \$70 billion, enabling governments to achieve more with their education budgets and providing millions of students with the foundation for a better future. (Manyika, et al., McKinsey & Company, 2013)

During the COVID-19 pandemic, online education evolved fast and most of the schools offered online classes during their closures. A study from Romania showed that **reasons for not attending online classes have been either lack of equipment or no internet access.** (Sava, 2021)

Online learning is becoming even more important as an additional tool. 98% of students in the U.S. are using them on a daily or weekly basis. (Duffin, 2020)

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We can see a big step in globalization of education. The main barrier of providing equal opportunities in this area are technology availability and affordable, stable connectivity.

---

## Health

As with education, health services are also being globalized by digitalization, taking exponential development in answer to health service barriers during the current pandemic. The Internet is enabling greater use of remote diagnosis,

treatment, and education. Technology-related benefits in health care could range from \$84 billion to \$188 billion by 2025, and the broader social and economic impact of improved health outcomes will be far greater. (Manyika, et al., Lions go digital: The Internet's transformative potential in Africa, 2013) Not all but many healthcare services and guidance can be provided through online healthcare platforms making it especially valuable in developing countries where going to the doctor means taking a half a day walk. **Digitalization brings help fast and efficient and has the potential to save lives.**

## Communication

We need only look to our own lives to realize how much digitalization has changed our communication, may it be personal or professional. Some may argue that its impact has its downsides, but in the global race, lagging in communication is detrimental in its own ways.

There is a positive correlation between GDP per capita and Social Networking. Secondly, young and educated people, arguably the more productive, are more connected. (Pew Research Center, 2012)

Personal communication is heavily impacted by connectivity and that became exaggerated during the recent pandemic. Companies introduced on average 3.5 new communication channels during this time. 54% reported increased use of live chats and 35% reported using it for the first time during the pandemic. Similar holds true to other communication channels such as Interactive Voice Response, SMS, Email, social media, and others. (Mlitz, 2021)

During lockdowns personal digital communication increased. **Just imagine not being able to communicate with your family and friends while visitations have been discouraged.** The same is true with travel and internationalization, where keeping contact with friends from all over the world is today easily possible over the internet.

## Governance

Communication and information availability are major factors in a governing society. With better information flow comes transparency and that should lead to less corruption and increased government effectiveness. Broadband inevitably improves communication and access to information, and it also enables e-government services. Potential public services such as public education and public healthcare will benefit from internet access. Digitalization promotes inclusion in governmental processes thereby improving equality.

It has been shown that a 10-point increase in digitalization increases Transparency International index by 1.2-point and gives the population more insight into government policies and function (Sabbagh, El-Darwiche, Friedrich, & Singh, 2012). This might lead to more active political participation and support for development of human rights.

Digitalization will also boost e-government services. A 10-point increase in digitalization improves e-government effectiveness by 0.1 point. The same digitalization factor also has a 0.17-point increase in the Inequality-Adjusted Education Index and is more pronounced in developing countries. (Sabbagh, El-Darwiche, Friedrich, & Singh, 2012)

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The blockchain technology is even more promising in revolutionizing the governance processes.

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Its temper proof, trustless environment might bring a positive change to the corruption prone individuals in power, starting with fair and trustless digital elections with the help of blockchain technology.

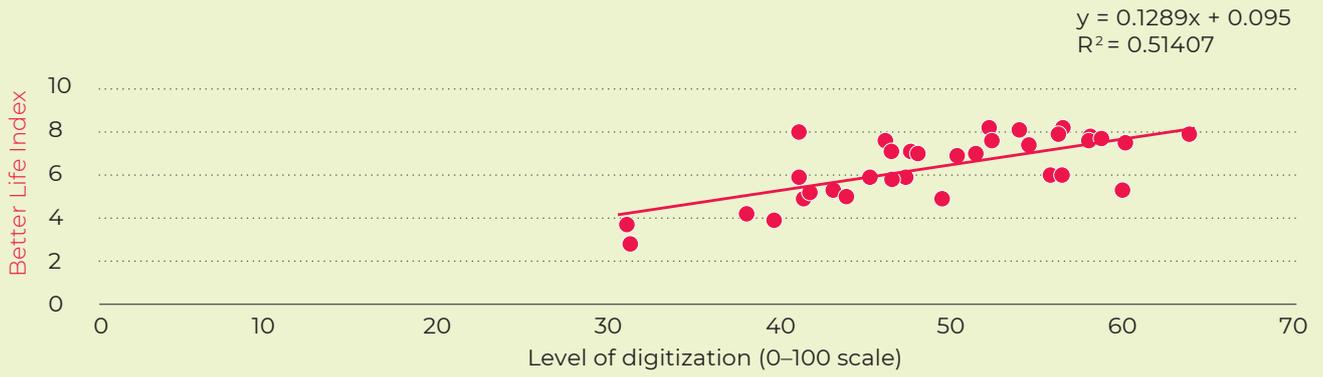
The other areas where blockchain is promising in providing viable solutions are digital identities and financial inclusion, land ownership and other official records, kept or used by the government.

## Quality of Life

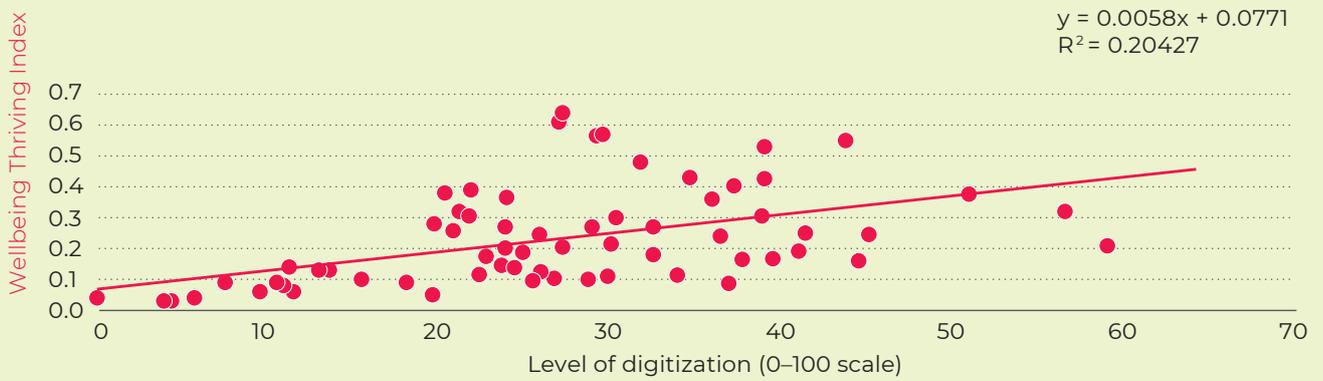
Quality of life is somewhat a catchall measure of all mentioned points. Education, health, and standard of living all play a significant role in how we perceive our life quality. It is therefore no surprise that there is a **strong positive correlation between broadband, digitalization and quality of life** measured by the Gallup Wellbeing Thriving Index and the OECD Better Life Index.

