The POP Network

https://PopChest.com

An open platform for video monetization

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WORKING DRAFT

**** WORK IN PROGRESS - SUBJECT TO CHANGE ****

Abstract

The POP Network is a decentralized approach to monetized video distribution using direct micropayments and token incentives instead of relying on advertising and paid subscriptions. The result is a system where Creators form direct relationships with their consumers, are liberated creatively, and get economically rewarded in a fair, transparent manner. This new system gives Viewers more choice by making long-tail content economically viable, allows deeper connections with Creators to form, and ensures the people making up the network share in the tokenized value they create rather than having that value funneled to massive, centralized corporations. In the same way Bitcoin, peer-to-peer electronic cash, forces a profound re-examination of the modern financial system, The POP Network is a tectonic shift in how humans create, distribute, and consume media. The POP Network is not simply competition to existing models but rather an entirely new ecosystem.

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Acknowledgements

Thank you for your contributions towards making human exchange more just. -*vb*

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Introduction

History of Video Monetization

Video is rapidly becoming the dominant form of media traversing the Internet. With the rise of services like Netflix, YouTube, and Hulu, streaming video is expected to account for 82% of all Internet traffic[1] by 2021. Emerging social platforms such as Twitter, Facebook, and Instagram could push that already astounding rate even higher.

As revolutionary as some of these platforms have been, monetization models are mired in legacy approaches left over from previous generations. Video distribution is primarily dominated by two methods: advertising and subscriptions.

The pre, mid, and post-roll advertisements you see on YouTube are simply a rehash of the television commercial format. That in itself is a knock-off of the old radio sponsorship model which goes all the way back to 1922[2]. So, the principle ad-supported method which will drive YouTube to a projected $27 billion[3] in revenue in the coming years is based on a model nearly 100 years old.

Subscription video is old school as well. The first paid cable television service debuted in 1948[4] as a means to offer over-the-air broadcast signals to rural communities out of range of urban broadcast sources. These first subscribers paid $3 a month, the equivalent of $30.95 in 2017 dollars, to access multiple television channels.

About 60 years later, Netflix[5] tweaked this format and found great success delivering movies and television over the Internet. Over the course of many years, others such as HBO and Showtime followed. Now, it is common for major television networks and movie studios to have their own standalone online video subscription service while others such as Amazon Instant Video and Apple TV attempt to serve as aggregators for subscription services. As traditional over-the-air and cable broadcasts dwindle, these IP-based forms of video consumption are in effect the new television. All TV will be online video.

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[1] https://www.cisco.com/c/en/us/solutions/service-provider/visual-networking-index-vni/index.html
[2] https://aehistory.wordpress.com/1920/11/02/1920-first-commercial-radio-station-kdka/
[3] http://www.tubefilter.com/2016/04/15/youtube-estimated-revenues-27-billion-2020/
[4] https://www.ncta.com/who-we-are/our-story
[5] http://www.nytimes.com/2007/01/16/technology/16netflix.html?mcubz=1

Pros/Cons of Legacy Systems

Ad-supported and subscription video services have endured because they offer many benefits to both viewers and publishers.

For publishers, the obvious benefit of both systems is the predictable revenue which funds the creation of videos.

Many viewers willing to watch commercials alongside online video perceive the experience as getting content for "free" in exchange for their time and attention. Others may see the ads providing useful information about a previously unknown product or service. Overall, ad-supported content allows for an extremely low barrier to consumption which disproportionately benefits those with minimal discretionary income.

Subscriptions are generally perceived as "hassle-free" because once a fee is paid to use the platform, there is not much thought given to operating the service. Because these fees tend to subsidize the creation of less popular channels, subscriptions tend to offer a relatively high-degree of varied content. And, if media is consumed at an above-average rate, subscriptions can offer great value per dollar/hour spent.

But, these legacy systems do come with trade-offs.

With "free" ad-supported content, the viewer effectively becomes the product. This means the audience is made to forfeit its personal information while the host site sells them to the highest paying advertiser. Viewers then sacrifice their attention watching commercials in exchange for the right to see the actual content.

This creates many distorted incentives. Content creators are forced to push for bigger and bigger audiences with least-common-denominator material to make mass market advertising economics work. In today's YouTube frenzy, this is literally pushing content creators to death[6] in pursuit of spectacle.

And, for viewers, watching ads truly sucks your life away. The average American spends four years[7] just viewing commercials. The societal impact of such human waste is immeasurable. It harkens back to the days when doctors would smoke cigarettes while seeing patients. At some point, when the facts are clear, such behavior is grossly irresponsible. The same is true with ads.

