White Paper

Technology Powered by Community

Vol 1.0

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Abstract

Pandolab is solving the challenges facing the video streaming industry by creating a secure, stable, and scalable blockchain-based ecosystem that is powered by people and a token economy and supports a wide variety of innovative and engaging DApps running on a decentralized video streaming network.

Our goal is to provide creators and collaborators with a better revenue model while delivering more satisfying and engaging video experiences for users-even in currently underserved regions.

The Rise & Challenge of Video Streaming

Online viewers are consuming ever-increasing amounts of video content. Video streaming is quickly becoming the preferred way for people to watch shows, movies, sports, educational programs and live events and to play video games, network, talk to family & friends, attend classes or meetings, and even listen to music and podcasts.

According to a study by Contiva, overall streaming time grew 44% between Q4 2019 and Q4 2020, with a 157% year-over-year increase in smart TV viewing hours alone[1]. The global video streaming market size was valued at a staggering USD 50.11 Billion, should be close to USD 70 Billion by the end of 2021 and is expected to reach USD 223.98 Billion by 2028[2]. Compare that with box office receipts for the film industry which only hit USD 42 Billion pre-pandemic, and dropped to USD 11.42[3] Billion in 2020.

Paid subscription services, Netflix & Amazon Prime Video each have over 200 Million subscribers and China's iQIYI has over 105 Million. Ad-supported free services are even more popular. YouTube has over 2 Billion monthly active users with 30 Million daily users watching over a Billion hours of video every day. TikTok has over 700 Million users who watch even more hours per month than average users on YouTube. Tencent has more than 700 Million active users (and 120 Million paying subscribers)[4].

Twitch has 140 Million unique visitors every month and is experiencing record-setting growth[5]. It gained 10% growth in total viewership in just one week while the general SVOD industries gained 10% over a year. This and other trends point to the fact that viewers are interested in a wider variety of engagement and user-generated content. More than 4 Billion video views take place on Facebook every day where 500 Million viewers watch 100 Million hours of video content daily and 1 in 5 videos watched is a live broadcast[6].

Video streaming already accounts for around 80% of internet usage. Large traditional media broadcasters that used to rely on radio frequency and cable transmission are now converting to internet streaming for delivery. When you add video conference streaming services like Zoom, Microsoft Teams, Google Hangouts, Skype, Webex and others, you can see why, **for the first time in history, the internet is showing signs of genuine, region-crippling congestion, with video streaming services being the primary culprit.**

1. According to a study by Contiva, overall streaming time grew 44% between Q4 2019 and Q4 2020, with a 157% year-over year increase in smart-tv viewing hours alone
2. Video Streaming Market Size, Share & Trends Analysis Report By Streaming Type, By Solution, By Platform, By Service, By Revenue Model, By Deployment Type, By User, By Region, And Segment Forecasts, 2021 – 2028, Grand Video Research, Feb 2021
3. Box Office 2019: What Went Right and Wrong in an $11.4 Billion Year & How 2020 is Shaping Up, A. D'Alessandro, Dec. 2019, Deadline
4. Which Streaming Service Has the Most Subscriptions, O. Wallach, Mar. 2021, Visual Capitalist
5. Twitch Usage and Growth Statistics: How Many People Use Twitch in 2021?, B. Dean, Oct. 2021, Backlinko
6. Facebook Video Statistics, Statistics, J. Guardian, 99 Content, 99 Firm

Satisfying the ever-rising demands for quality video at fast speeds requires an ever-increasing amount of bandwidth and resources. Current infrastructures are not equipped to handle this level of activity. Most Central Delivery Network (CDN) models are expensive and unscalable. They were designed decades ago when demand was a small fraction of what it is today.

To cope with recent overload, regulatory bodies in various regions are forcing platforms to lower their quality. For example, per the EU[7], Netflix, Amazon Prime Video, YouTube and other video platforms recently had to commit to reducing streaming quality in Europe[8].

While regulators are demanding decreases, consumers are demanding increases. As viewers become more reliant on streaming not only for entertainment, but for personal and professional engagement, their needs are growing and their expectations are rising. According to a recent survey by Nielson, the vast majority of users ranked "variety of content", "good streaming & playback quality", and "fast streaming speed" as very important to them[9].

Manufacturers are helping to satisfy the demand for quality by producing better products with higher resolution. Apple TVs, and Rokus currently offer at least 4K video resolution, but as screen sizes get larger, 8K video resolution is quickly becoming the new standard. Unfortunately, 8K video has four times as many pixels as 4K, so it requires even more bandwidth and promises to further strain the system[10].

A Bit of History

In the early days of the internet, video streaming was choppy, low resolution and had to fit into a small 1" viewable window. The data had to move from the originating server through several "hops" or interconnected computers before it was able to arrive at the destination machine. With each progressive hop, quality and performance would degrade, resulting in lag, outages, and general unreliability.

In 1998, Dr. Tom Leighton and his student Danny Lewin founded Akamai Technologies and developed the first Content Delivery Network (CDN). It was a revolutionary improvement in the way video data was delivered. Instead of traveling through multiple hops, data packets were cached at centralized sites which were geographically distributed. This meant the same piece of information was being redundantly stored at multiple, high capacity, high throughput locations with a more direct connection to the end-user. This CDN model has remained essentially the same for the past two decades. Scale, geographic distribution and bandwidth have increased, but the core principles and technology are largely the same today.

7. EU calls on Netflix, other services to stream in lower quality due to bandwidth concerns, R. Klar, Mar. 2021, The Hill
8. Netflix will reduce streaming quality in Europe for 30 days, G. Kumparak, Mar. 2020, TechCrunch
9. Which Consumer Attitudes Will Shape the Streaming Wars? Media, Nov. 2020, Nielsen
10. TV's New Year's resolution: The start of the 8K wave, P. Lee, K. Westcott, C. Calugar-Pop, Dec. 2020, Deloitte

PROBLEM & SOLUTION

Costly Infrastructure & Last Mile Delivery Problems

Video is more expensive to stream (and even more expensive to livestream) than other forms of data because it has to be "transcoded". The original raw video format has to be simultaneously reformatted to work with different levels of bandwidth available to users and different devices the video will be viewed from. This process is so costly that usually only large mega-corporations like Google, Microsoft, Amazon and Cisco can own and operate CDNs. (Netflix doesn't even own a CDN. It uses Amazon's services).

To mitigate some of the expense, CDNs are usually built in remote areas where the price of land is low and inexpensive power is readily available. While this is better for profits, it isn't better for performance because it generally places central servers far away from users in large city center (where the highest concentration of demand originates from). This distance can cause lower quality, longer lag times, and higher inconsistencies in the streaming experience.

Another problem is that the infrastructure for large bandwidth connections is not infinitely scalable. When bandwidth is capped, adding additional servers doesn't expand capacity or improve performance, so as demand for video streaming increases exponentially, it overloads CDN infrastructures.

To address these issues, top streaming service providers have invested Billions in new technologies such as video compression algorithms and have placed data centers known as Points-of-Presence (POPs) in a variety of locations throughout the world, but because the number of POPs is limited, they are still not accessible to the majority of viewers, particularly in developing countries. The "last mile" link is still a bottleneck that results in choppy streams, poor picture quality, and frequent rebuffering for users. "Last mile" delivery is still one of the most challenging problems facing the video streaming industry.

Blockchain Can Help

The advent of blockchain technologies has helped to mitigate this problem. While the infrastructure of blockchain itself isn't responsible for the improved efficiency of last mile delivery, its ancillary use can contribute to a decentralized system and an economic model that can be used to incentivize participants to participate in a more efficient distribution model that solves the problem.

There are currently several blockchain-based video distribution companies bringing an impressive suite of technical know-how, partnerships and execution capability and a comprehensive distribution of nodes. However, they are primarily concentrated in the United States and Europe where CDN infrastructures are already performing at their best. The reason for this is obvious, companies want to set up where demand is already high, but the greatest need for blockchain-based peer-to-peer based video distribution networks is actually in areas where CDN availability and performance is lowest.

Setting up a successful blockchain-based peer-to-peer mesh network in all areas (for truly global video streaming) requires a multi-faceted approach that includes not just a better delivery network, but coordinated regional efforts to drive traction in the areas that need it the most and a content development strategy that ensures high viewership in areas with active nodes.

Centralized Incentive Models

Because of the gigantic costs associated with using CDN infrastructures, two revenue models have emerged for video streaming content. Either consumers pay-per-view or with subscription fees, or ad revenues are split between the platform and the content creators allowing users to view for free. Either way, large audiences are required to cover costs and make a profit.

Video providers and platforms are in the business of generating substantial revenues and driving share price appreciation for shareholders, so with revenue sharing, they benefit the most when they pay creators the least. In 2019, YouTube generated USD 15 Billion[11] in overall revenue but only 55% of it went to the creators of the content[12].

On platforms such as YouTube and TikTok, where ad revenue reigns, a contributor might invest in expensive recording equipment, hire video and audio specialists, pay for music licensing, and invest considerable time before generating any revenue. Only after they've built an audience and have substantial viewership (subscribers in the hundreds of thousands or millions) can they earn a good living from ad revenue. To make matters worse, the platform actually owns the users and the rules around monetization can change at any time. Many creators have found themselves suddenly without a livelihood they've counted on for years.

Platforms that allow creators to charge their own subscription fees usually also take large percentages of the revenue and maintain the same kind of power and control over the users, the content, and the options available.