1 point increase in the Digitization Index leads to an increase of 0.59 points in the Quality-of-Life Index. (Katz & Koutroumpis, SSNR Electronic Journal, 2012)

### Digitization and the Better Life Index (34 OECD countries)



### Digitization and the Wellbeing Thriving Index (67 non-OECD countries)



### Digitization and the Human Development Index (120 countries)

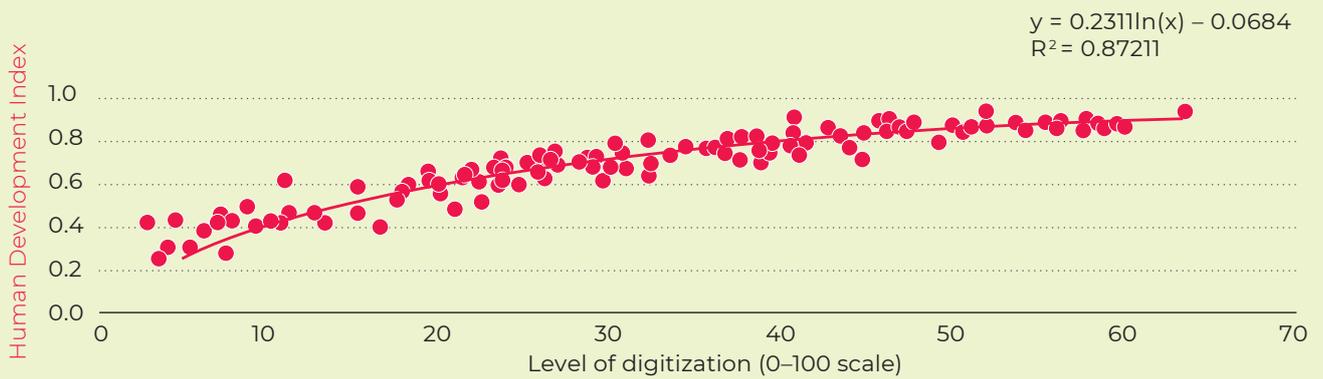


Figure 26 OECD Better Life Index; Gallup Wellbeing Surveys; UNDP HDI; Strategy& analysis

The index is a bit less pronounced in developing countries and the difference seems to be correlated to factors beyond digitalization such as food, housing, clothing, water, energy, health and finally transportation and communication. It seems like once the basic needs are covered, digitalization has exponential positive effects by providing access to basic services, especially healthcare and education. As economies develop, access to basic services becomes a given and digitalization's impact again becomes less pronounced. (Sabbagh, El-Darwiche, Friedrich, & Singh, 2012)

## Appendix 2: Risk analysis

### Our strengths:

- Proprietary technology that allows building broadband infrastructure in densely populated urban areas of developing world.
- No need to lay cables as we can provide fiber optics grade connections through air.
- Infrastructure costs only a fraction of traditional telecom operators thus immensely lower CAPEX.
- Low OPEX.
- Fully operational within 6 months.
- Proven and field tested as K3 technology is already fully operational in 9 countries.
- Team with over 10 years' experience with telecommunications in Africa.
- Connections to multiple African officials with agreements of building broadband infrastructure.
- Clear understanding of telecom software infrastructure needs and how blockchain can bring additional value.
- Using superior features of Cardano's native blockchain solutions, providing speed, security, stability, and cost efficiency.

### Our Weaknesses

- Lack of users. Most of the countries have adapted to using mobile technology and may not feel the need to change, unless 3air is considerably cheaper and more reliable than mobile.
- The team has no experience in providing financial services such as microloans that are planned for the third stage so we will need to expand our team and are partnering up with Cardano.
- Later entering new countries where we do not have an established customer base yet.
- Loosing on some potential early adopters because we are not building on the currently most widely adopted blockchain Ethereum.

- No internal blockchain marketing experience that's why we are hiring a professional marketing agency.

## Our Opportunities

- Huge untapped potential of the developing countries with no proper broadband infrastructure.
- Businesses need this uninterrupted internet service.
- Remote working relies on good internet connection.
- Countries open to collaborations as broadband brings new and equal opportunities to the population.
- Visible commitment from regulators and governments to increase broadband penetration in Africa (clear plans, strategies and policies firmly established).
- Low competition with inferior products.
- Huge entry barriers for new competitors.
- Strong relationships with the Cardano foundation.
- The Cardano blockchain provides multiple advantages and benefits to other existing blockchain technologies.
- Fast adoption of blockchain technology in target countries compared to general population.
- Schools: virtual learning has become more commonplace since COVID19 and is a segment that could benefit needs stable broadband connectivity.

## Our Threats

- Political instability in African countries.
- Policy and regulatory bottlenecks.
- Social and Demographic chasms and illiteracy.
- Possible new technologies disrupting the market in the future.
- The blockchain technology is new and right now there is no universal adoption of it.
- Some people might distrust new blockchain projects because of the negative publicity of several scam projects in the past.
- The Cardano blockchain in particular is new and not all needed technologies have been implemented yet. Yet Cardano is strong within their timeline and will deploy all needed technologies within next 3 months.

## Appendix 3: PESTLE analysis

### Political

3air will be providing more equal opportunities to people of Africa by providing them connectivity, identities, financial services and contribute to growing the local economy. There will be a lot of focus on the 3air community government that will have the control over funds to support local projects.

General political instability in African countries is the main risk we are facing. There are numerous countries with corrupt political regimes. Additionally, frequent political changes could potentially mean disruption of our proceedings within a country.

Our advantage lies in those countries needing and wanting broadband. As of now, our technology is the best and only broadband solution for densely populated cities.

With over 10 years' local experience in this area and good government connections we are confident to navigate through this successfully. After all internet connection counts as one of the most important factors or a countries development.

There is also the field of blockchain community, especially Cardano as the platform we will built upon. The advantage is the truly global and decentralized nature of this communities, so they are quite insulated from local political shocks.

There is a lot of hot debate and political influence in the blockchain industry, but some of them, like Bitcoin and Ethereum, have already been officially declared not-securities even by the US SEC (Hinman, 2018). Either way the decentralized nature of Cardano makes it harder for political disruption, and the fast adoption by renowned organizations brings additional legitimacy to other projects running on the blockchain.

### Economical

Sub-Saharan Africa is home to over 1 billion people. The populations are young with the mean age predicted to be below 25 years by 2050. Africa is the world's largest free trade area creating an entirely new development path, harnessing the potential of its resources and people.

The regions are composed of low to high income countries. The economic impact of the COVID-19 in Africa is severe and economic activity is estimated to have contracted by 2% in 2020, pulling the continent in the first recession since 25 years. (The World Bank, 2021)

The broadband market in Africa is estimated at \$97 billion at

current global average broadband penetration rate and up to 4 times this amount once penetration reaches developed world standards.

