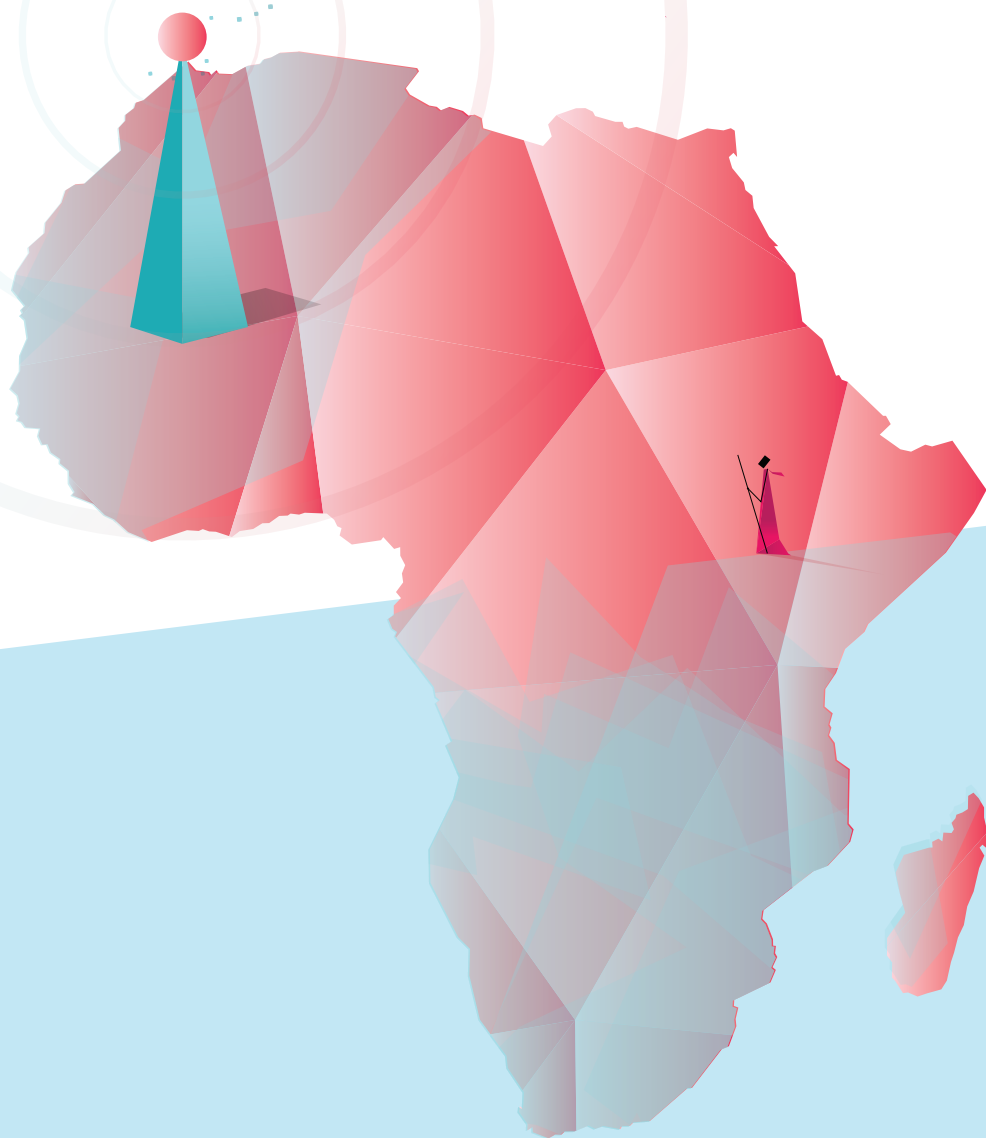
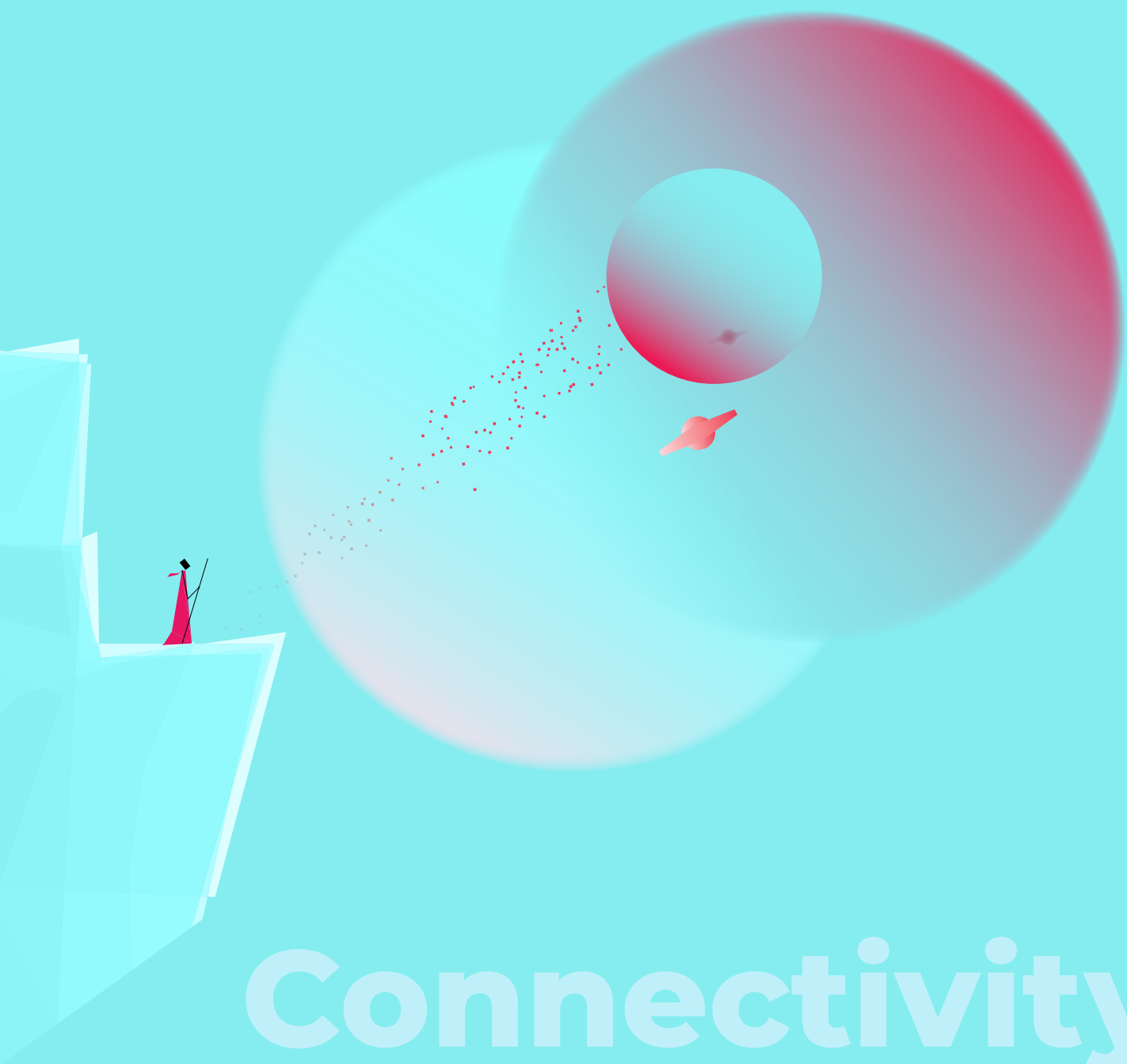


3air



# WHITEPAPER

3AIR / SEPTEMBER 2022 | Author: **Sandi Bitenc**



# Connectivity and Banking for the Next Billion

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4. instrument, entity, scheme or venture that participates or receives any dividend, payment, profit, income, distribution or other economic returns;

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All statements regarding the 3air Parties' financial position, business strategies, plans, prospects, and the industry's future are forward-looking. These forward-looking statements, including but not limited to the 3air Parties' revenue and profitability, prospects, plans, expected industry trends, and other matters discussed in this Whitepaper regarding the 3air Parties, are matters that are not historical facts but only predictions. These forward-looking statements involve known and unknown risks, uncertainties, and other factors that may cause the actual results, performance, or achievements of the 3air Parties to be materially different from projected results, performance, or achievements, expressed or implied by such forward-looking statements.

### **These factors include, amongst others:**

- changes in political, social, economic and stock or cryptocurrency market conditions, and the regulatory environment in the countries in which the 3air Parties conducts its respective businesses and operations;
- the risk that the 3air Parties may be unable to execute or implement their respective business strategies and future plans;
- changes in interest rates and exchange rates of fiat currencies and cryptocurrencies;
- changes in the anticipated growth strategies and expected internal growth of the 3air Parties;

- changes in the availability and fees payable to the 3air Parties in connection with its businesses and operations;
- changes in the availability and salaries of employees who are required by the 3air Parties to operate their respective businesses and operations;
- changes in preferences of users of the 3air Platform;
- changes in competitive conditions under which the 3air Parties operate, and the ability of the 3air Parties to compete under such conditions;
- changes in the future capital needs of the 3air Parties and the availability of financing and capital to fund such needs;
- war or acts of international or domestic terrorism;
- occurrences of catastrophic events, natural disasters and acts of God that affect the businesses and/or operations of the 3air Parties;
- other factors beyond the control of the 3air Parties; and any risk and uncertainties associated with the 3air Parties and its businesses and operations, the 3air Tokens, the 3air Parties token generation event and the 3air Platform.

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# EXECUTIVE SUMMARY

*We have identified an amazing and field-tested technology that will bring broadband internet connectivity to places where it is impossible or uneconomical to build it traditionally. With a strong user base, we will develop, test, and deploy a blockchain platform to allow tokenizing telecom services and revolutionize how we perceive and consume them.*

*Blockchain technology is disrupting virtually every industry, and it is only a matter of time before it takes over the telecom industry - improving services, privacy, and security. We are proposing radical solutions to perennial problems in the industry that seem unsolvable using traditional methods. These changes are paradigm-shifting, and the adaptation phase can take a whole generation. It is not about whether this change will happen but when. Still, someone has to inspire this change and lead the transition from traditional models.*

*As a first step, we are building a platform based on blockchain technology that will enable migrating traditional systems to the blockchain with minor improvements in security, traceability, customer care, and privacy. This transition should not be difficult for the ISP provider and the user.*

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

*We have decided to create our own customer base to drive the adoption of our platform and make the transition easier. This will be a customer base that does not have extensive experience with telecoms, but is eager to learn and is increasingly reliant on the blockchain.*

*As Satoshi Nakamoto outlined in his work (Nakamoto, 2008), Bitcoin and blockchain should and will liberate people and empower them, especially the underprivileged, suppressed by corrupt governments or institutions. We are adding the unconnected to the list.*

*We will bring fast, stable broadband to African cities, starting with Ethiopia, Nigeria, and the Democratic Republic of the Congo (DRC). We will bring a reliable connection to the outside world and facilitate inclusion in the global educational, health, financial, and business economies.*

*Connecting the unconnected will bring millions of new users to our platform. Our growth reflects our power to motivate radical change within the industry and connect globally. Connectivity and inclusion are at the core of Satoshi's vision for the blockchain, and that is what we wish to inspire with our project.*



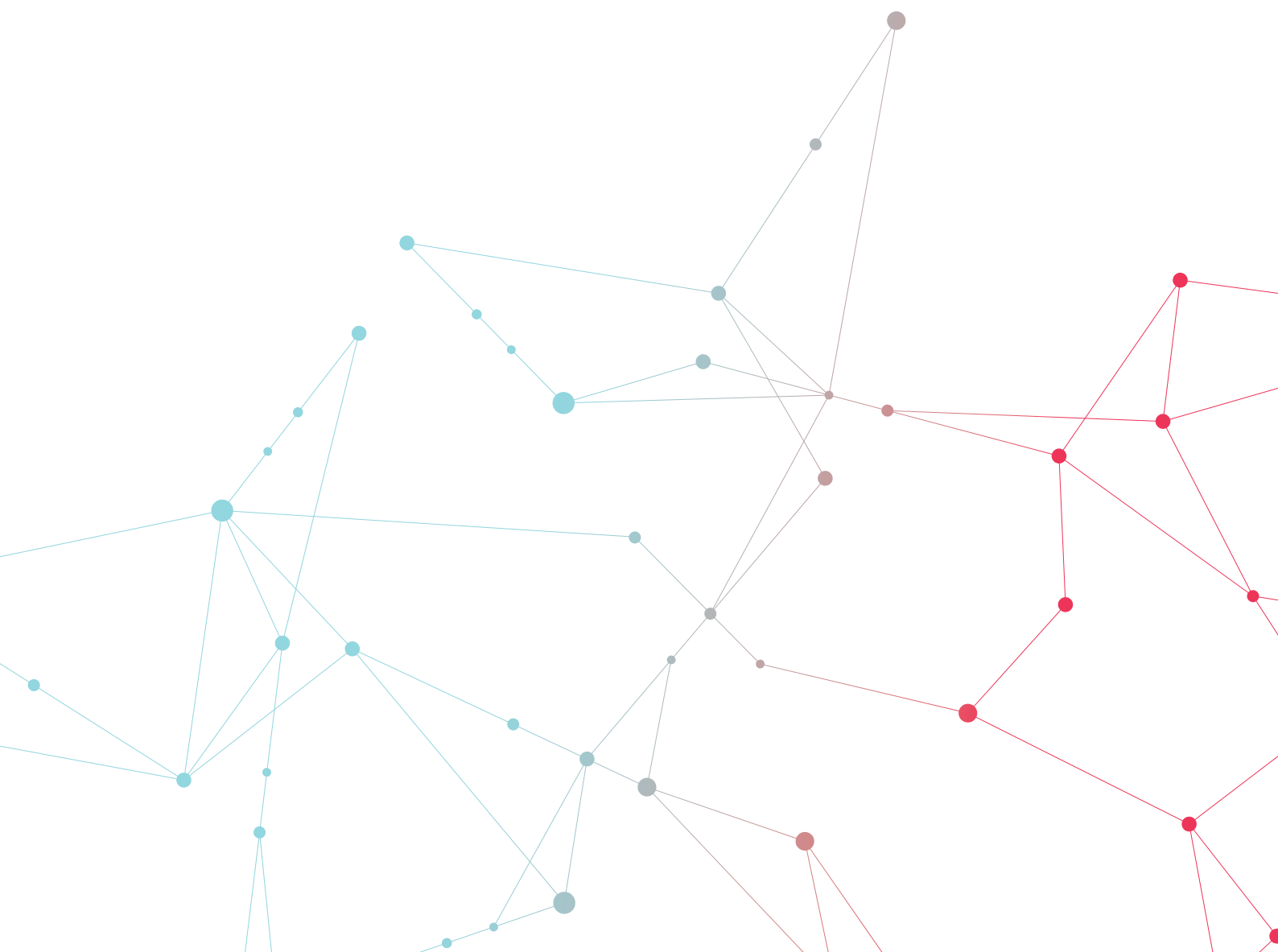
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# INTRODUCTION

Without doubt, humanity now lives in the information era. We take our smartphones out of our pockets or flip open our laptops, and we can access the world. We have instant entertainment, shopping, news, education, meetings, health-care, finance, travel, social connections, and other areas of our lives that connect us globally, leaving our digital footprints and data. Connectivity has become a part of our lives that we don't even notice the complexity behind it until the frustration from a malfunctioning router or bad connection makes us appreciate it.

On the other side, some **countries still lack proper broadband infrastructure**, with people lacking access to basic financial instruments or even a means of identification. Therefore, **tackling connectivity is not limited to building telecom infrastructure. It also means providing means of identification and payment.**

Our connections and communities affect and control our lives as individuals in more ways than we know. Without connections, the global economy would not exist as we know it today. While the current model has obvious flaws, it solves many more problems. Presently, countries cannot develop without a connection highway to the world that can accommodate most of their population.

Imagine your private or business life without a fast and reliable internet connection. Unfortunately, this is the reality for many people living in emerging economies. Now, imagine the limitations of the country as a whole.

Emerging economies need to focus on multiple areas, including economic development, social development, environmental protection, poverty eradication, and others. Solving these issues is often conflicting and complicated, but **solving them without information and connectivity is virtually impossible.**

Some even argue that information is the most important commodity of the 21st century (The Economist, 2017) (Madison, 2020). The internet is the biggest informational database to date, and there is no internet without connectivity.

Good relationships and cooperation are being built over long distances with modern technology, and each country's development depends on these virtual connections. These days, going to school or the bank could mean rolling out of bed and getting behind the computer. Imagine the value of proper education and banking services in Africa.

One could argue that there is no optimal development in a country without a reliable connection to the world wide web.

The potential is enormous.

More than ever, we have the motivation to explore the premise of delivering on Satoshi Nakamoto's idea of trustless finance (Nakamoto, 2008). The 1 billion unbanked people that

3air is creating equal opportunities for people in Africa

do not currently have any tools to preserve their wealth could finally start participating in the global economy with just a connection to the internet. 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,
- and provide a platform for global partnerships for development.

You can read more about how broadband and digitalization impact society in Appendix 1.

## Blockchain makes a difference

El-Salvador recently provided proof that global financial inclusion is possible. Since El Salvador declared Bitcoin as a legal tender (Renteria, Wilson, & Strohecker, 2021), the country has witnessed an exponential adoption rate. 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 than ALL BANKS IN EL SALVADOR combined.” (Bukele, 2021). For comparison, despite the Central Reserve Bank of El Salvador being a member of the Alliance for Financial Inclusion and signing a joint Maya Declaration Commitment in 2013 (AFI Global, 2017), only 30.4% of El Salvadorians had a bank account in 2017 (World Bank, 2021).

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

The **next obstacle to overcome will be to connect and educate people**. The latest statistics show that 60% of El Salvador’s inhabitants have mobile internet access (Holst, Statista, 2021), and only 8.14% have fixed-line broadband (Holst, Statista, 2021).

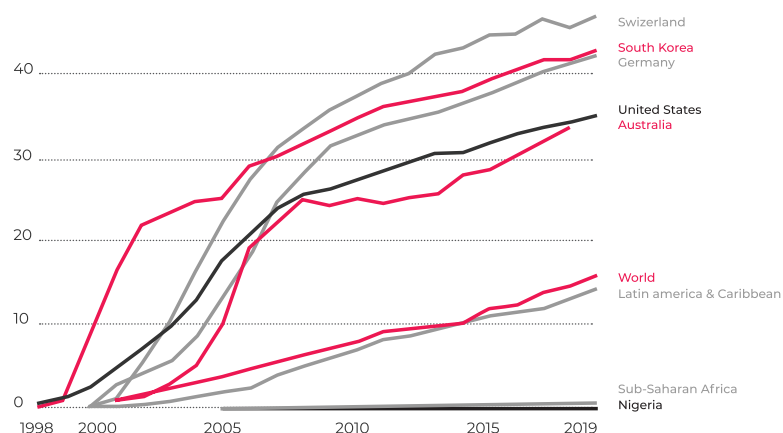
# PROBLEMS AND SOLUTIONS

In addition to providing opportunities to emerging economies, broadband internet connectivity plays a significant role in almost every major development aspect.

To launch a successful ISP platform in emerging economies, we need to look at the presence of local ISPs and how users currently interact with their services. We then need to assess their ability to adapt to new technologies and other changes we plan to implement.

## Broadband connections in urban areas of emerging economies

While there are many mobile providers in emerging economies, there is virtually no broadband infrastructure within and outside major cities. For example, over 99% of the people living in Africa lack access to broadband internet connection or stable TV signals.



Broadband subscriptions per 100 people, 1998 to 2019

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 2019  
(<https://ourworldindata.org/internet#broadband-access>)

In contrast, the broadband market penetration average is about 15.7% globally and 40% in developed countries. It is immediately apparent that these cities are severely underserved.

The lack of infrastructure is linked to how it is almost impossible to build these facilities in these areas. The cities are densely populated, and the alternative to close roads to dig the trenches to lay these cables is impractical and virtually non-existent. Other than installing the cables, the commitment to keep this hardware underground is another significant responsibility.

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

The extremely high capital requirements to build broadband infrastructure combined with the lack of activity imply that there will not be any significant steps to move forward in this direction.

One could also argue that broadband might become obsolete with the development of mobile networks.

Imagine your home or business without a cable broadband connection to the world. Add weak coverage, reduced speed, instability, and low-end mobile hardware to the mix, and it becomes immediately apparent that **broadband internet will remain relevant for a long time.**

The alternative is inconceivable. That is why we must not succumb to the challenges and strive to build quality broadband infrastructure where needed.

## Acquiring services in emerging economies

After resolving the infrastructure issue, there are still 2 major barriers to accessing broadband services within emerging economies.

1. Means of identification
2. Means of payment

**There are over 1 billion people worldwide without the means of identifying themselves** (Desai, Diofasi, & Lu, 2018), and that is a potential problem in accessing services, including 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 to pay for goods and services and no means to build a credit line.

An interesting statistic is the level of blockchain adoption in areas such as **Nigeria, leading in global cryptocurrency adoption with 32%**. In comparison, arguably the most crypto-friendly developed country, Switzerland, has an adoption rate of 11% and only 6% adoption in the US. (Oluwole, 2021).

### How common is crypto?

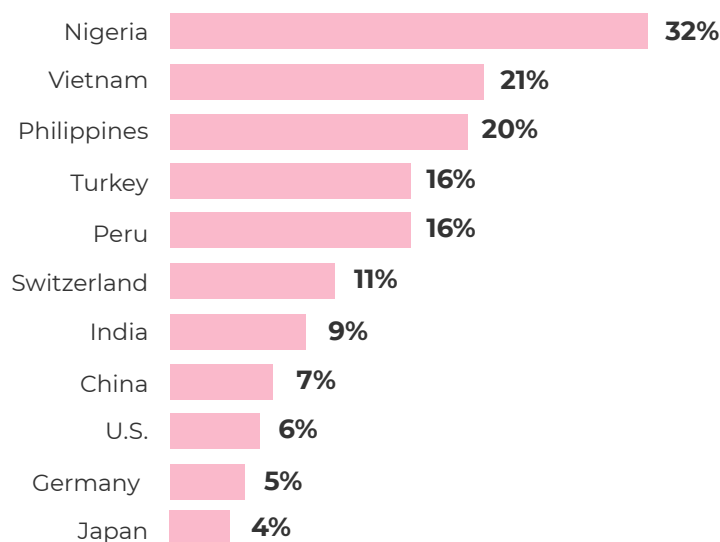


Figure 2 How Common Is Crypto? <https://africa.businessinsider.com/loFigure 30 Kinshasa coverage mapr-bitcoin-and-cryptocurrency-adoption-in/drv4121>

Even with limited connection and hardware, global financial inclusion may be possible without banks. People may be ready and willing to explore such opportunities, with the main barrier to regular and efficient use being **inadequate or nonexistent connectivity and hardware**.

## Our solution

To promote the adoption of the 3air platform, we have partnered with **K3 telecom AG**. This Swiss broadband provider specializes in building broadband infrastructure and providing quality broadband services in densely populated cities within emerging economies. This partnership will help us 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.