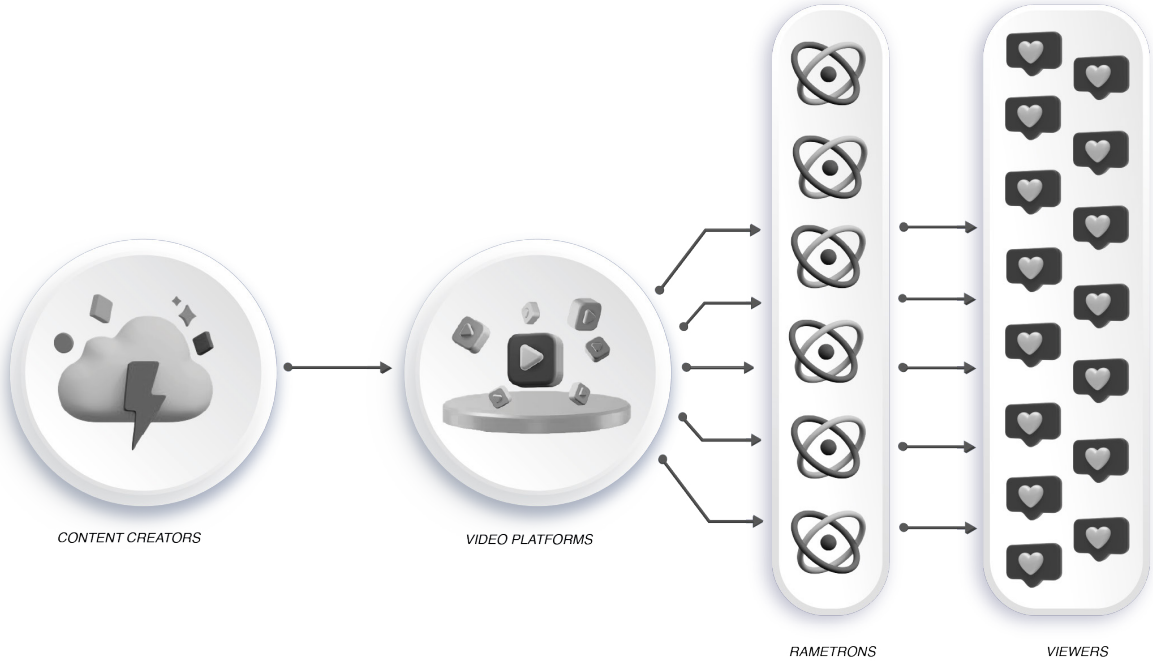
10. YouTube is a $15 Billion-a-year business, Google reveals for the first time, N. Statt, The Verge, Feb. 2020
11. YouTube Money Calculator: Calculate How Much Money You Can Make, Influencer Marketing Hub, Oct. 2020

How Pandolab Addresses These Issues

Pandolab is a complete ecosystem with a blockchain-based, decentralized, highly scalable video distribution network powered by a token-economy, supported by popular DApps. It will initially be focused on the last-mile transmission of streaming content in areas that need it most.

By empowering users to create content and set their own prices and revenue strategies (unencumbered by the high infrastructure costs) and incentivizing users to participate by watching and distributing videos, Pandolab will be able to cost-effectively scale more easily than traditional CDNs.

We see the biggest opportunity in having a more strategically developed distribution strategy along with content development that fuels and supports growth and value creation.



Content Development

To ensure high usage on the network and a robust token economy, we are focusing on content development by providing platforms and a wide variety of specialized decentralized apps ranging from entertainment, to job recruitment and educational hubs. All of our DApps will be highly relevant in today's ever-growing streaming landscape.

We will also work with other content producers such as networks, studios, broadcasters, news outlets, influencers and original content producers to help build an immense library of high-quality content.

Similar to methods employed by the best content development studios (like HBO, Netflix, and Amazon), we intend to both curate and acquire content while incubating and developing our own. We plan to provide rich video streaming experiences beyond film and television, such as educational content, live shows, career development and video game streaming. We believe that employing teams for in-house content production capability will be instrumental in our initial and continued growth and allow us to more closely align with the needs of our audiences.

Because our delivery relies on peer-to-peer decentralized distribution (rather than costly, rigid infrastructures) and community-based governance (rather than powerful central platform control) it will offer content creators more freedom, security and revenue.

Infrastructure

Pandolab started with the open-source technology of the Theta Blockchain and tweaked it to meet special requirements. This saved critical time and resources that were invested in developing the streaming network, the token economy and the initial DApps. Once the system is completely up and running, we will encourage other developers and partners to build and host other decentralized applications on the Pando Network as well, but by starting with our own innovative DApps, we can better ensure user engagement, growth and value.

We intend to ultimately service every region around the globe with our decentralized network but in the initial stage (when tokens and revenue are expected to be limited) we will forge partnerships with large cloud service providers and target areas outside of current well-developed infrastructures with an incentive structure designed to drive growth. Our mission is to significantly minimize the need for CDNs by developing and scaling an entirely peer-to-peer infrastructure in these regions.

Our infrastructure development strategy will be closely related to our content development strategy. For example, as we roll out our infrastructure within certain geographic regions, we will focus on content development and curation relative to those regions.

To accomplish the consensus checking necessary for Blockchain efficiency, we have developed our own **Pando Network Governance** with three layers of nodes. **Zytatron Nodes** serve as block initializers and hold the full ledger of the Pando Network. They also provide the first layer of security. **Metatron Nodes** act as block finalizers responsible for validating transactions while holding partial ledgers of the Pando Network, and provide the second layer of security. **Rametron Nodes** are relay streaming nodes that transcode and relay data files within our blockchain-based video streaming system. Within two years, we plan to have 1,000,000 Rametron Nodes in our network. Ultimately, the system will have no structural costs and unlimited scaling possibilities.

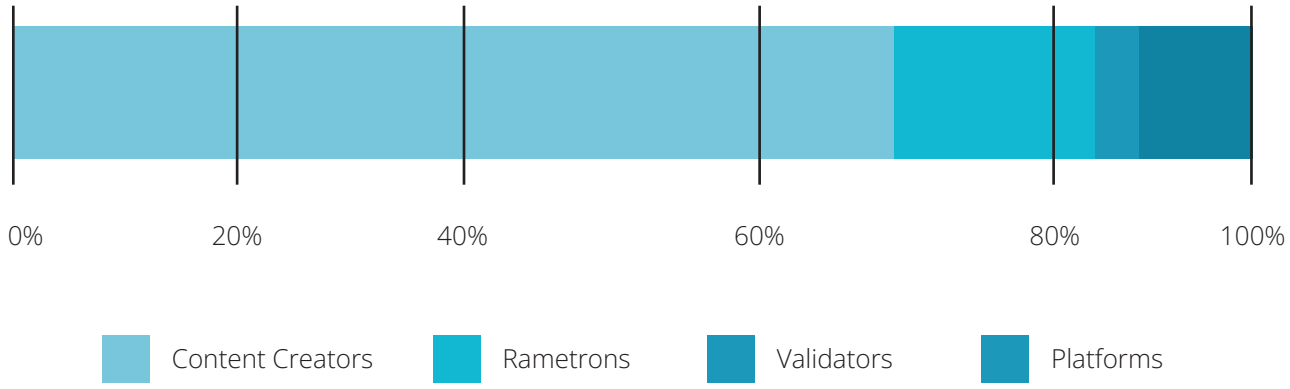
Our ability to execute this will be possible, in part, because of our unique approach, which significantly reduces upfront launch costs in these regions. Where large streaming service providers need to invest in CDNs, we need to only rely on individuals with internet-connected personal computers that are already available in every region. These personal computers act as Rametron Nodes.

Equitable Revenue Split

In order to democratize the payout of collected revenues, Pandolab will distribute 90% of all collected advertising revenue to content creators and infrastructure contributors, retaining just 10% for internal operating costs.

The anticipated breakdown is illustrated below.

Revenue Split



Infrastructure

Pando Network

The Pando Network allows users to simultaneously watch video content and earn token rewards for relaying videos to other users who are also watching content. Like other sharing economy models, users can opt-in (as Rametron Nodes) to volunteer their spare bandwidth and computing resources to relay videos to other users and earn token rewards for their contributions. This decentralized technology allows the Pando Network to capture live video, transcode it in real-time, cache and relay live stream video data to users globally without needing a single central server.

Video platforms that choose the Pando Network for video delivery can reduce their video delivery costs, deepen viewer engagement, and drive incremental revenues. By spending less on video delivery infrastructure, and more on rewarding their users, Pando-enabled video platforms can grow their user bases and gain market share.

The Pando Blockchain is designed from the ground up for video and data relaying. It's unique multi-BFT (Byzantine Fault Tolerant) consensus design combines community-run Zytatron Nodes with a second layer of community-run Metatron Nodes. Zytatron Nodes propose and produce new blocks in the chain, while Metatron Nodes seal blocks and check for malicious or non-functional Zytatron Nodes.

Smart Contracts open up a whole new set of user experiences and new attribution models for DApps built on the Pando Network. The Pando Blockchain Mainnet supports Turing-Complete smart contracts that can enable digitized item ownership (such as NFTs), innovative payment-consumption models, transparent royalty distributions, trustless crowdfunding mechanisms, and more.

This provides additional options for social and economic interactivity, supplements the core functionality of video and data delivery, and is likely to significantly increase the engagement and retention of platform users.

PTX (Pando Token) is the Governance Token of the Pando Protocol. PTX (Pando Token) is used to stake Zytatron, Metatron and Rametron Nodes and for on-chain operations like payments to Rametron Node relayers for sharing a video stream, or deploying or interacting with smart contracts. By staking and running a node, users can earn a proportional amount of the new PTX (Pando Token) generated. Relayers earn PTX (Pando Token) for every video stream they relay to other users on the network. The supply of PTX (Pando Token) is fixed at 1.5 Billion and will never increase.

Transcoding and distribution is done using Pandolab's proprietary technology - a robust token-powered solution that enables low-cost transcoding and streaming. We initially evaluated the marketplace for a decentralized, open-source video transcoding and delivery service but didn't find any suitable candidates, so we decided to develop our own by utilizing open-source transcoding libraries and converting them to work with our decentralized system. Rametron Nodes are employed to operate the transcoding software locally and disseminate the content to viewers.

InterPlanetary File System (IPFS) is an open-source decentralized and distributed, peer-to-peer file storage protocol. Pandolab leverages IPFS's core functionality to handle the distribution of content across the network. Rametron Nodes run on an adapted copy of IPFS using PTX (Pando Token) tokens.