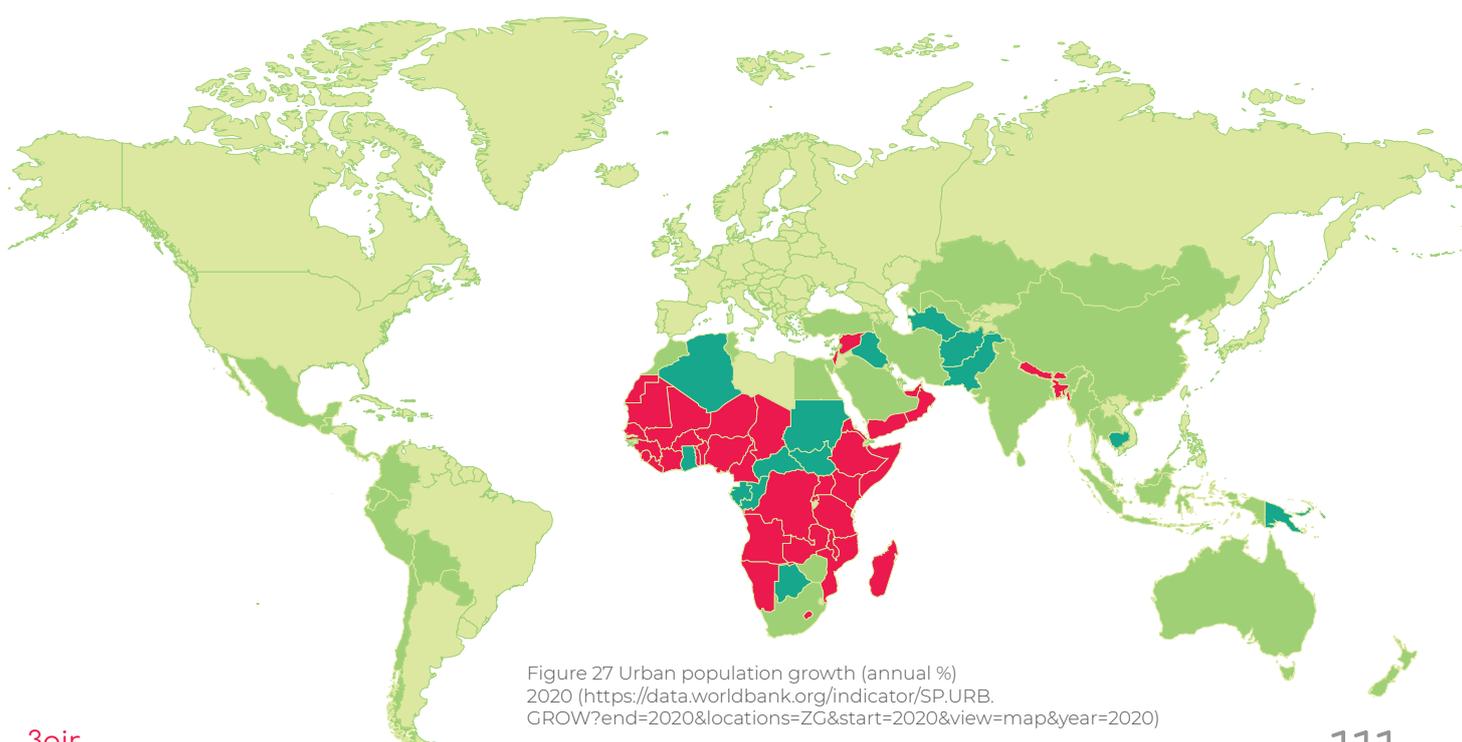
Also, Africa has by far the highest urbanization growth rate in the world with around 4% growth of urban population annually (The World Bank, 2021). This drives even more demand for broadband connections and therefore means that our market is growing constantly by at least 4% annually.

Regarding the blockchain community, the Cardano ecosystem is currently growing at a parabolic rate, with daily turnover in the billions. More and more traditional businesses and organizations are moving to blockchain. The adoption rate is even faster than that of the internet and mobile phones in their early stages (Levin, 2021). With blockchain on the rise, the outlook for 3air looks increasingly positive.

Cardano is also predicted of becoming the blockchain of tomorrow as it represents the strongest 3<sup>rd</sup> generation blockchain, addressing the shortcomings of Bitcoin and Ethereum.

As such Cardano is addressing the economic issues of high gas fees on the most widely spread blockchain, Ethereum. Such high fees are excluding a lot of potential users and reducing revenues of blockchain businesses. Cardano provides a system with the lowest possible fees and allows for inclusion of most users.

- < 0,37
- 0,37 - 1,23
- 1,23 - 2,33
- > 3,45



## Social/Cultural

The culture of a people is what marks them out distinctively from other human societies. For sure Africa is one of the places where social and cultural differences are not only different from the rest of the world, but also the difference within are immense. There can already be a challenge in communicating as there are many different languages and dialects even within a country. The values differ greatly from the rest of the world causing entry barriers for foreign businesses. Working tightly with locals and having representative offices are a must. Years of working in Africa has thought us how to deal with local socio-cultural challenges.

It is interesting that the blockchain community within Africa is growing faster than the rest of the world. This is probably due to wide adoption of smart phones and a lookout for new opportunities, especially in the financial markets. Blockchain has the potential to fill the gap of the unbanked and provide equal financial services to everybody.

The blockchain community in general, while still in its early stages, is gaining rapid traction. The whole community is still fully engaged and one of the most active communities right now. Such communities tend to promote and adopt good projects but also reject the bad ones quickly. 3air will present itself fully transparent and disclosed, to avoid any rejection from the community.

## Technological

K3 technology is proprietary and patented and field tested with presence in 9 countries already. Technologically we clearly have the advantage and the best suitable infrastructure system to provide broadband internet in urban areas of developing countries. As outlined in the competition section we have identifies 2 major upcoming technologies. Although they are not yet ready or are facing big entry barriers to the market, we need to be ready and acquire and solidify our market share before the competition.

Blockchain as a nascent sector will undoubtedly be seeing significant changes and improvements to the technological landscape 3air will be inhabiting. Nonetheless, the levels of funding sought will ascertain that tier one development resources will be hired to leverage any new developments to our advantage.

With building on Cardano, 3air will take advantage of all its superior features. As the whole project will heavily rely on

Digital Identities (DIDs), we will be leveraging the unique capabilities of Cardano and their Acala Prism identity platform. As tokens can also be exploited and are prone to hacks, we have thought deeply about this topic. Cardano is the only blockchain that supports custom tokens natively on its blockchain. With this, all tokens share the same state-of-the-art security standards as Cardano's native token ADA.

## Legal

3air has sought expert legal counsel in all its proceedings regarding jurisdiction selection, token launch and distribution. With this counsel we have set up all the required systems for a fully legal and transparent token sale and all ongoing and future operations.

The selection of favorable jurisdiction to operate within and working with a high-level legal partner will provide safe and stable environment for 3air and the exact boundaries of operations.

In accordance with our political analysis the regulatory changes are for sure imminent. For the case these changes will affect 3air operations we will set aside funds for legal counseling and actions, should the need emerge.

## Environmental

3air takes environmental challenges very seriously. Our technology has been designed around low power consumption as it is also one of our main operating costs. We will seek out usage of renewable energy sources on local markets to our maximum capabilities.

3air will aim at operating carbon neutral from the start.

Regarding technology, there have been some questions raised about the environmental footprint of the current blockchains especially with regards to Proof of Work (PoW) security mechanism that devotes large energy resources to trivial calculations in order to keep the blockchain safe and secure.

We have therefore been reluctant of building our project on such blockchains as it would go against our core principles. We have chosen the Cardano blockchain that uses a new, secure, and environmentally friendly security mechanism called Proof of Stake (PoS).

As a platform provider for internet and TV services we will aim on educating the local society about the environmental issues and responsibilities and make it our mission to care and nurture the world we all live in.

## Appendix 4: ESG narrative

The ESG narrative is becoming increasingly important in financial markets, with portfolio managers incorporating sustainable investments into their strategies regularly now.

It's been heavily introduced to the blockchain space by a Tweet from Elon Musk in May 2021 (Musk, 2021), talking about the potential environmental threats Bitcoin mining might pose. Since then, there have been more and more talks about environmentally friendly mining and other ESG aspects in the crypto community.

Extending from the previous chapter, from an ecological point of view K3 technology is operating on low power and needs fewer base stations per customer as technologies providing comparable services. Yet we strive for renewable sources of energy wherever that is possible.

It also does not require any digging for cables, thus preserving nature in a greater way. Frequencies used are not in extreme ranges but work on regular frequencies that are in the same bandwidth as regular radios.