In our first stage, we will constantly expand throughout Africa, providing **broadband connectivity to the masses**.

The second stage is the 3air platform, providing **easy access to services, identity management, payments, and credit line building**. These services will provide additional value to all parties involved.

The third stage is to change how we use telecom services to become the **world's first blockchain-based, decentralized, permissionless ISP service platform** that provides the tokenization of bandwidth and other services. We will also enable secondary markets and add to security, roaming, IoT, and connect ISPs globally.

## Core objectives

### ○ Provide broadband connectivity to cities in Africa

With our K3 partnership, we will build broadband infrastructure in major African cities. K3's "Cable in the Air" system has been operational in Sierra Leone since 2019, and its operation is already spreading to the DRC. We will first build the infrastructure in DRC and Nigeria and then expand to other countries.

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

Our platform will give users and ISPs an easy-to-use system to onboard new clients, track subscription status, and provide payment solutions through blockchain that even countries without world-class banking systems can easily adopt.

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

We will utilize a system that supports digital identities (DIDs). DIDs are identification and personal information tracking tools with privacy options to give our users their verifiable identities. They also facilitate credit score tracking. With regular broadband service usage and additional payment data, users can build their credit scores and access loans within or outside the platform.

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

Brand recognition, community building, and loyalty programs are essential components of a successful business. Tokens provide a valuable utility for these activities if implemented correctly. Providing discounts and rewards for these special activities fosters community satisfaction and customer loyalty.

### ○ Provide cross-collateralized and undercollateralized microloans to people in Africa

It has become increasingly challenging to comply with the requirements and regulations necessary to acquire a bank loan. It is virtually impossible if you do not own a bank account and cannot provide bank statements or income

records. With digital identities and financial tracking, we can safely, privately, and securely store important personal financial information that helps to assess your credit capabilities. Data on the blockchain is immutable and does not require authenticity proofing. Hence, credit scores can be calculated automatically and loans granted instantly. This information can be used within the ISP system to quickly acquire payday loans or connect with other microloan 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 to reduce fraud without compromising privacy.

### ○ Enable secondary markets for bandwidth and other subscription services

There is untapped potential in fully digitalized subscription services and bandwidth. Secondary markets can potentially stabilize prices to beneficial levels for 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 to create tamper-resistant records of shared transactions on the internet. It also enables business partners to share and access IoT data without central control and management.

IoT devices track critical infrastructure and maintenance, including core networks and base stations. This utility enables other partners or governments to access operational records or perform tasks on individual devices without any central authority.

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

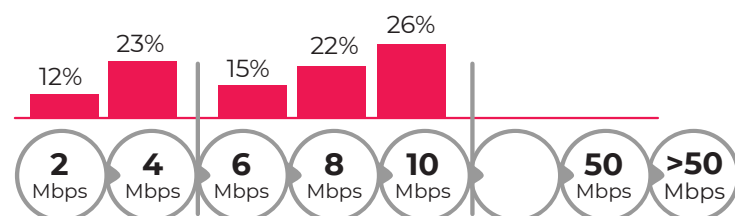
Roaming becomes seamless when IoT, digital identities, and bandwidth tokenization are in place. Switching between networks is instant, secure, trackable, and easily verifiable.

# TARGET MARKETS

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

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

## Current internet speed



## Desired internet speed

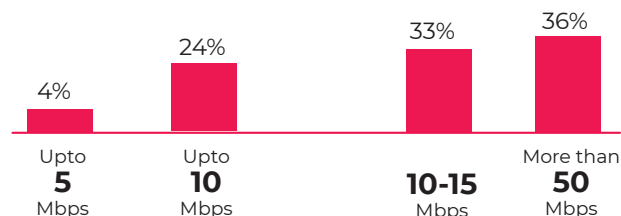


Figure 4 Current vs. Desired internet speed in Nigeria (source: internal research survey)

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

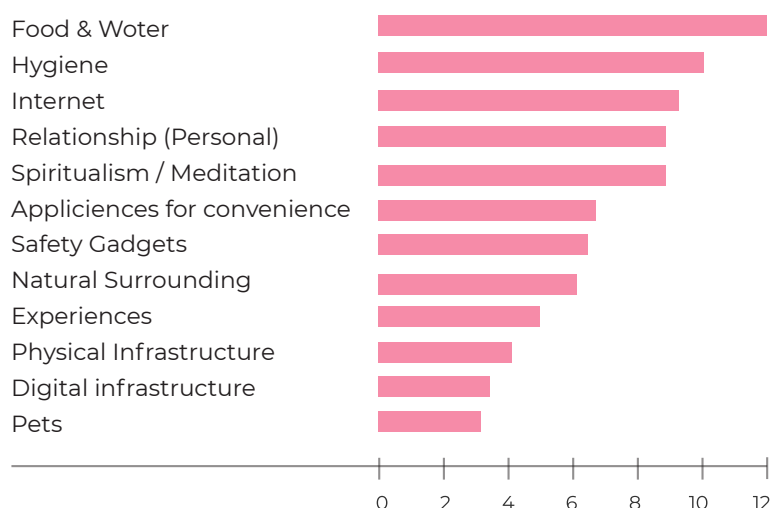


Figure 5 Most important things for Nigerians in today's life (source: internal research survey)

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

Our unique solution enables us to tap into an unclaimed market worth about \$97 billion annually (calculated at a 12% broadband penetration rate)<sup>1</sup>. **Our advanced and effective technology gives us a competitive edge and minimal competition for platform adoption and growth.**

The broadband penetration rate in Africa is currently less than 1%. This figure is incomparable to the world average of 12% or 40% in developed countries (World Development Indicators, 2021). **The biggest obstacle is a lack of infrastructure.** As we resolve this issue, we will gain years to establish and consolidate market share before any competition enters the space.

Our survey of over 300 respondents from Nigeria confirms this too. Only 2% of the respondents with internet access had true broadband connections. They believe broadband internet is FASTER, BETTER, and more RELIABLE.

There is a wide gap between the available internet speed and the desired Speed. 69% of consumers desire speeds above 10Mbps, while none currently have more than 10 Mbps speed.

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

Surprisingly, the internet ranks as the 3rd most important need, just after Food & Water and Hygiene.

After a successful rollout in Africa, we will explore entering other emerging markets and creating partnerships with established ISPs around the globe. We will be entering a global market valued at \$1.6 trillion in 2020 and that is expected to grow at a compound 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 by offering novel methods to handle subscription services and bandwidth. Our target is to become the go-to platform to manage services for ISPs.

# COMPETITION

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

As we build our market to start the platform, we must also assess the competition within the targeted ISP markets in Africa. Additionally, we need to acknowledge the competition and the developments in the blockchain space regarding platforms for offering and acquiring ISP services.

## Overview of the global T&M landscape

### Evolution is the keyword in the global Telecoms & Media landscape.

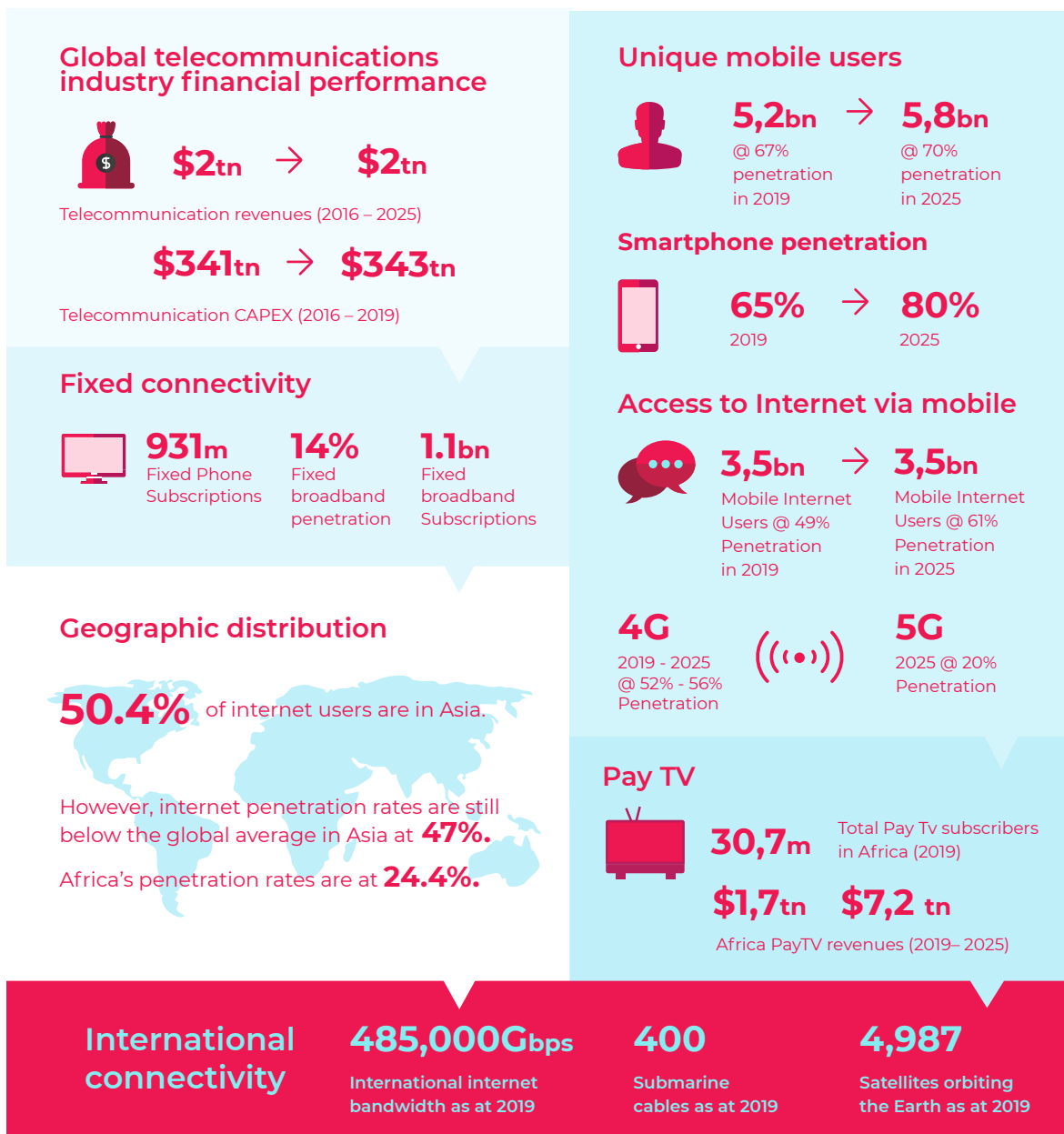
Increased competition, dwindling revenues, and market saturation have forced telecommunications industry giants to explore growth opportunities via geographic expansion and/or new technologies, applications, or services.

Furthermore, growing interconnections between technologies and devices (Internet of Things or IoT) has led to the demand for data-intensive services and 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' growing demands.





Figure 6 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)



## General broadband technology comparison

### Mobile Network based ISP connections

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

Due to a lack of cable infrastructure, mobile network providers entered the ISP space by providing Wi-Fi devices for people to enjoy Wi-Fi at

home. These devices are good for mobile connectivity but not good enough for fixed broadband connections at home or office.

- 240 times lower bandwidth per base station than K3

Such devices operate on 20 MHz to 40 MHz split users. It means each user gets about 70 Mbps per base station. In contrast, K3 operates on 600 MHz and has 17,000 Mbps per base station, outperforming mobile networks x240.

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

#### ○ Unreliable

Mobile networks cannot control how people move between base stations and who buys SIM cards and connects to each tower. If a tower is overloaded, its speed drops or stops working. Secondly, many regions in Africa lack the mobile infrastructure to support current users.

#### ○ High CAPEX to reach many customers

Mobile networks need many base stations to distribute the load, and towers are not sufficiently available.

#### ○ Coverage range

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

#### ○ Less control

Individual control is impossible. Hence, mobile networks cannot assign different speeds and other parameters to different users.

#### ○ 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%

#### ○ User experience

Users can easily misplace their Wi-Fi device, have insufficient battery charge, or get poor reception within the house.

#### ○ Costly IP TV

Users resort to satellite TV because IP TV requires fast connections and abundant bandwidth, which is mostly limited. Satellite TV has many shortcomings, including downtimes when it rains.

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

#### ○ Point-to-Point is fast, expensive, and not scalable

Typically used for business connections, hotels, or VIPs. The setup and bills cost over \$1,000 per customer. It is not scalable as each client requires a corresponding link to the tower, limiting connections to about 50 customers per tower.

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

Subject to disturbances since it operates on free frequency bands. It can connect about 50 to 100 users to one base station. IP TV is expensive for operators because IP TV users demand high backhaul capacity (i.e., if 100 people watch HDTV at 5 Mbps, the operator requires 500 Mbps. Meanwhile, it costs nothing for 100 people to watch HDTV with K3 because it broadcasts IP TV within a closed system).



## Current broadband alternatives in Africa

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

For instance, the competitive landscape in Kinshasa for residential and corporate users predominantly delivers “broadband” services via mobile networks and point-to-point connections, with inherent limitations in each method. Even high-end residential or business districts do not have physical cable access for true broadband. As a result, prices are high, and performance is not on par with western standards. Sim-card-based Wi-Fi hotspots cost about \$100 for 100 GB, and suppliers charge between \$200 and \$800 per Mbps for dedicated point-to-point connectivity.

Satellite-based TV ranges from \$7 to \$105 per month and doesn't work when it rains.

IP telephony, an important service for enterprises and large corporations, is absent.

### Broadband Data

The big market participants, Africell, Airtel, Vodacom, Orange, etc., focus on the mobile phone sector. However, the absence of cable infrastructure and fixed broadband in Africa motivated these players to enter the ISP space via Wi-Fi hotspot dongles for residential customers and point-to-point solutions for enterprise use. 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.

### TV

The two main providers, DStv and Canal+, operate on satellite technology, which is extremely vulnerable to signal disturbances from weather conditions (e.g., rain). They offer various channel offerings with packages ranging between \$7 to \$105 per month.

### Fixed phone lines

Provided by some market participants for an additional fee. These are not used often due to the absence of IP phone functionality and the 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

Based on our data, the average K3 customer in Sierra Leone uses 140 GB of data per month. Thus, Vodacom's largest package (100 GB) is not enough for regular broadband use. Additionally, the above packages do not include TV and IP telephony. Those must be acquired through additional services such as DSTV or Canal+, costing between \$7 and \$105.

**This data represents the situation in 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, government, and corporate clients, with prices that cost around 50% less than the competition. There is no service remotely comparable to K3's "Cable in the Air."

## Competition in the blockchain space

Telecommunications is a lucrative market and heavily dependent on technology. Technologies with revolutionary potential, including blockchain, will always try to penetrate, disrupt, and claim shares in such markets. Therefore, it is normal to see projects exploring the industry. Blockchain can disrupt the telecom industry in many ways.

Many projects focus on providing mobile payment systems, digital identities, and additional security, but none are currently working on the disruptive aspects blockchain can provide.

After reviewing the competition in the blockchain space, we are confident that we have a unique business model that makes us stand out from other projects in this space. As we mentioned, we are creating our own market and setting a high entry barrier for the competition.

## Telcoin

Telcoin is undoubtedly the most prominent project connected to telecoms in the blockchain space. Although Telcoin initially focused on telecoms, it has since evolved into the “mobile money” market, aiming to become the most adopted mobile payment system.

Telcoin claims to be an easy fit for connecting to existing fee models of carrier billing and incentivizing a low-fee service that is attractive to end users and profitable for networks. It also offers a pricing and exchange API for easy integration with carrier billing platforms.

It aims to achieve financial inclusion through its partnerships, which does not include any telecom partner. Telcoin is exploring a different market to 3air with different business plans and strategies.

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

<https://www.telco.in/>

## Dent

Dent describes itself as a revolutionary digital mobile operator offering eSIM cards, mobile data plans, call minutes top-ups, and a roaming-free experience. It uses blockchain to create a global marketplace for mobile data. Its core business offers an eSIM with data plans that work in 60 countries, thus providing a seamless data roaming experience.

As of now (July 2021), there is no actual use case for the Dent token as the marketplace has not yet been built. According to their roadmap, the DENT Mainnet should launch in 2022.

Compared to 3air, Dent aims for the global data roaming market and enables voice calling with mobile data within its app. Dent is contracting different telecoms, stopping them from selling directly to the end user. As such, it acts as a telecom service provider.

3air focuses on bringing broadband to Africa, creating its own user base, 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 reached a market cap of over \$1B in April 2021.

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

## Corda

Corda is a blockchain-based platform designed to help users build permissioned distributed solutions and networks. A part of Corda's platform is dedicated to the telecom industry. It claims to provide a secure, scalable, and efficient platform where multiple parties can share data, logic, and records. They streamline KYC, onboarding, 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.

Overall, Corda seems like a good platform with telecom as one of its target markets. It offers a blockchain platform for telecoms to build their own dApp solutions. 3air, on the other hand, specializes in providing out-of-the-box solutions with minimal development and programming needs for the user.

<https://www.r3.com/customers/telecommunications/>

## Ammb

Ammb 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, resell their unused bandwidth. Lately, Ammb has focused on providing on-chain financial services and is advertising as a Quantitative Market Maker. They are also moving into the NFT space. All these commitments may count against their commitment to the telecom markets.

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

## QLC Chain

QLC is a Chinese startup built upon the NEO blockchain. It currently provides mobile payments through SMS-based billing systems and integrations with telecom companies. It also provides digital identities and the QLC Chain wallet.

Its roadmap scheduled development to end in 2019, but it appears to have stagnated since then.

<https://qlcchain.org/>

## BitMinutes

BitMinutes provides another option for mobile payments. It connects its BitMinute token to prepaid mobile minutes that can be used the same way as prepaid cards. Blockchain technology provides additional AML options and fraud prevention while making the buying process easier for the end customer.

BitMinutes is entering the payment and DeFi space, focusing on some emergent nations such as Nigeria. However, its roadmap ended in 2020.

The token is untracked on CMC and shows a meager volume and market cap on Coingecko.

<http://bitminutes.com/>

## FIX Network

FIX aims to provide blockchain-based cellular security solutions. It allows smooth transitions between different devices through digital identities and a digital currency. It currently operates in the IoT space as it explores mobile operators.

<https://fix.network/>

## World Mobile Token

World Mobile Token (WMT) is a new project in its pre-launch phase. It aims to bring affordable connectivity to rural areas of emerging economies using a mesh network on a hybrid spectrum, renewable energy, and blockchain technology.

WMT is building a native blockchain on Cardano to help facilitate traffic through its nodes and Wi-Fi mesh network infrastructure, using solar-powered routers and hotspots. It offers affordable mobile services with peer-to-peer sharing and online payments.

WMT and 3air are not direct competitors as one focuses on rural areas, and the latter explores urban areas of emerging economies. The technologies and user bases are different, and the possibility of customer overlap is minimal.

WMT completed its presale in August 2021. It sold 10% or 200 million WMT tokens for \$0,20 during the public sale and raised \$40 million. It sold an additional 2,5% or 50 million WMT at ~\$0,14 for \$7 million in a private round.

With a token supply of 2B WMT, they had a fully diluted market cap of \$400M at launch.

<https://worldmobiletoken.com/>

## Helium chain

Helium calls itself the People's Network and the world's fastest-growing wireless network. It provides special HW hotspots that allow users to connect to their internet and share with other members of the Helium network. They currently have 541,372 hotspots connected all around the globe.

Users providing hotspots can earn HNT token rewards, and users connected to the hotspots are charged for it.

This idea is similar to our bandwidth sharing model, with the main difference being the presence of ISPs. This model becomes unsustainable when scaling without thinking about the ISP as the one who actually needs to buy the original bandwidth.

Helium has still built a strong community and user base around its project. It is also probably 3air's biggest contender within the crypto and bandwidth space.

## Future competition

The telecommunication space is developing at an exponential pace, and we are updated on the latest developments. New technologies are emerging, while 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:**

- 5G technology
- Starlink

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

Even if construction were possible, the World Bank estimates it would require an investment of \$100 billion to cover Africa by 2030, and “no single actor will be able to meet Africa’s 2030 target” (Senges, 2019). Such facts also offer perspective 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, the claims seem more like clever marketing plots, and the lack of motivation in this direction for many years supports this outlook.

## 5G mobile technology

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

The main advantages of 5G are high bandwidth and reasonable deployment costs.

5G has the amazing theoretical potential of 20 Gbps downlink and 10 Gbps uplink (Bhardwaj, 2021). However, real-world tests show that current 5G download speeds reach between 160 and 350 Mbps and upload speeds of 20 to 30 Mbps (Fogg, 2021). Although this throughput might be considered high enough, the real issue is the high response time making it almost unusable for certain businesses that rely more on low latency than throughput.

One major drawback of 5G is that each cell/station can only reach up to a few hundred 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 lower. Also, 5G operational costs are up to 5 times higher than K3’s technology. 5G coverage in cities is growing and is at about 15%. Typically, penetration in Africa and other emerging economies is almost nonexistent and is not expected to play a major role in the next 5 years (it is estimated that only 3% of the mobile connections in Africa will be on 5G by 2025 (Kazeem, 2020)).