[6] https://www.nbcnews.com/news/us-news/teen-youtuber-shoots-kills-boyfriend-video-stunt-n777851
[7] https://www.streamingobserver.com/you-literally-waste-years-of-your-life-watching-commercials/

Video subscriptions have many flaws as well. The fact that you get a bill even if you watch absolutely nothing is borderline predatory, particularly when it is coupled with a high level of difficulty to cancel the subscription. Even if you do watch a few things, your money is effectively subsidizing the creation of material you don't watch. Because of this relatively big monthly charge the maximum services any one person can commit to is limited, thus reducing consumer choice and creative diversity.

Changing the Status Quo

What if video distribution followed the macro pattern of society as we move to everything on-demand and a la carte? Uber. Airbnb. Amazon.

The POP Network proposes an alternative monetization method centered around peer-to-peer micropayments and token incentives to encourage creation, sharing, and consumption of video driven by direct relationships between Creator and Viewer.

PopChest.com, built by PopChest, Inc., is the first implementation on The POP Network. As the Satoshi Client[8] is to Bitcoin, PopChest is to The POP Network. Whereas PopChest is a gentle, curated introduction to the concept of video distribution unburdened by advertising or subscriptions, The POP Network is an open platform for monetizing video in the same way that Bitcoin is an open platform for transferring value. Anyone can participate on their own terms without third-party approval or interference.

Rather than surrendering to predictable content constructed and reconstructed for the purpose of mass manipulation perpetuated by legacy advertising and subscription regimes, the new economy of The POP Network will allow infinite niche communities centered around common interests to arise.

With the rapid adoption of ad-blockers and native ad-free browsers like Brave[9], the public has clearly shown its disdain for the commercial web status quo. And, as viewership of highly watched shows like Game of Thrones[10] continue to break piracy records[11], audiences are clamoring for alternatives to onerous terms imposed by subscriptions.

[8] https://en.bitcoin.it/wiki/Original_Bitcoin_client
[9] https://brave.com/
[10] http://variety.com/2017/tv/ratings/game-of-thrones-season-7-finale-ratings-2-1202540601/
[11] http://fortune.com/2017/07/21/game-of-thrones-premiere-pirated/

In legacy parlance, one element of The POP Network is TVOD/EST: Transactional Video On Demand, Electronic Sell Through. TVOD/EST is where a transactional fee is paid for unlimited access to a specifically requested video. In comparison, YouTube can be seen as AVOD (advertising-supported video on demand) while Netflix is SVOD (subscription video on demand).

As for existing TVOD/EST, the dominant players are iTunes and Amazon Instant Video. Neither platform has shown much enduring interest[12] in fairly monetizing the short-form video content which dominates the web. Credit card fees for such low-value material make it difficult for this market to even exist let alone be sustainable. With the advent of blockchain technology, it is now possible to effectively monetize on a true micropayment level and create an entirely new market that has never been properly served.

And, even for lengthier pieces, the months-long process to get accepted on platforms like Netflix is lined with gatekeepers, middlemen, and can be very expensive[13]. Independents are typically shut out in favor of big studio players. This powerful market signal disincentivizes much original creativity and insures a march to rehashed themes, sequels, and general middle-of-the-road fare.

The POP Token

In addition to direct micropayments offering non-speculative monetary inflow, by introducing The POP Token (ERC-20) on the network, the community can align incentives and coordinate behavior to keep The POP Network vibrant and healthy.

The fundamental purpose of The POP Token is to provide all the network participants with access, power, and status: power to publish videos, access to watch videos, and status reflecting contributions to the network. In its simplest form, The POP Token can be acquired by direct purchase. But the true power of the token lies in its ability to be gifted from origin to those most responsible for ensuring the platform's success. Rather than buying into the network, it's also possible to *earn* your way.

Are you curating content that is drawing new Viewers onto The POP Network? How about encoding and storing video for the network? Maybe you are providing sustained direct support to a particular Creator? These are verifiable actions the network would value and reward with tokens accordingly. In turn, those tokens could be used to gain more access, power, and status on The POP Network leading to a virtuous cycle.

[12] http://tubularinsights.com/amazon-taking-on-youtube-for-the-short-form-video-market/
[13] http://nofilmschool.com/2016/02/whats-aggregator-and-why-do-you-need-one-release-your-film-online

Long Tail Economics

Given the ability to monetize with micropayments and align incentives with a native token, videos that once needed mass market appeal to succeed can now exist with support of a passionate yet much smaller audience.