From a social perspective, our mission is to bring equal opportunities to where the widest gap to the western world exists. We create jobs as we employ local staff to manage and build the infrastructure and our products come with a satisfaction guarantee.

We provide health and safety guidelines and care for our community.

Blockchain has the ability to take corporate governance to a different level. We aim to fully decentralize our platform and give the power to the token holders. We have implemented a community pool into 3air and are giving the governance over it to the community. This provides additional social benefits to the wider local ecosystem.

Our goal is to connect the unconnected so the unbanked can be banked. We strive to provide formal identities, where there are none and hope to provide online education and e-health to a wider audience. Indirectly we create new and global job opportunities for the locals and help develop countries as a whole.

# Appendix 5: K3 proprietary Technology

The K3 Lastmile solution system consists of two major outdoor components:

## Base station

The K3 base station is an essential part of the K3 Lastmile solution wireless point-to-multipoint system, providing the capability of a secure and reliable microwave radio access to Internet service providers and offering the possibility to provide triple play content to all the residential and business users in a radius of up to 50 km from every base station. The base station is located on a central point to achieve the highest possible coverage.

## Product highlights

- Cost effective solution compared to fixed land lines.
- Optimal cost / performance ratio.
- Fast deployment and immediate start of revenues resulting in short return on investment time.
- Service effective wireless solution platform.
- Range of signal up to 50 km (31 miles).
- Predefined working frequencies from 2 to 42 GHz.
- Transmitting of up to 500 MHz in downlink (downstream) from sector to user.
- Receiving of up to 500 MHz in uplink (upstream) from multiple users to sector.
- Regulatory compliance with RF standards depending on selected frequencies.
- Compatibility with Coded Orthogonal Frequency Division Multiplexing (COFDM), Time Division Multiplexing (TDM).
- Able to function with Time Division Multiple Access (TDMA), Advanced Time-Division Multiple Access (ATDMA) and Synchronous Code-Division Multiple Access (SCDMA).
- Small scale, light weight, high performance, robust and weatherproof solution, easy to install and operate.
- Low power consumption of maximum 500 W.
- Simple WEB interface for remote management.
- Automatic climatic control for assuring best possible working conditions.

## Transceiver

The K3 transceiver is the counter part of the base station and is located at the end user/customer premises. The transceiver enables a bi-directional microwave link, which offers a broadband connection between the end user and the base station. It enables simultaneous delivery of all services users are looking for today.

### Product highlights:

- Fast and easy setup.
- Optimal cost / performance ratio.
- Compact, small scale all in one unit, embedded in a robust weatherproof casing, easy to install and operate. IP 66 certified. Mounting compatible with standard satellite dishes.
- Regulatory compliance with RF standards depending on selected frequencies.
- Range of signal up to 50 km (31 miles).
- Predefined working frequencies from 2 to 42 GHz.
- Receiving of up to 1000 MHz in downlink (downstream) from base station to user.
- Transmitting of up to 40 MHz in uplink (upstream) from user to base station.
- Compatibility with Coded Orthogonal Frequency Division Multiplexing (COFDM), Time Division Multiplexing (TDM).
- Able to function with Time Division Multiple Access (TDMA), Advanced Time-Division multiple Access (ATDMA) and Synchronous Code-Division Multiple Access (SCDMA).
- Real triple-play wireless solution.
- Advanced self-protective auto-off system.
- Low power consumption of only 12W maximum.

A YouTube video shows K3 technology, infrastructure proceedings and telecom operations in Africa. (K3 Telecom, 2018)

## Appendix 6: Frequency requirements

To start operations, radio frequency spectrum (RF) is needed, which allows the transmission of all triple play services bi-directionally (downstream and upstream) from the K3 base station antenna to the end user and from the end user back to K3 base station again.

K3 Lastmile solution can be designed to operate on any frequency spectrum levels between 2 and 42 GHz. It can use all major frequency bands already allocated for fixed wireless around the world. Simply put, K3's solution is able to operate on any spectrum between 2 and 42 GHz as long as the bandwidth required is available on that spectrum.

Two frequency bands are required, one for downstream and one for upstream. Optimum frequency bandwidth for downstream is between 200-500 MHz and between 75-400 MHz for upstream with minimum 200 MHz (1 GHz preferable) bandwidth space between the two of them. The system can utilize even up to 2 x 500 MHz of frequency bandwidth in downstream and up to 500 MHz of frequency bandwidth in upstream.

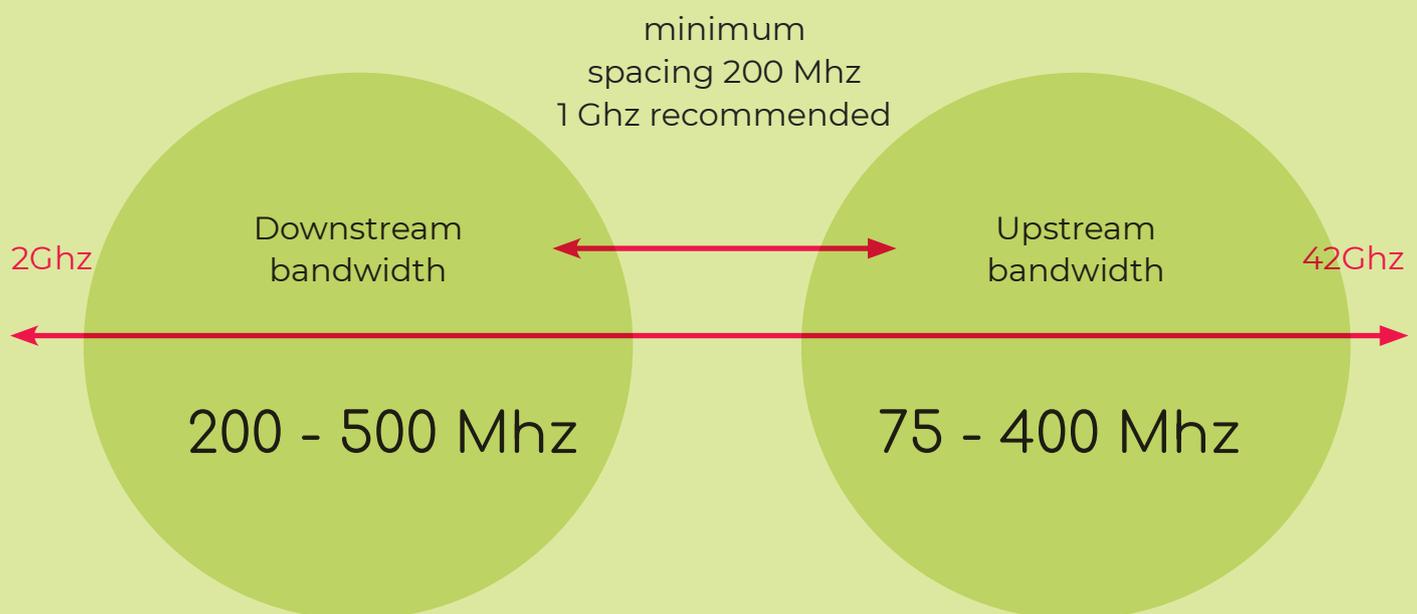


Figure 28 K3 frequency requirements

Read more about K3 technology in [K3 Technical Info Brochure](#) (per request).

## Appendix 7: Pilot project Sierra Leone

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K3 technology is already fully operational in USA, Spain, Czech Republic, Canada, Mauritius, Slovenia, Liberia, and Sierra Leone.