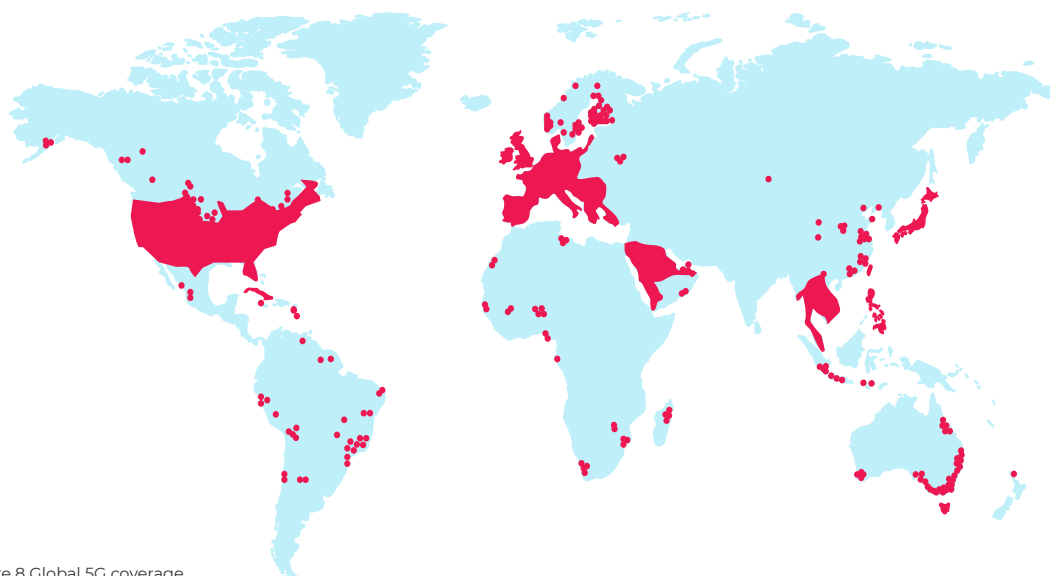


Figure 8 Global 5G coverage  
(<https://www.nperf.com/en/map/5g>)



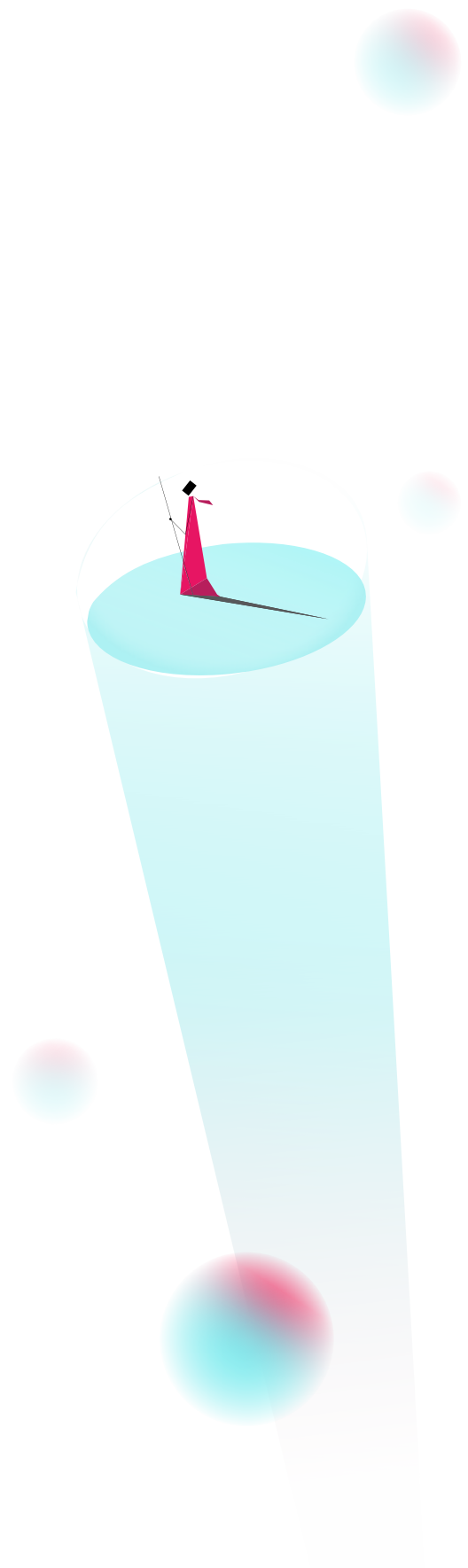
## Starlink

Starlink is a new technology aiming to provide 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. Starlink's long-term goal is to reach the 1 Gbps download speed mark.

Although Starlink can potentially disrupt the broadband market in the future, it is still in its infancy. It is currently unreliable, inconsistent, foiled by nearby trees, and has limited availability. Real-world usage shows actual download speeds even below 25 Mbps (Patel, 2021).

Starlink requires a near-perfect line of sight with its satellite. This becomes an issue in cities where high buildings obstruct clear views of the sky. 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). In the end, this leads to poor user experience as many report interruptions, inability to hold online meetings, and low-quality video streaming. There is no doubt the user experience will improve in the future as more satellites go into orbit. However, Starlink aims to cover rural and remote areas without proper broadband infrastructure. Hence, it is not a direct contender with K3 and 3air, as we aim for densely populated urban areas. Also, Starlink is years from becoming fully functional, while K3 technology has matured over the last decade and already has verifiable real-world applications.

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





# 3AIR ECOSYSTEM

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

## The project is divided into 3 stages:

1. Create a market by building broadband infrastructure in Africa through the K3 partnership.
2. Build the blockchain ecosystem.
3. Expand the platform with additional functionalities and onboard multiple ISPs.

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

For our development, we have chosen to build on the SKALE blockchain. SKALE is a containerized network system capable of running an unlimited number of secure, decentralized, high-performance blockchains native to Ethereum. We chose SKALE for reasons such as:

- EVM compatibility,
- Fast transactions on a network that does not get congested and slow,
- Zero end-user gas fees.

There is much more to SKALE; you can find it in Appendix 11: SKALE blockchain.

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

The best platforms are only worth as much as they are used. Therefore, we have started by building our own user base. We will focus on underdeveloped markets in Africa and their untapped potential for change and adopting new technologies.

We have identified a strong partner with a unique solution in building broadband where others can't. Our partnership will give us a competitive advantage and the ability to kickstart our platform with thousands of users upon launch. We project up to 1 million users to come onto the 3air platform through this partnership within the first 3 years.

We provide a detailed description of K3 technology and how it can achieve success where others have failed in Section 6: K3 broadband solution.

Important notice - All agreements with K3 are already in place and will start immediately after our successful token launch.

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

However, we'll not get ahead of ourselves. Let's begin with a focus on the core functionalities.

## Digital identities

One of the main features of the 3air platform is **Digital Identities**. Identities are a cornerstone of society. However, many of Africa's population lack proper identification and verifiable records from different sectors, such as finance, education, and health.

Digital identities can provide all of these in a trustless, secure, and private medium, providing access to credit scores, medical history, or

proof of education that is directly verifiable on the blockchain.

By current standards, clients must sign up at a vendor and present their physical ID. They must also submit personal data, although most vendors don't need all this information. If the sign-up process occurs online, it usually involves multiple usernames and passwords or third-party services. All of these attract additional costs and come with development, usability, and security flaws.

Although ISPs currently process a lot of personal information, they are not part of the authentication and identity services in general. With the 3air platform, ISPs could provide identity-as-a-service and earn additional revenue or just offer additional value to their clients. ISPs are perfectly suited for these tasks. For 3air, each issued digital identity will incur a fee.

In the best scenario, a properly issued digital identity will be recognized by government authorities and could replace even official means of identification. 3air will strive to achieve the status of a licensed or certified ID issuer through our K3 partnership. Issuing official government ISP licenses could pave a shorter route to our destination, however our success is not dependent on this outcome. Still, identities issued by a licensed ISP provider will have merit with other institutions and businesses struggling with identification means for people living in emerging economies.

Such an identity will benefit the client and the ISP. 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 to 3air's ecosystem, removing a major security flaw and cost from ISPs that join the platform. On the other hand, once digital identities become mainstream, they will be usable on other points of identification, including websites, web stores, shops, bars, etc. With proper issuer certification, it even has the potential to become a mainstream means of identification.

## Decentralized identifiers

The term, digital identity, is only loosely defined. It can be any means of identification with a digital document. On the other hand, there is a W3C standard being proposed that defines decentralized identifiers (DIDs) (W3C, w3.org, 2021) and Verifiable Credentials (VCs) (W3C, w3.org, 2021).

We believe this will be the standard that will prevail in the digital identities space, which is why we are structuring our identity data model according to this standard. It will make our identities usable in versatile situations and interoperable with future projects and institutions.

At the head of digital identities, there will be VCs. Credentials are a part of our daily lives. We use a driver's license to show that we can operate a vehicle, we use university degrees to prove our level of education, and we use passports to travel between countries. The VC specification provides a mechanism to express these sorts of credentials on the web in cryptographically secure, privacy respecting, and machine verifiable methods.

DIDs in this model refer to any subject (a person, organization, thing, data model, etc.). It is decentralized because it can be decoupled from centralized registries, identity providers, and certificate authorities.

Some services like Atala Prism (<https://atala-prism.io/app>), Serto ([www.serto.id](http://www.serto.id)), or Veramo (<https://veramo.io/>) already offer DIDs with ready and turnkey solutions or SDKs that allow for deeper integration into existing systems. Each user will have their DID on the 3air platform. This DID will be used for all contracts between users and ISPs, including granting ISP services, payments, rewards, marketing, micro-loans, etc.

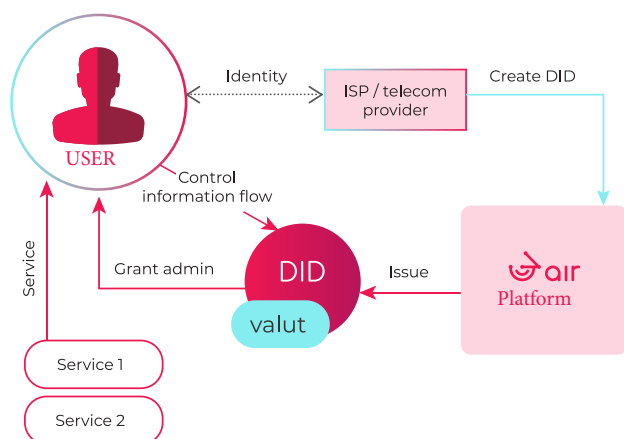


Figure 9 DID issuing and service interactions

### How issuing DIDs and DID interactions work?

A user walks into an ISP or telecom provider that can issue a DID. They identify themselves, and the ISP creates a DID on the blockchain with their information through the 3air platform. The information is stored in a digital vault. The user gets complete control over their DID and can use it to access other services, either with the ISP or other parties that accept the level of DID they were issued. The level depends on the information provided and the issuer's license. With every DID interaction, the user has complete control over submitted information. Each interaction stores data to build a verifiable history that users may need to access certain services in the future.

In the medium to long-term, it will lead to seamless KYC procedures, better customer experience, and reduced costs for the ISP. The user will have complete control of who can see or use their private information using vaults under their control.

Vaults facilitate sharing private information without revealing sensitive data to the other party. For instance, if you need to be of age to access a service, the questions should be:

**Are you older than XX years (with the answer simply Yes/No)?**

**Does this information belong to you?**

There is no need for the other party to know exactly how old you are, your name, or where you live. All these pieces of information usually

come with regular IDs, even when they are not needed. As for the second question, the digital identities indisputably match the provided information to the correct identity based on biometric data.

Blockchain technology makes it impossible for any party to fake or manipulate information, with biometrics adding an extra protection layer against identity theft.

The user will benefit from the DID with a reduced frequency of identification and KYC procedures. It also provides access to new services inside the ISP and even outside. Users can use the same DID on other websites and apps to uniquely and trustlessly identify a user. Payment records can contribute to building a positive credit score, making it easier to acquire financial services such as loans. A good track record also makes it easier to access other services from different providers. The options are limitless and synergistic.

## 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 burned or used to fund ESG-compliant community projects. Decisions related to token 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 the amount or date before the event. We may announce them after the event. To avoid doubt, the above does not directly imply that 3air will buy tokens on open markets, if at all.

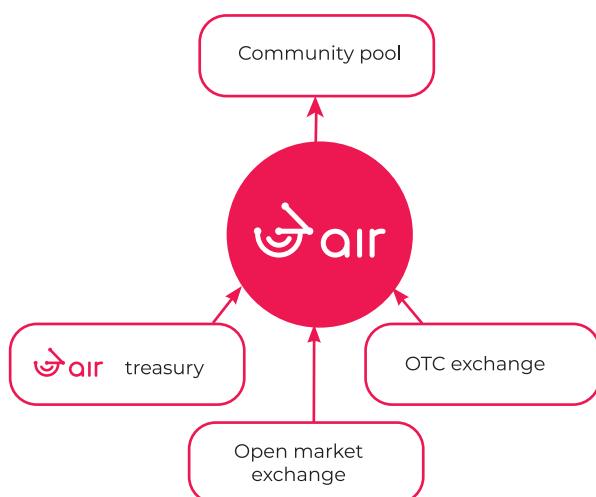


Figure 10 Token buyback option

## Token burns

If it is deemed beneficial to promote the 3air platform and incentivize its users, 3air could potentially burn a determined number of tokens at regular intervals. The 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 a certain amount of tokens to be burned.

3air may not publicly set any specifications (dates or amounts) for token burns. However, it has to be consensually decided with the community using surveys, polls, or other opinion-gathering and voting mechanisms.

To facilitate the processes mentioned above, community pool contracts allow voting on token burns within a certain percentage range of pool tokens. If circumstances suggest, a contract may be set up to allow community members to vote on how many tokens will be sent to a burn address within a specified range of 25% to 75%. An average percentage would be calculated from the votes and set aside as the burn token.

The community token contract could also change after reaching a certain milestone, with the aim to fully decentralize decisions on community pool funds usage.

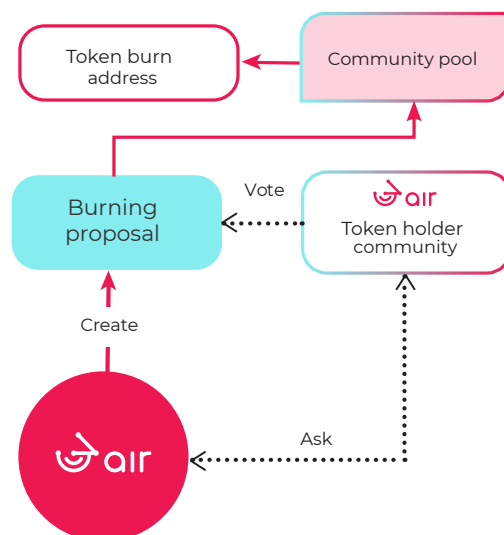


Figure 11 Token burning process

## Payments

To promote token adoption, all transactions on the 3air platform will be through 3air tokens. With our aim of fast coverage of Africa's cities and the demand for broadband connectivity, we will position the token to achieve mass adoption. We are also open to adoption and inclusion by third parties.

Ease-of-use is another factor to consider in achieving mass adoption. Forcing an unknown payment system on inexperienced blockchain users might be detrimental to platform adoption. Therefore, we will aim to include other means of payment and integrate backend token conversion into 3air tokens. The additional fees from these conversions will disincentivize payment in other currencies while motivating them to use 3air tokens.

To ensure steady incomes for the ISPs, 3air will not enforce setting prices in 3air tokens. Instead, it will recommend that prices be set in local currencies. The currency selection will be limited to 3air integrated currencies, but the final selection will be up to the ISP. At first, 3air will allow them to set prices in local fiat currencies, select stablecoins, and 3air tokens, but we will continue to expand the ecosystem through future integrations.

Fiat onboarding will be integrated into the platform and offered as an additional service to ISPs. SKALE chain, which we will build on, offers such a service in cooperation with one of the biggest fiat onboard and offload companies in the cryptocurrency space, Wyre ([www.sendwyre.com](http://www.sendwyre.com)). Clients can use those on-ramps 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 into crypto and then use crypto to pay through the 3air platform. With Wyre natively supporting the SKALE chain, we will ensure the integration of 3air tokens into Wyre. However, if direct conversion is unavailable, the 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 for the transactions.

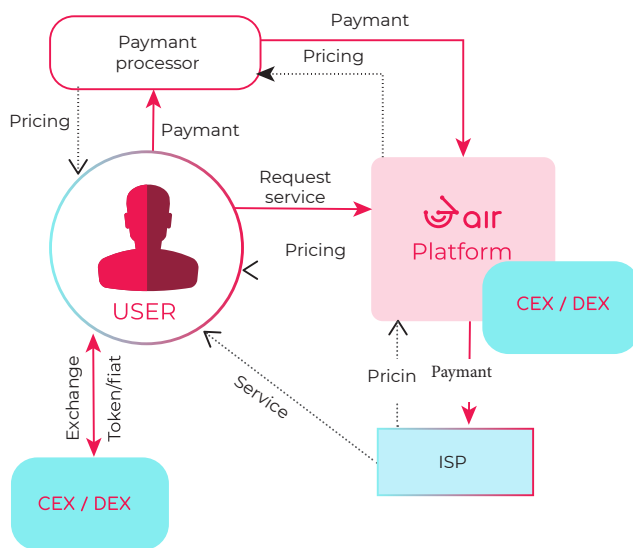


Figure 12 3air payments workflow

Let's look at two different case studies for a user from Nigeria that wants to pay for services with a 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 will see the price in Nigerian naira. The 3air platform will feed the payment processor a price in Nigerian naira. At this point, the payment processor shows the final

payment price that could potentially include additional third-party fees. The client then pays with their credit card, and the payment processor processes it and returns 3air tokens to the client. These tokens are then used to pay for the services via the 3air platform.

#### Case 2:

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

In this case, the user sees the price in EUR and can choose to see the live exchange rate of the Nigerian naira. The 3air platform would use its internal exchange rate and feed the price to the payment processor in USDT. The payment processor then displays the final price in USD, calculated with its exchange rate and adding additional fees if it applies. If the user has Nigerian naira as the primary currency on their credit card, their 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 steps involved in these two use cases.

#### Once made, the payment will be sent to a smart contract that will:

1. Enable the service the user paid for.
2. Exchange the payment tokens for 3air tokens using a third-party exchange if it is not 3air.
3. Send the processing fee to the 3air wallet address.
4. Send the remaining amount to the ISP's 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 cases where the ISPs don't want to deal with crypto payments, 3air might partner with third parties offering fiat exchange services to ISPs if regulators permit such a service. This service comes at an additional cost.

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

## Rewards and loyalty system

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

**The 3air rewards and loyalty system will evolve with time. The functionalities that we have identified and may integrate include:**

- ✎ 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 structures.

**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.
- ✎ Easily track referrals from multiple providers across different platforms.
- ✎ Coupons can be issued as NFTs, providing additional functionalities such as secondary markets (as this option might or might not be desired, they can turn it on or off per NFT).

The main difference from traditional rewards is

the integration of tokens as stipends. They can also be used independently, providing benefits for holding tokens, or in combination with other rewardable actions to enhance user rewards. For example, 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 and holding duration,
- ✎ completing tasks set up by the client,
- ✎ referring customers,
- ✎ sharing and promoting content,
- ✎ writing product or services reviews.

**Rewards can be potentially given as:**

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

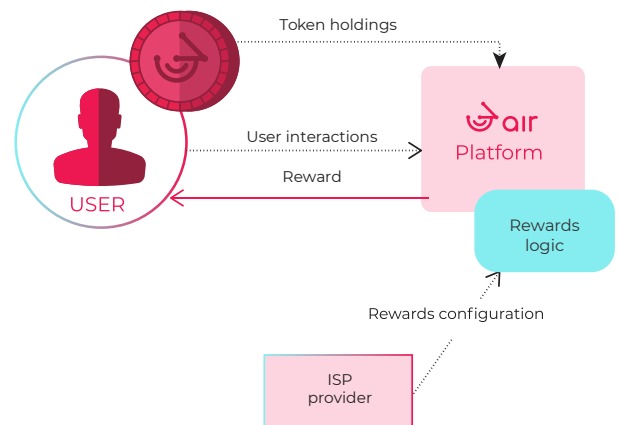


Figure 13 3air rewards system

We believe that such features should appeal to ISP providers and are essential in any modern business model. It is effective when used individually by an ISP or in a connection to other ISPs through the 3air token. The more clients use the rewards system, the higher the value of tokens on the platform and in the hands of every token holder. ISPs may have high average 3air token holdings as the payments will be pro-



cessed in 3air. Hence, they could be potentially incentivized to use the token-based loyalty system to compound their returns. It will perform excellently in the traditional sense to recruit new and retain old clients.

To further 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. This reward is calculated on the first day of a specified period for the previous period (e.g., monthly).

For instance, if a client has paid 10.000 3air tokens in fees and 1.000 3air tokens as rewards to its users during the previous month, 3air will refund 600 3air tokens to the client. If the client paid out only 500 3air tokens as rewards that month, the refund would be the whole 500 3air tokens spent on rewards. At the end of each period, the counter is reset. This process would be automated and governed by a smart contract that evaluates the transactions from each client using specific timestamps.

Additionally, we will provide an API to allow integration with clients' current rewards system. K3 has already agreed to use the full rewards system for its clients.

## Referral and agents system

Although the referral system is part of the rewards system, we mention it separately because of its specific implementation and importance in every 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 critical in the times of online shopping as trust is harder to establish without personal contact. Therefore, people seek advice and trust by browsing through reviews, and a recommendation from a trusted person makes the decision even easier.

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

### Referral systems currently face numerous issues that blockchain can solve:

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

Currently, affiliate and referral campaigns are plagued by fraud. The pay-per-click model is outdated and vulnerable to click fraud, cookie stuffing, and typosquatting. Moving to the blockchain model of referral marketing offers additional benefits in fraud prevention since smart contracts automate the process and reduce the need for trust. Honest publishers will also receive better value when cookie spamming and artificially generated traffic is contained. Using digital identities makes it easy to uniquely identify a user and effectively prevents multiple user accounts or self-referrals.

Dispute events are almost nonexistent in the world of smart contracts. Even if they occur, the blockchain records every transaction for easy review and resolution.

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

Tracking is also easy and can become cookie-free as each user is uniquely identifiable by a DID. Each transaction can be precisely timed and assigned to a specific user. Using hashes to represent DIDs also improves user privacy and effectively resolves privacy breaches.

Each platform user will receive their unique referral link, which is connected to their DID. Once guests visit the 3air website through their link and register, their DID will be connected to the referrer, and every subsequent transaction can be between them.

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

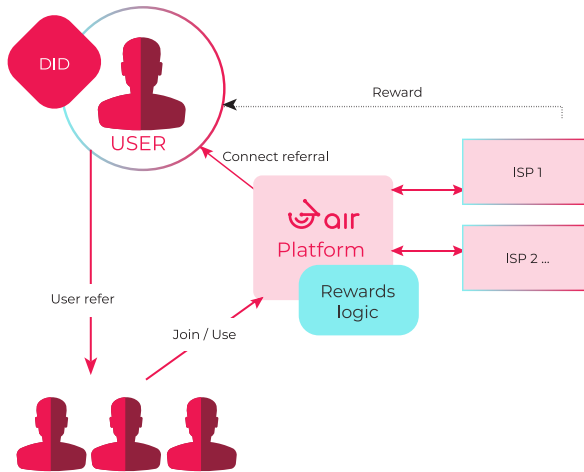


Figure 14 3air Referral system

## Community building and governance

3air aims to become fully decentralized over time. As the blockchain matures, we see refined on and off-chain voting systems coupled with on-chain execution, proving that even the biggest blockchain projects can become decentralized. That is the future of organizational structures we believe in.

Many on and off-chain governance solutions are available for EVM-compatible chains like Aragon, DAOStack, Colony, Compound Governance, and others. Snapshot is one of the most popular and fully integrable with SKALE (<https://snapshot.org/>). 3air may use Snapshot for its community engagement in platform governance and possibly connect with Gnosis Safe (<https://gnosis-safe.io/>) for immediate on-chain execution.

Gnosis Safe is a trusted and popular platform for managing digital assets on Ethereum. Direct integration with SKALE is on their road map and should be available soon (Safe, 2021).

The community pool is part of our plan to decentralize 3air. 3air could regularly provide funds to the community pool. The pool may be funded with a fraction of the fees collected on platform transactions described in the token

buybacks chapter. The pool may be managed through a Gnosis Safe multisig account, coupled with direct on-chain execution of voting results from Snapshot.

The community pool aims to incentivize the community to participate 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 more equal opportunities to emerging regions to improve their lives. With a strong, engaging community, we can start progressing towards full decentralization of 3air.