The dream of "The Long Tail" is here.

"The Long Tail" is a concept crystallized by Chris Anderson[14], then editor-in-chief of Wired, in 2004. In Mr. Anderson's own words:

> *The theory of the Long Tail is that our culture and economy is increasingly shifting away from a focus on a relatively small number of "hits" (mainstream products and markets) at the head of the demand curve and toward a huge number of niches in the tail. As the costs of production and distribution fall, especially online, there is now less need to lump products and consumers into one-size-fits-all containers. In an era without the constraints of physical shelf space and other bottlenecks of distribution, narrowly-targeted goods and services can be as economically attractive as mainstream fare.*

Disassociating mass market commercial dynamics from content production and distribution has the capacity to fundamentally transform what visuals get created and consumed on the web. With this, the industrial capacity to create global cultural consciousness is ripped from the hands of the few and becomes decentralized. As the Internet moves from a primarily text-based medium to a video-based medium, the impact of this transition cannot be overstated.

By introducing micropayments and token incentives to video monetization, The POP Network is tapping into the same insight CEO Reed Hastings of Netflix and CEO Jeff Bezos of Amazon have made the driving force within their respective companies: The Human Race has entered into the era of mass customization. The difference is that instead of the power of niche monetization resting in the hands of global corporate behemoths, The POP Network aims to democratize access.

In a sense, The POP Network is the spiritual successor to the century-old idea behind the original United Artists[15]. UA was an attempt way back in 1919 by filmmaking legends Charlie Chaplin, Mary Pickford, Douglas Fairbanks, and D.W. Griffith to put the means of video distribution into

[14] https://www.wired.com/2004/10/tail/
[15] https://www.theguardian.com/film/2008/feb/23/film

the hands of Creators rather than be subjected to the whims and manipulation of commercial studios. They foresaw the inevitable problems which would arise if the power of what people saw and heard en masse was centralized to a few sources.

Guiding Principles

For The POP Network to be successful and differentiate itself from existing platforms, it must make creative and financial freedom its key differentiator.

Yet, with the newfound abilities brought by blockchain and various decentralization technologies, it's important for The POP Network to NOT quickly adopt technology simply for the sake of having the *coolest* tech stack. Gall's Law[16] warns us that "a complex system that works is invariably found to have evolved from a simple system that worked."

We heed the lessons of Hong Kong's iTV, the first widely deployed video streaming service that beat Netflix to market by nearly a decade[17]. Never heard of iTV? Exactly! iTV built a very ambitious technology stack which collapsed under the weight of its own complexity. History is littered with projects that fetishize tech over usability and end up as a footnote in the success story of the ultimate victor.

The POP Network is transforming existing TVOD/EST by monetizing an underserved segment of the market and decentralizing the monetization process using various blockchain and peer-to-peer technologies as they become viable. With that system as our solid base and, when the community is ready, only then will we expand network capacity by diving further into advanced tech.

Along the way, The POP Network commits to:

1. Use The POP Token to create an economic incentive for disparate groups to work together in collective benefit for the network
2. Allow anyone that demonstrates willingness to make a positive contribution to participate on the network, as determined by the community not by a central arbiter
3. Focus on network effects which make The POP Network defensible and enduring

Although it is practically impossible to create a multifaceted system like The POP Network to be entirely decentralized from the beginning, our goal is to incrementally disperse major decision

[16] http://52weeksofux.com/post/743059572/galls-law
[17] http://tedium.co/2017/01/05/first-streaming-service-itv-hong-kong/

making to network participants. At its zenith, The POP Network will be owned by no one, controlled by no one, and the property of all.

The Ultimate Application

The Internet has fundamentally changed how humans form "community". Until relatively recently, community has been limited by geography. That is no longer true with the creation of "Virtual Communities"[18], as techno-theorist Howard Rheingold dubbed them in the early days of the World Wide Web.

As Bitcoin democratized access to the global financial system, The POP Network democratizes access to the global media market by making it economically viable to directly connect content Creators with passionate Viewers without being limited by geography.

Imagine you are an American living in Los Angeles and you wanted to watch a dystopian Korean science fiction movie. First off, finding a dystopian Korean science fiction movie on any of the big streaming services would be extremely difficult because, one, there aren't that many to begin with and, two, licensing niche content with traditional movie distributors typically is not very lucrative.