Zytatron Nodes

Validator Nodes are full nodes that participate in the "consensus" process. In the Pando Network, **Zytatron Nodes** are responsible for verifying and preserving a record of transactions when they participate in the consensus. These Validator Nodes construct blocks, validate all transactions and are responsible for inspecting and confirming blocks that they don't create. Zytatron Nodes are region-specific network listeners responsible for validating content views and engagement in addition to ensuring the integrity and quality of service rendered by the Rametron Nodes. Zytatron Nodes will initially be operated by Pandolab. Additional Validator Nodes will be selected and permissioned as Governance Nodes based on key strategic partners' strategic fit, and ability to promote, scale and expand the platform's vision in the region they are assigned to. They must meet a high standard (node availability, hardware and bandwidth requirements, etc.) and must stake a sufficient amount of PTX (Pando Token). Our ultimate goal is for our governance to be spread out in such a way that no single entity or group has enough control over the network to cause any problem due to negligence or any malicious act.

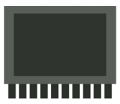
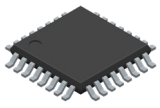
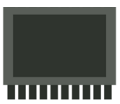
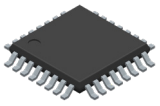
Beyond performing validating services on the Pando Network, each Zytatron Node will initially play a role in developing the Pando Community in their area to ensure sufficient geographic distribution in key areas where high-quality and high-bandwidth video streaming is currently lacking. Because they will have responsibilities for validating, monitoring and stabilizing the Pando Network, plus growing usage in the region, it is best if Zytatron Nodes are taken up by influential enterprises or well-connected, hard-working individuals.

To become a Zytatron Node Holder, users need to activate by staking a minimum amount of 1,000,000 PTX (Pando Token) (Pando Tokens). Every Zytatron Node stake is subject to a locking period of one year. It is important that the initial stake is not withdrawn within the locking period because doing so will deactivate the node.

Metatron Nodes

Metatron nodes initialize, propose and finalize new blocks created on the network while performing certain tasks to keep the network secure. By authoring new blocks on the network, Metatron Nodes play a key role in the Proof-of-Staking (PoS) consensus mechanism. Metatron Nodes focus on the 'write' mechanism by accepting content from content creators and inserting it on the Pando Blockchain while providing signatures for the validation of the block. Metatron Nodes should have knowledge of the current state of the Pando Blockchain. Pandolab will ensure that there are enough Metatron Nodes operating on the Pando Network to maintain the right decentralized video streaming system and ensure that no one can take control of the network. To become a Metatron Node Holder, users are required to activate by staking a minimum amount of 3000 PTX (Pando Token). The higher the stake amount, the higher the chances of node participation in the node finalization. This will then contribute to more rewards. If the staking is withdrawn within the locking period, the Metatron Node will be deactivated.

The requirements for a Metatron Node are as such:

COMPUTER				
	Operating System Windows, macOS, Linux	**Storage space** Recommended 800 GB, SSD Hard Drive Preferred	**RAM** 32 GB	**CPU** 2 cores or more
SERVER				
	Operating System Ubuntu V18, Linux	**Storage space** recommended more than 800 GB, SSD Hard Drive Preferred	**RAM** 32 GB	**CPU** 2 cores or more

Rametron Nodes

Rametron Nodes are a critical infrastructure component of the Pando Network and Protocol. They are responsible for retrieving content from other Rametron Nodes and distributing it to end users. Initially, Pandolab will retain a centralized core platform CDN which will serve as the master storage for all uploaded content. Rametron Nodes will pull copies from the core CDN based on the directions given from the node software. As the network becomes more decentralized and distributed, uploads from content producers may be transferred directly to nearby Rametron Nodes and propagated throughout the network. Rametron Nodes may initially pull entire content files, but as the network develops, they may only need to retain specific shards of a large content block to increase efficiency of the network.

Rametron Nodes will need to perform at a high standard, with node availability, hardware, and the bandwidth necessary to easily transcode data files and effectively deliver content to users. In order to ensure that Rametron Nodes are adhering to minimum uptime requirements, our platform will utilize a Proof-of-Network (PoN) mechanism to validate uptime and engagement (and act as collateral against poor performance and malfeasance). The Pando Tracker Server (PTS) will frequently ping each Rametron Node to assess responses and response times. It will also send and request data packets to regularly test and determine stream quality. These actions will be validated against a cryptographic challenge with unique keys to prevent collusion and assure that each queried Rametron Node is honest.

Rametron Nodes are compensated for their uptime, even if streaming isn't taking place during the entirety of their availability across any given block of time.

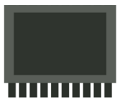
To become a Rametron Node Holder, users are required to activate by staking a minimum amount of 250 PTX (Pando Token) which is subjected to a locking period of six months. Node Holders may add (re-stake) a minimum amount of 25 PTX (Pando Token) to the balance, but it is crucial that the initial stake not be withdrawn during the locking period, as doing so would deactivate the node.

The requirements for a Rametron Node are:

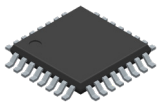
COMPUTER

Operating System
Windows, macOS, Linux

Storage space
recommended 100 GB, SSD Hard Drive Preferred



RAM
4 to 8 GB

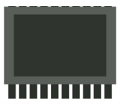


CPU
2 cores or more

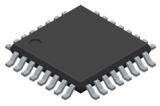
SERVER

Operating System
Ubuntu V18

Storage space
recommended 100 GB, SSD Hard Drive Preferred



RAM
8 to 16 GB



CPU
4 cores or more

Rewards & Penalties

Pandolab will offer multiple important rewards to Zytatron, Metatron, and Rametron Nodes for their presence and participation in the PandoProject Ecosystem. It will also enact penalties if nodes depart from the protocol.

Validator Nodes (Metatron & Zytatron)

Rewards

As Validators, Metatrons and Zytatrons are eligible for token rewards. A specific Coinbase transaction is included in each block which deposits newly created tokens to the Validator addresses. Because blocks are so numerous, awarding each Zytatron Node for each block may not be feasible. Instead, we will select a small number of Validators at random as the recipients of each blocks are awarded. The height of the newly proposed block is denoted by l, while the most recently finalized checkpoint is denoted by cp. For checkpoint cp, the proposer should have received the aggregated signature cp and the corresponding signer vector ccp. The proposer can check the following condition for each Validator whose corresponding entry in vector ccp is not zero after validating (cp, ccp) (i.e. that Validator signed the checkpoint)

$$H(pk_i, \sigma_{cp} \| B_{l-1}) \leq \tau$$

where B is the hash of the block with height and is the same as the BLS signature algorithm's l1 l 1 H: G 0, 1 * G hash function. The proposer adds the Validator with public-key pki to the Coinbase transaction recipient list if the inequality holds. The threshold is carefully selected to ensure that only a minimal number of Validators are included. As proof for the prize, the proposer should attach (cp, ccp) to the Coinbase transaction[13].

Proof-of-Stake

Proof-of-Stake (PoS) is a mechanism for activating nodes and ensuring positive activity. Users must stake a minimum of 250 PTX (Pando Token) to activate a Rametron Node, a minimum of 3000 PTX (Pando Token) to activate a Metatron Node and a minimum of 1,000,000 PTX (Pando Token) to activate Zytatron in the Pando Network. A portion of the stake can be lost if they go offline (fail to validate) and the entire stake can be lost if a user engages in malfeasance or willful collusion.

13. Theta Blockchain 2.0 Whitepaper, Theta, Nov. 2018

In a PoS based consensus mechanism, decentralization allows for an even stake distribution across consensus users. The consensus method should allow thousands of nodes to participate in the block finalization process, each with an equal stake and a local copy of the Blockchain.

Validators do not need to utilize a lot of computing power because they are chosen at random and are not competing. They do not have to mine blocks; all they have to do is produce them when they are needed and validate suggested blocks when they are not. Validators are rewarded for suggesting new blocks and attesting to existing ones.

Network security will be managed by peers who have a stake in the network in the PoS paradigm utilized by the Pando Network. The algorithm's incentives will not encourage centralization in the same way as Proof-of-Work (PoW) algorithms do. Data demonstrates that the Pando Network has remained highly decentralized since its inception: a huge number of accounts contribute blocks to the network.

Penalties

If any malicious action is detected, the Pando Ledger will impose a token penalty. A block proposer will be fined if they sign contradictory blocks for the same height, or if a Validator votes for various blocks of the same height. These locked tokens used for staking the node can be deducted as a punishment for malicious or negligent action. A specific Slash transaction can be submitted to the Pando Blockchain by the node that discovers the malicious behavior. The Slash transaction should include proof of malicious behavior (e.g. signatures for conflicting blocks). Penalty tokens will be taken from the malicious node and given to the first Slash transaction submitter.

In the unlikely case that more than one-third of the Validators are corrupted, rogue Validators might attempt to commit double-spending by forking the Pando Blockchain from a settled but unfinished block. The Validator pool would identify this because forking generates numerous blocks of the same height, but signed by more than two-thirds of the Validators. Any Validators that carried out a double signing would be fined, and the entire Validator committee would be re-elected. The Pando Blockchain would then continue to progress from the most recent finalized checkpoint after the Validator committee is reinstated.