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

The community funds usage may be subject to voting or other opinion-gathering mechanisms. It could also be used to burn tokens and fund proposed projects if it is beneficial for the development and adoption of the 3air platform. At first, 3air could implement certain limits on the community's power. Those limits are outlined in the chapter on token burning. With time, the community might receive greater power to make decisions about funding and proposals. Until then, 3air may propose the projects that can be voted upon to prevent misuse of governance and power. Also, a specified percentage of the pool, which may be around 25% or even more, could be used to fund projects.

A 3air-selected board will receive and evaluate projects requesting funding. The project choice will be the board's responsibility. The project choice needs to be motivated by a will to progress the local society, infrastructure, and businesses with an eye on the ESG narrative. Any selected project should not directly violate 3air's vision, policies, and objectives.

Selected projects can present themselves to the community to win their votes. A date would



be set for voting, and projects will receive funding according to their acquired votes and other decision-making mechanisms. A quadratic funding model may be applied as discussed by Vitalik Buterin. (Buterin, Vitalik Buterin, 2019)

Voting may be done through the Snapshot platform, where 3air will select a voting strategy (Snapshot, 2022) that it deems most fair.

If a token holder does not want to participate in the voting process, they may be able to delegate their voting rights to another user. Experts and leaders will arise within the community through their engagements and reputation. Such individuals could receive delegations from the general community.

Up to 10% of the community funds could be set aside to incentivize users to vote if needed. These funds may be distributed to every wallet that participated in the voting process, according to the tokens they spent to vote. It could be done automatically through an on-chain management service like Gnosis Safe.

The amount of tokens set aside for voters can be adjusted to maintain fairness and sustainability. The reward must be enough to incentivize participation without depleting the treasury of development funds. It must be clear that voting is a right and obligation to help a greater cause. If applicable, the same process applies to voting about token burning.

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.

## Voting strategies

Usually, we consider individuals' on-chain voting rights equal to their token holdings. That may be considered fair, but it comes with flaws and inequities, as pointed out by Vitalik Buterin (Buterin, vitalik.ca, 2021). The problems can arise from small groups of wealthy participants ("whales") overruling the opinion of the majority of individuals. Per token voting empowers coin holders and their interests at the expense of other community members. The interest of "price-go-up" from speculative holders without any intrinsic protocol interest may therefore take precedence over community priorities such as funding projects for the general good. There is also the issue of conflicting interests when users also hold the governance tokens of other projects that may be affected by their decisions.

Hence, not everything in decentralized governance is perfect, and new systems and voting strategies are being developed. Delegation is considered to be capable of solving some of the issues, as small-time holders can delegate their

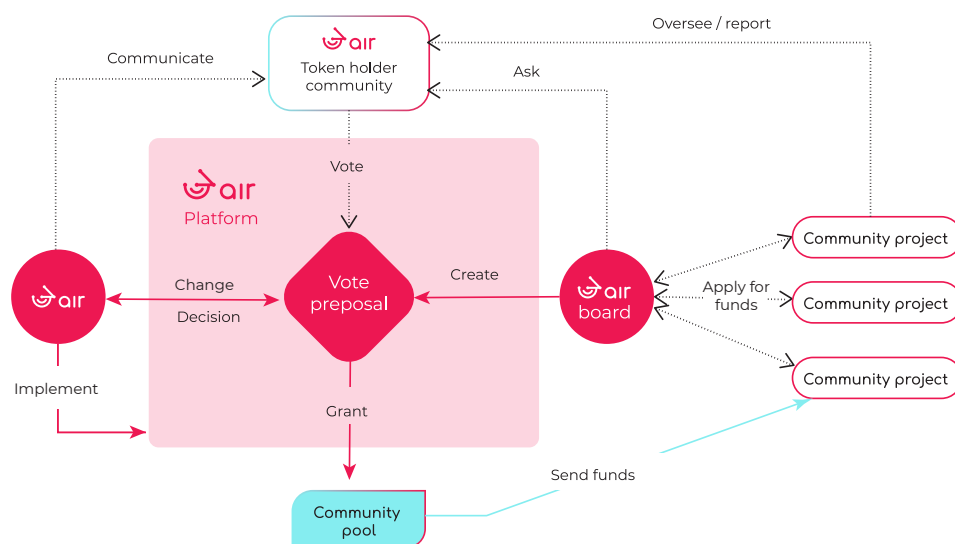


Figure 15 3air governance system

voting power to community leaders they trust, and they would not need to contribute to every decision personally. Of course, vote buying may become an issue in such models.

At 3air, we follow the latest developments in decentralized governance (DeGov). We believe that reputation-based voting may be the future of DeGov combined with quadratic voting. The Orange protocol (protocol, 2021) is an excellent example. Orange protocol generates reputation reports for users and couples them with their DIDs. It combines this with a Quadratic formula considering the token holdings. In such a system, more engaged users will have more voting power than passive token holders which speculative investors usually are. There are exciting times ahead in DeGov.

## Own your own hardware incentive

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

A token economy provides a different solution to this problem and creates new value for all participants. We propose the "Own your own HW" incentive, where users can become the owners of their hardware with the company's help while the company receives long-term clients.

When clients first enquire about a service through the 3air platform, they will get the appropriate hardware to connect and use the provided services. At this point, the HW is leased, so they can use it without becoming outright owners. At the same time, the company (either the ISP or 3air) will provide the client with 3air tokens in an 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 while they have a valid subscription and the tokens remain locked. If they decide to

unlock the tokens after 12 months, they must pay for the HW to keep the tokens and become outright owners. Unlocking tokens is governed by a smart contract where the value of the HW is kept in a stable currency. Upon unlocking, the 3air tokens needed to cover the HW expenses are transferred to the company and the rest goes 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 their subscription to 3air-provided services during the first 12 months, the locked tokens are returned to the company, and they will be required to return the HW.

With this, the user potentially gets to become the owner of their own HW without buying it out of pocket. They also gain some education on how staking cryptocurrency works. In exchange for the small initial investment, the company gets a long-term, crypto-educated client and the reimbursement of the provided HW after a certain period. The whole token economy benefits as the total value locked (TVL) increases with each new user.

These locked tokens are not part of any staking pool, so they do not generate any yield nor dilute any other rewards in the system.

## Staking

In addition to the previously mentioned "hodling" incentives, 3air may provide a staking pool where users may potentially be able to receive rewards by staking their tokens.

### Early staking

Upon launch, 3air will provide a pre-staking application within the 3air app (app.3air.io) under the staking tab. A Floating APY pool with weekly rewards distributions will be provided.

On 22nd of September, right after the token listing, subscriptions for the preparation period will open. The first 1000 addresses that sign up for the staking pool will be whitelisted and granted early access to the Access Point Nodes staking.

**Only fully vested tokens can be used for staking. The company cannot participate in any staking pools.**

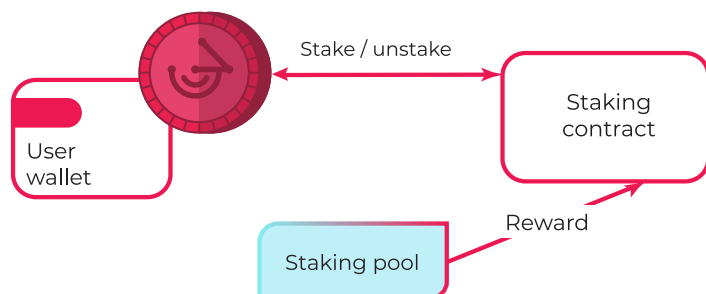


Figure 16 3air staking system

## Floating APY pool

3air will start with a continuous staking pool that will be available for an undefined period. This is a floating APY pool with set rewards that are distributed equally to all staked tokens.

### This pool accepts:

- 3air token
- Selected LP tokens

Only LP tokens of approved 3air liquidity pools will be accepted into staking. A list of pools with addresses will be published regularly.

Users that provide liquidity in these pools can also stake their LP tokens and receive rewards proportional to their 3air commitment.

### Floating APY pool data:

- Preparation period start: 22nd of September 2022, 12 pm UTC
- Staking period start: 22nd of October 2022, ~12 pm UTC
- First pool payout: 29th of October 2022, 12 pm UTC
- Staking period end: Continuous
- Staking cap: 2,500,000 3air per wallet
- Reward pool: 17,500 3air weekly with a weekly growth rate of  $\log_{10}(2) + 0.9065$
- Pool rate: floating with the APY rate of pool reward \* 5214 / total tokens staked
- Unstaking period: 2 weeks (during the unstaking period, only the next staking reward will be rewarded)
- Accepted tokens: 3air, selected LP tokens

The floating APY pool does not grant a fixed APY on staking. It balances the APY rate based on staking supply and demand. The pool grows on a logarithmic scale to match the token circulating supply.

This is the primary 3air staking pool and will be available for easy staking from the claim dashboard, allowing you to claim your vested tokens and stake them in one single transaction.

Floating pool rewards are non-compounding, but users can claim their weekly rewards and restake them at will, up to the maximum amount permitted per wallet.

This staking pool can be discontinued at any point. On pool discontinuation, all tokens become immediately claimable. Claiming functionality must be available for at least 24 weeks after pool discontinuation.

Immediately at the weekly payout, a snapshot of the staked tokens is created that is used for the next week's payout. So, when you enter during the week, you will not get any APY until one week after the next payout.

At snapshot, the amount of 3air tokens within the LP tokens is calculated for each user that is staking LP tokens. This amount of 3air tokens is used to calculate the reward from the staking pool. Please note that these staking rewards are in addition to the rewards offered by the liquidity pool.

The snapshot functionality and commitment to on-chain transparency may cause minor delays (a few minutes) in weekly payouts.

Once a user clicks unstake, the 7-day unstaking period starts, and only the first reward is paid during this time. The tokens in unstaking are not captured in the next snapshot, so these tokens will be equally distributed among other staked tokens for future rewards. Once the 7-day period is over, the user needs to claim their tokens.

Staking pool parameters can be adjusted with a 17-day notice. Any future changes to pool parameters need to be in time lock for at least

3 days longer than the current unstaking period. That should give any user staking their tokens enough time to unstake if they do not agree with the new parameters.

## Connectivity NFTs

3air users can access 3air's services through NFTs.

### Device NFTs

In the first step, 3air will issue an NFT that identifies the user's hardware. It will allow 3air to enable its services on the correct device and give the owner the ability to clearly and unmistakably identify their hardware. The hardware will contain an image of the actual device, its serial number, and all the relevant information 3air needs to provide its services to that device.

NFTs will also allow the end user to manage their connectivity in different locations. A user may have a router connected at home and the office. They will own 2 Device NFTs to access 3air services.

### Connectivity NFTs

The second type of NFT will provide information about the exact services that need to be provided to the Device NFT.

A user will be able to mint an NFT in the 3air marketplace. They can choose the type and location of the services they want from the marketplace. A general NFT will be minted with an intrinsic value expressed in USD value.

This makes the NFTs truly interchangeable as different services and locations have different service prices. Additionally, once 3air opens up to other providers, these NFTs can be freely transferred to any geographical region or service among providers within the 3air ecosystem.

Once users want to use these NFTs to access the services, they can stake them in the Device NFT. At this point, they need to select their provider and service. The user can change these preset pieces of information according to their preferred settings.

Once activated, the NFT changes its initial intrinsic value from a USD-denominated figure to the specific service and provider. From this point, the NFT can only work for the activated service. If the service is time-based, the countdown will begin from the moment of activation. At any point, the user can unstake their NFT from the Device NFT and stake it in a different Device NFT to use the services there. They can also sell, gift, or rent their NFT.

3air expects secondary telecom services markets to soon begin trading and exchanging value to unprecedented levels in the space, and this can be seen as an evolution of the mobile minutes also popularized by African communities.

It also opens up possibilities for new business models and philanthropic donations contributed by sending NFTs to the Device NFTs of schools or talented students in need of financial aid.

## Flexibility

These NFTs will be built with expansion options and flexibility in mind. Because of cultural variability worldwide, technical and business solutions must be adaptable.

For instance, in regions where trust is an issue, the Device NFT may require a 3air stake to guarantee the safety of the hardware. If the hardware is not properly protected or lost, the staked 3air tokens might get slashed.

Additionally, a long-term staking pool can be used instead of long-term contracts to return the staked 3air tokens when the commitment period has ended. If the user does not honor their commitment, the staked 3air tokens may get slashed.

These staked tokens may be part of the general staking pool and could earn rewards that might help pay off used HW in places where upfront funding may be an issue.

The world of NFTs offers novel solutions with additional benefits compared to their Web2 counterparts and will soon make their way into mainstream business solutions.

## Bandwidth sharing

With the lack of proper infrastructure in our target countries, there are almost no public Wi-Fi connections or shared connectivity in shopping malls, restaurants, bus stations, and shops.

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

### There are 2 main issues with bandwidth sharing:

- Local regulations.
- Terms and conditions from the ISP provider.

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

Secondly, ISPs don't allow commercial or non-commercial bandwidth sharing. It is especially true of shared connection plans, which are the most popular type of broadband connectivity today. The ISPs that operate a shared network sell your bandwidth cheaper than they buy it because 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, these connections do not support bandwidth sharing, and the ISP can decline your service request if your bandwidth usage is excessive.

Communities built on such sharing economies have raised concerns 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 facilitating the differentiation of services on our platform, where ISPs can charge a premium for permitting

bandwidth sharing. When users acquire such a package, they will get the proper access point hardware, preinstalled with a software solution that allows multiple, payable, or free connections. Users can share free bandwidth in shopping malls, restaurants, and places where such additional services are needed.

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

## Types of users

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

- ISPs, providing original bandwidth,
- Access point operators, sharing their bandwidth,
- Consuming users, connecting to shared access points,
- Insurance providers, ensuring sustainable system maintenance.

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

### ISPs

ISPs operate a business model based on selling bandwidth as their primary service and main revenue stream. The goals of ISPs in sharing economies are to:

- 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 by 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 during peak periods.
- Leads to additional costs in buying more bandwidth from the backbone providers.
- Reduces their primary revenue stream.

Therefore, ISPs will never allow bandwidth sharing **without additional incentivization**. Due to the sharing demands 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

Access Point (AP) operators run access points for diverse reasons that can be summarized thus:

- Additional revenue stream from providing a connection point as a service.
- Better customer experience, building the brand reputation, and gaining an edge on the competition.
- Attracting more transitory customers, such as tourists.

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

Good connectivity in many emerging economies is hard to come by, so providing such a service can lead to a significant competitive edge. Shopping malls, restaurants, tourist centers, bus stations, and banks would benefit from providing public internet services.

Also, it may generate revenue by providing a connection spot.

### Consuming users

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

- Roaming capabilities on their 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 HW failure and needs to be compensated with an appropriate reward. The insurance provider's incentives are the rewards from the Staking and Access Point pools.

## Sharing model

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

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 in public spaces. The challenge here is how to provide bandwidth to the connected users and fairly distribute the available bandwidth without compromising the quality of the connection for each user. This calls for a basic decision model that must be validated and fine tuned in a real-world setting. 3air plans to tackle this with the help of K3's 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 these types of transactions. They do not contribute significantly to security or privacy as this data is not sensitive, attributed to a specific user, or valuable to hack.

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

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

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



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

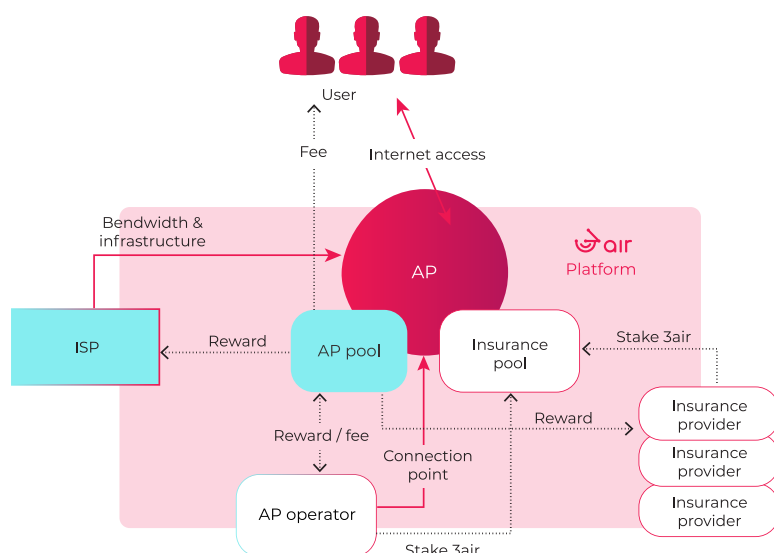


Figure 17 3air bandwidth sharing model

## Access point insurance

A certain amount of 3air tokens must be staked in a smart contract to operate an access point successfully. These tokens are used as insurance in case of access point HW damage, failure, or other events 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. The access point operator must provide at least 25% of the minimum required tokens to incentivize proper care of the infrastructure. If any maintenance or replacement is needed, insurance tokens will be reduced by the amount needed for repairs or to exchange the access point equipment. Until the 3air platform

v2 is online, this procedure will require the 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 decided by a vote from all insurance token holders.

The 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 online. Staked tokens will ensure access to all relevant IoT information and the ability to veto the maintenance team's decisions to prevent system exploitation. When they cannot reach a consensus, insurance tokens from other access points can vote on the dispute. Such a complex permissionless insurance system warrants more in-depth analyses and reviews 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 can stake their tokens into the smart contracts and pledge them as insurance. During the "early staking" period (see section 5.9.1 Early staking), tokens staked for insurance will also receive distributed rewards from the staking pool.

These tokens may get extra rewards from the Access Point pool to act as additional rewards for insurance providers.

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.

## Accessing shared services

Professional Access Points (AP) will be 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 100m to serve up to 500 users simultaneously.

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

- Full authentication, using a DID.
- 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 they have roaming services enabled to allow or deny access to the internet accordingly.

If the user is not a 3air customer, they have the option to buy a voucher code to access the public internet. The public internet usage policy sets the level of authentication, usually by validating the user's 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 allow free access to the services if it is more suitable for their business model. In this case, they forfeit the related rewards of operating an AP.

The AP operator and the ISP providing the service will design the internet access interface. The user can see the availability of a 3air connection in their home area and can apply for services.

## 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:

- Monthly premium fees, paid by the end user for roaming.
- Monthly premium fees, paid by the access point operator.
- Access fees, paid by transitory users who buy vouchers or pay online.

## Rewards distribution

Rewards from Access Point pools are distributed every week.

**Three parties 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** receive 10% of the total AP pool. This 10% is distributed to each pool according to how many users connected to it during the 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 logic behind such a split is simple since it incentivizes the AP operators to promote the services and connect as many users as possible. It generates revenue streams in the system.



ISPs bear most of the costs in this model. They provide the initial AP, infrastructure, and on-going bandwidth, so they are awarded most of the AP pool funds. The funds are split based on users that connected during the week 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 Uap that the ISP serves.)
- ↗  $U_t$  (Total users connected in the week, calculated as the sum of all UISP)

Another option to ensure fair rewards distribution 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, bandwidth tracking and calculations lead to complex systems. We have also restrained from calculating total users as it is also easier to exploit the AP and ISP rewards calculations. We believe the suggested system provides the perfect balance between fairness and complexity and the least vulnerabilities to exploitation.

Insurance providers receive 40% of the rewards because they carry some potential risk in the system. A system of diminishing returns will be integrated to prevent token centralization and equal distribution between APs. The goal is to have a balanced AP insurance, where every AP is fully insured before it becomes operational. The rewards for the insurance providers are set up so they have diminishing returns on the additional tokens staked. The formula to calculate the total insurance reward per AP is:

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

**Where:**

- ↗  $R_{i(ap)}$  (Total insurance reward for AP)
- ↗  $R_{i(t)}$  (Total insurance rewards)
- ↗  $F$  (Distribution factor between 0 and 1)
- ↗  $A_{pn}$  (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 token stakes by users in the AP)

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

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

Users can also decide to stake the tokens in the regular staking pool during the early staking period. Such staked tokens are also distributed as early staking rewards.

## Providing Free internet

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

If an AP decides to deliver free internet, they also forfeit their right to the AP operator rewards distribution. These rewards go back to the AP pool to be used in the subsequent distribution. The AP operator is still eligible for standard insurance staking rewards.

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

## Maintenance request cases

In the case of maintenance costs, the tokens are deducted from the AP pool, where each contributor contributes an amount proportional to their stake.

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

## Staking and unstaking

Staking will be done via a browser application that allows users to connect a wallet to the dApp. The application will display a full list of APs, but only the ones with minimum self-delegation will be active for token delegation. The APs will include statistics such as total tokens staked, self-delegation percentage, maintenance request, cost incurred, current APY, and other additional information.

Users will need to select an AP and the amount of tokens they wish to delegate and stake them in a smart contract.

The user interacts with a smart contract to unstake. Unstaking takes 2 weeks, and no rewards are distributed during the unstaking period. After 2 weeks, the user gets their tokens

returned in the same wallet they staked 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.

## Roaming

Roaming within the 3air system is easy and accessible for all parties in the ecosystem. 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 through a fair and permissionless model. Using Digital Identities that are virtually impregnable, users can connect to APs and authenticate themselves.

Roaming is instant and fairly priced across different providers, cities, or countries.

It is essential to mention that other ISPs can join the 3air platform for roaming functions exclusively and participate in setting up APs within their networks. This may create many access points around the world. It is essential to finalize agreements before setting up an AP. This is the only sustainable way to build a sharing economy in the future.

ISPs have an economic model that does not include uncontrolled bandwidth sharing. Currently, sharing communities are still small and mostly unnoticeable. To achieve mainstream popularity, ISPs have to be included.

## Closing thoughts

Getting the details right in such a system of complex interactions is tricky. The game theory provides good insight into how different actors will act to serve their personal interests. We believe we have tackled all the loopholes but will continue monitoring the system closely once implemented to adjust the rewards distribution and insurance staking parameters. This is not the final model and will continue to evolve in the future.

First, we must justify whether such a system warrants a new second-layer blockchain. Many projects are developing their chains without any real purpose or in-depth thought. While a side chain might have some advantages, it also has many downsides. They involve security concerns, compatibility issues, additional development time, adoption, and recognition. We must also decide which transactions need to be recorded on the blockchain. Authentication events should be time stamped and recorded, and logs can be aggregated and recorded at certain times.

We concluded that with data optimization, a full sidechain might not be needed. That said, a sidechain might become necessary if we want to record more data on the blockchain in real-time.

## Microloans

There is enormous potential in providing additional financial services in emerging economies, but they come with peculiar issues too. The problem of low repayment rates remains unsolved except where strict selection processes or good enforcement mechanisms exist.

As a platform for ISP providers and a 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 microloans in the scope of previously acquired services. Additionally, 3air tokens can be staked as collateral for loan repayment.

With time, a 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 for financial inclusion and standard banking services. A working microloans system could attract external capital into emerging economies to facilitate faster

growth. A good system could also facilitate undercollateralized loans in the future.

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

We will build upon the experience of existing projects such as Kiva<sup>5</sup> and published academic papers<sup>6</sup>.