This is the chicken-and-egg problem. Why even bother creating something where the potential outlets are extremely limited? But, as the Internet has proven time and time again, the ability to organize massive virtual communities around niche activity is limitless.

With The POP Network functioning as the decentralized monetization and distribution mechanism, content that would otherwise never be created now has a pathway to sustainability.

Just as the introduction of e-commerce and the ability to open markets for niche operators propelled an unimaginable retail revolution[19], putting any creative individual on the same economic playing field as major movie studios and television networks while not being bound to centralized distributors has the same disruptive potential.

What Amazon did to open retail through empowering niche players, The POP Network is doing to liberate the global video streaming marketplace.

[18] http://www.rheingold.com/vc/book/intro.html
[19] https://fred.stlouisfed.org/series/ECOMPCTSA

Architecture

The goal of The POP Network is to create an open video monetization network upon which Creators can distribute without constraint, Developers can freely build, and Viewers can openly enjoy. Foundational components of the network enable token transfers, video encoding, storage and delivery of content, searchable metadata, and a token rewards engine.

It is critical to note that The POP Network would not be well served by trying to reinvent every component from scratch. There are many proven decentralization technologies that can meet the needs of the platform today. In an effort to bring the network to life as quickly as possible, we are adopting existing schemes as needed.

Ethereum Payment Channels

The POP Token is the native medium of exchange on The POP Network. Tokens are sent to and from Creators, Viewers, and the network itself. To facilitate a massive amount of high-frequency transactions, an Ethereum Payment Channel implementation becomes vital.

Once a user deposits into a Payment Channel[20], unlimited payments can be sent from that account until the channel is closed. Transaction fees and interaction with the underlying blockchain only occur at the start and end of the channel thus making such a system extremely efficient for micropayments.

PopChest, Inc. is actively contributing to development of the Vynos wallet by Machinomy[21] to implement on The POP Network. Machinomy is an open-source Node.js library for micropayments in any ERC-20 token over HTTP.

In-Browser

Since the Vynos wallet is built in JavaScript it can function on a wide range of products built for video consumption, from smart TVs to mobile phones, and is not crippled by the necessity to download a browser plugin or install single-purpose software.

EIP-721

Non-fungible Ethereum tokens[22] play a major role in the evolution of The POP Network. Creators use POP Tokens to fund the minting of unique digital assets. These sub-tokens can be

[20] https://en.bitcoin.it/wiki/Payment_channels
[21] https://machinomy.com/
[22] https://github.com/ethereum/EIPs/blob/master/EIPS/eip-721.md

used as rare collectibles, exchanged for real-world items and experiences, or a range of other applications.

EIP-86

With the upcoming Ethereum Improvement Proposal #86[23], the ability to prefund smart contracts is a major step forward in usability. Now, new users will not have to come to the network with cryptocurrency in hand. Much like the existing customer acquisition model during the PopChest.com Beta, entrants simply join the community and are rewarded with tokens to use on the site. Additional programmatic conditions constrain usage of these newly minted tokens to prevent bleeding by malicious actors and ensure they are used to grow the network.

Death of the Paywall

Once users have a smart contract-enabled wallet, the door is open to infinite possibilities. The death of the paywall is here. Automated communication takes place between The POP Network and the in-browser wallet which, with conditional acceptance, eliminates the need for direct user input prior to watching monetized videos.

The POP Core

The backbone of The POP Network is The POP Core. These nodes are effectively custom BitTorrent clients with an internal Ethereum wallet. Cores are tasked with encoding video for the network using free and open source FFmpeg[24] and act as the peer-to-peer transfer mechanism between distributed video storage and player clients. The POP Cores keep track of video metadata while also providing an interface for decentralized governance.

Because of the critical nature of The POP Core in relation to The POP Network, node operators must stake POP Tokens to perform certain tasks and receive the equivalent of network mining rewards.

Encoding

For content to be served with optimal quality to multiple devices and bandwidth conditions, it is common practice to encode videos into different formats with varying bitrates. Most modern computers are capable of encoding web-standard HTML5 video at a reasonable speed.

[23] https://github.com/ethereum/EIPs/issues/86
[24] https://www.ffmpeg.org/

Using a local POP Core, encoding of video client-side results in an immediate token reward for the publisher. Since POP Tokens must be burned to upload video to the network, self-encoding via local node provides a simple gateway for Creators to obtain their first POPs.

Using distributed nodes, a Creator sends source video to the network. This large master file can be analyzed, split, encoded, then rejoined with token rewards distributed to every participant.