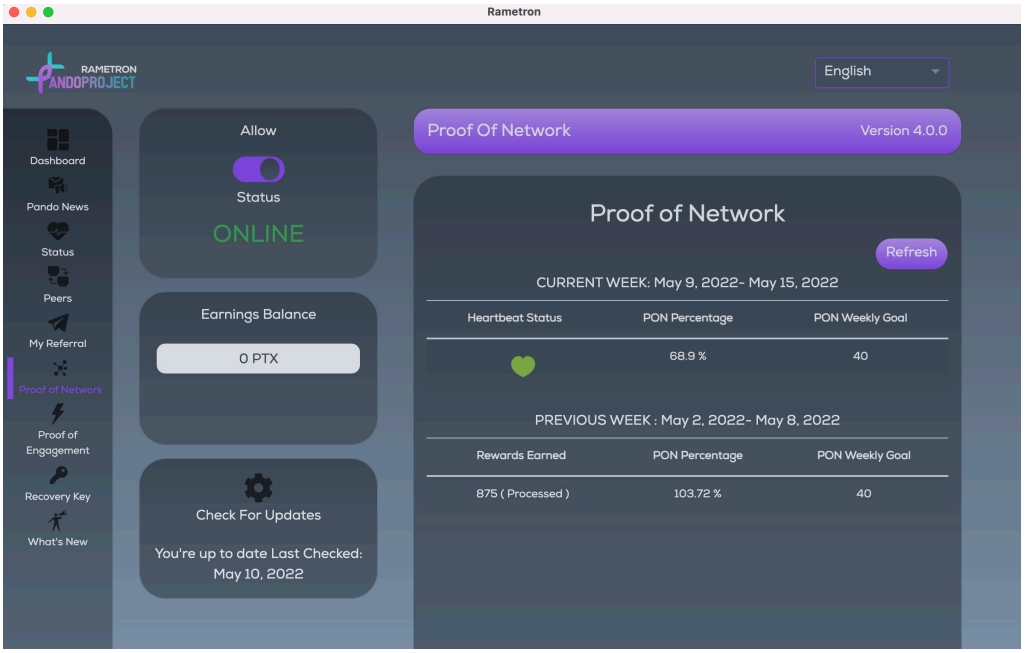
Rametron

Rewards

Proof-of-Network

Proof-of-Network (PoN) is a special reward offered to Rametron Nodes for their sheer presence on the Pando Network. The Pando Tracker Server will frequently ping Rametron Nodes and check their response time. In addition, Zytatron Nodes check the data packets streamed by Rametron Nodes to assess the quality and performance of Rametron Nodes on the Pando Network.

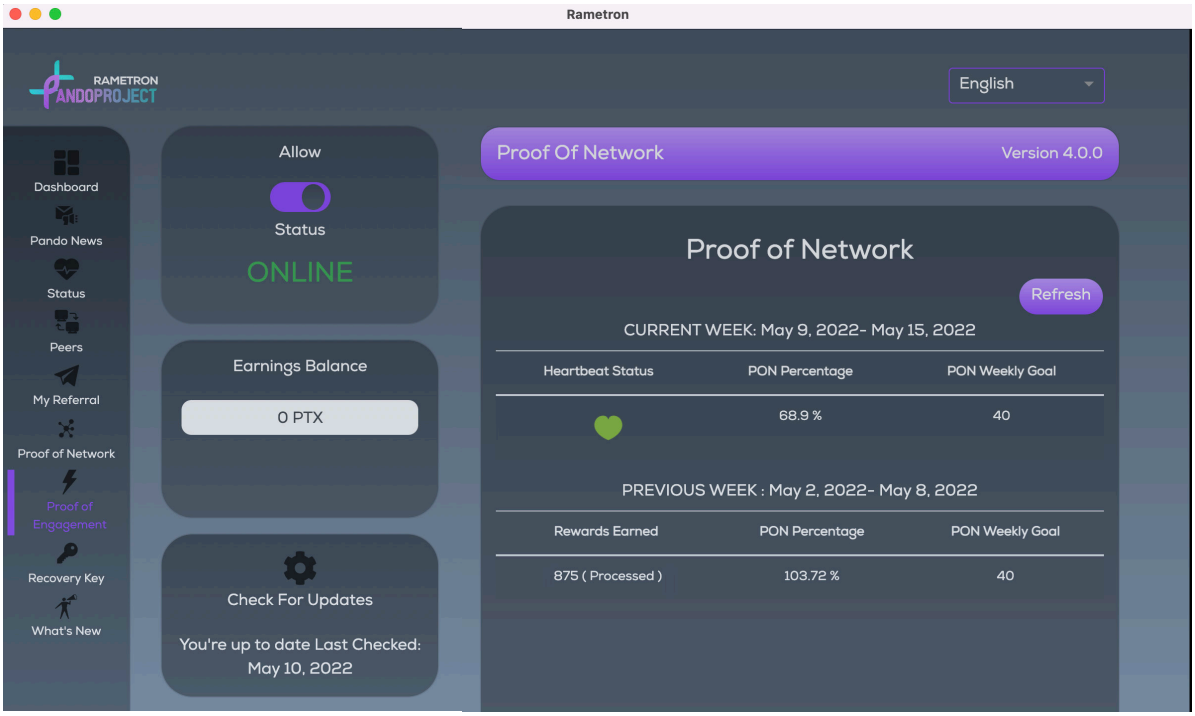
Rametron Nodes will receive 2.5% per week from the total of 10% per month of the total PTX (Pando Token) staked. The total amount of PoN rewards are based on the total hours spent within the network. Currently, the minimum total hours in a week that a Rametron Node has to contribute in the Pando Network is 40 hours. This is important for them to qualify for the maximum amount of rewards. The minimum total hours required will increase in increments of 20 hours as the Pando DApps are released quarterly until it reaches the maximum of 120 hours per week. (Please refer to the figure below)



	PoN Requirement	PANDOJO	tutorX	VIXO	SHOW.US	And Thereafter
Weekly Contribution	40 Hours	60 Hours	80 Hours	100 Hours	120 Hours	120 Hours
Quarter of the year	Q4 2021	Q2 2022	Q3 2022	Q4 2022	Q1 2024	-

Proof-of-Engagement

Proof-of-Engagement (PoE) is another special reward that will be offered to Rametron Nodes for their contribution to the PandoProject decentralized streaming platform. In addition to being present in the network and streaming content, Rametron Nodes can perform tasks such as capturing video, transcoding it, caching and relaying it. The rewards earned will be based on the volume of work done and the quality of the service. Rewards of 0.01875 PTX (Pando Token) will be given each time they successfully transcode a file to a user in 60 seconds (1 min). The longer they operate within the network, the higher their earning will be.



Proof-of-View (PoV)

A record of viewership is essential to the Pando DApps as the flow of PTX (Pando Token) is dependent on it. When a view is recorded, PTX (Pando Token) will flow from advertisers via the PandoProject Treasury to content creators. A portion will also be shared with the Rametron Nodes responsible for streaming the content. Within the context of viewership, Validators will act as unbiased nodes responsible for assuring that views have occurred. Views are reported by Rametron Nodes as well as by the viewers themselves, through the video player or browser.

Penalties

Rametron Nodes will be penalized and not receive rewards if they are consistently offline or stream poor quality.

Interoperability

The PandoProject is an open platform that will allow both centralized and decentralized application developers to leverage the infrastructure to host and stream content. Developers will pay in PTX (Pando Token) based on the utilization of the network and for services. As an example, game developers can stream in-game video content to players, host tournaments and broadcast real-time gameplay, or run their own online channels to stream content to their viewers. The PandoProject will run anywhere high-performance video content delivery is needed. APIs and SDKs enable seamless standards for integration, allowing developers to quickly deploy solutions within the platform.

Corporate Structure

Pandolab is our holding company and is comprised of innovative industry experts, experienced management and IT talent. The team cooperatively designs, develops and deploys the decentralized peer-to-peer delivery technology necessary for the Pando Network, and the DApps while overseeing Pandosoft and the PandoProject.

Pandosoft is our marketing and management company where interrelationships between Management, Country Partners, Marketing and Customer Relations for the PandoProject happen. By specializing in the soft skills necessary to serve and satisfy a global community, Pandosoft helps the Pando Community to unite and expand its wings across the globe.

PandoProject consists of the Pando Network and Pando DApps. The Pando Network is based on decentralized technology and is powered by the community. It runs on the Pando Blockchain and features three types of decentralized nodes: Zytatrons, Metatrons and Rametrons. Zytatron and Metatron Nodes act as on-chain Governance Nodes while Rametron Nodes are off-chain relay nodes that contribute resources to the decentralized streaming network. DApps will be streamed, transferred and delivered across the globe via the Pando Network and feature a myriad of applications including video streaming, decentralized messaging, virtual live concerts, education and more.