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

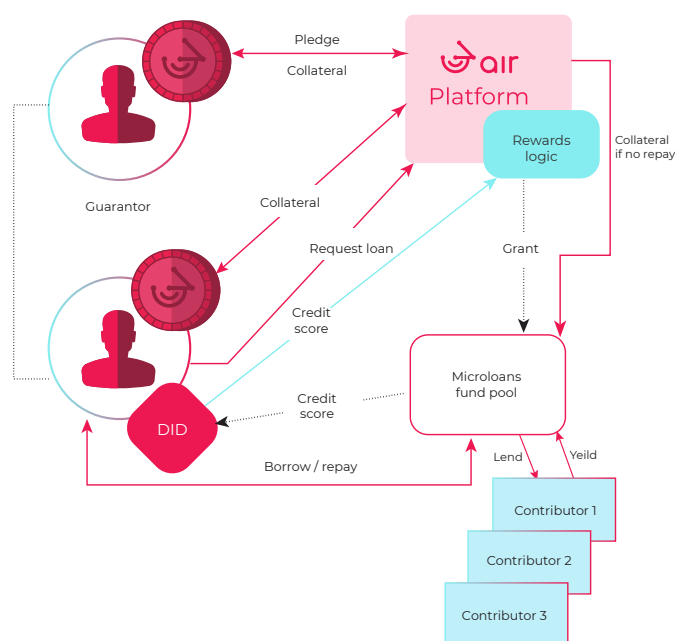


Figure 18 3air microloans system

<sup>5</sup> <https://www.kiva.org/protocol>

<sup>6</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>)

## 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 - a single solution that every employee and user can use. It will provide every employee with the necessary information without overwhelming them, enabling them to do their job efficiently.

TMS is also more than just some service software. It includes proven procedures for completing everyday telecom tasks like activating customers, handling support tickets, organizing the networking department, or the day-to-day operations of field installation teams. The system must also be secure and protected against fraud. All these requirements make the argument for building TMS on a blockchain platform to make them easier, more effective, and more secure.

Each customer will be assigned individual accounts connected to their DIDs, which they require to use the service. Each account is connected to a blockchain wallet that the customer can recharge. Clients can approve automatic spending through smart contracts, or they can choose to pay for services manually. Using a smart contract, the remaining credit can be used for phone calls or other services. The user can always cancel smart contract interactions. Additional bonuses, discounts, and rewards are automatically calculated through on-chain data.

DIDs also help prevent fraud.

Key characteristics of TMS are:

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

We will develop a one-click, modular, white-label TMS solution. The modules will include metering, billing provisioning, controlling, community building, loyalty-building and other modules specially designed for 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 integrate the 3air platform into their existing TMS easily.

## Future development

In the third phase, the 3air platform will become the go-to platform for ISPs. It will provide services such as identity, payment, community, governance, and marketing solutions. It will also potentially solve other issues that ISP providers face today.

The main benefits that 3air could 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, they could run selected blockchain nodes, providing users with additional income.

## Fraud prevention

Every telecom company faces fraudulent attempts to exploit security loopholes. Some users abuse telecommunications products and services to steal money from other customers or communication providers. There were over 25 million fraudulent call attempts in the UK in 2018 alone, costing millions of pounds (BICS, 2020). Scammers can hack into systems and enforce high charges that they redirect to themselves.

Mobile and landline phone or internet providers are vulnerable to this form of traffic pumping scheme. Different fraud techniques exist, including dial-through, International Revenue Sharing Fraud, the Wangiri fraud (One ring and cut), call forwarding fraud, and multiple transfer fraud.

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

One of the newest fraud schemes is the Wholesale SIP trunk fraud, where fraudsters 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.

These fraudulent schemes drain ISPs and mobile operators through chargebacks, direct financial damages, and service outages because of infrastructure overload and reputation damages. Scams erode trust and decrease the usability of data-driven networks in general.

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

- **Trustless** – no trustworthy intermediary 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 code provides trust.
- **Integral** – there is a verifiable record of every transaction that has been made, and these records can never be altered.
- **Transparent** – the blockchain ledger is public and can be read by every party with access to it. At the same time, the data retains a high level of privacy.
- **Secure** – with the decentralized design, there is no single point of failure. It also means that no participant can add, delete or alter data.

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

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

Authentication services are a common point of failure for many customers. Still, the most common authentication system is the classical (archaic) username & password method. This method is no longer considered safe and is also inconvenient. Users typically use the same poorly secured passwords for multiple access points, making it easy for hackers to steal their identities. Attempts to improve security with 2, 3, or n-factor authentications are also burdensome.

Blockchain DIDs allow for verifiable and easy authentication by simply connecting your private wallet. In their current state, blockchain wallets are considered unhackable. The only drawback is the storage of private keys, which will become easier with time and general blockchain user education.

## IoT platform

IoT platforms on the blockchain enable devices across the internet to send and read data from tamper-resistant records. Users can share these data seamlessly across different devices and users. Blockchain enables business partners and third-party contractors to share and access IoT data without central control and management. Every permissioned network member can verify transactions to prevent disputes and build trust.

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

## Service accessibility, tokenization and roaming

Each ISP provider or mobile operator needs to run its database of users and their acquired services. Exchanging the existing centralized databases with distributed blockchain ledgers offers additional value for users and providers. Automating services, connectivity, and building trust without in-person authentication, authorization, third-party trustees, and accounting is a privilege only the blockchain provides.

With a public ledger, each party can verify previous transactions, leading to fewer customer service requests and expensive lawsuits.

Tokenizing services and bandwidth allow ISPs and mobile operators to always sell all their services and bandwidth on the open market, thereby maximizing income and managing usage spikes. Pricing is easier as the market can determine the best value on monthly or daily timeframes and intra-day lows and highs.

On the other hand, users get more control over their acquired services and receive fair pricing, which is impossible to achieve with current models. Users can share or resell unused services and bandwidth to friends or on secondary markets. Switching devices is also easy on the blockchain.

Blockchain and tokenization render 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. ISP providers can obtain such services and resell them to their customers within packages or on the open market.

It is a bold idea that can completely change how we view online services.

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

## Business model

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

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

**3air has already received a signed Letter of Intent from K3, stating their interest in 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.**

# K3 BROADBAND SOLUTION

3air has formed a partnership with K3 because we believe K3 has the best potential to kickstart the 3air platform based on its proprietary technology and success in building true broadband in densely populated urban areas of emerging economies. Its technology and vision align with 3air's to bring equal opportunities to Africa's cities by providing stable, secure, and affordable broadband, TV, and telephony.

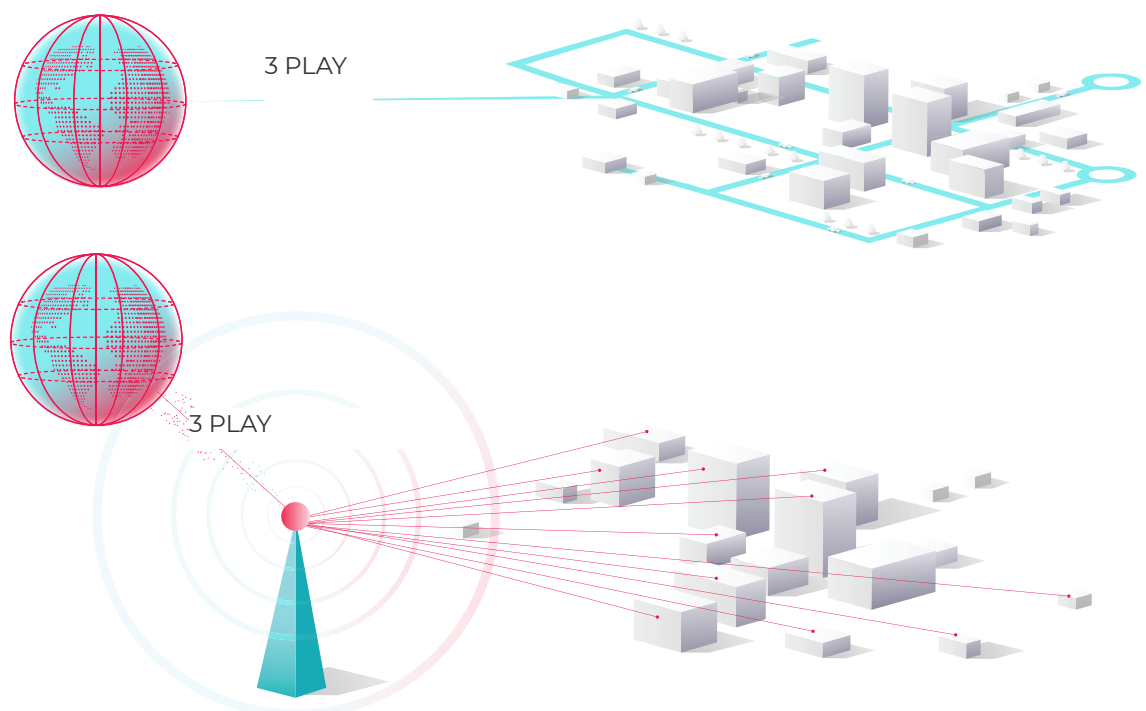
## Broadband infrastructure

K3 is building broadband infrastructure in urban African areas, providing millions of people broadband internet connection, digital TV, and IP telephony. 3air may co-invest in K3 broadband infrastructure. This infrastructure alone offers us the potential to bring over 1 million users onto 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 that can completely replace any wired connection.

K3 Lastmile solution is a unique integrated wireless triple-play content providing system based on a point-to-multipoint solution in the telecommunication market, providing radio access to all the residential and business users in a radius of up to 50 km from every base station. With this, we can provide all the triple-play services that residential and SOHO users need today.

Figure 19 Technology comparison: Cable broadband vs. K3 Lastmile solution





The system also provides the possibility of providing content such as 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, and DVB-T.

Up to 17.112 Mbps per base station delivered.  
Up to 15.000 users per base station served.  
Up to 1.000 Mbps per end user.

#### K3's services include:

- **Ultra-High-speed Broadband Internet** (up to 1.000 Mbps per user).
- **OTT Services** (Netflix, Apple TV, and other TV, streaming services, Timeshift, VoD functionality, 150+ SD and HD digital TV channels, for an 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...).

## Case studies

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



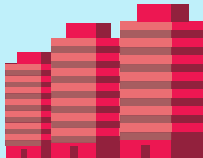
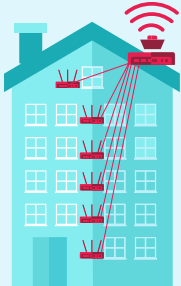
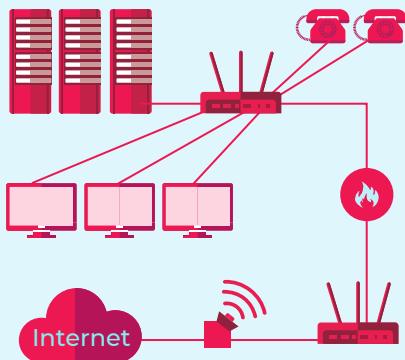
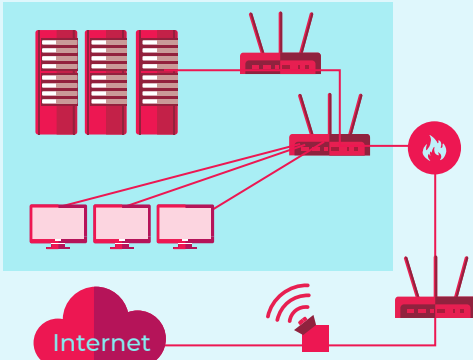
	Retail market	Enterprise market	
User group	 <p>Households &amp; residential</p>	 <p>Small, medium enterprises</p>	 <p>Large corporates</p>
Scenario	<p>28 apartment complex in Monrovia required an apartment-wide internet service</p> 	<p>A private enterprise in Spain with 25 clients required reliable internet connectivity for seamless business operations</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>	<ul style="list-style-type: none"><li>• Deployed in September 2018, Liberia, K3 successfully delivered on this client with a dedicated package connected of 20/10mbps with /28 public IP address space.</li><li>• The client engagement is governed by an SLA and there is real time monitoring of the clients service delivery from K3's dedicated NOC</li><li>• System used - DOCSIS 3.0</li></ul>

Figure 20 K3 Lastmile solution key use cases



## Future plans

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

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



We have already established contacts in high places and licenses in most of these countries, with work set to begin in Ethiopia, DRC, and Nigeria immediately after funding.

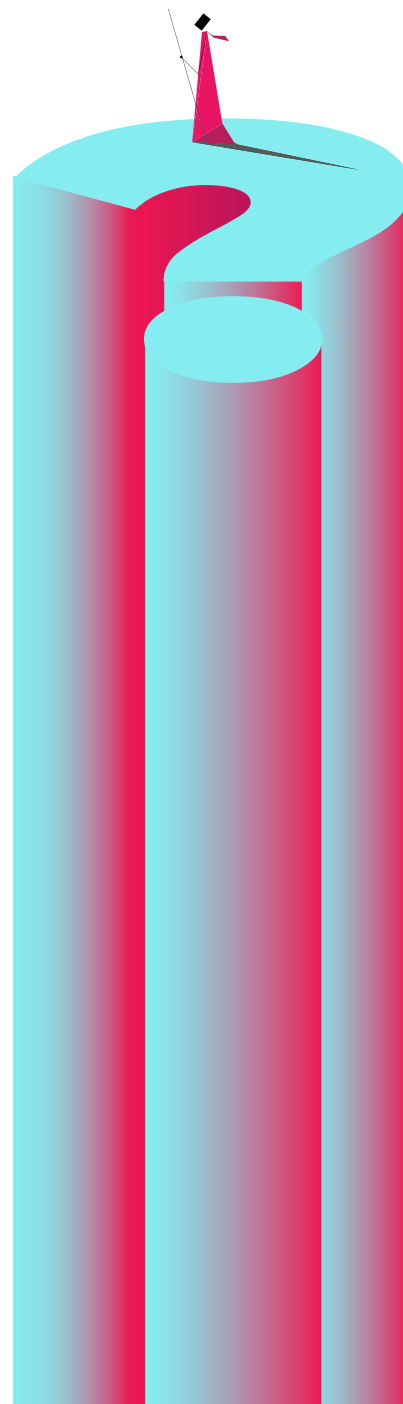
K3 is already present and fully operational in Sierra Leone and is presently in late-stage investment talks with major African countries. Once the 3air platform is ready, K3 may move all their existing clients to the 3air platform, guaranteeing fast adoption in the early stages of the platform.

K3 provides all its services in-house, while 3air may bring all its services to the blockchain.

## New technologies for low-income areas

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

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



# MILESTONES AND METRICS

## Roadmap and milestones

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.

### 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
- ✦ Public sale start

### Q1 2022

- ✦ Audited token contracts
- ✦ Audited vesting contracts
- ✦ Token claim platform

### Q2 2022

- ✦ NFT marketplace beta
- ✦ DID app beta

### Q3 2022

- ✦ TGE
- ✦ Early staking
- ✦ Platform beta testing
- ✦ First CEX listing
- ✦ First DEX listing

### Q4 2022

- ✦ SKALE network integration
- ✦ NFT platform launch
- ✦ Multichain bridge
- ✦ Start building infrastructure in DRC
- ✦ Connectivity NFTs

### Q1 2023

- ✦ Governance
- ✦ Token burning
- ✦ Start building infrastructure in Ethiopia

### Q2 2023

- ✦ 3air platform & app main launch
- ✦ First 3air platform users
- ✦ Agents program

### Q3 2023

- ✦ Start building infrastructure in Nigeria
- ✦ Loyalty program
- ✦ Own your own hardware

### Q4 2023

- ✦ Credit scores

### 2024-2025

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

In cooperation with K3, we aim to provide infrastructure and services to new locations every 4 months (depending on funding) with the following plan:

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

## Metrics and Key Performance Indicators (KPIs)

KPIs help to guide projects towards achieving scalability and sustainability. They measure efficiency and must be constantly updated. They also need to evolve, adapt, and grow with the project. These are not 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.

We will also use other metrics to track the efficacy of implemented services. For instance, fraud events prevalence, bandwidth usage distribution, OPEX changes, and general customer satisfaction.



# 3air TOKENOMICS

The 3air token is an Ethereum-based token on the SKALE blockchain that powers the 3air platform. The 3air platform will provide an easy-to-use, blockchain-based ISP management system integrated with security, transparency, and low fees needed to operate a successful telecom network.

3air tokens will be used to access services such as monthly subscriptions, internet and TV services, digital identities, and staking, as well as the rewards, loyalty and referral system on the platform.

Future development will focus on providing collateralized and under-collateralized microloans and other advanced and revolutionary ideas.

## Token supply, distribution, and release schedule

Total supply is one of the most important token metrics. Another important metric is the circulating supply which provides information on how many tokens are in active circulation, which depends on the distribution schedule of the created tokens. With a **known and transparent release schedule**, some of the disturbances caused by changes in the supply stated by Keynes (Keynes, 2016) can be managed effectively.

**The initial and max supply of 3air tokens will be 830,000,000. 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. It removes the need for trust and highlights the blockchain's trustless characteristics. Once the initial token distribution is complete, 3air will not have the right to alter token releases or manipulate token pools.

## Initial distribution and token vesting

	#tokens	%	vesting
<b>Total</b>	<b>830,000,000</b>	<b>100%</b>	
Presale	120,000,000	12.049%	multiple vestings
Team	80,000,000	9.638%	linear for 12 months, starting 12 months after listing
Advisors	50,000,000	6.024%	linear for 12 months, starting 10 months after listing
Marketing	50,000,000	6.024%	5% per month, starting 5 months after listing
Strategic partnerships	50,000,000	6.024%	5.56% per month starting 6 months after listing
Ecosystem	350,000,000	42.169%	4% per month, starting 1 month after listing
Liquidity	50,000,000	6.024%	100% on listing with 3yrs liquidity lock
Farming/staking	100,000,000	12.048%	2.5% per month, starting 1 months after listing

Table 1 3air token initial distribution

To ensure fair distribution of the 3air tokens, there is a 15M 3air tokens limit of maximum (1.8%) of max token supply per user in private rounds and a limit of 830,000 3air tokens (0.1%) per user in the public sale.

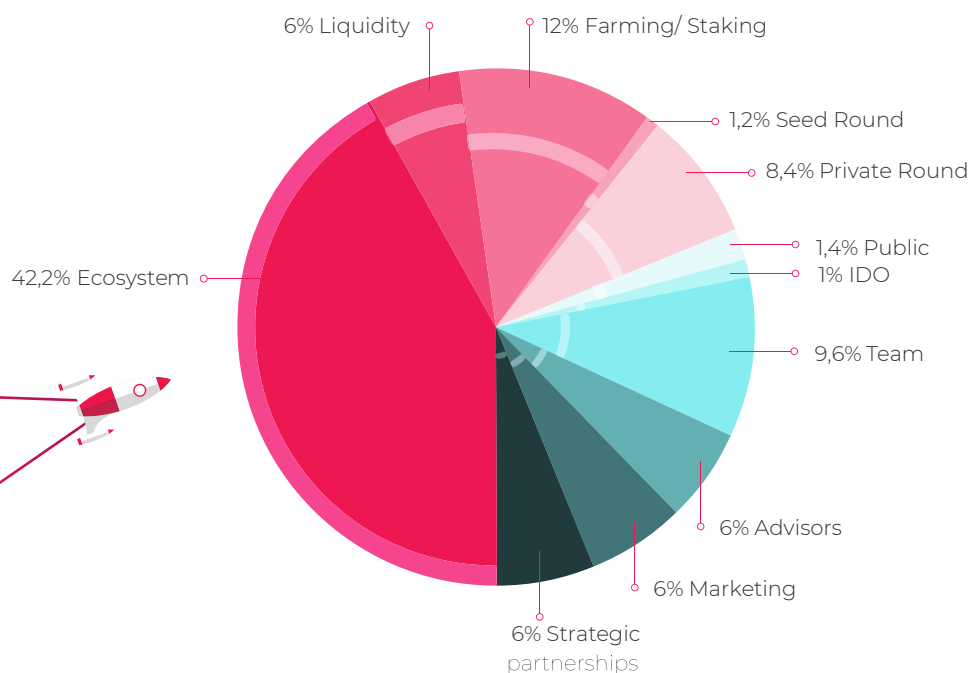


Figure 21 Pie chart: 3air initial token distribution

## Seed and private presales

In September 2021, the Seed sale was filled with \$100,000 at the price of \$0.01 per token.

The private rounds have run back-to-back, raising the floor price.

There have been 100M tokens for sale in Series A, starting in October 2021. Private presale has raised \$2,653,000 at the average price of \$0.037 per token. Also, we conducted a public presale round with \$720,000 raised at the token price of \$0.06 per token.

#tokens	%	price	raise	vesting	
<b>Total</b>	<b>92,000,000</b>	<b>11.0855%</b>	<b>\$0.0365</b>	<b>\$3,473,000</b>	
Seed sale	10,000,000	1.205%	\$0.01	\$100,000	linear for 18 months, starting 6 months after listing
Private round	70,000,000	8.434%	\$0.03	\$2,653,000	linear for 18 months, starting 6 months after listing
Public presale	12,000,000	1.4464%	\$0.06	\$720,000	10% on listing, then linear for 18 months*

Table 2 Total raise results

\*Average of 2 different vesting schedules

## Current presale and launchpads

There are 8M 3air tokens still available for presale and will be available for launchpads, planned for September 2022.

#tokens	%	price	raise	vesting	
launchpads	8,000,000	0.964%	\$ 0.06	\$ 520,000	20% on listing, then linear for 6 months, starting after 1 month

Table 3 Current presale and launchpads

## Initial market capitalization and listing

The circulating market capitalization at listing will be \$240,542 at the IDO price of \$0.0.

Due to development difficulties caused by the Russian-Ukraine war, the launch of the premium SKALE DEX, Ruby.Exchange has been postponed. Therefore, the team has decided to initially launch the 3air token on the Binance Smart Chain and list it on PancakeSwap. 3air's initial listing is planned for the 22nd of September, 2022. No soft cap will be required for listing as the currently raised funds already provided the necessary capital for building the 3air platform. You can read more on our BSC launch decision here.

**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.**

## Token generation event (TGE) and vesting

At TGE, tokens will be minted on the Ethereum blockchain and immediately transferred to the 3air blockchain on SKALE. We will be minting ERC20 tokens directly on Ethereum because of future cross-chain compatibility and higher possibilities of partnerships with other projects. Listing on centralized exchanges is easiest with an ERC20 standard token. We have also written about the ease of switching between EVM-compatible chains. A token directly on Ethereum makes this process even easier in the unlikely event that something happens with SKALE or we decide to move away.

Using the SKALE Interchain Messaging Agent (IMA), we will bridge the tokens to our own SKALE chain and immediately lock them into vesting contracts that we will publish on our

GitHub pages for review and audit. This way, we will avoid the high fees of the Ethereum blockchain in favor of a zero-fee environment.

Vesting will start simultaneously with providing the initial DEX liquidity, even though TGE will be done sometime before the DEX listing. We will mint the tokens before the DEX listing for two reasons:

- To improve transparency with verifiable on-chain token lockups
- Some launchpads require tokens upfront to integrate with their platforms.