Storage and Delivery

The POP Network uses a decentralized storage and distribution system based on BitTorrent and WebTorrent.

BitTorrent[25] is a peer-to-peer file transfer protocol for sharing large amounts of data in which each part of a file downloaded by a user is transferred to other users.

WebTorrent[26] is a streaming torrent client that works in the browser. It is written completely in JavaScript and uses WebRTC for peer-to-peer transport whenever possible. No browser plugins, extensions, or installs are required to use WebTorrent.

As video propagates throughout the network, nodes start serving packets they possess in unison with other nodes to provide a fast, seamless viewing experience. In-browser clients then act as peer-to-peer streamers themselves, thus increasing capacity and balancing the load. All participants receive POP Token rewards for serving the network.

Using a decentralized distribution protocol provides censorship resistance from central authorities which might prevent users from participating in the network. This also constitutes a natural way of shifting both the cost and benefits of running the platform to the people actually engaging the service.

Metadata

Every video has associated metadata which describes how to make it searchable, such as: title, description, author, tags, and pointers to other objects such as subtitle tracks and thumbnails. This metadata can be freely read, creating an open search engine.

The metadata is a standard structured format which is used by clients to get relevant data to play videos, display related information, and by any other party to index and provide search

[25] https://en.wikipedia.org/wiki/BitTorrent
[26] https://webtorrent.io/

functionality. Metadata is saved as a content-addressed hash link and stored as a reference in POP Cores.

The decentralized database also holds an account or contract address where to receive payments. This allows a range of payment implementations, from simple one-to-one contracts to extremely complex mechanisms distributing proceeds to multiple rightholders.

We foresee multiple independent providers segmenting this information, curating content for their own web domain, deciding on policies about the type of content they want to show, and creating a multitude of value-added services.

Token Rewards Engine

Entering the Network

There are two ways Viewers and Creators can enter The POP Network: buy-in or earn-in.

Buying into the network is straightforward. POP Tokens are acquired through multiple payment methods. Notably, Creators must burn the token to publish on The POP Network thus establishing innate demand. Viewers wanting to support a Creator exchange the token for permission to watch a video. This non-speculative inflow is the base level support for The POP Network.

At the genesis of The POP Network, a predefined amount of POPs are created to serve as The Rewards Pool. These tokens are dedicated to incentivizing content creation, monetizing user actions, and rewarding those responsible for growing The POP Network.

Core Token Actions

Power

The POP Network can not exist without published videos. Videos cannot be published to the network without The POP Token. The POP Token gives Creators the power to publish to The POP Network.

A Creator wishing to take advantage of all the benefits of publishing to The POP Network must burn a small amount of POPs as admission. This fee ensures every participant has skin-in-the-game, functions as spam protection, and discourages potential attackers from flooding the network with low quality content.

POP Tokens are also needed by POP Cores as collateral for executing the essential functions on The POP Network. The token gives nodes the power to process information for the network and vote on governance issues. Misbehaving nodes are punished by losing their staked tokens.

Access

The POP Network is worthless without Viewers consuming monetized videos. The POP Token provides the means of exchange from Viewer to the video Creator.

The ability of The POP Network to process true micropayments through Ethereum Payment Channels opens the door to transactions that were simply not possible before blockchain technology.

Viewers can acquire POP Tokens and gain access to videos in many different ways such as direct purchase, exchanging attention, or providing network support. As the network evolves, possessing a certain amount of POPs will enable unlimited video views for a predefined period of time.

Status

As a way to provide recognition for contributions deemed valuable by the community, The POP Network mints and distributes special ERC-721 tokens, or Badges, as rewards.

Badges not only confer status upon both Viewers and Creators but they also have the capacity to empower the token holder with privileges, such as first-access to exclusive content. This type of use, effectively, allows Creators to fund future projects based on support directly from enthusiastic fans. Additional use cases include entry to offline events, exchange for tangible goods, and much more.

Since Badges are tracked on the blockchain, each token holder has cryptographic proof of possession with undisputed chain of custody.

Governance

To fight the rise of fraud and harmful content which will inevitably encroach upon The POP Network, a governance model which empowers nodes that stake The POP Token shall be adopted. By incentivizing token holders to make decisions about the long-term health of the network, we trust self-interest and cryptoeconomic dynamics will take hold and provide a strong protector of The POP Network.

Identity

Establishing personal identity is not a requirement to participate in The POP Network. However, a cryptographic identity built from multiple sources and maintained faithfully over time adds great utility for its possessor. Strong identity signals the network that each user generated action should be weighed more than a transient identity. Since identity is stored but not owned by The POP Network, users are in complete control of their data.