Pando DApps

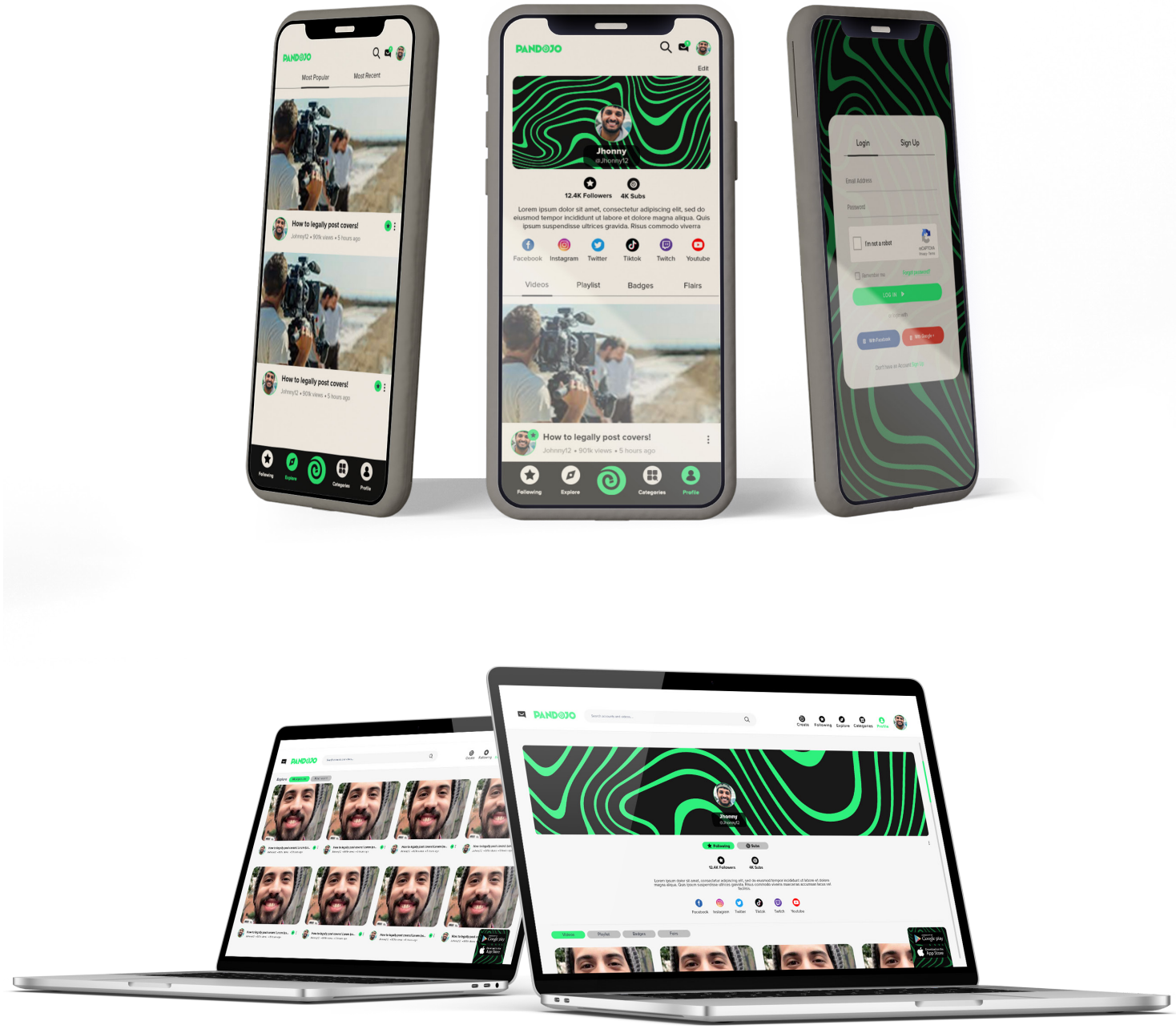
Pando DApps

PANDOJO

Pandojo serves as a video streaming platform that uses blockchain to decentralize the accessibility and ownership of online video sharing and streaming while also introducing a tokenized monetization system. It is a streaming platform that caters not only to the needs of the gaming community but also enables streaming for all occasions. It enables users to stream any events e.g. a wedding, a university graduation ceremony, a local soccer game, or virtually any moment that has a live audience.

It utilizes blockchain and cryptography for storing metadata and vital information such as number of views, likes and comments etc., ensuring no manipulation. Pandojo is designed to better provide sustainable revenue for all content creators and viewers, not just mainstream content producers. Pandojo has adopted a decentralized blockchain-based architecture, deployed on the Pando Blockchain Network, whereby it has two foundational parts.

The front end of Pandojo is a user-friendly application similar to traditional video streaming websites, ensuring easy adoption and comprehension for non-tech savvy users. The front end is integrated with Pandojo's customized implementation of the Pando Blockchain Network layer which is responsible for recording all metadata such as views recorded on a video, likes, comments, ownership access, and transactional data. For transaction processing, Pandojo uses smart contracts which are responsible for executing transactions such as micro-payments, tips, sponsoring agreements, subscription and access control, and donations. Pandojo architecture also ensures immutability and transparency.



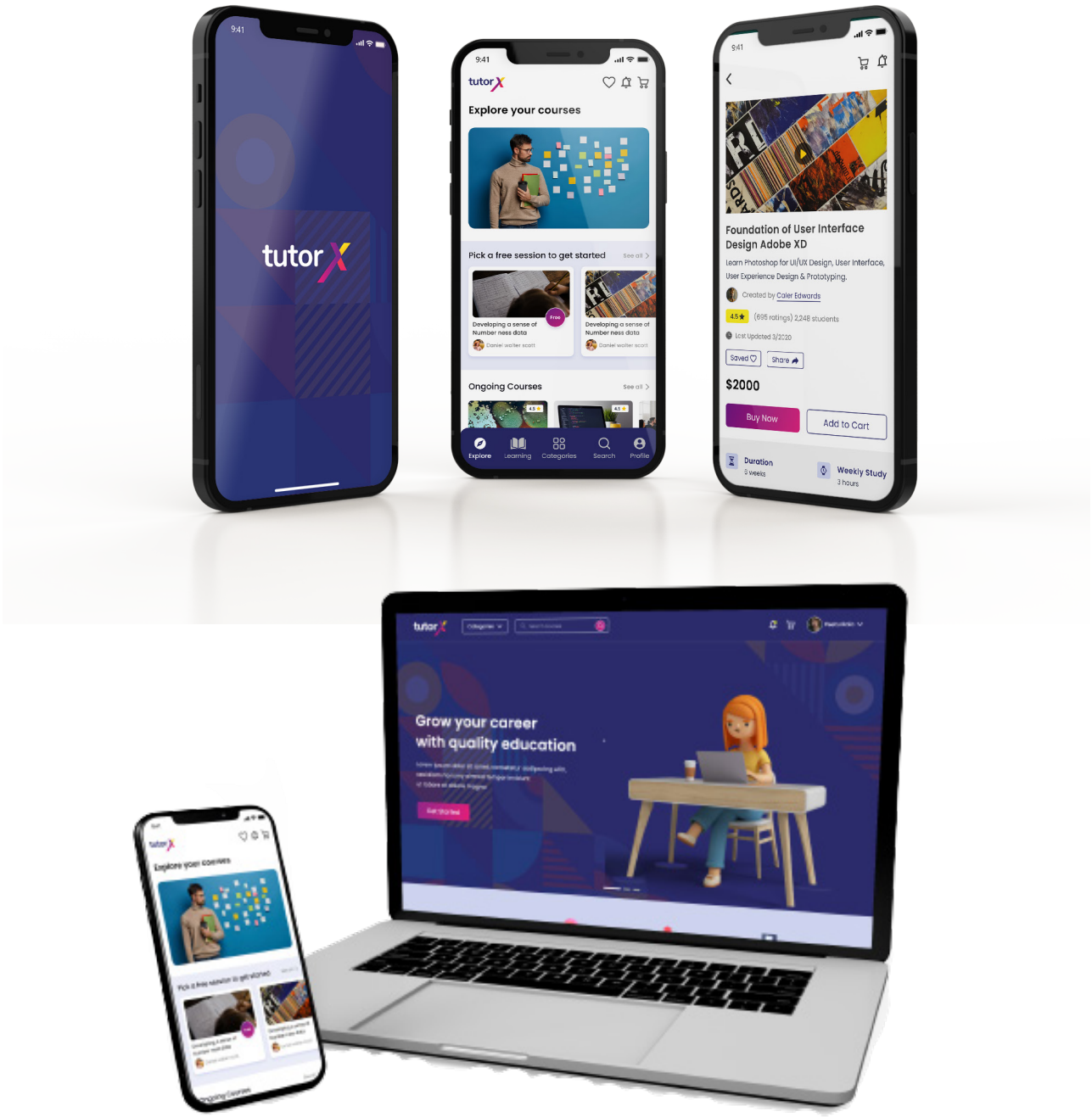
Standout Features

- Multi-Angle Cameras
- Built-in OBS
- Go Live Anytime
- Keep your Profits
- No Contracts
- Seamless Streaming
- Create Multiple Channels
- Team-Streaming
- 12 Revenue Models

TutorX is an educational platform that provides access to decentralized educational content provided by the community. Despite a variety of existing websites that offer online education and courses, one main issue is that students of junior and middle classes, particularly those who live in developing countries, still do not have access to quality curriculum available in other countries. They lack access to online classes, courses, and learning materials, or are unable to find content that is localized to their language and geography.

TutorX allows content creators in the same region the ability to produce quality educational content for their audience, alternatively allowing translation and adaptation of existing content by local teachers. The platform enables educators to connect directly with learners through a video conference and chat-based user interface, allowing a virtual classroom setting with full instruction. TutorX also supports self-paced learning in the form of digital coursework. Payments for content consumption can occur on a per class, per course, or subscription-based basis. Custom payment arrangements can be made between student and educator, including 1-to-1 tutoring sessions.

TutorX platform also resolves the issues of centralization and single point failure by deploying all user and publisher data on blockchain. Moreover, as it uses blockchain which is an immutable and transparent data structure, TutorX ensures accreditation of certificates is transparent and authentic, leaving no room for manipulation or fake certificates.

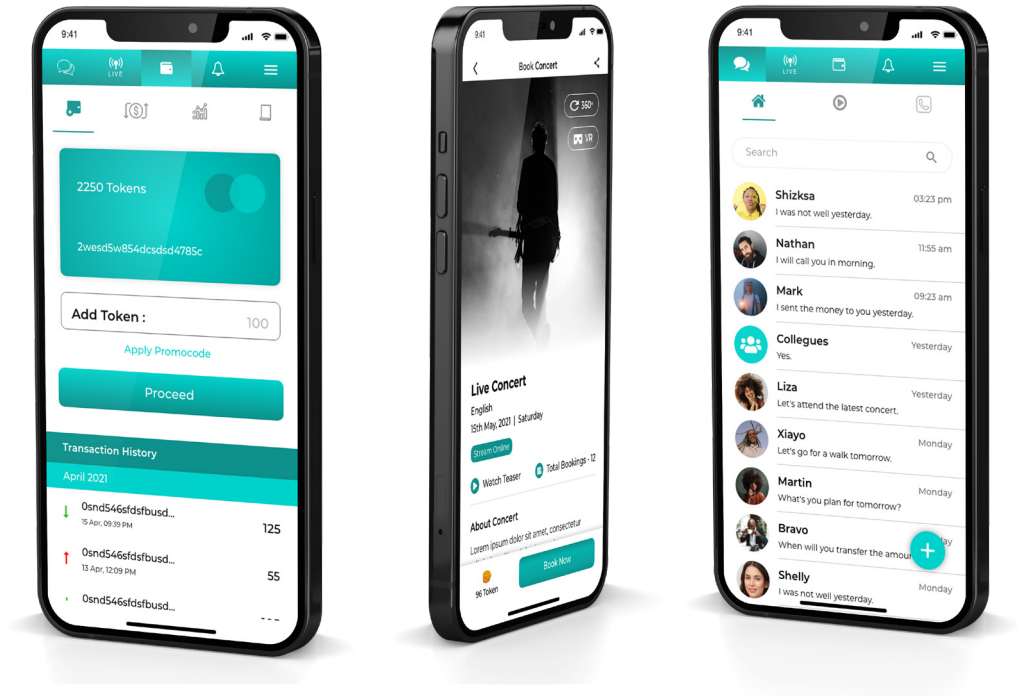


Standout Features

- Scheduling
- Global Languages
- Certified Courses
- Virtual Whiteboard
- Online Tutorials
- Quizzes and Exam Feature
- Note writing Add-ins
- Multi-Angle Camera
- Seamless Streaming