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Sierra Leone was chosen for the pilot project and proof of concept because of its harsh environment and socio-economic status. Sierra Leone is considered a poor country even for developing countries, yet K3 has still managed to successfully launch its services with the mean revenue of \$127 per client (retail and business) per month. Even though this is by far undercutting our competition, we are still able to hold a profitable margin.

Additionally, there are only 1 million people living in the capital city Freetown. Sierra Leone is therefore considered a micro market. K3 has managed to become profitable in these conditions.

And the third big test for the technology was the harsh environment and landscape. Freetown has 2 distinct properties that could present a challenge for K3 Lastmile solution and those are:

- lots of hills and
- lots of heavy rain.

These were a concern and needed to be addressed and tested on the field. The results have been more than excellent with fully stable connections and no service interruptions. While the landscape does produce some coverage dead spots, they are minimal at around 2%.

As planned, time to market was only 6 months (works started in August 2018 and first clients have been connected in February 2019). K3 Sierra Leone has now over 80 dedicated employees and over 2000 paying customers, \$1.3M revenue in 2020 and projected \$2M revenue in 2021. K3 Sierra Leone is currently valued at \$17M.

### **K3 has done all the work in house:**

- Acquired all the needed licenses.
- Set up the network.
- Built the complete telecom infrastructure.
- All software is developed in house.
- Provide end user connection services.
- Market and manage services.
- Provide customer support.
- Manage and maintains equipment with a local team.

K3 Sierra Leone continues its exceptionally fast growth and proves the quality and economic feasibility of its technology and business model.

K3 opening week in Sierra Leone:

<https://www.youtube.com/watch?v=r0OVDOWNGuI>

## Usage data in Sierra Leone for reference

Avg. speed per user during peak hours = 0.7 Mbps (meaning 1,000 users use 700 MB per second on the base station) – not driven by user package!

In current operations, we offer dedicated speeds (mainly used by businesses) and shared speeds starting at 5 Mbps. For shared speeds, we guarantee at peak hours always 60% of the plan speed, off peak hours the full speed.

Average usage per user per month is 100-120GB data.

As it is seen from the daily usage traffic graph, data usage of K3 services in Sierra Leone is corresponding with world statistics for speed usage which currently is 0.7 Mbps per user in peak time.

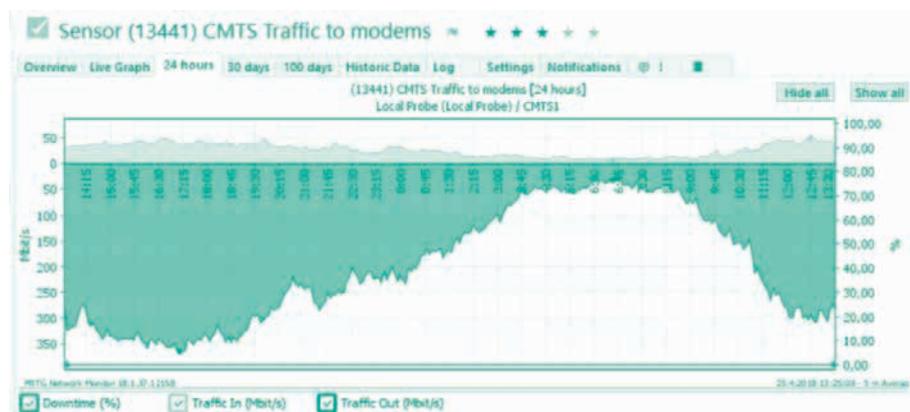


Figure 29 K3 Sierra Leone daily traffic graph.

## Appendix 8: DRC operations

DRC is the largest country by area in the sub-Saharan Africa and just second after Algeria in the whole Africa. It's also the 11<sup>th</sup> largest country in the world. With a population of around 105 million it's the third most populous country in Africa. (The Economist Intelligence Unit, 2021) Population growth rate has been above 3% annually (Data Commons, 2021) for the last 15 years and is predicted to continue in the coming years.

In 2019 it's GDP has amounted over \$50 billion and has been climbing since 2002 reaching annually growth rates of up to 10% (Data Commons, 2021). Future predictions show continuous uptrend with estimated 3% GDP growth in 2022 (Trading Economics, 2021).

Operations in DRC are already in the funding phase as it is of strategic importance to cover DRCs capital city Kinshasa because of its size and geographical position. The city is constantly growing with a population of over 15 million people in 2021. Its terrain offers best performance for K3 technology with an easy expansion option to Congo Brazzaville.

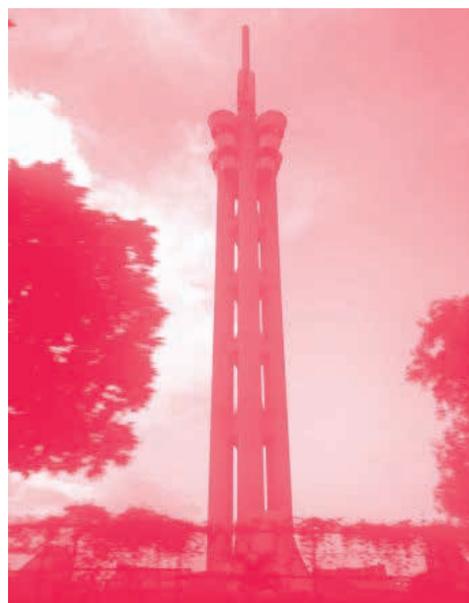
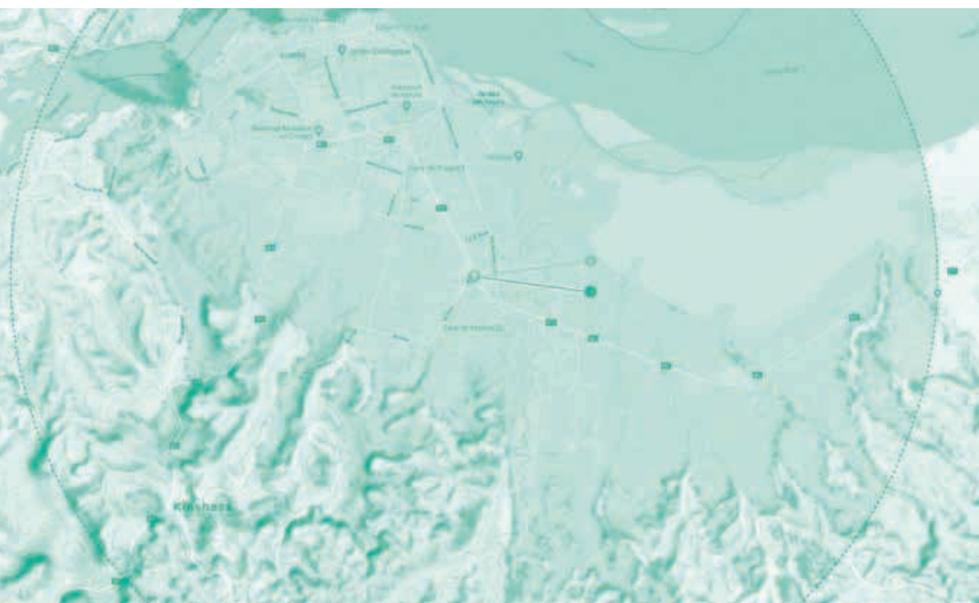
**There are 3 initial base stations planned in Kinshasa at:**