Distributing Rewards

Proof of Social Value

Proof of Social Value is the principal determinant in how The Rewards Pool is distributed. Fundamentally, it is an automated voting mechanism based on user actions which assesses the value of content and distributes tokens accordingly.

The idea is every user action on the network inherently has minimal value. Instead, the action derives its value from how beneficial it is to other users. For example, publishing a video may give a limited reward to its Creator whereas publishing a video that Viewers contribute micropayments towards would give a much greater POP Token payout. This method along with a diminishing time-weight reward ratio guards against automated activity intended to defraud the network of POPs.

These rewards also encourage organic growth for publishers of long-tail content. Tokens for actions such as filling detailed metadata incentivizes building video libraries within The POP Network even if there is not a large initial audience.

Identity plays a critical role in rewards distribution. A swarm of transient identities with no payment history has much less relative weight than established identities with a clear record of supporting the network.

Time is the best ally to minimize abuse in the distribution system. Although real-time payments are possible, a short buffer period is helpful to insure risk and convenience are balanced. Controversial distributions can be voted on by staking nodes before automation resumes.

The POP Score

Building the entire network will understandably take a considerable amount of time. Until the Token Rewards Engine is ready, an intermediate marker known as The POP Score will measure the relative positive contribution of each user.

As The POP Network grows, the score uses a predefined ratio which translates into POP Tokens. This incentivizes early adopters while strengthening the network, as attackers will surely try to trick the system and game their POP Score. These attacks can be identified, repelled, and neutralized before POP Tokens are at risk.

Constructive Collusion

One of the most important developments to come from the proliferation of blockchain technology is the spread of cryptographic tokens as a mechanism for motivating collective behavior towards common goals. The act of possessing a token demonstrates support for the ideals behind the network and direct interest in its success.

The need for The POP Network to achieve sustainability through coordinated action by self-interested POP Token holders is critical to long-term success.

At first, possessing the token provides little monetary or functional value. But once enough people join the network by owning tokens, an organic army backing the token is born. With enough activity by this group, outsiders begin to take notice. As The POP Network deploys the POP Token gains utility. Newcomers either participate in the network and earn tokens for their work or simply buy tokens on the open market.

Increasing demand drives the token price thus rewarding early participants for their foundational efforts and encourages more activity by these veterans. Success stories function as a beacon which attracts more new entrants. And with that, a closed economy built upon coordinated action for the purpose of increasing collective value is born.

Whereas many blockchain projects simply hope for network effects to drive token value, The POP Network has the added strength of non-speculative inflow (micropayments) backstopping the system.

Advanced Smart Contracts

One of the more menacing challenges for content creators is to collect what is truthfully owed for one's work. The practice of purposely inflating or obscuring costs so as to defraud partners is referred to as “Hollywood Accounting”[27].

Not only does having a transparent blockchain ledger allow The POP Network to put an end to this practice, using smart contracts we can insure every interested party receives rightful payments with cryptographic certainty. Payment can go to a master account then be automatically routed to multiple accounts.

Additionally, smart contracts can serve as a crowdfunding mechanism for channel communities to proactively support Creators they love. This ensures that audiences have a much greater say in what content gets generated rather than be passive recipients impacted by decisions made by opaque and distant entities.

Token Generation

Proof of Participation

For The POP Network to endure, it must be sustained by POP Token holders actively finding utility and value in the token. The initial distribution of POPs is engineered to ensure ownership diversity amongst those actively participating in the growth of the network.

The Rewards Pool helps kickstart the network by reserving a segment of POPs to incentivize Creators. As Creators attract an audience, new Viewers are instantly rewarded with a small amount of POPs to effectively make their first experience with the network have no cost.

Using smart contracts, these funds are restricted to conditional release defined by what the network determines to be beneficial behavior. If the Viewer executes a positive action then a POP reward is issued, thus encouraging further activity. The purpose is to provide newcomers with zero cost barriers to entry, to create sustained engagement from first use, and to embed the behavior of circulating POPs as part of the network culture.

[27] https://en.wikipedia.org/wiki/Hollywood_accounting

This *Proof of Participation* is meant to codify the ideal “you receive by giving”. Those that give the most time, energy, and effort to grow The POP Network are rewarded with POPs at a greater rate than indifferent participants.

Private presale and Public sale

It is in the interest of the network to have a broad range of POP Token holders from the beginning. Without this, creating a truly decentralized governance model to run The POP Network is impossible.