Vixo is an all-in-one decentralized sharing platform for immersive entertainment, live concerts, ticketing, messaging and so much more. It is a DApp that perfectly accommodates to the demands for streaming within the entertainment industry whereby everyone can now attend, watch and also host live concert shows in 3D mode. Artists are provided with a conveniently interactive platform to perform and host live concerts meanwhile viewers are able to simply purchase NFT tickets via our extensive ticketing system and attend immersive live concerts of their favorite artists all from the comfort of their own homes. Extraordinary virtual experiences for the users are made possible with the implementation of Augmented Reality (AR) and Virtual Reality (VR) technology in which AR provides additions of digital elements to the live view whereas VR brings forth a complete immersion experience that shuts out the physical world – allowing users to enjoy the active interaction with one another and be completely engrossed in the concerts they choose to attend.

Moreover, Vixo includes the first ever decentralized messaging framework with domains of different internal messaging protocols which allow users to discretely exchange messages with individuals or in group chats with complete privacy and security. This is achieved by deploying peer-to-peer message nodes together with IPFS supporting the Blockchain Protocol in an on-the-fly concept.



Standout Features

- Virtual Live Concert Streaming
- 360° view
- Immersive Concert
- NFT Ticketing Feature
- Decentralized Messaging
- Secure & Private Chat
- Engaging Social Media Platform
- Built-in Wallet
- Advertisement Space

ShowUs is a short clip-sharing talent platform that acts similar to Snapchat or Tiktok but in a decentralized way. While it allows creation and sharing of small video clips with editing and dubbing functionality, it also stands out from the rest by acting as a talent acquisition platform whereby anyone with a talent can create a short clip, publish it and get offers directly from recruiters, which in other words, can be termed as a combination of Tiktok and LinkedIn.

It will serve as an outlet for the playful way the community connects — professionally as well as socially. Job seekers can make videos on the app almost immediately, while recruiters and decision makers from various industries will have their dedicated accounts and can connect with the respective artists or jobseekers directly via the DApp.

With ShowUs, the vision of the Pandolab team is simply to ensure that talent is fairly compensated. In this pursuit, ShowUs adopts the concept of tokenized rewards, whereby anyone viewing can reward a content creator by donating micropayments in the form of tokens from their wallet similar to Patreon. ShowUs will also support subscription-based payments to a viewer's favorite creators.

Pandogo is Pandolab's decentralized video streaming service that relies on a curated content model to source high quality scripted entertainment similar to the likes of Amazon, and Netflix.

Pandogo relies on an operational budget to purchase or license content from other content producers and studios or create and produce its own quality content. This budget is funded from revenues earned by advertising and subscription fees or alternatively, through appreciation of the PTX (Pando Token) token's value.

Pandogo will host region specific content to drive adoption in various markets.

PTX (Pando Token)

(PTX (Pando Token)

PTX (Pando Token) is an exceptionally important part of our ecosystem. It is the governing currency used for participation in all aspects of the Pando Network of which can be bought, sold, traded, exchanged, gifted and utilized for various other purposes. PTX (Pando Token) is used to incentivize PandoProject's Node Holders as well as every content creator and viewers within our applications. When users earn PTX (Pando Token) from Rametron or the applications, it may as well be used in any of Pando DApps or exchanged for FIAT or other cryptocurrencies. It can also be purchased and utilized by advertisers, sponsors and tournament organizers. PTX (Pando Token) enables accessibility and connectivity for every user, especially when utilized in its very own ecosystem. The well-developed Pando Blockchain Platform and ecosystem can cope with a large influx of users and transactions at a time which allows for maximum scalability of PTX (Pando Token) in value and usage with its easy adoption, ecosystem utility, and scalability – making it a propitious currency.

Standout Features

Utilization

PTX's (Pando Token) bright future comes from the fact that it is a utility token which represents the access that all sorts of users have to our services which includes our nodes as well as our DApps. It is heavily utilized in the complete ecosystem of PandoProject for example in relation to our Zytatron Node, Metatron Node and Rametron Node whereby these nodes are activated with PTX (Pando Token) and their respective Node Holders earn in PTX (Pando Token) for contributing in the Pando Network. As for our DApps, PTX (Pando Token) is used to reward the community in which viewers and content creators are rewarded with PTX (Pando Token) for going live, watching or uploading videos through any of the Pando DApps. It is also used by content creators and users to charge or purchase premium content, products, merchandise, services, subscriptions, etc in all our DApps. When Node Holders or users earn through the applications or their respective nodes, PTX (Pando Token) may be used back in any of the Pando DApps or exchanged for FIAT or other cryptocurrencies.

Adoption

The utilization of PTX (Pando Token) in our own complete ecosystem proves the easy adoption of this token in any other existing platforms. Tokens are widely adopted when it is the means of payment on platforms made for specific uses as is our PTX (Pando Token) for our Node Holders and DApps. For example, Rametron enables its Node Holders to provide their resources (i.e., excess bandwidth) in exchange for PTX (Pando Token). In our DApps, advertisers use PTX (Pando Token) to pay for their ads, the publishers or content producers receive PTX (Pando Token) for hosting these ads, and the users of our platforms are rewarded with PTX (Pando Token) for viewing these ads. The user adoption of PTX (Pando Token) exhibits network effects in which essentially, the streaming platforms we provide encourages more users to join in our network.

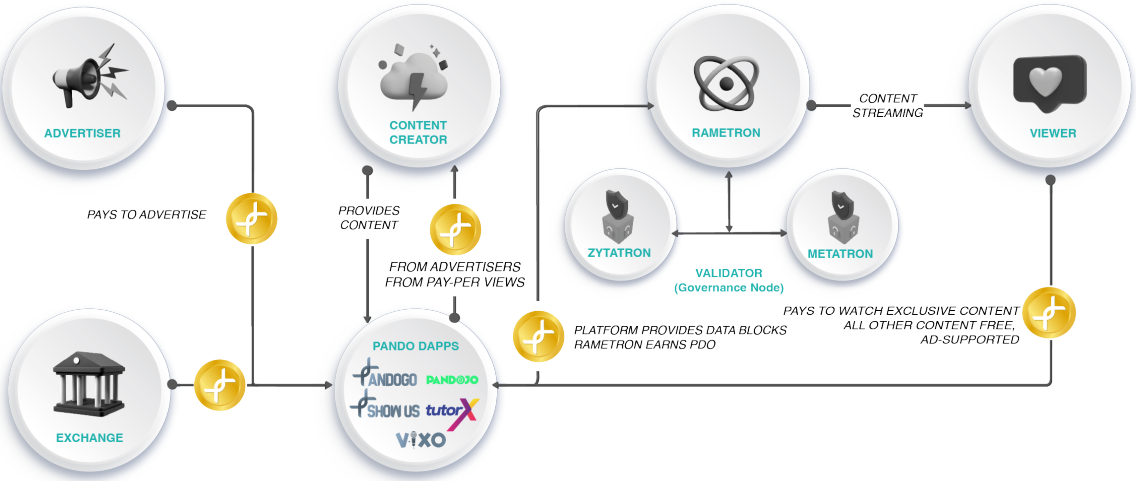
The greater the number of users in our network, the easier it will be for anyone to obtain a transaction counterparty, and the more useful and valuable our PTX (Pando Token) will become. The use case for PTX (Pando Token) continuously grows as the development of PandoProject expands towards building and hosting more DApps & applications, entering the NFT marketplace, decentralizing the entire video streaming industry with our blockchain technology and providing the last mile delivery solution with our Rametron technology for existing applications.

Horizontal Scaling

PTX (Pando Token) enables our platform to continuously welcome the addition of more nodes to the framework of the Pando Network Governance. It also allows Pandolab to increase the platform's overall throughput capacity to accommodate for the growth in users and increase in transactions within the network as the market expands. With PTX (Pando Token), our blockchain platform continues to scale in response to the demand for digital assets, offering asset custody, new trading features and functionality along with the access to an ever-growing number of digital assets within the streaming industry. By using Proof-of-Engagement (PoE) and our specialized smart contracts to trace the transmission of video segments, PTX (Pando Token) is addressing scalability challenges in blockchain and video streaming in which the smart contracts on the Pando Blockchain oversee the distribution and collecting of prizes on the platform whereas PoE is a means of providing transparency for users to earn PTX (Pando Token) in return for their participation in our network. Other application developers are also able to utilize our protocol as it supports the writing of new smart contracts based on the requirements for their apps.