The vesting cannot start before the initial listing as anyone holding tokens already will be able to provide liquidity themselves, which can cause potential problems with scams or high token volatility.

An app will be provided that will allow you to connect an integrated browser wallet (like Metamask) and claim your tokens at any time. With zero fees, you can control your own tokens every time at no additional cost. The vesting will be done continuously on every EPOCH, meaning you will not need to wait for a whole month before you can claim your tokens. You can claim the already vested tokens at any time - even multiple times per day.

3air, its affiliates, or third parties may provide first liquidity of 50M 3air tokens at \$0.1. If it benefits 3air and the community, this liquidity could remain in place for as long as 3 years. Consequent to the rapid 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 a choice may be influenced by the development progress and traction on SKALE's native DEX and interest in other blockchains.

After a successful launch, 3air will aim to list on several prominent centralized exchanges and will set aside funds to provide efficient market-making services to support the token.

## Considering gas fees

3air is aware of the issues plaguing older blockchains regarding high gas fees, especially Ethereum. With 3air operational in emerging economies and selling monthly subscriptions, we cannot utilize a blockchain with high fees. That is why we have chosen SKALE. SKALE creates an environment with zero-gas fees for the end user. As we will be moving all tokens from Ethereum to SKALE, each user will be able to claim, use or trade their tokens for zero gas fees on the whole SKALE ecosystem.

We will include a fiat onboard and offload ramp for ease of use and adoption. We also aim to integrate with centralized exchanges in the future, making it even easier and cheaper to transfer value between chains from outside SKALE.

## Token lifecycle

Token life cycles begin at mint. 3air, its affiliates, or other third parties will be responsible for token minting and initial distribution as described earlier. Token releases will be governed by smart contracts.

The user interacts with the 3air platform through their DID and the 3air tokens. DIDs can be issued by the ISP or a 3rd party service. A 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.

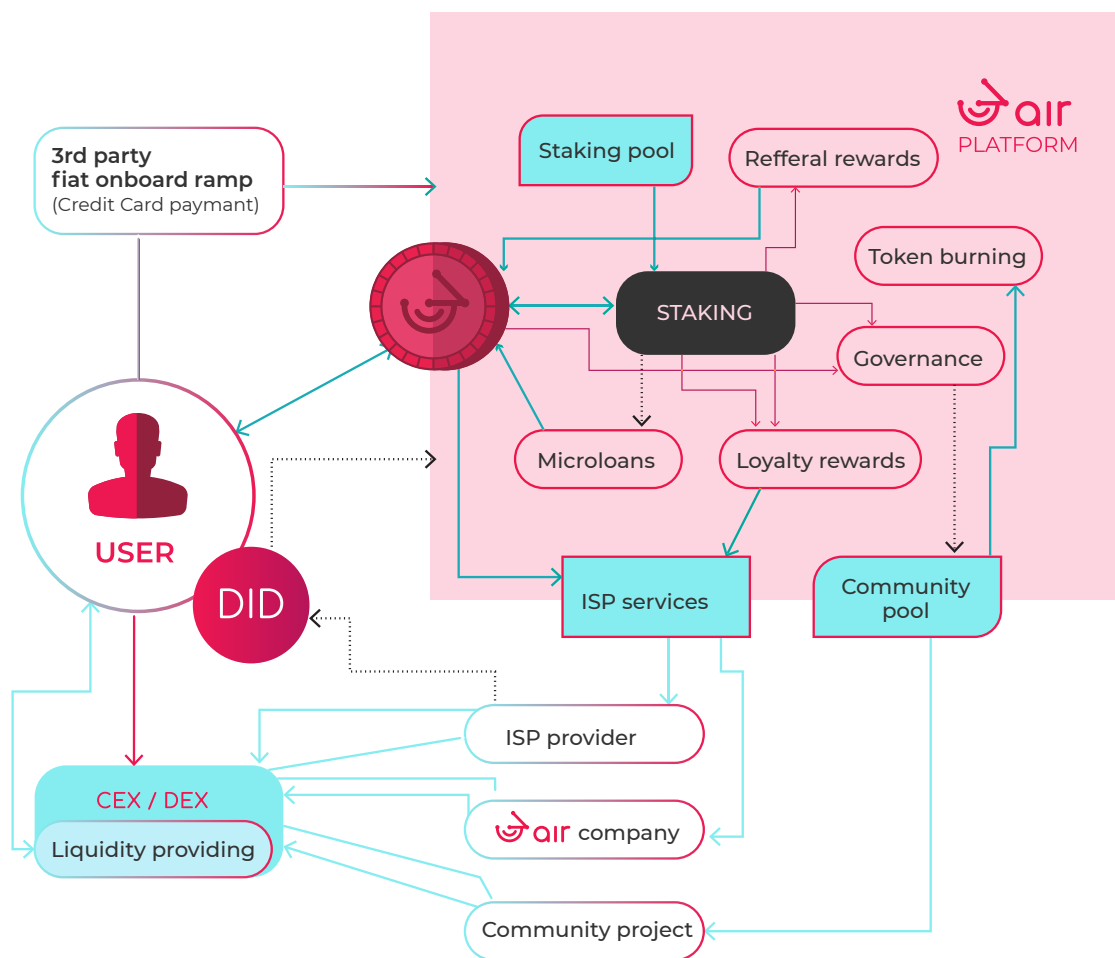


Figure 22 3air ecosystem token interactions



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

The user can pay for ISP services with tokens or with the help of a 3rd 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 their DID.

Users may eventually vote with their tokens. The community pool will be under the governance of the token community that may give their opinion on matters such as token burning or funding local community projects.

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

## Token holding incentives

3air aims to create strong incentives to use the 3air token through initiatives such as (described in more detail in Section 5: 3air ecosystem):

- **Staking pool.** A special staking pool could be set up for staking rewards including potentially higher rewards for early adopters.
- **Governance.** Each token could represent one vote in the platform's governance and motivate users to participate in the decision-making to fund projects, burn tokens, and take part in other essential changes to the platform.
- **Rewards.** A certain amount of tokens may be required to unlock different VIP statuses and remunerations, such as special discounts, promotions, airdrops, cashbacks, and upgrades.
- **Referral bonus.** The amount of staked tokens could determine the referral bonus.
- **Microloans collateral.** 3air tokens could be used as personal or pledged collateral to secure loans.

- **Own your own hardware incentive.** The company will provide each client with locked tokens that can be used to purchase the leased hardware later.
- **Bandwidth sharing.** Special Access Points may be set up for bandwidth sharing utilizing staked tokens to insure the AP infrastructure and earn rewards for stakers.

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

## Token Supply

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

Token buybacks and token burning are described in detail in Section 5: 3air ecosystem.

While a deflationary supply does not guarantee good token economics, it certainly helps.

## Decentralization mechanisms

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

- Private round sales are capped at a max of 15M tokens (1.8% of total supply) per user, and public sales are capped at 830,000 tokens (0.1% of total supply).
- Incentivizing every platform user to hold tokens through staking, discounts, and rewards. With over a million projected users by 2025, 3air could potentially be one of the most widely distributed tokens even in the short term.

- Part of the fees could potentially go to community pools to be distributed outside the current network to increase the population of token holders.
- Staking rewards could be capped at 50M tokens to disincentivize “whale” holdings.
- The majority of our presale will be public with small allocations, making the initial distribution spread to as many users as possible.

## Building community and raising token awareness and expectations

We are fully aware that the survival of projects depends on their community and marketing strategies. We will not use this as an excuse to build a poor product.

We have teamed up with Amazix to create a complete crypto-specific marketing strategy, build our community, and raise the awareness and expectation of the 3air project. Amazix is a huge player in marketing crypto projects and has worked with many top 20 projects in the crypto space.

We will start a comprehensive marketing campaign with ads, 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. We will work tirelessly to ensure others believe in us as well.

## Airdrops

5% of the total supply, or 50M 3air tokens, are reserved for airdrops. 2% of this amount (1M 3air tokens) will be released into circulation upon DEX listing, and the remaining 98% 6 months after. These tokens will be dropped into the wallets of participants that fulfill the preset requirements. These requirements will be announced and published earlier on the 3air official website. The requirements may 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 airdrops is to reward the community and for marketing purposes.

## Growth predictions

### Users

We expect app users to grow exponentially. Initially, users could potentially come to the platform through the K3 partnership. There are already over 2.000 active K3 customers who could port to the 3air platform once it's operational. As we build our infrastructure throughout Africa, we expect an exponential growth in users even through this partnership alone. This partnership may help generate traction once the platform is operational and could potentially bring 400.000 active users to the platform by 2026.

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

Note, that these numbers include only our K3 partnership. We aim to onboard other ISPs on the platform, potentially reaching 1 million users by 2025.

This only highlights the potential volume of active users on the platform.

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

Table 5 3air user growth prediction

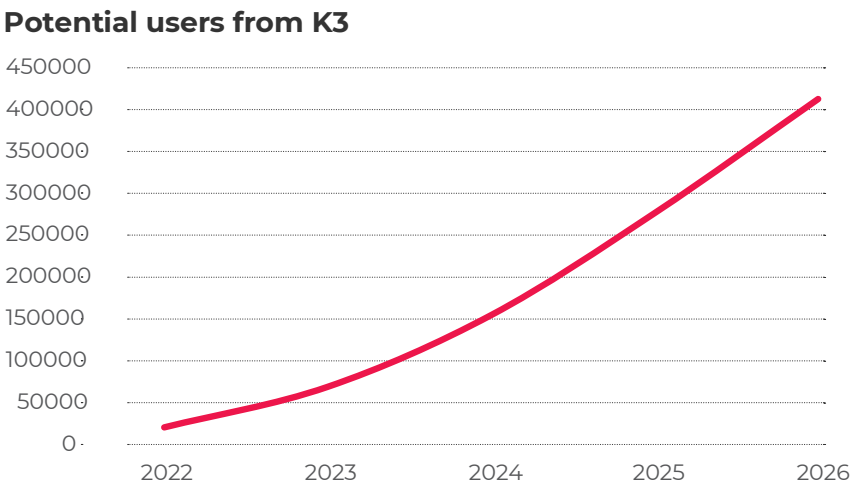


Figure 23 3air user growth prediction

## Revenue

Using real-world data from K3 Sierra Leone, the average revenue per user sits around \$130 per month. Sierra Leone is one of the lower-income countries even relative to its African neighbors, so we expect that the average revenue in other African countries will not fall below this mark. With a 3% fee on the turnover (due to special terms agreed upon with K3), 3air could grow quickly and sustainably with the K3 partnership alone. 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 6 3air revenue growth prediction

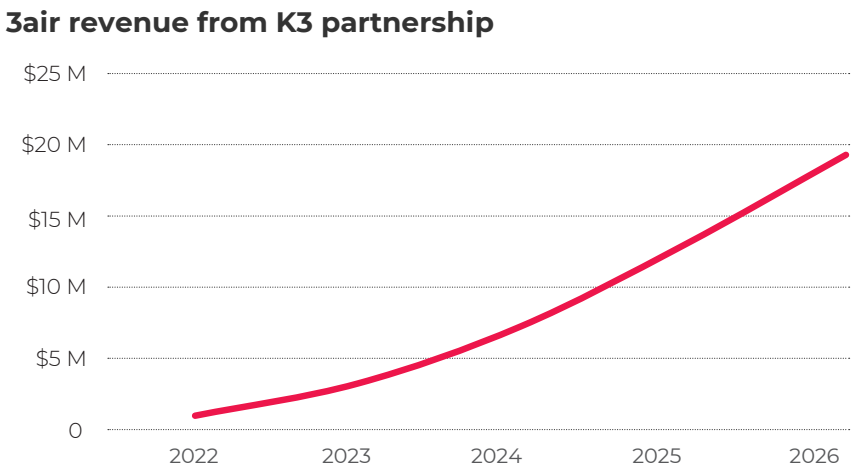


Figure 24 3air revenue growth prediction

**If we reach 1M users by 2025, 3air revenue could potentially equal \$180M.**

# Project valuation

Evaluating a token economy is challenging. As of yet, there is no distinct formula 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 have tried to compare it to similar projects in the crypto space.

The most widely used metric to evaluate telecom companies is the EV/EBITDA method. **Considering the K3 partnership alone**, 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 7 3air valuation prediction

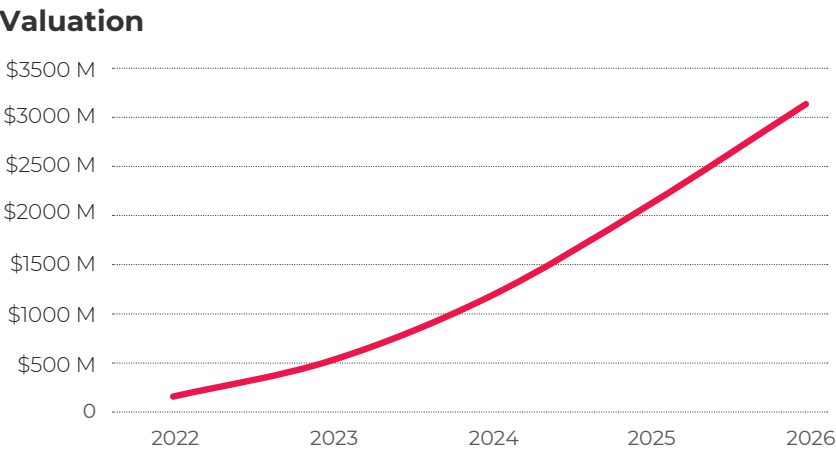
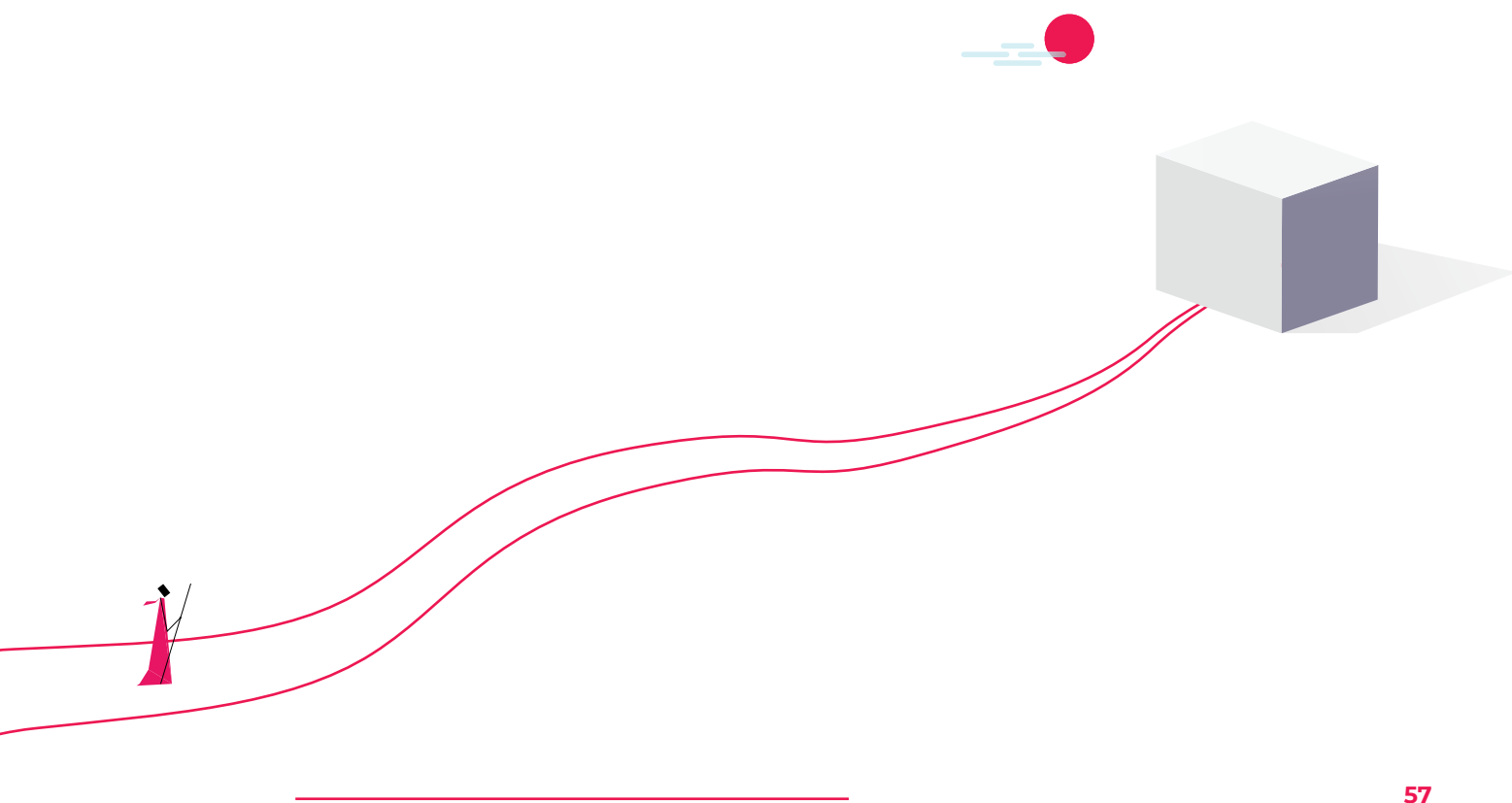


Figure 25 3air valuation prediction



# FINANCIAL OVERVIEW

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

All funds will be disbursed in 100% transparent channels and used solely to expand connectivity throughout Africa and build the best ISP platform.

All vested tokens will be locked in smart contracts together with the initial liquidity provided upon DEX listing. We want to make our token holders feel safe in a trustless system as facilitated by blockchain technology.

## Use of funds

In principle, there should be 3 main cost drivers:

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

It is worth noting that most of the acquired funds will be initially used to fund broadband infrastructure building in Africa. With our partner, K3, we will start building the K3 Lastmile solution proprietary technology infrastructure in Ethiopia, DRC, and Nigeria once all the needed funds have been collected. K3 has the experience and detailed financial plans confirmed in similar African projects. The funding required to cover Ethiopia, DRC, and 2 major cities in Nigeria (Abuja and Lagos) is \$35 million. Even if this figure seems meager compared to traditional broadband infrastructure costs (the same project would cost at least \$700M), K3 technology reduces costs significantly. This has been proven with the already operational infrastructure in Sierra Leone. Detailed financial plans and Sierra Leone operations are available for registered and interested investors upon request.

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

- Seed and presale:
- Market analysis, document preparation, incorporation
- Document preparation, legalities, private sale preparation, Pre-IDO marketing
- Ethiopia, DRC, and Nigeria operations
- Post-launch marketing and platform development
- Airdrops: dropped to the community when operations launch in DRC and Nigeria
- Ecosystem: Ethiopia, DRC, and Nigeria operations, platform development, infrastructure for additional countries

Other distributed tokens usage should be self-explanatory.

**K3 Lastmile solution infrastructure (Ethiopia, 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
- Front-end development of ISPs

**Marketing could include but is not 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

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## Appendix 1:

# BROADBAND, DIGITALIZATION AND SOCIAL IMPACT

Assessing the impact of digitalization on societies is complicated because of a 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 also means motivating 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.** The universal access to digital services by consumers and enterprises.
- **Affordability.** A level of pricing that makes them available to the majority.
- **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.** 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 these key attributes except for skill, which 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.

The 3air community will strongly influence the development of the countries it will connect.

## Economic growth

We probably don't need to explain that digitalization leads to higher productivity and how it would impact a nation's economy. The connection becomes more apparent by looking at the numbers. 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 this continues to grow steadily.

This is especially important for emerging markets that need to create additional jobs and gain inclusion into the global economy to ensure their young population 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 country's score on the Global Innovation Index (Sabbagh, El-Darwiche, Friedrich, & Singh, 2012), suggesting that countries become more innovative as they become digitized.

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 expand their search radius globally when they need talent.** Good internet connectivity will be a prerequisite to accessing these opportunities.

## Standard of living

With economic growth comes an increase in the standard of living. It is also the first step to raising the quality of life within a society.

Introducing broadband to a household increased its average monthly income by 3.67%. (Katz, International Telecommunication Union, 2017)

In an emerging economy, this can lead to better provision of basic needs, such as food and shelter, and brings about exponential growth in life quality and satisfaction.

## Education

Online education is powerful because it breaks down the barriers installed by traditional education. While traditional education has its benefits, it is obviously outdated. With its global reach and cost-effectiveness, online education provides abundant equal opportunities, especially to people living in emerging economies.

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 while 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 many schools offered online classes while closed. A study from Romania showed that the top **reasons for not attending online classes were a lack of equipment or internet access.** (Sava, 2021)

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

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

## Health

As with education, health services are also being globalized by digitalization, having experienced exponential development to address health service barriers during the current pandemic.

The internet enables 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)

Many (not all) healthcare services and guidance can be provided through online healthcare platforms, which is especially valuable in emerging economies where going to the doctor could mean half a day's walk. **Digitalization has the potential to save lives by delivering help faster and with greater efficiency.**



## Communication

We only need to look at our own lives to realize how much digitalization has changed our personal and professional communication. Some may argue that its impact has its downsides, but in a global race, lagging behind is far more detrimental.

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 the recent pandemic has exaggerated its effect. Companies introduced an average of 3.5 new communication channels during this period.

Live chat channels increased by 54%, with 35% of the respondents using these channels for the first time during the pandemic. The results were similar for other communication channels such as Interactive Voice Response, SMS, email, social media, and others. (Mlitz, 2021)

During COVID lockdowns, personal digital communication increased. **Just remember not being able to communicate with your family and friends while visitations were discouraged.** The same is true with travel and internationalization, where the internet has made keeping in contact with faraway friends an easy routine.

## Governance

Communication and information availability are major factors in governing society. With better information flow comes transparency, which should increase government efficiency and reduce corruption. 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 the Transparency International index by 1.2 points and gives the population more insight into government policies and functions (Sabbagh, El-Darwiche, Friedrich, & Singh, 2012). It might also lead to more active political participation and support for the development of human rights.

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

Blockchain technology is even more promising in revolutionizing governance processes

Its tamper-proof, trustless environment might bring a positive change to the corruption-prone individuals in power, starting with fair and trustless digital elections conducted 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.

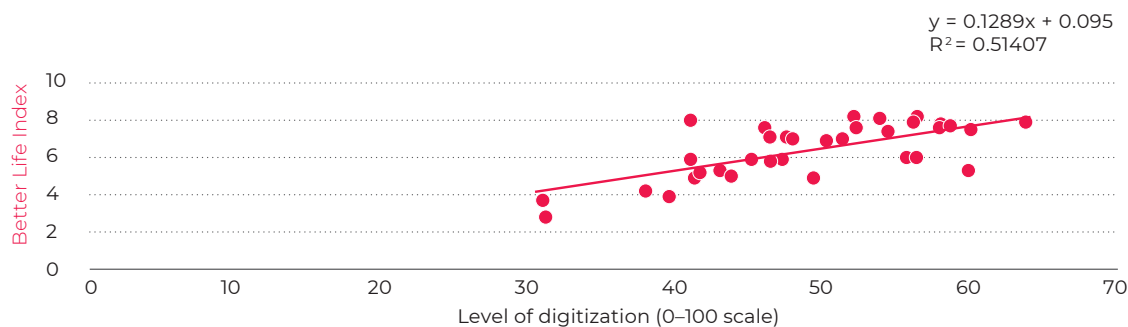
## Quality of Life

Quality of life is somewhat a catchall measure which includes all the points mentioned beforehand. Education, health, and standard of living all play a significant role in how we perceive our quality of life. Therefore, it is 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.