Given the intense interest in token events, having a presale of POPs is meant to satisfy initial enthusiasm of larger contributors while reserving tokens for the vast majority of participants that may not meet the requirements needed to participate in the presale.

Launch Sale

Even though countless token events have been executed to date, no clear consensus has emerged on the best method to conduct a sale. The POP Network aims to take the best ideas in practice and unify them around The POP Token event.

After the initial sales period, an open sale of POP Tokens occurs at platform launch. The exact method for this process shall be detailed in community channels well before the go date. If incoming funds exceed a predefined amount during the open sale, then the smart contract conducting the sale triggers its resolution at a specific time. Additionally, a maximum level (“kill cap”) is set at which point the sale immediately ends.

Continuous Token Issuance

After the initial token generation event, it is important for POP Tokens to continually be created with the purpose of sustaining long-term development of The POP Network. Newly minted tokens reinforce The Rewards Pool and provide a powerful incentive mechanism to both new and old users.

Although adding tokens is inflationary, the central function of burning tokens to publish is deflationary. With experimentation, finding the right balance which fosters network growth is achievable.

The best defense against token inflation is running a POP Core. By staking tokens to perform activities on the network such as video encoding, storage, and peer-to-peer streaming, nodes get

token rewards for their efforts. This encourages token holders to reinforce The POP Network rather than remain passive.

Token Structure

Token Symbol	POP
Token Format	ERC-20
Genesis POP Supply	4,200,000,000 POP
Total POP Sale Supply	2,100,000,000 POP
Private Presale POP Supply	1,050,000,000 POP
Private Presale Cap	$20,000,000
Public Sale POP Supply	787,500,000 POP
Public Sale Cap	$15,000,000
Launch Sale POP Supply	262,500,000
Launch Sale Cap	$5,000,000
Total Hard Cap	$40,000,000
Timeline (no earlier than dates)	Private Presale: June 4, 2018 (50% bonus) Public Sale: July 9, 2018 (25% bonus) Launch Sale: August 6, 2018 (10% bonus)

Token Allocation

Token Sale	50%
Token Rewards Engine (includes Bounties)	20%
The POP Team (Founders, Devs, Investors)	20%
Reserve	10%

Use of Funds

Development	60%
Operations	20%

Marketing	20%

Challenges

Mental Transaction Costs

In addition to token incentives, The POP Network depends on peer-to-peer micropayments as a major driver of cryptoeconomic dynamics. The concept of low-value financial transactions goes back to the earliest days of the World Wide Web[28]**.** However, micropayments as originally conceived have never caught on in mainstream applications. Many consider the cognitive burden, or "mental transaction costs", associated with making such tiny payments as the culprit. As Nick Szabo explains in his seminal whitepaper[29]:

> *Customer mental transaction costs are significant and ubiquitous, so much so that in real world circumstances cognitive costs usually well outweigh technological costs, and indeed technological resources are best applied towards the objective of reducing cognitive costs. Furthermore, technological costs will continue to fall while cognitive costs remain constant, and (more arguably) will fall faster than technological cost can be substituted for mental costs by discovering and automating the relevant mental processes. Customer mental transaction costs will soon dominate the technological transaction costs of the payment system used in the transaction (if they don't already), and micropayment technology efforts which stress technological savings over cognitive savings will become irrelevant.*

The POP Network will not succeed without challenging long held assumptions around mental transaction costs. Here are proposed solutions:

Move The Mind

Asking a user to complete a complicated procedure to accomplish a seemingly simple task is a recipe for disaster. Traditional micropayments introduce logic, reason, and mathematical hurdles for someone trying to give value in exchange for service. In short, once the human mind is involved in the decision-making process then all is lost.

If involving the human mind in the decision-making process is unhelpful, then the decision-making source must be moved from the head to the heart.

[28] https://www.w3.org/ECommerce/Micropayments/
[29] http://nakamotoinstitute.org/static/docs/micropayments-and-mental-transaction-costs.pdf

As futurist Kevin Kelly remarks in *The Inevitable*[30]:

> *When copies are free, you need to sell things that cannot be copied.…The only things that are increasing in cost while everything else heads to zero are human experiences—which cannot be copied.*

Building a system where Creators' only economic incentive is to satisfy the most passionate fans encourages investment in the scarcest and most valuable online commodity: intimacy. This follows another Kevin Kelly maxim known as *The 1000 True Fans Theory*[31].