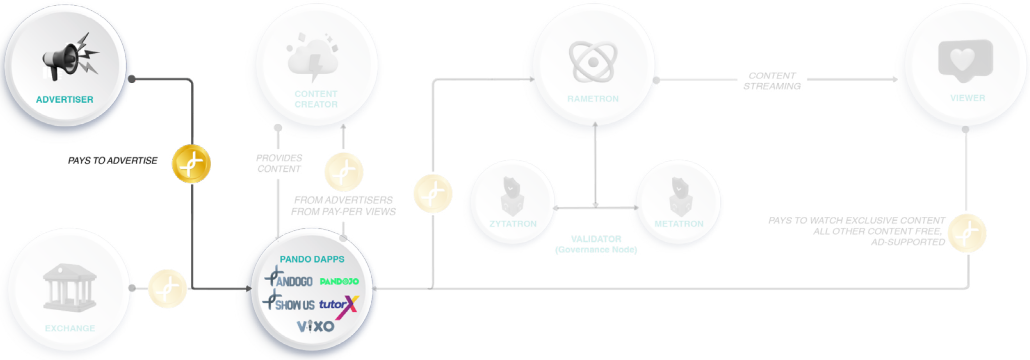
Token Topology

PandoProject Token Topology



The PandoProject Token Topology consists of five (5) important components of which revolves around PTX (Pando Token).

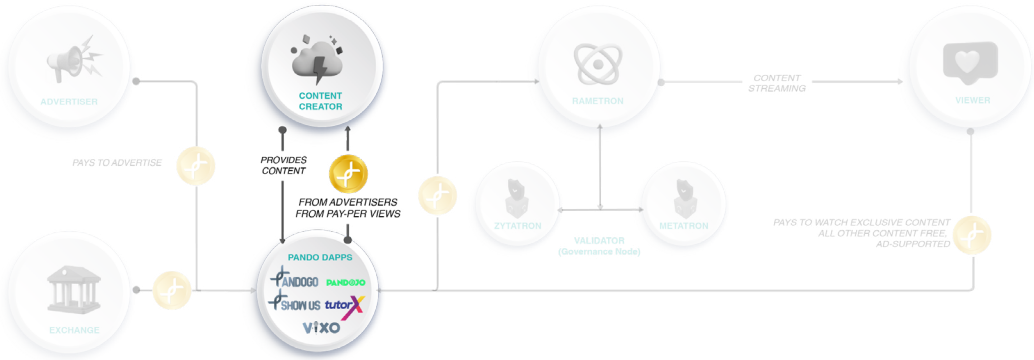
Advertiser



Advertisers are a critical part of the PandoProject Ecosystem. They pay Pandolab fees in exchange for rights to display ads to the platform's users. They can pay such fees in supported fiat or alternatively in major cryptocurrencies such as BTC and ETH. They can also pay in PTX (Pando Token), and in doing so, will receive a 10% discount on advertiser fees.

These fees are eventually converted to PTX (Pando Token) if not already paid as such, and fuel the various incentive programs within the platform.

Content Producer



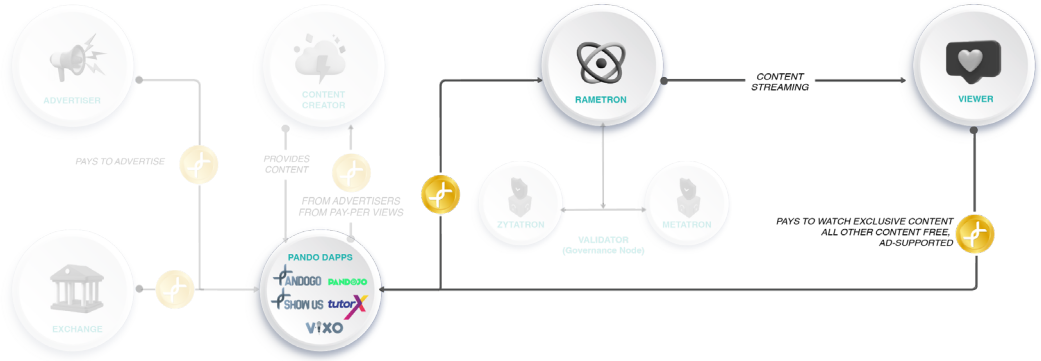
Content producers are the next component of the ecosystem and is responsible for supplying content to the platform across five product categories – Pandojo, TutorX, Vixo, ShowUs and Pandogo. In exchange for providing content they are paid in PTX (Pando Token) token for each view received, similar to other video sharing platforms.

In general, content producers are responsible for financing and developing their content. However, Pandolab may also purchase exclusive rights to such content as an upfront payment in PTX (Pando Token) in exchange for unlimited streaming.

Content producers upload their completed content to the platform for viewing.

Content Streaming

Rametron



Rametrons are resource providers on the Pando Network. They are responsible for the storage and distribution of all video and educational content on the platform. The Pando Protocol is responsible for determining which blocks of content are stored with each Rametron for an optimal viewing experience.

Rametrons fetch shared content from the Pando DApps and store it locally on their machines. They must also be connected to a sufficiently fast internet connection to stream this content directly to end-users. For providing this service, they are paid in PTX (Pando Token) based on the amount of data packets they distribute. Rametron's may be penalized for frequent outages, low uptime and poor quality of service.

Viewer

The viewer is the end-user on the platform, who consumes content using an internet connected device and access to the Pandolab website or application.

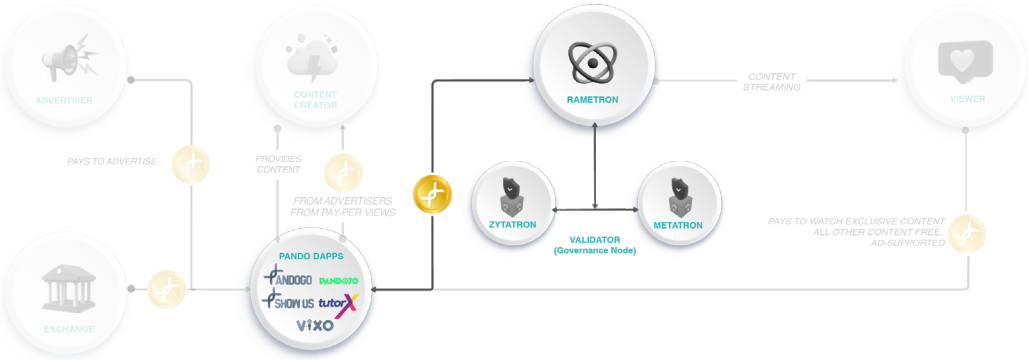
There are three methods in which viewers consume such content. The primary method involves watching ad-supported content. Viewers who watch such content earn a small incentive payment in PTX (Pando Token) in exchange for their views.

While other online video sharing platforms retain a substantial portion of advertiser revenue, Pandolab shares this revenue in the form of PTX (Pando Token) payments to viewers. The next method is to pay-per-view, such as content that is rented or paid to watch. Examples can include movie rentals, or paying for an education course or individual lesson. The final method is to pay a subscription fee as an ad-free viewing experience.

The latter two methods are paid in PTX (Pando Token) which are then split between Pandolab and the content producers.

Validator Nodes

Zytatron & Metatron



Zytatron and Metatron Nodes are the final components within the PandoProject Ecosystem. They are responsible for ensuring uptime and quality of service. These nodes will redelegate content across other Rametrons to optimize content distribution. Zytatron and Metatron Node Holders stake PTX (Pando Token) in order to gain rights to perform validation functions. This ensures that only the most economically incentivized users are performing this service.

Tokenomics

PTX (Pando Token) Total Supply

1.5B PTX (Pando Token) Total Supply (1,500,000,000)

PTX (Pando Token) Distribution

60% Mining Allocation

The remaining tokens created by the contract will be distributed based on the following:

26.16% Rametron Rewards for PON and POE contribution

10% Token Private Sale and Validators' Allocation

1.34% Referral Rewards (Airdrop)

2.5% Reserve

Initial Token Price : USD 0.20

PTX (Pando Token) Distribution (Details)

Mining Allocation

60%

900 Million

- No lockup
- Earnout as per actual mining activity

Rametron Rewards

26.16%

392.4 Million

- Lockup
- Distribution based on PoN & PoE

Token Private Sale and Validators' Allocation

10%

150 Million

- No lockup

Referral Rewards

1.34%

20.1 Million

- Lockup
- Distribution based on 10% of staking
- Airdrop

Reserve

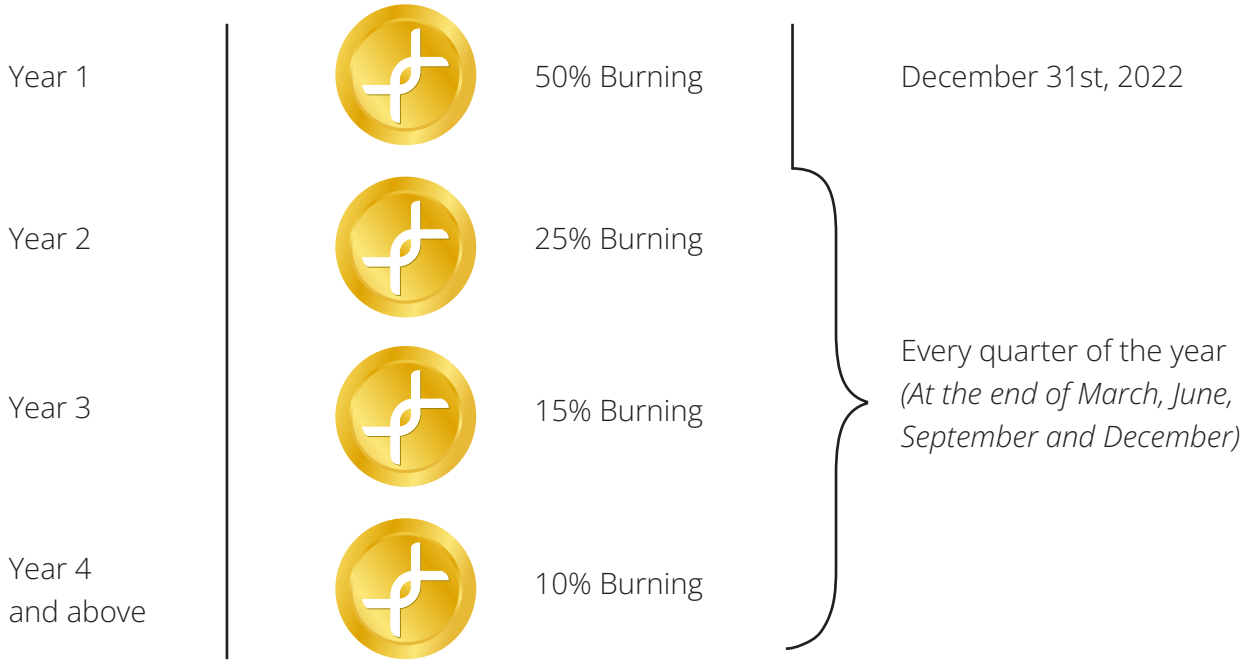
2.5%

37.5 Million

- 12-months lockup
- Equal monthly distribution over 24 months thereafter

Token Burning

Pandolab intends to share a substantial portion of its profits from advertising revenue with its ecosystem participants. As PTX (Pando Token) is paid out for usage, the value is driven by the revenue generated on the platform through a token burning mechanism. Pandolab will utilize 50% of the profits generated in the first year to buyback tokens in the secondary market and destroy them, creating scarcity for the remaining tokens. Token burning will be performed once per quarter and according to the following schedule:



Reserve

Tokens held in the reserve can be used to fund operations, technology development, marketing initiatives, consulting and legal costs, and other costs. However, they must adhere to the vesting release schedule as identified. Tokens held in the reserve can be used to pay for future team members not part of the original founder team allocation.