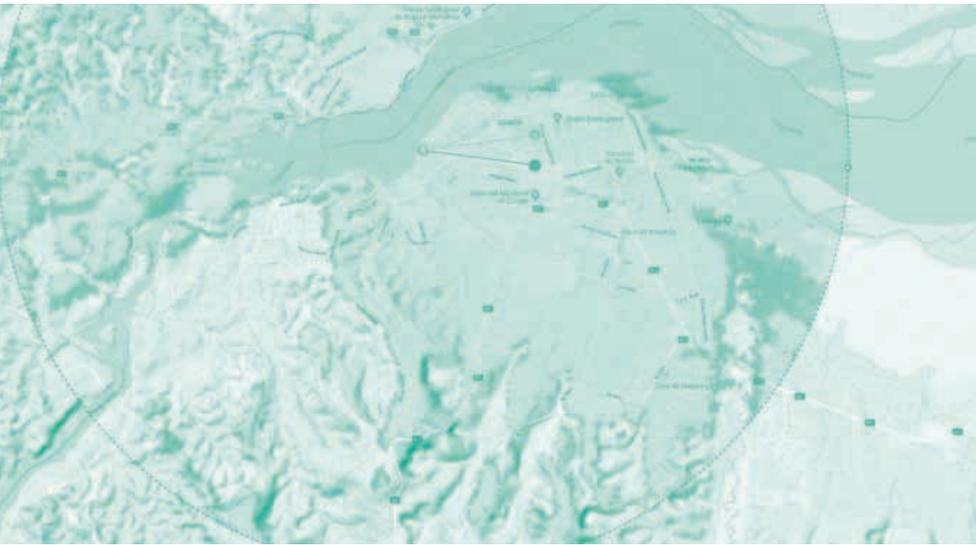
1. Binza Pigon
2. Mont Ngaliema
3. Limete Tower

This setup will allow coverage of about 90% target areas within Kinshasa.

After setting up base in Kinshasa, expansions are planned for Lubumbashi, Kisangani, port and trade cities of Matadi, Boma and Moanda, and mining zones in Mbuji-Mayi.

Figure 30 Kinshasa coverage map





### High level Economics:

- Expected to yield EBTIDA margins of about 50% to 60%
- Profitability is reached with only ~3,000 customers
- Break-even time per customer is 2-4 months

**90,000 customers in DRC will yield an entity value of USD ~675M** (90,000 customer equates to about 20% of the addressable market in Kinshasa)

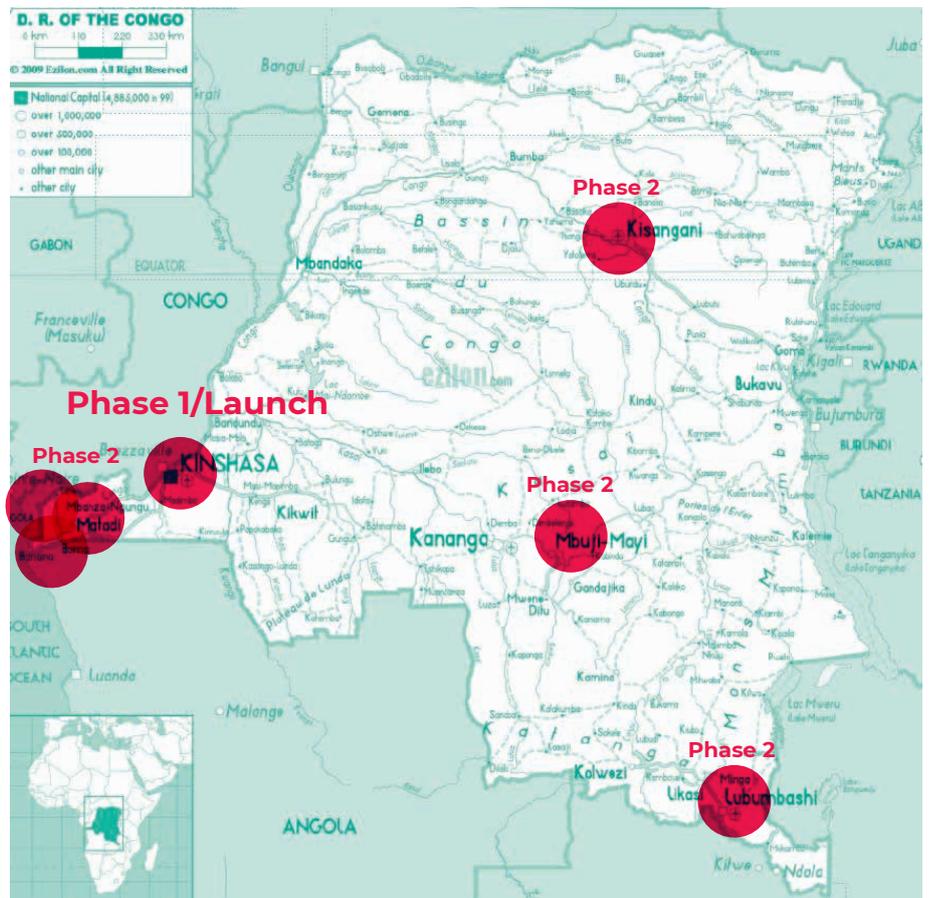


Figure 31 DRC expansion plan

Period	Year 1	Year 2	Year 3	Year 4	Year 5
Total Number Of Users by Period-End	5,201	19,568	39,541	64,771	90,000
Total Number Of Base Stations	2	5	9	14	19
Revenues					
Service Fee	1,344,098	19,615,757	44,396,684	81,363,085	120,721,028
Discount/Free trials	(352,609)	(982,990)	(1,366,595)	(1,726,226)	(1,726,226)
Connection Fee	656,970	1,814,750	2,522,945	3,186,878	3,186,878
Total Revenues	1,648,460	20,447,517	45,553,034	82,823,738	122,181,681
Total Direct Cost of Sales	1,749,443	5,779,633	11,034,718	17,812,207	24,123,583
Total General & Admin Costs	1,894,292	3,902,367	6,498,818	10,240,716	13,636,687
EBITDA	(1,995,275)	10,765,517	28,019,498	54,770,814	84,421,411
<b>Terminal value at 8x EBTIDA multiple</b>					<b>675,371,286</b>

Table 8 DRC operations Profit and Loss Statement

## Profit and Loss Statement

*Economics currently ignore the upside potential from:*

- 1) *Expansion to Phase II markets (named above)*
- 2) *Targeted enterprise solutions DRC along with the broadband offerings (IT Security services, Data centre management, network solutions, and others)*
- 3) *Lower income and mass-market solutions already in pilot stage in Sierra Leone (public Wi-Fi mesh zones)*

We intentionally remain conservative in our projections. In Kinshasa alone, indications point to a much great growth potential. With 15 million people in the city, a high cost of living for western standards (>\$3,000 rent a month for a 2-bedroom apartment) and a shocking lack of true broadband and modern entertainment services, the market is in desperate need for modern standards. Various growth scenarios are outlined below.

Detailed business plan is available for interested, registered investors on request.