His reasoning is: An artist is less likely to create enduring success with 1 million transient fans but more likely with 1000 truly committed fans. Following the analogy, this means although The POP Network may be smaller than existing video distribution platforms the value and intensity of each interaction is exponentially higher, thus producing an outsized result.

The MEH Button

There's no question that manually approving a transaction creates a certain level of anxiety. Whether the purchase is for 1¢ or 1 million dollars, there is always the fear within the purchaser that they'll not receive fair value for their expenditure.

Micropayments compound this issue by creating purchase decisions that, based on value, are not even worth making. Clay Shirky explains this anxiety conundrum perfectly in "The Case Against Micropayments":

> *A transaction can't be worth so much as to require a decision but worth so little that that decision is automatic. There is a certain amount of anxiety involved in any decision to buy, no matter how small, and it derives not from the interface used or the time required, but from the very act of deciding.*

Offering an instant refund removes the anxiety conundrum because now the initial decision can be made without fear of consequence. We call it The MEH button because the typical use case is a Viewer sends a micropayment for a video, isn't thrilled with the result, and in their mind they think, "That video was MEH".

[30] http://kk.org/books/the-inevitable/
[31] http://kk.org/thetechnium/1000-true-fans/

Through the use of smart contracts, that original value transfer can have programmatic conditions placed upon it, such as this instant refund scenario. Think of it like the no-hassle return policy of Amazon and Zappos put in cryptographically secure form.

PopChest.com runs a model of this system now, alongside a series of abuse protections. Refunds are considered to be a customer acquisition cost providing amazing value per transaction. The gratitude from satisfied Viewers has been remarkable. Any internet venture that could create a lifetime user with just a 5¢ refund would be extremely happy.

Leveling Up

The biggest change to the status quo around the failure of micropayments comes with the introduction of blockchain token incentives. Rewarding tokens to incentivize collective action has profound implications across multiple industries. The origin story of Steemit using native Steem tokens to encourage early bloggers to publish on its platform provides a shining example of the possibilities.

Building upon this foundation, The POP Network aims to tokenize not just the content on the platform but rather every interaction practical. Token rewards for social shares, upvotes, and all. positive repetitive behaviors are just a few examples.

The effect is similar to “leveling up” in video games. Leveling up is when your character does something good in the game, which earns a reward, and with that reward the potential for doing more good things increases.

Creating the cycle of exchanging POP Tokens for prolonged user activity has the potential to grow the network much faster than otherwise. Over time the rewards diminish but, as the network builds its base, euphoria and activity comes with partially using a “paid” platform for “free”.

Blockchain Efficiency

The POP Network assumes the underlying Ethereum network remains cost-efficient to utilize for second layer Payment Channels. This is necessary for ultra low-value transactions used to power the network. If this assumption proves wrong, then using another blockchain is inevitable.

Bad Actors

Just as light creates shadow, it is assumed there will be attacks from infinite directions upon The POP Network. As experience from operating PopChest.com shows, typical fraud such as Sybil and double spending can be easily identified and punished with ruthless efficiency.

Nevertheless, it is given that some forms of gaming the system will be successful. After all, it is estimated that businesses could lose $16.4 billion[32] this year due to online advertising fraud from bots. Therefore, the goal of The POP Network is not too eliminate all fraud but rather to minimize it to be no worse than current video distribution systems.

The combination of smart contracts with built-in time buffers which conditionally release value only after certain criteria are met, harsh disincentives for cheating the network, and hyper transactional transparency are the principal tools in the never-ending war against bad actors.

Core Team

Founder & CEO - Valerian Bennett

Valerian Bennett is founder and CEO of PopChest. Valerian is an award-winning television producer, editor, and documentary filmmaker with extensive media distribution experience. He earned a degree in film from the University of Southern California and has worked on hit television shows seen by millions for ABC, MTV, and E!, among others. As a Silicon Valley native, Valerian has always maintained a deep relationship with advanced technology and possesses the uniquely balanced perspective needed to fuse blockchain with global media distribution.

Chief Technology Officer - Jeremy Grodberg

Equally interested in people, products, and technology, Jeremy Grodberg sees his mission in life as bridging the gaps between people who love technology and people who just want it to work for them. With diverse experience ranging from creating the first online consumer banking platform at Wells Fargo to scaling video distribution at Fullscreen (AT&T), Jeremy has a lifetime of constructing complex technical frameworks at scale.

[32] https://www.cnbc.com/2017/03/15/businesses-could-lose-164-billion-to-online-advert-fraud-in-2017.html