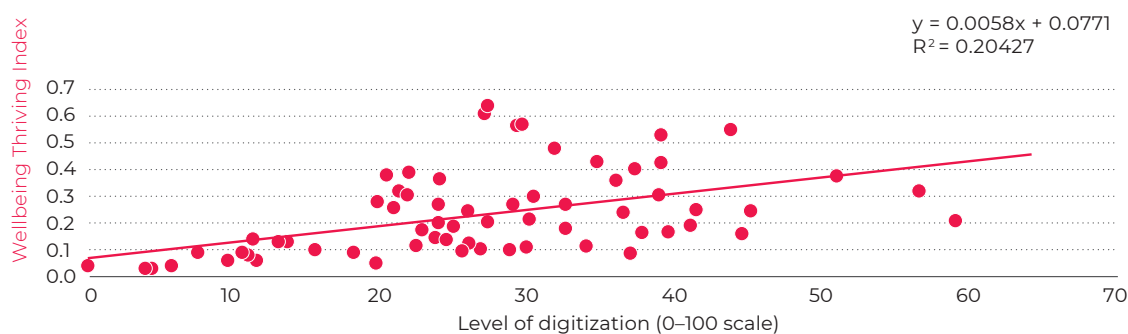


1 point increase in the Digitization Index leads to an increase of 0.59 points in the Quality-of-Life Index. (Katz & Koutroumpis, SSNR Electronic Journal, 2012)

### 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)

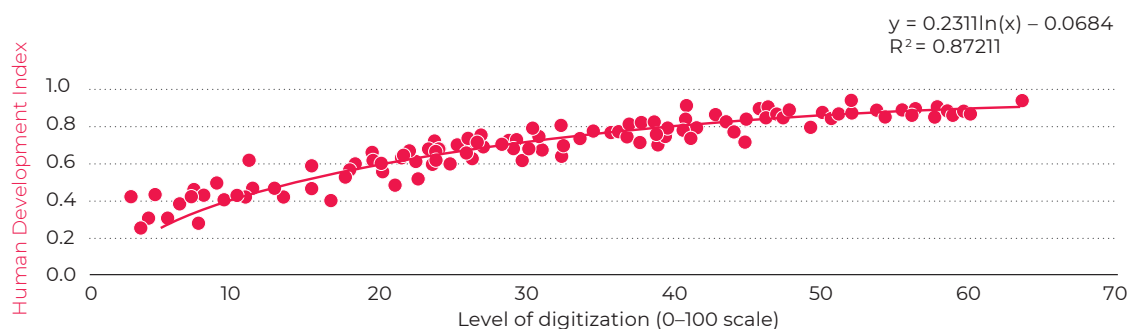


Figure 26 OECD Better Life Index; Gallup Wellbeing Surveys; UNDP HDI; Strategy& analysis

The index is a bit less pronounced in emerging economies and the difference seems to be correlated to factors beyond digitalization such as food, housing, clothing, water, energy, and health transportation or communication. It seems like once the basic needs are resolved, digitalization has exponentially positive effects in providing access to basic services, especially healthcare and education. As economies develop, access to basic services becomes routine, and digitalization's impact becomes less pronounced again. (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 emerging economies.
- No need to lay cables as we can provide fiber optics grade connections through the 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 of experience with telecommunications in Africa.
- Connections to multiple African officials with agreements on building broadband infrastructure.
- Clear understanding of telecom software infrastructure needs and how blockchain can bring additional value.
- Using the superior features of the SKALE native blockchain solutions, providing speed, security, stability, and cost efficiency.

### Our weaknesses

- Lack of users. Most countries have adapted to 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 micro-loans scheduled for the third stage, so we will need to expand our team and gain new skill sets.
- Entering new countries where we do not yet have an established customer base.
- Losing potential early adopters because we are not building on the 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 in emerging economies with no proper broadband infrastructure.
- Businesses need uninterrupted internet service.
- Remote work relies on a good internet connection.
- Countries are 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 from inferior products.
- Huge entry barriers for new competitors.
- Strong relationships with the SKALE foundation.
- The SKALE blockchain provides multiple advantages and benefits to other existing blockchain technologies.
- Fast adoption of blockchain technology in target countries compared to the global average.
- Schools: virtual learning has become more commonplace since COVID19 and is a segment that could benefit from stable broadband connectivity.

### Our threats

- Political instability in African countries.
- Policy and regulatory bottlenecks.
- Social and demographic chasms and illiteracy.
- The potential of new technologies to disrupt the market in the future.
- Blockchain technology is new and has not reached universal adoption.
- Some people might distrust new blockchain projects because of the negative publicity from several scam projects in the past.
- The SKALE blockchain is new, and some essential parts of the technology have not been implemented yet. Yet SKALE is strong within its timeline and will deploy all needed technologies within the next months.

## Appendix 3: PESTLE ANALYSIS

### Political

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

General political instability in African countries is the primary risk we face. Many countries are led by 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 of local experience in this area and good government connections, we are confident we will successfully navigate this phase. After all, internet connection is one of the most important factors in a country's devel-

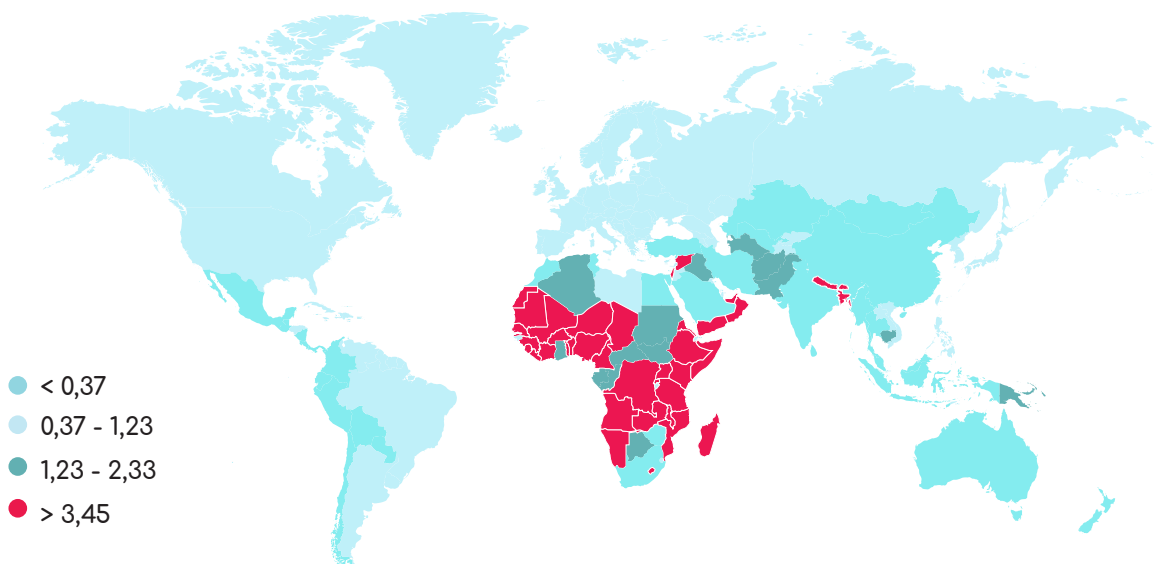
opment. There is also the field of the blockchain community, especially SKALE, as the platform we want to build on. The advantage is the truly global and decentralized nature of these communities, so they are quite insulated from local political shocks.

There is a lot of hot debate and political influence in the blockchain industry, but some pioneers, like Bitcoin and Ethereum, have already been officially declared non-securities even by the US SEC (Hinman, 2018). Either way, the decentralized nature of Ethereum and SKALE makes them more resistant to political disruption, while 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 population is 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 COVID19 in Africa is severe and economic activity is estimated to have contracted by 2% in 2020, pulling the continent into its first recession in 25 years. (The World Bank, 2021)



The broadband market in Africa is estimated at \$97 billion. It has the potential to grow by 4 times when it reaches the current global average broadband penetration rate.

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

Regarding the blockchain community, the Ethereum ecosystem is currently the biggest in the blockchain space because of its dApp ecosystem. Daily turnovers are in the billions of dollars, with more traditional businesses and organizations moving to the blockchain. The adoption rate is even faster than the internet and mobile phones in their early stages (Levin, 2021). With blockchain on the rise, the outlook for 3air looks increasingly positive.

SKALE might also become the blockchain of tomorrow as it offers an innovative solution to Ethereum's scalability issues and addresses many of the general shortcomings of Bitcoin and Ethereum.

SKALE addresses the economic issues of high gas fees on the most widely spread blockchain, Ethereum. Such high fees exclude many potential users and reduce the revenues of blockchain businesses. SKALE provides a system with the lowest possible fees (effectively zero gas fees for the end user) and allows for greater inclusion of users.

## Social/Cultural

The culture of a people is what marks them out distinctively from other human societies. For certain, Africa is a region where social and cultural differences differ not only from the rest of the world but also from within the continent. Communication is already a challenge in countries where many languages and dialects are spoken. Values can sometimes 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 taught us how to relate with local socio-cultural challenges.

Interestingly, the blockchain community within Africa is growing faster than the rest of the world. This is probably due to the wide adoption of smartphones and openness to new opportunities, especially in the financial markets. Blockchain has the potential to fill in the gap of the unbanked and provide equal financial services to everybody.

The blockchain community, in general, is gaining rapid traction even though it is in its early stages. The whole community is still fully engaged and is one of the most active communities in tech. Such communities tend to promote and adopt good projects and reject bad ones. 3air will present itself with full transparency and disclosure to avoid any rejection from the active community.

## Technological

K3 technology is proprietary, patented, and field-tested, with a presence in 9 countries already. Technologically, we have the advantage with the best suited infrastructure system to provide broadband internet to urban areas of emerging economies. As outlined in the competition section, we have identified 2 major upcoming technologies. Although they are not yet ready and face significant entry barriers into the market, we need to be ready to gain and consolidate our market share before the competition arrives.

Blockchain, as a nascent sector, will undoubtedly see significant changes and improvements in the technological landscape 3air will inhabit. Nonetheless, the funds raised will ensure that we hire tier one development resources to leverage any new developments to our advantage.

By building on SKALE, 3air will take advantage of all its superior features. As the whole project will rely heavily on cheap transaction costs, we

will leverage the unique capabilities of SKALE to provide zero-fee transactions for the end user. Additionally, operating in an EVM-compatible environment will allow us to access a vast ecosystem of applications. Adding these resources to our platform will reduce development costs and security challenges.

Tokens can also be exploited and are prone to hacks, prompting our in-depth analysis on this topic. EVM has stood the test of time, and although we see exploits and hacks, they occur on the level of dApps that are not thoroughly tested, code auditing, or patching known security flaws. Ethereum and its ERC20 token standard are one of the most secure assets to date.

## Legal

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

Choosing favorable jurisdictions to operate in collaboration with a high-level legal partner will provide a safe and stable environment for 3air and help map out the exact boundaries of operations.

In accordance with our political analysis, regulatory changes are bound to occur. We have set aside funds for legal counseling and actions in the event that such changes affect 3air operations.

## Environmental

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

3air aims to launch and operate at neutral carbon levels.

Regarding technology, there have been some questions about the environmental footprint of existing blockchains, especially Proof of Work (PoW) security mechanisms that devote large energy resources to trivial calculations in an effort to keep the blockchain safe and secure.

We have been reluctant to build our project on such blockchains as it would go against our core principles. We have chosen the SKALE blockchain, which uses a new, secure, and environmentally friendly security mechanism called Proof of Stake (PoS). Additionally, Ethereum, SKALE's settlement layer is also committing efforts to progress to an energy-efficient PoS.

We make it our mission to care for and nurture the world we all live in. As a platform provider for internet and TV services, we aim to educate local communities about environmental issues and their responsibilities.

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## Appendix 4: ESG NARRATIVE

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

ESG became a hot topic in the blockchain space because of a Tweet from Elon Musk in May 2021 (Musk, 2021), talking about the potential environmental threats of Bitcoin mining. Since then, there have been more and more talks about environmentally friendly mining and other ESG aspects in the crypto community.

Coherent with the ecological outlook of the previous chapter, K3 technology is operating on low power and requires fewer base stations per customer than other technologies providing comparable services. Despite that, we strive for renewable sources of energy wherever that is possible.

K3 technology also does not require any digging to lay cables, thus preserving nature. Its frequencies are not in extreme ranges. Instead, they are in the same bandwidth as regular radios.

From a social perspective, our mission is to bring equal opportunities to places where the widest gaps exist. 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 can take corporate governance to a different level. We aim to fully decentralize our platform and give 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 broader local ecosystem.

Our goal is to connect the unconnected and bank the unbanked. We strive to provide formal identities where there are none and hope to provide online education and e-health to a wider population. Indirectly, we will create new local and international job opportunities for the local populace and contribute to the development of whole countries.

## Appendix 5:

# K3 PROPRIETARY TECHNOLOGY

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

### 1. Base station

The K3 base station is an essential part of the K3 Lastmile solution wireless point-to-multipoint system. It provides the capability of secure and reliable microwave radio access to Internet service providers. It also offers the possibility to provide triple-play content to residential and business users within a 50 km radius of every

base station. The base station is located at a central point to achieve the highest possible coverage.

### Product highlights

- Cost-effective solution compared to fixed landlines.
- Optimal cost to performance ratio.
- Fast deployment and immediate revenue generation resulting in a 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 up to 500 MHz in downlink (downstream) from sector to user.
- Receiving up to 500 MHz in uplink (upstream) from multiple users to the sector.
- Regulatory compliance with RF standards depending on selected frequencies.
- Compatibility with Coded Orthogonal Frequency Division Multiplexing (COFDM) and Time Division Multiplexing (TDM).
- Ability to function with Time Division Multiple Access (TDMA), Advanced Time-Division Multiple Access (ATDMA), and Synchronous Code-Division Multiple Access (SCDMA).
- Small scale, lightweight, 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 to assure the best possible working conditions.

### 2. Transceiver

The K3 transceiver is the counterpart 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 the services that users need.

### Product highlights:

- Fast and easy setup.
- Optimal cost to performance ratio.
- Compact, small-scale, all-in-one unit, embedded in a robust weatherproof casing,

easy to install and operate. IP 66 certified. Compatible mount with standard satellite dishes.

- Regulatory compliance with RF standards depending on selected frequencies.
- Signal range up to 50 km (31 miles).
- Predefined working frequencies from 2 to 42 GHz.
- Receiving up to 1000 MHz in downlink (downstream) from base station to user.
- Transmitting up to 40 MHz in uplink (upstream) from user to base station.
- Compatibility with Coded Orthogonal Frequency Division Multiplexing (COFDM) and Time Division Multiplexing (TDM).
- Ability 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, a radio frequency spectrum (RF) is needed. The RF allows bi-directional (downstream and upstream) transmission of all triple-play services from the K3 base station antenna to the end user and from the end user back to the K3 base station.

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

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

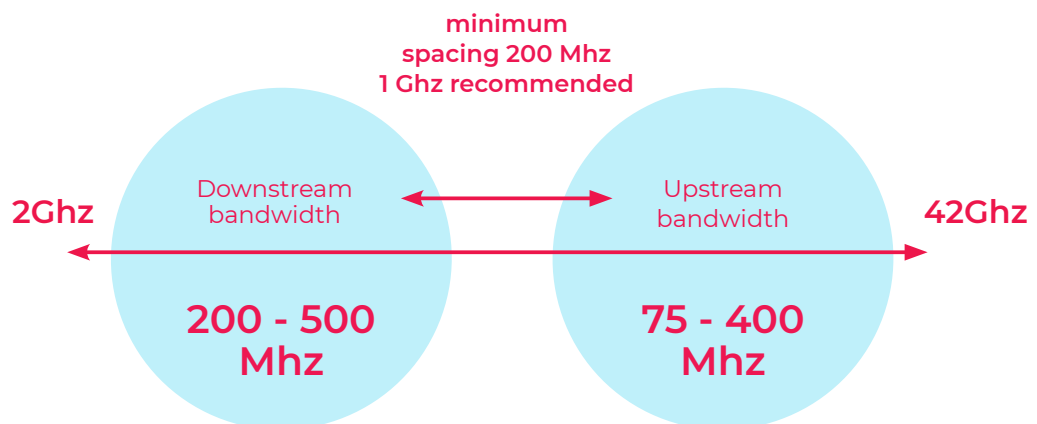


Figure 28 K3 frequency requirements

Read more about K3 technology in the K3 Technical Info Brochure.



## Appendix 7:

# PILOT PROJECT SIERRA LEONE

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

We chose Sierra Leone for the pilot project and proof of concept because of its harsh environment and socio-economic status. Sierra Leone is considered an emergent nation even among other emergent nations. However, K3 has managed to successfully launch its services to a clientele with a mean revenue of \$127 from each client (retail and business) per month. Even though we undercut our competition by far, we still manage to hold a profitable margin.

Additionally, Freetown, the capital city, has a population of only 1 million persons. Sierra Leone is therefore considered a micro market. K3 has managed to become profitable in these conditions.

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

- an abundance of hills and
- an abundance of heavy rain.

These factors were concerns that needed to be addressed and tested in the field. The results have been more than excellent, with fully stable connections and no service interruptions. While the landscape produced some coverage dead spots, they were minimal, at around 2%. As planned, marketing ran for only 6 months (works started in August 2018, and the first clients connected in February 2019). K3 Sierra Le-

ona now has over 80 dedicated employees and over 2.000 paying customers, \$1.3M revenue in 2020, and a projected \$2M revenue in 2021. K3 Sierra Leone is currently valued at \$17M.

### K3 has done all of its work in-house:

- Acquired all the needed licenses.
- Set up the network.
- Built the complete telecom infrastructure.
- All software development.
- Providing end-user connection services.
- Marketing and management services.
- Providing customer support.
- Managing and maintaining equipment with a local team.

K3 Sierra Leone continues its exceptional 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 always guarantee 60% of the plan speed at peak hours and full speed off the peak hours. Average data usage per user per month is 100-120GB.

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

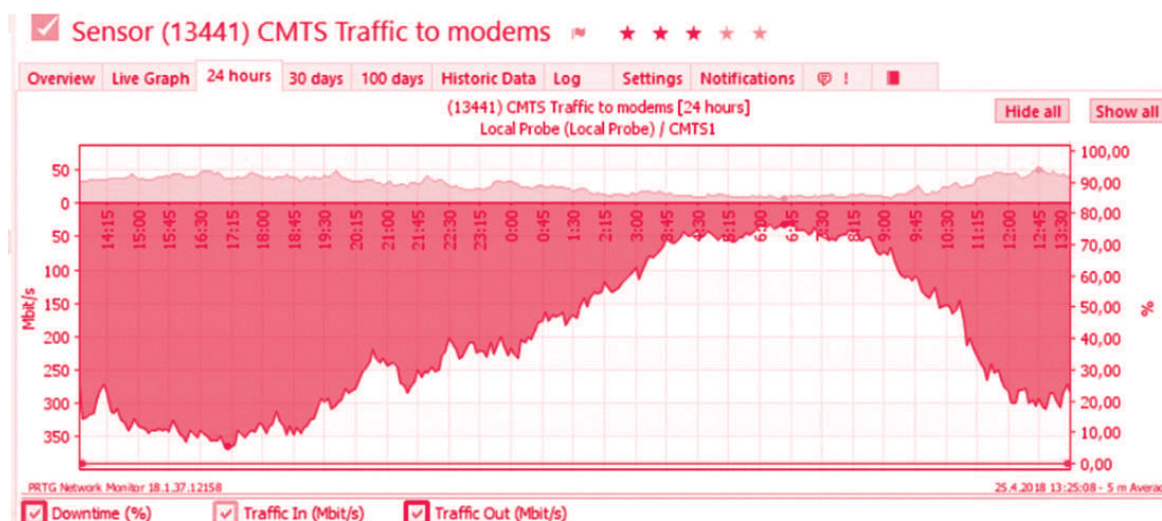


Figure 29 K3 Sierra Leone daily traffic graph.

## Appendix 8: DRC OPERATIONS

DRC is the largest country by area in sub-Saharan Africa, second only to Algeria in the whole of Africa. It is also the 11th largest country in the world. With a population of around 105 million, it is Africa's third most populous country (The Economist Intelligence Unit, 2021). The population growth rate has been above 3% annually (Data Commons, 2021) for the last 15 years which is predicted to continue into the future. The GDP amounted to over \$50 billion in 2019 and has been climbing since 2002, reaching annual growth rates of up to 10% (Data Commons, 2021). Future predictions show a continuous uptrend with an 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 the 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 the 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% of target areas within Kinshasa.