# Appendix 9: Nigeria operations

Nigeria is the largest economy in Africa and within top 50 economies worldwide, with GDP of \$475B in 2019. This is projected to grow to \$736B by 2023 (The Economist Intelligence Unit, 2021). It is also the largest country in Africa by population and 7<sup>th</sup> worldwide, with a population of 206M (2020). (The World Bank, 2021)

## Country profile



**Nigeria**  
Country

**Abuja**  
Capital

**West Africa**  
Region

 <p><b>\$475bn</b> GDP (2019)</p>	 <p><b>c.197m</b> Largest population in Africa and 7<sup>th</sup> largest globally (2019)</p>
 <p><b>12%</b> Historical 5-year average GDP growth</p>	<p><b>81,000</b> Broadband subscription (2019)</p>
 <p><b>12.2%</b> Inflation rate (March 2020)</p>	<p><b>24%</b> Of adult population are in the middle class (2018)</p>
<p><b>184.7m</b> Mobile subscriptions (2019)</p>	<p><b>8th</b> Most improved country in the ease of doing business global ranking</p>

Figure 32 Nigeria country profile

3air in cooperation with K3 will build the K3 Lastmile solution infrastructure in Nigeria. Nigeria is considered the biggest market in Africa and the “golden country” for 3air. The aim is to build K3 Lastmile solution infrastructure simultaneously in Abuja and Lagos with the combined population of over 26M. Nigeria has a huge lack of modern broadband access in all cities.

Nigerian Federal Government is working hard to provide education, infrastructure and financial support on information technology and literacy. Currently there are 3 major campaigns running:

1. Government supported Universal Service Provision Fund (USPF) intended to achieve national policy goals for universal access and universal service to information and communication technologies (ICTs) in rural, unserved, and underserved areas. (USPF, 2021)
2. Intensive nationwide awareness campaign to educate the citizenry about the value of ICT services. (Agyeman, 2007) Introduction to digital literacy education and training programs across all levels of education. (Federal Ministry of Education, 2019) (Oye & Aiahad, 2015)
3. The Federal Government is also driving various initiatives aimed at infrastructure improvement, funding & incentives, and demand drivers in order to achieve improved coverage, quality and penetration as contained in the Nigerian National Broadband Plan 2020 – 2025. (Nigerian Communications Commission, 2020)

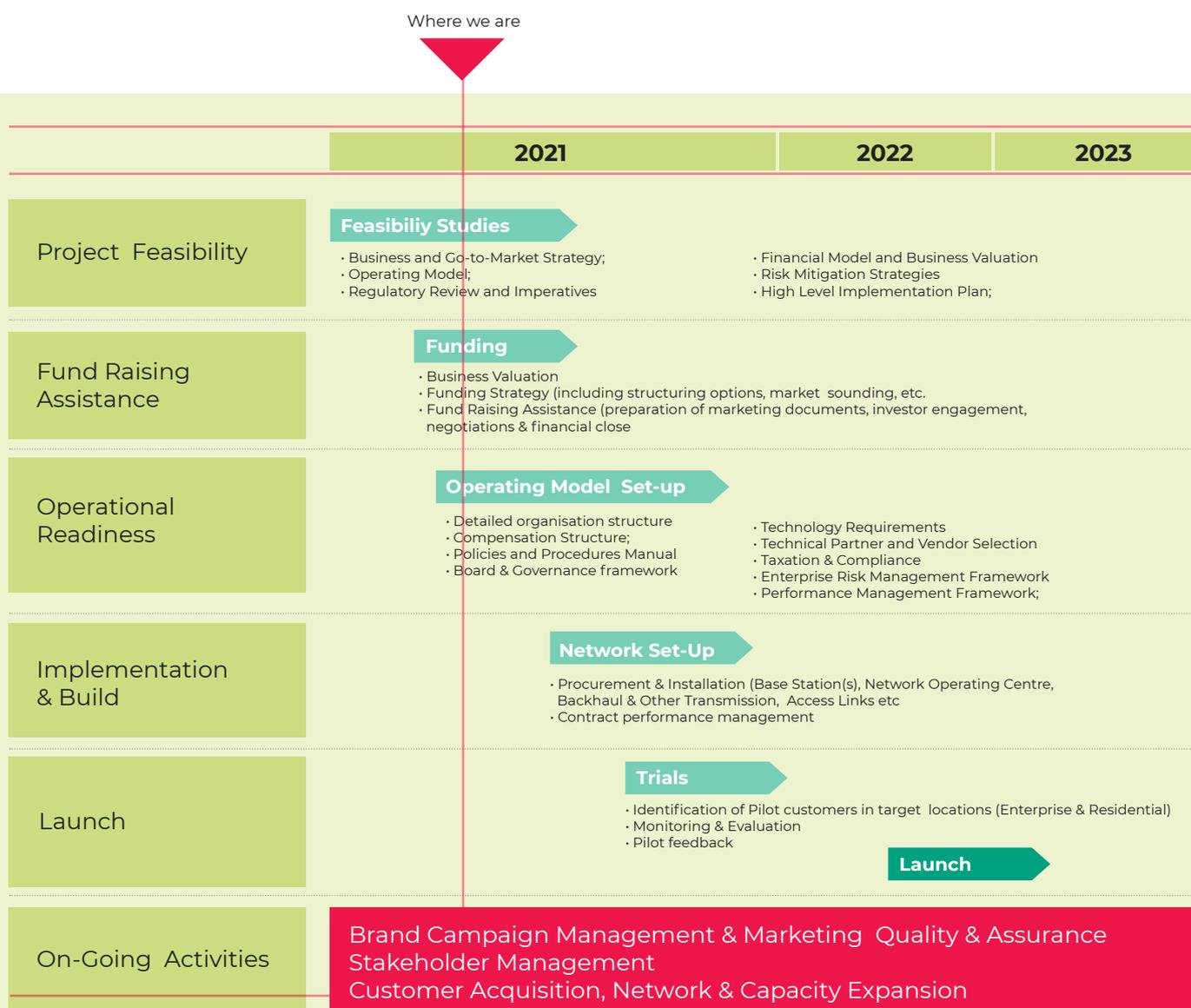


Figure 33 Nigeria implementation time schedule

K3 already holds an Internet Services License (“ISL”) issued by the Nigerian Communications Commission (“NCC”) under the Nigerian Communications Commission Act. This allows K3 to operate in Nigeria within its ISP scope including broadband, digital TV, and IP telephony services. Following funding, K3 will set up the network, build the infrastructure, train the local team, and launch operations with 4 base stations.

This setup will achieve coverage of about 90% in Abuja and Lagos.

The duration of setup from the time of funding till launch will take about 22 weeks.

After launch, each person in the coverage area will have the ability to obtain modern triple play services (internet, Digital TV, IP telephony) equal to that of cable. Upon reaching profitability (with 100 business or 2000 retail clients), we will expand services to other areas in Nigeria.

To remain conservative, the projected economics only include operations in Abuja and Lagos.

## Market Sizing

By 2022, the estimated market size of the fixed broadband segment in Nigeria will be \$752 Mn, representing a 96% growth from 2017 revenues. This growth is expected to be driven by increased demand and improved purchasing power.