Non-Fungible Token (NFT)

Non-Fungible Token (NFT)

NFT Token

To incorporate the NFT business model into the ecosystem, Pandolab will be coming up with a new token that can be swapped with the PTX (Pando Token). The Pando Network powered by an open-source automatic market maker program enables users to swap NFT tokens with PTX (Pando Token) in a decentralized, non-custodial and trustless exchange. As such, PTX (Pando Token) will be further reduced, giving way to the new token that supports the NFT market.

Pandolab is developing an app that allows users to do live stream virtual concerts. While artists can create a virtual concert and sell NFT tickets, users can buy ticket to watch the live concert. Artists can issue loyalty tickets to fans using this app. This will be the first use case for the NFT token. Going forward, the Pandolab NFT marketplace is sure to open up massive opportunities for all stakeholders of the PandoProject Ecosystem.

NFT for Contents

Committed to delivering a multi-stream revenue to its stakeholders, Pandolab is continuously exploring different ways of income-generating models in this segment. Leveraging the Non-Fungible Token (NFT) and digital collectible buzz in the crypto world, Pandolab is now coming up with a Pando NFT community for PandoProject content creators. This NFT community is created with the idea of adding a new stream of income in the form of NFT drops on live content on the PandoProject NFT smart contract platform.

Pandolab is collaborating with NFT marketplaces such as OpenSea, SuperRare, Candy, Rarible to integrate NFT into the PandoProject Ecosystem. Now, content creators can create NFTs and earn huge revenues.

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Roadmap

Q3 2018 – Q4 2018

- Review on Peer-to-Peer assisted Live Streaming
- Research on multiple possible solutions for the Last Mile Delivery problems

Q1 2019 – Q2 2019

- Research on Blockchain as a Solution
- Research on Theta Protocol for Decentralized Applications (DApps)

Q3 2019 – Q2 2020

- Completion of White Paper
- Initiated the Development on Theta Blockchain Protocol Initiated the Development of the Pandojo DApp

Q3 2020 – Q2 2021

- Roll out Prototype in Developers' Environment
  - Zytatron Node
  - Metatron Node
    - Pando Explorer
    - Pando Wallet
    - Rametron
    - Pandojo DApp Development for the Website, iOS and Android

Q3 2021

- Testnet Launched
- Pando Network 1.0 Testnet
- Pando Explorer
- Pando Wallet
- Rametron
- Pandojo DApp Internal Testing

Q4 202 - Q1 2022 PANDOJO

- Mainnet 1.0 Launch
- Pandojo DApp Live Testing
- Pandojo DApp Launch

tutorX Q2 2022

- TutorX DApp Internal Testing
- TutorX DApp Launch
- Pando NFT DApp Development

Q3 2022 VIXO

- VIXO DApp Internal Testing
- VIXO Messaging DApp Launch
- Pando NFT DApp Launch
- Initiating the Development of Mainnet 2.0 Protocol

Q4 2022 - Q1 2023

- Mainnet 2.0 Launch

Q2 2023 SHOW.US

- ShowUS DApp Internal Testing
- ShowUS DApp Launch

PANDOGO Q4 2023

- Pandogo DApp Internal Testing
- Pandogo DApp Launch

Technology Partner

dlesTechnologies

Exchanger

LBANK

Disclaimer

In consideration of Pandolab Pte. Ltd. (the "Company") providing this Whitepaper to the recipient, the recipient acknowledges that the contents of this Whitepaper are confidential to the Company and the recipient agrees not to disclose, distribute or permit to be communicated verbally, directly or indirectly or otherwise, or to otherwise publish the contents of this Whitepaper except with the prior written consent of the Company. For the purposes of this acknowledgement "recipient" includes, without limitation, any principal, employee or agent of the recipient.

This Whitepaper, and any offers made within it, is solely for Participants. This Whitepaper provides a summary of the main features of the Company. It contains general advice only and has been prepared without taking into account any participant's objectives, financial situation or needs. Participants should read the Whitepaper carefully and assess whether the information is appropriate for them in respect of their objectives, financial situation and needs.

This Whitepaper does not purport to contain all the information that a prospective participant may require. In all cases, interested parties should conduct their own investigation and analysis of the Company and the data contained in this Whitepaper.

The Company does not make any representation or warranty as to the accuracy or completeness of the information contained in this Whitepaper. Furthermore, the Company shall not have any liability to the recipient or any person resulting from the reliance upon this Whitepaper in determining to make an application to apply for shares in the Company.

The Company considers that the financial and non-financial information contained in this Whitepaper has been prepared to the best of its reasonable knowledge and ability. However, recipients must rely on their own investigation of all financial information and no representations or warranties are or will be made by the Company as to the accuracy or completeness of such information.

The Company makes no representation about the underlying value of the tokens on offer. Prospective participants must make their own assessment about whether the price of the tokens being offered represents fair value.

Participant Warning

Participation in a token sale carries high risks. It is highly speculative and before participating in any project about which information is given, prospective participants are strongly advised to seek appropriate professional advice;

The information contained in this Whitepaper has been prepared by or on behalf of the Company. Pandolab Pte. Ltd. has not undertaken an independent review of the information contained in this Whitepaper.

Prominent Statements

The information contained in this Whitepaper about the proposed business opportunity is not intended to be the only information on which a decision is to be made and is not a substitute for a disclosure document, or any other notice that may be required under law. Detailed information may be needed to make a token participation decision;

Prospective participants should be aware that no established market exists for the trading of any tokens that may be offered.

Future Statements

Except for historical information, there may be matters in this Whitepaper that are forward-looking statements. Such statements are only predictions and are subject to inherent risks and uncertainty. Forward-looking statements, which are based on assumptions and estimates and describe the Company's future plans, strategies, and expectations are generally identifiable by the use of the words 'anticipate', 'will', 'believe', 'estimate', 'plan', 'expect', 'intend', 'seek', or similar expressions. Participants are cautioned not to place undue reliance on forward-looking statements. By its nature, forward-looking information involves numerous assumptions, inherent risks and uncertainties both general and specific that contribute to the possibility those predictions, forecasts, projections and other forward-looking statements will not occur. Those risks and uncertainties include factors and risks specific to the industry in which the Company operates as well as general economic conditions. Actual performance or events may be materially different from those expressed or implied in those statements.

All forward-looking statements attributable to the Company or persons acting on behalf of the Company are expressly qualified in their entirety by the cautionary statements in this section.

Except as expressly required by law, the Company undertakes no obligation to publicly update or revise any forward-looking statements provided in this Whitepaper whether as a result of new information, future events or otherwise, or the risks affecting this information.

None of the Company, its officers or any person named in this Whitepaper with their consent, or any person involved in the preparation of this Whitepaper, makes any representation or warranty (express or implied) as to the accuracy or likelihood of fulfilment of any forward-looking statement except to the extent required by law. The forward-looking statements reflect the views held only as at the date of this Whitepaper.

Value Risks

Tokens issued by Pandolab Pte. Ltd. may drop substantially in value, or may remain illiquid for long periods of time or indefinitely. Pandolab Pte. Ltd. cannot guarantee an active secondary market for the exchange of tokens purchased in the token sale. Not all disclosures or statements are being made in this disclaimer section. Participants should review the token sale agreement in its entirety and seek the professional advice of legal counsel and investment professionals.

PTX (Pando Token) may change in value based on a number of factors that are outside our control. There is no guarantee or expectation that PTX (Pando Token) will increase in value, provide a return, or have sufficient adoption and liquidity on exchanges. Owning these tokens does not constitute a share of equity or ownership in the company. The token economy is new and exciting. Regulatory circumstances may require that token mechanics be changed or altered.

PTX (Pando Token) do not have any rights, uses, purpose, attributes, functionalities or features, express or implied, including, without limitation, any uses, purpose, attributes, functionalities or features on the Pandolab Pte. Ltd. platform. Company does not guarantee and is not representing in any way to buyer that the PTX (Pando Token) have any rights, uses, purpose, attributes, functionalities or features. PTX (Pando Token) may have no value. The company reserves the right to refuse or cancel PTX (Pando Token) purchase requests at any time at its sole discretion.

Not a Security

It is important to note that any tokens issued on Pandolab Pte. Ltd.'s platform are not intended to be securities, and this document is not a prospectus, offering document or a solicitation for investment in a share or equity offering. Tokens issued on our platform as referenced in this document do not confer any type of ownership or debt within Pandolab Pte. Ltd.'s ecosystem. Tokens currently trading or issued in the future are non-refundable. Pandolab Pte. Ltd. will not guarantee any value, secondary market, or commitments to the value of such tokens. Buyer and owners shall participate in each economy at their sole risk.

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