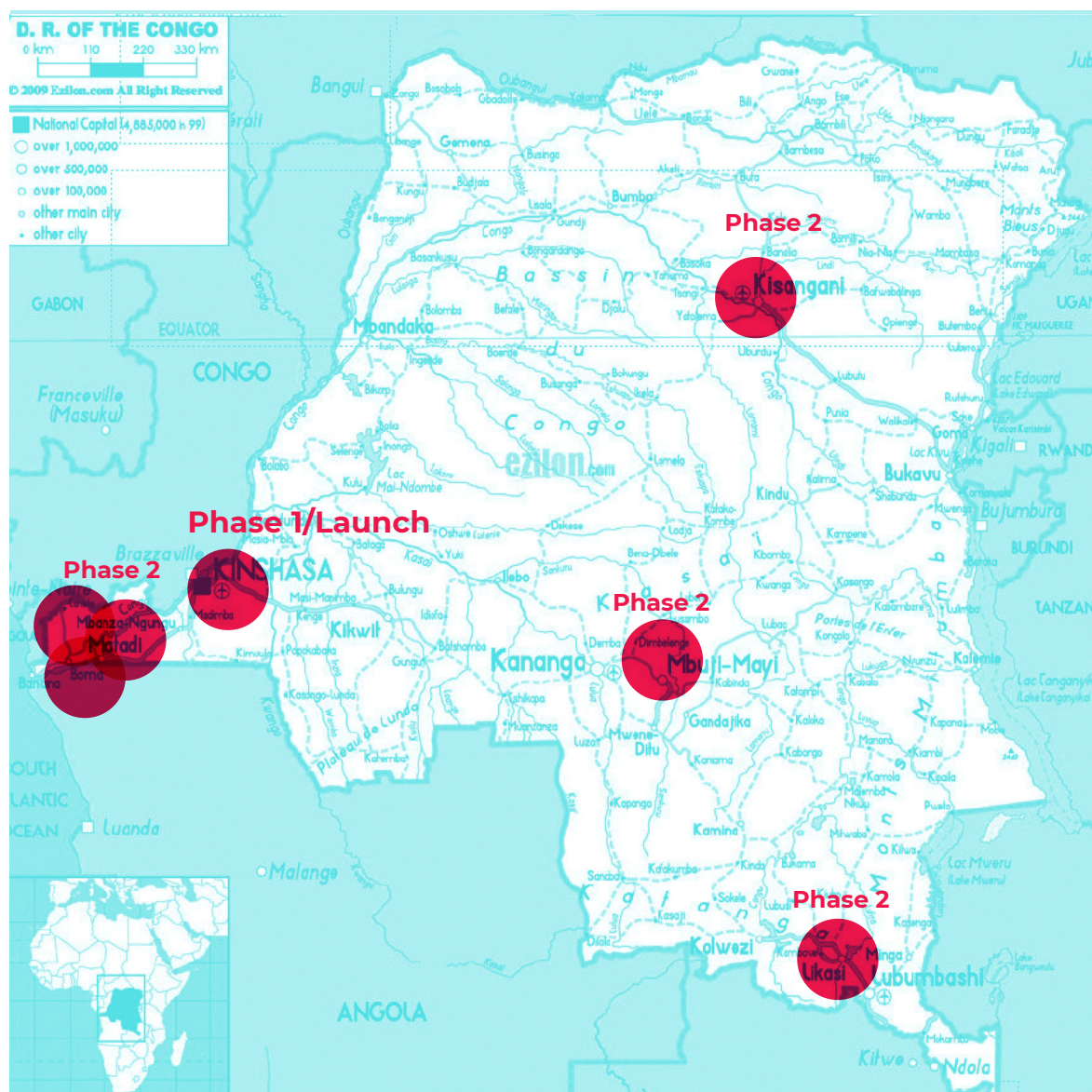


Figure 31 DRC expansion plan

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

#### 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 customers equates to about 20% of the addressable market in Kinshasa)

#### 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 center management, network solutions, and others).
3. Lower-income and mass-market solutions that are already in the pilot stage in Sierra Leone (public Wi-Fi mesh zones).
4. We intentionally remain conservative in our projections. In Kinshasa alone, indications point to much greater growth potential. With 15 million people in the city, a high



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
<b>Revenues</b>					
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
<b>Total Revenues</b>	<b>1,648,460</b>	<b>20,447,517</b>	<b>45,553,034</b>	<b>82,823,738</b>	<b>122,181,681</b>
<b>Total Direct Cost of Sales</b>	<b>1,749,443</b>	<b>5,779,633</b>	<b>11,034,718</b>	<b>17,812,207</b>	<b>24,123,583</b>
<b>Total General &amp; Admin Costs</b>	<b>1,894,292</b>	<b>3,902,367</b>	<b>6,498,818</b>	<b>10,240,716</b>	<b>13,636,687</b>
<b>EBITDA</b>	<b>(1,995,275)</b>	<b>10,765,517</b>	<b>28,019,498</b>	<b>54,770,814</b>	<b>84,421,411</b>
<b>Terminal value at 8x EBTIDA multiple</b>					<b>675,371,286</b>

Table 8 DRC operations Profit and Loss Statement

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 of modern standards.

The detailed business plan is available for interested, registered investors upon request.

## Appendix 9: NIGERIA OPERATIONS

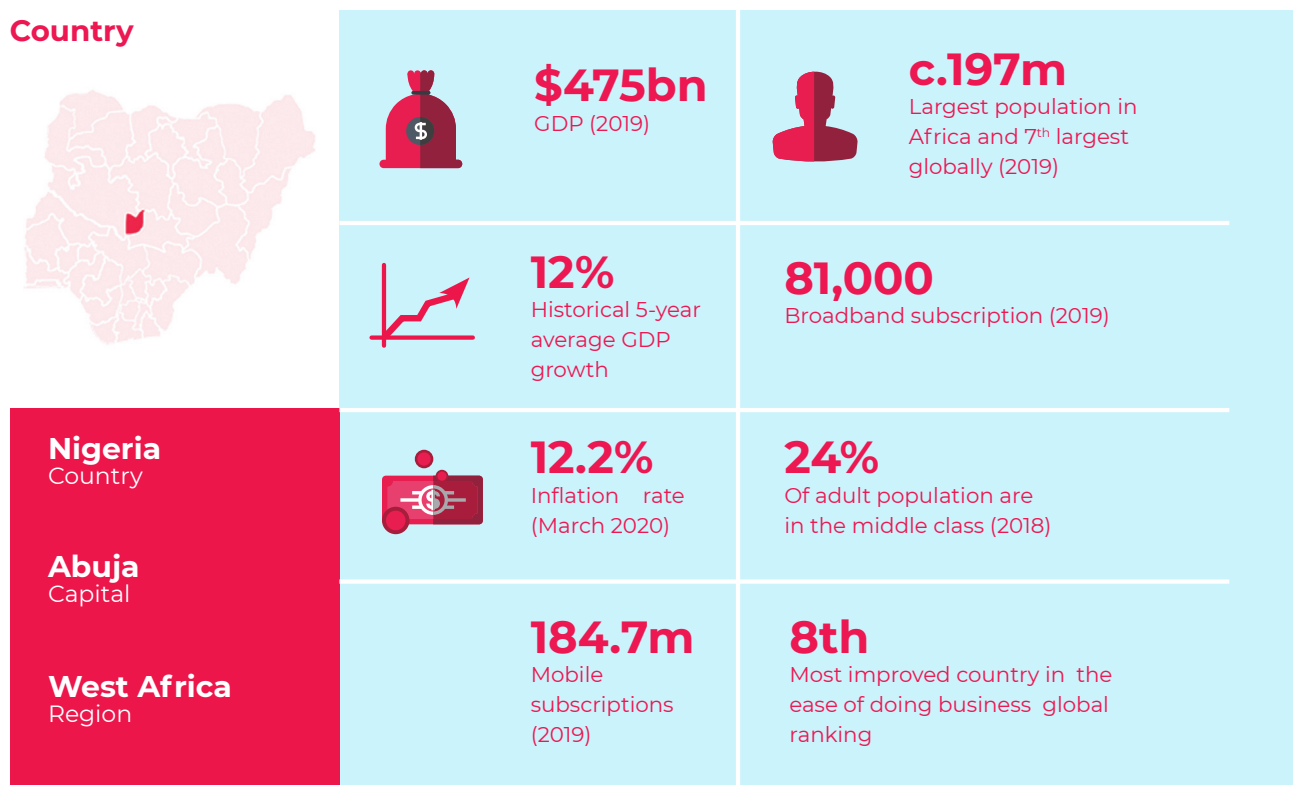
Nigeria is the largest economy in Africa and within the top 50 worldwide, with a GDP of \$475B in 2019. This figure is projected to grow to \$736B by 2023 (The Economist Intelligence Unit, 2021). It is also the largest country in Africa by population and 7th worldwide, with a population of 206M (2020).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

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 in Abuja and Lagos simultaneously, cities with a combined population of over 26M.

Nigeria suffers from a lack of modern broadband access in all cities.

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

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 population about the value of ICT services. (Agyeman, 2007)
3. Introduction to digital literacy education and training programs across all levels of education. (Federal Ministry of Education, 2019) (Oye & Aiahad, 2015)



The Federal Government is also driving various initiatives aimed at infrastructure improvement, funding & incentives, and demand drivers to achieve improved coverage, quality, and penetration as contained in the Nigerian National Broadband Plan for 2020 – 2025. (Nigerian Communications Commission, 2020)

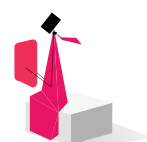
K3 already holds an Internet Services License ("ISL") issued by the Nigerian Communications Commission ("NCC") under the Nigerian Communications Commission Act. This license allows K3 to operate in Nigeria within its ISP scope, including broadband, digital TV, and IP telephony services. Following the 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 setup duration from the time of funding till launch will take about 22 weeks.

After launch, each person in the coverage area will have access to modern triple-play services (internet, Digital TV, IP telephony) equal to that of cable. Upon reaching profitability (with 100 businesses or 2,000 retail clients), we will expand services to other areas in Nigeria.

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



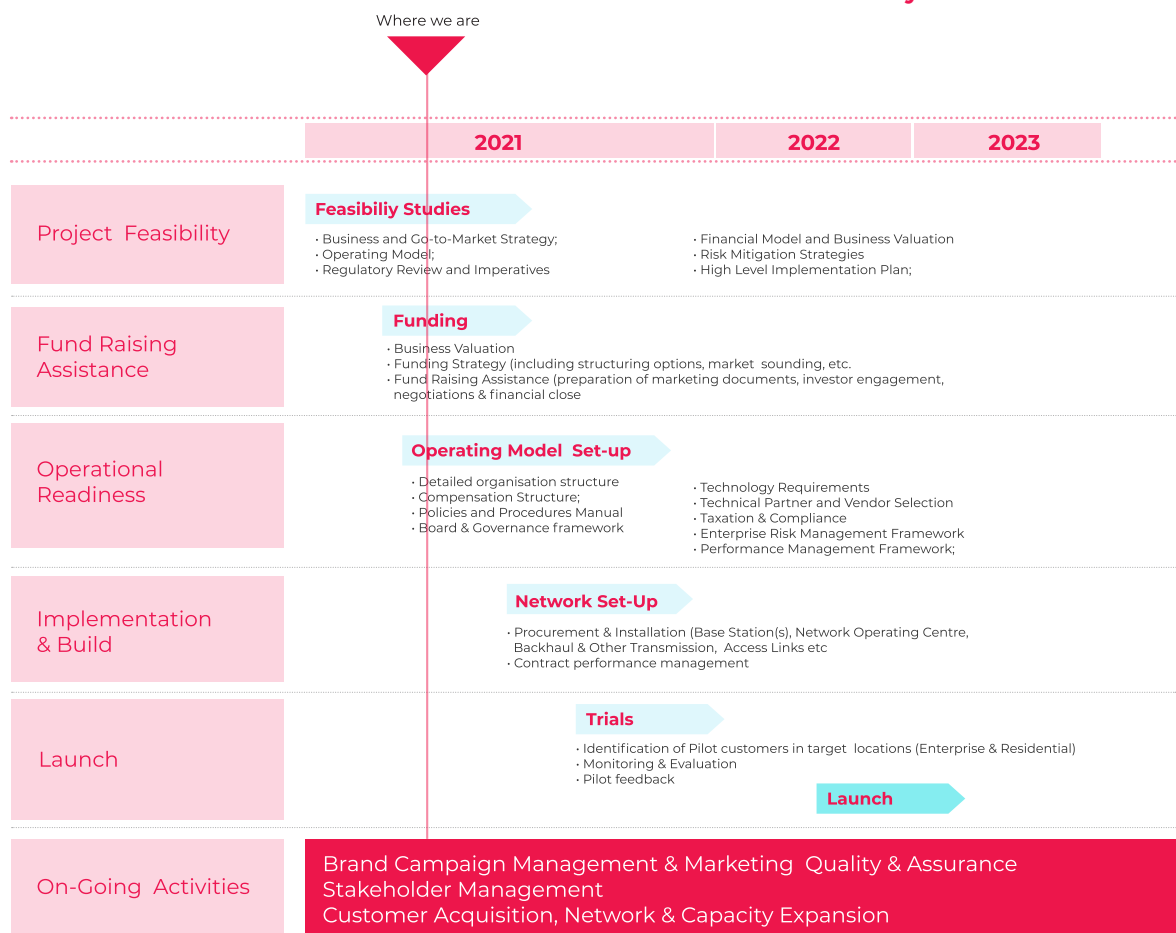


Figure 33 Nigeria implementation time schedule

### Market size

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

- Nigeria's telecoms and media revenue is expected to increase from \$7.3B in 2017 to \$11.2B by 2022, at a CAGR of 7.5%.
- Mobile revenues continue to dominate the market, accounting for 88.9% of revenues in 2017 and 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.**

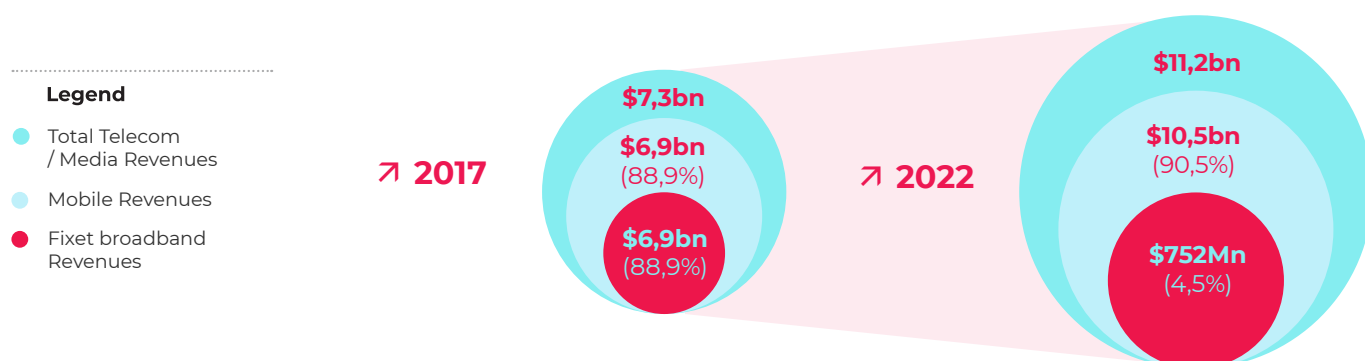
- Key drivers include improved household spending & increased demand.

### 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 customers equates to about 20% of the addressable market)

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>



	2022	2023	2024	2025	2056
Users	9.000	35.000	80.000	140.000	210.000
Base stations	4	10	18	28	38
Total revenue	\$7 M	\$46 M	\$105 M	\$184 M	\$277 M
EBITDA	(\$1,5 M)	\$41 M	\$99 M	\$177 M	\$267 M

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

**The total capital expenditure** until profitability is \$15 million, including prudent reserves. Of that required capital, \$3 million will go toward providing the initial infrastructure set up to cover Abuja and Lagos. \$3 million will be used for CEP / User inventory for the first 6,000 customers, and \$6 million for the working capital until we reach profitability (\$3.0 million in reserve). The detailed business plan is available for interested and registered investors upon request.

## Appendix 10: GENERAL TOKEN MANAGING MECHANISMS AND TOKEN ECONOMY

The artificial economies of the blockchain differ from traditional economies in many aspects. They typically focus on one or a small number of products or services, making them more flexible and adaptable. However, 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 translate to token economies. Hence, they require new and innovative models to assess and manage them, making developing token economy models one of the most important aspects of a blockchain project. (Mougayar, 2017)

A good tokenomics model will ensure the 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's value rise while users may want a low token price). (Kampakis, 2018)

Looking at token economics from a macroeconomic perspective, it is useful to have a basic understanding of the interaction between supply and demand. The Quantity Theory of Money, popularized by Milton Friedman (Friedman & Schwartz, 1971) provides a proficient framework. We can use 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 formula tells us that the token price will depend 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 money supply will affect various and innumerable prices in the economy in many irregular ways, creating misinformation by disturbing the structure of relative prices and therefore resulting in the 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, we cannot compare them directly to money. They have some similarities with shares issued by companies. At IPO, the share price is determined by the company value and dividing it by the number of shares. Key factors to consider while forming a company's valuation are (OnMarket, 2021):

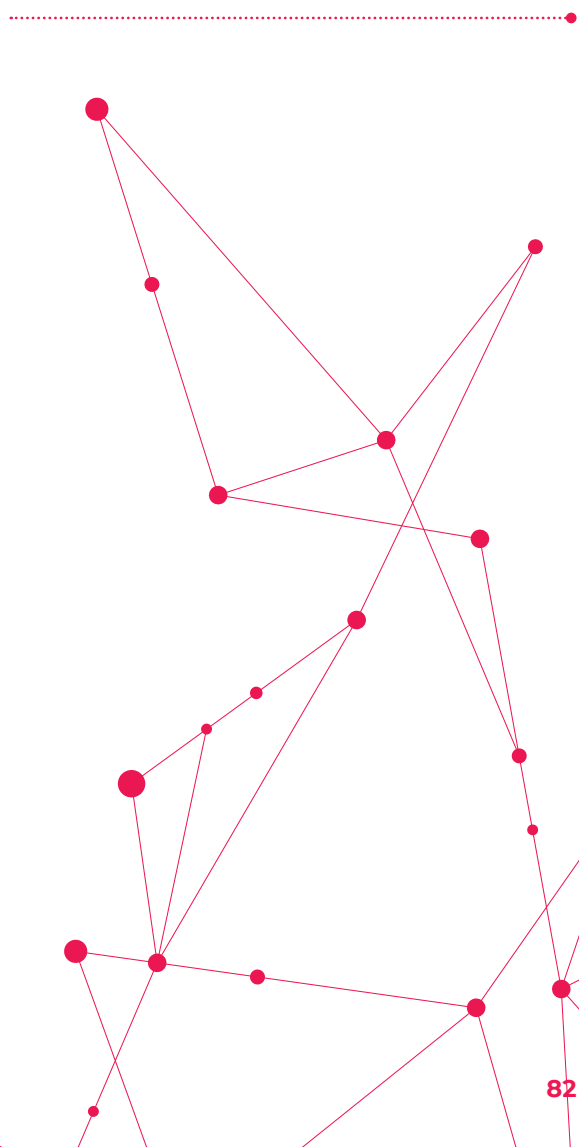
- Comparable companies operating within the same or similar industries and providing similar services.
- Financial track record of the company and quantity management.
- The company's growth potential beyond the IPO and how the funds will be used after IPO.

Significant differences in market capitalization between stocks and cryptocurrency tokens prove that these markets are not directly comparable.

Firstly, tokens and cryptocurrencies tend to incorporate more potential or future project value into the market capitalization. Secondly, token economics can and will profoundly influence its 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 project's control) in addition to economic conditions, regulations, and general market sentiment contributing to the token's price.

Currently, no mathematical formula accurately evaluates a token's price, 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 a model exists, price predictions will remain (educated) guesses.



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## Appendix 11: SKALE BLOCKCHAIN

SKALE chain is a unique multichain network capable of running an unlimited number of secure, decentralized, high-performance blockchains native to Ethereum.

In a sense, SKALE is a Layer 2 scaling solution for the Ethereum blockchain, with multiple unique features like:

- EVM compatibility,
- Fully decentralized,
- Zero end-user gas fees,
- High throughput with fast block times,
- Instant finality,
- Modular, customizable, and fast L2 bridge,
- On-chain file storage and
- Pooled security with randomized node selection and rotation.

SKALE's architecture supports an ever-expanding set of dApp-specific chains, which makes it quick and easy to set up cost-effective multichains running Ethereum-compatible smart contracts.

In essence, SKALE provides a separate blockchain for each dApp while utilizing the same validators that frequently rotate to provide the processing power needed to run the smart contracts and validate transactions. The system is similar to sharding, with the main difference being each SKALE sub-chain is a kind of shard, and each sub-chain is only loosely coupled with the rest of the whole multichain network.

It achieves this by having app-specific sub-chains (shard). The system will continue running unaffected even if one of the sub-chains malfunctions. This is impossible with the classical sharding model.

SKALE utilizes algorithms that have been mathematically and practically proven to be secure. It uses the Byzantine Fault Tolerant (BFT) consensus algorithm, accounting for up to one-third of participants possibly acting maliciously. Its

leaderless consensus mitigates the possibility of collusion among network participants by ensuring that each user has an equal right to propose and commit new blocks. The nodes in the network are structured asynchronously (similar to the internet's structure). This means that they are only loosely coupled so that the system can function normally even if some messages are not delivered on time. Threshold signatures enable efficient interchain communication and support randomness in node allocation.

SKALE is designed to be free from network healing time, meaning that transactions have instant block finality. Users no longer have to wait to confirm that their transactions cannot be altered anymore.

SKALE utilizes all the existing Solidity tooling, which is the most extensive in the blockchain space to date. It allows easier, faster, and more cost-effective development. EVM is by far the most widely used smart contract platform with best practices, design patterns, and online support. In turn, it allows for more secure development as many code design patterns have already been tested and proven secure (or otherwise).

It also means that users can use the same wallets, token standards, and tools as Ethereum.

SKALE is interoperable with Ethereum through the Interchain Messaging Agent (IMA) bridge. IMA facilitates transferring any token standard or message between Ethereum and SKALE, using BLS (Boneh-Lynn-Shacham) Threshold cryptography to secure transfers.

SKALE integrates many excellent and progressive thinking features. It improves performance, scalability, security, and additional features like native on-chain storage, native oracles, randomness generators, etc. The code is open-source and regularly audited before each push to the mainnet.

One such push is imminent with SKALE V2 mainnet that will bring fast and zero-fee chain interoperability. It paves the road for new projects already in active development on the test net, the most important being a high-level DEX, Ruby.

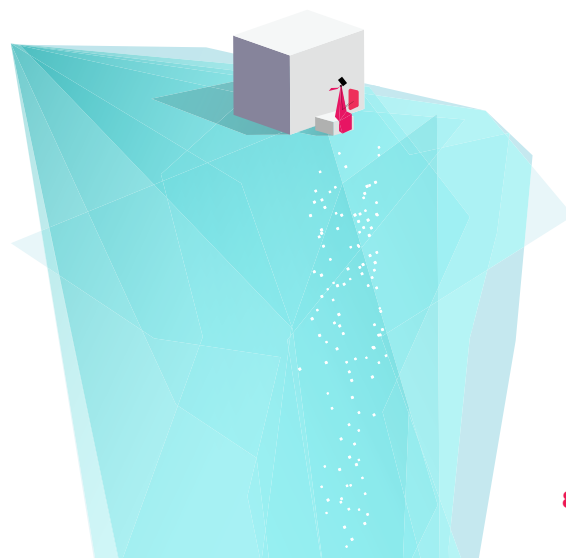
Version 2 also brings native FIAT onboard and offramp, which will be incredibly valuable to 3air to easily onboard clients that are not yet familiar with blockchain and crypto.

Low fees are essential for end users to make regular, small-volume transactions such as monthly subscription payments. SKALE proposes feeless transactions for the end user. It still needs gas payments on transactions for security purposes, but the sFuel has no commercial value and can not be bought. sFuel is free to claim, but only in reasonable amounts to prevent malicious attacks that have become common in low-fee blockchains lately.

Another exciting feature is protection against front-running from miners (validators). The concept uses BLS Threshold cryptography that encrypts transactions and encrypts them after they are in the block. This means that the validators don't see the actual transactions and cannot sort or front-run them.

Overall, SKALE is one of the best-performing scaling solutions on Ethereum. The development looks sound, and the team is extremely professional and capable of delivering on an exceptional blockchain. The development roadmap is moving according to schedule and has so far avoided any real issues. The chain has already been operational for over one year, and it is getting the V2 upgrade in March 2022, which will make it interoperable with other projects, creating a robust network of dApps that work together in a safe, fast and feeless environment. Additionally, the SKALE team welcomes the 3air project and is ready to facilitate its growth in other aspects, including providing a blockchain layer.

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# Connectivity and Banking for the Next Billion