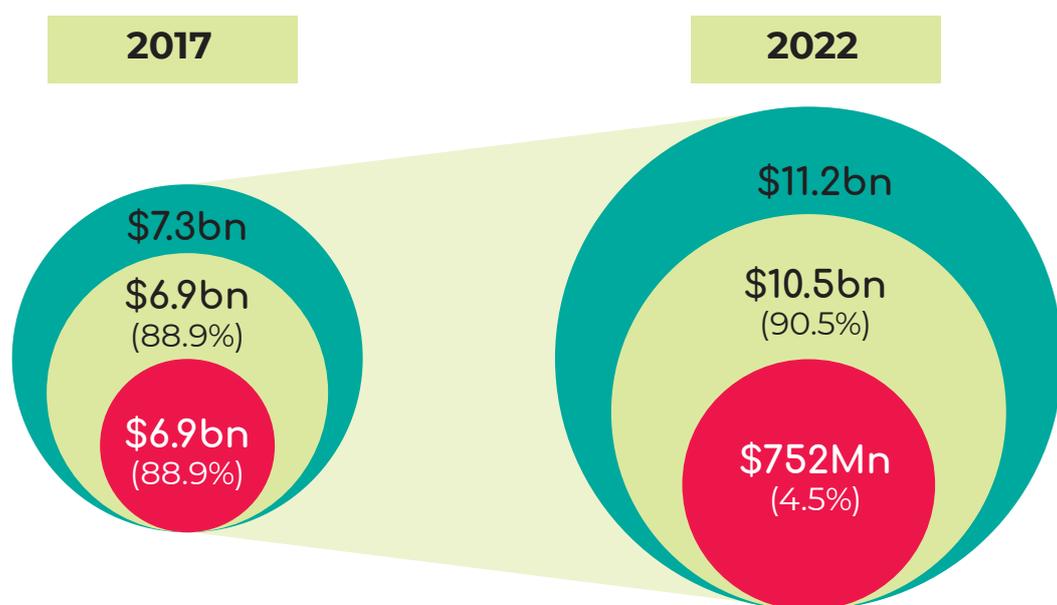


Figure 34: Entertainment and media outlook: 2017 – 2021 An African perspective: <https://www.pwc.co.za/en/assets/pdf/entertainment-and-media-outlook-2017.pdf>

### Legend

- Total Telecom / Media
- Mobile Revenues
- Fixed broadband Revenues

- Nigeria's telecoms and media revenue is expected to increase from \$7.3bn in 2017 to \$11.2bn by 2022, at a CAGR of 7.5%.
- Mobile revenues continue to dominate the market accounting for 88.9% of revenues in 2017 and is expected to grow to 90.5% by 2022.
- **The fixed broadband segment, the fastest growing segment driven by increased demand from high-end users will see its revenue share grow from 3.7% in 2017 to 4.5% by 2022.**
- Key drivers include improved household spending & increased demand.

## High level Economics:

- Expected to yield EBTIDA margins of about 50%-60%.
- Profitability is reached with only ~2,000 customers.
- Break-even time per customer is 2-4 months.

**210,000 customers in Nigeria will yield an entity value of \$1.6B** (210,000 customer equates to about 20% of the addressable market).

	2022	2023	2024	2025	2026
<b>Users</b>	9.000	35.000	80.000	140.000	240.000
<b>Base stations</b>	4	10	18	28	38
<b>Total revenue</b>	\$7 M	\$46 M	\$105 M	\$184 M	\$277 M
<b>EBITDA</b>	(\$1,5 M)	\$41 M	\$99 M	\$177 M	\$267 M

Table 9 Nigeria operations Profit and Loss statement

We intentionally remain conservative in our projections. In Abuja and Lagos alone, indications point to a much great growth potential. With 26 million people in both cities, a high cost of living for western standards (>\$5,500 rent a month for a 3-bedroom apartment) (Numbeo, 2021), and a shocking lack of true broadband and modern entertainment services, the market is in desperate need for modern standards.

**The total required capital** until profitability is reached is \$15 million, inclusive of prudent reserves. Of that required capital, \$3 million will be used for the initial infrastructure set up to provide coverage for all of Abuja and Lagos; \$3 million will be used for CEP / User inventory for the first 6,000 customers; and \$6 million will be used for working capital until profitability is reached (\$3.0 million is budgeted as a reserve).

Detailed business plan is available for interested, registered investors on request.

## Appendix 10: General token managing mechanisms and token economy

The artificial economies of blockchain are different from traditional economies in many aspects. They are more narrowly focused on only a few or even only one product or service, they can be more flexible and faster adaptable, but they also face many new risks from regulation changes, speculative manipulations or hacking attacks.

This means that many of the tools, theories and methods that apply in economics do not apply in case of token economies. New and innovative models are therefore needed to assess and manage token economics, making designing of token economy one of the most important aspects of a blockchain project. (Mougayar, 2017)

A good tokenomics model will ensure long-term viability of a blockchain project, preventing volatility that could jeopardize the whole project.

A good tokenomics model will also ensure the growth and potential of a project.

Tokenomics are complicated and challenging as there are usually many conflicting interests within the token economy (investors want to see the token raising in value but users might potentially want a low token price). (Kampakis, 2018)

Looking at a token economics from a macroeconomic perspective it is useful to have a basic understanding of the supply and demand interaction. A good framework for this is The Quantity Theory of Money, popularized by Milton Friedman (Friedman & Schwartz, 1971). We can use the Vitalik Buterin's adaptation of the equation of exchange from monetary economics (Buterin, Vitalik Buterin's website, 2017).

**He expresses it as:**

$$MV = PT$$

**Where:**

- M is the supply of tokens,
- V is the velocity of tokens,
- P is the price level of the goods or services in terms of the token,
- T is the transaction volume per day.

### **This tells us that the token price will be dependent on:**

1. Total supply of tokens.
2. The time the users hold the tokens.
3. The total economic value spent with the tokens.

It needs to be noted that The Quantity Theory of Money has been challenged multiple times by J.M. Keynes (Keynes, 2016) and Friedrich Hayek in The Denationalization of Money (Hayek, 1990), stating that the main flaw is the failure to consider different kinds of concurrent currencies. He states that changes in the supply of money affect various and innumerable prices in the economy in different irregular ways, creating misinformation by disturbing the structure of relative prices and therefore resulting in misallocation of resources.

The main challenge in assessing the price of a token is capturing the chaotic process of price discovery, in particular the direct relationship between supply and price level.

Of course, as most tokens are not pure payment tokens, they cannot be directly compared to money either. They have some similarities with shares issues by a company. At IPO the share price is determined with valuating the company and dividing it by the number of shares. Key factors to consider at forming a company's valuation are (OnMarket, 2021):

- Comparable companies operating within the same or similar industries and providing similar service.
- Financial track record of the Company and quantity management.
- The Company's growth potential beyond the IPO and how the funds will be used after IPO.

Big differences in market capitalization between stocks and cryptocurrencies and tokens show us that those markets aren't directly comparable. Firstly, tokens and cryptocurrencies seem to tend to incorporate more potential or future value of the project into the market capitalization and secondly token economics can and will profoundly influence it's market capitalization. Comparing 2 similar projects with differences in token economics (for instance token holding mechanisms) will have distinctly different market capitalizations.

There are also general factors, out of the projects control, contributing to the token price not limited to economic conditions, regulations, and general market sentiment.

There is no mathematical formula today, that allows for evaluating a price of a token, whatever the legal shape and

technical form. Price lookup happens in a highly complex system that has resisted modeling for hundreds of years. The intangible aspect is as important as the utility and should be priced into the model. Until such model exists, price predictions are but an (educated) guess.

# Change log

v1.7

## **5.8 Own your own hardware incentive**

- Section added

### **5.9.1 Early staking**

- Section added/changed
- changed Figure 15 3air staking system

### **5.9.2 Full staking**

- Section added

## **5.10 Bandwidth sharing**

- Section added

## **8.1.1 Initial distribution and token vesting**

- Vesting of airdrops in Table 2 3air initial token distribution and vesting
- Figure 20 3air token release schedule
- Table 3 3air circulating tokens and market capitalization at TGE

## **8.4 Staking**

- added the bullet point “Own your own hardware” incentive

## **8.8 Airdrops**

- Section added

## **9.2 Team and advisory board**

- Added Rok Mihailović Krpan
- Added Samo Zorger
- Added Markos Leema
- Added Oliver von Wolff
- Added iceaddis
- Added CV labs global