PAX

PARSEC ATTENTION EXCHANGE

PARSEC

Summary

An average of 66 cents of every dollar spent on digital advertising is absorbed by middlemen.

Parsec has invented methods to deliver more efficient advertising by using attention metrics, like time. PAX translates our time-based marketplace to a blockchain for even greater cost savings.

Over the past three years Parsec has built a business selling guaranteed attention to brand advertisers. We charge brands for the amount of time that people choose to spend with their ads. Time, especially when it is a product of choice, is a consistent and specific measure of value.

To take advantage of the transactional efficiencies of blockchains, Parsec is porting our existing marketplace to a distributed infrastructure called the Parsec Attention Exchange ("PAX").

PAX is the only blockchain-based advertising marketplace backed by major media buyers including IPG and Omnicom. Additionally, PAX has the advantage of being incubated in a profitable company that has proven its business model off-chain.

This whitepaper describes how PAX will use Parsec technology to develop a blockchain based solution that can meet the speed and data privacy requirements of digital advertising.

PAX Overview

The problems facing digital media can largely be attributed to the impression. Impressions in display and video advertising represent a random amount of attention and open the door to middlemen, fraud and arbitrage.

Even impressions that are designated as "viewable" might be one of 30 ads on a page for .5 seconds, or a full page in-line ad that a reader chooses to spend 10 seconds with. The resulting arms race to game metrics, inspect impressions and measure every possible signal has spun up an adtech industrial complex that extracts an unsustainable tax on digital media publishers.

There is no doubt that a blockchain could reduce some of the friction in digital advertising. Here is the catch -- impressions aren't consistent enough to be implemented in smart contracts. Smart contracts require precise metrics.

If metrics are fuzzy, risk increases for buyers as the contract gets easier to game. Impressions are so fuzzy that the biggest innovation in the past 10 years in digital media has been buyers inspecting every impression in order to submit an individual bid, also known as Real Time Bidding or RTB.

A more precise metric is needed before a blockchain for digital media can be deployed.

How did we get here? There has been a massive shift in the control of consumer attention over the past 60 years. Media companies used to enjoy captive audiences thanks to a limited amount of entertainment options on TV and Radio. They were in control of where attention was directed, and could easily shift consumer attention from content to advertising and back again.

PAX
PARSEC ATTENTION EXCHANGE

Because of this, media was sold in consistent lengths and denominated by the number of times an ad was run—in impressions.

Since the advent of the remote, consumers have adopted techniques to wrest control of their attention back from media companies. DVRs, second screens, ad blockers and even browser tabs are all examples of how consumers can avert advertising, many in unmeasurable aways. The explosive growth of information available via cable TV and the internet, has made it ever harder for publishers to control attention.

Consumer control over attention means the number of times an ad is shown becomes a less accurate proxy for advertiser value. The impression is further hampered by its liberal application online, where there can be dozens of "impressions" on screen at once, all competing for consumer attention.

Today consumers have gained full control of their attention and advertising experiences should conform to their expectation of control. Publishers and advertisers who embrace the shift in control will adopt "politely interruptive" experiences that capture attention for an amount of time controlled by the consumer. Full page mobile ads, skippable video, branded content and even augmented reality can be politely interruptive.

When people control how long to spend with ads in digital media, that duration becomes a data goldmine. Not only is time a lower risk and more efficient way to transact but it's also a strong proxy for quality and relevance. Time can be used to A/B test creatives and even personalize sequenced content based on previous levels of engagement.

With these insights at Parsec, we launched a marketplace to sell politely interruptive ads using an attention metric, cost per second. Over the past 3 years we've built a profitable business selling guaranteed attention to brand advertisers through their media agencies. Time-spent creates proprietary insights around creative, audiences and media that we use to inform novel approaches for acquiring attention.

Time's accuracy as a measure of value means it has the precision that smart contracts require, making it much more suitable as a metric for blockchains. This whitepaper will outline our plans to build a time-based marketplace on the blockchain called Parsec Attention Exchange, or PAX.

Early versions of PAX will serve the mobile web and video advertising markets, but the technology can be applied to any experience where consumers choose how long to pay full attention to an ad. Desktop, OTT, branded content and augmented reality could all work in the PAX marketplace.

PAX's clients will be the same media agencies that already work with Parsec. Four of the top six agency holding companies have joined, or are in the process of joining, the PAX consortium.

Advertising has data privacy constraints that, while not unique to the industry, aren't yet solved by existing blockchains. Therefore, we are investigating custom protocols. We will likely partner with a blockchain specialist to create a protocol that offers the required multi-party zero knowledge proofs.

The first protocol, called PXT and detailed in this whitepaper, will be used to clear advertising transactions. In the future, protocols or tokens may be released that represent consumer attention.

PAX and Fraud

Fraud is rampant in digital advertising, with estimates pegging 70% of some channels (like open exchange video) as fraudulent. While the causes today include incentivized traffic, audience stuffing, spoofed domains and nested or layered ads, criminals will innovate as these tactics are detected.

There isn't a silver bullet to stop fraud in digital advertising. However, a distributed marketplace like PAX, with counterparty transparency and easily auditable logs, will go a long way towards cleaning up the ecosystem.

PAX in Detail

The PAX DApp is a series of APIs and smart contracts that onboards demand, manages audiences, transacts media and provides verification. To achieve this, we propose the following:

+ Fully decentralized peer-to-peer marketplace using a blockchain protocol.

+ State channels for required speed.

+ Multi-party Zero Knowledge transactions to provide privacy to parties on each transactions.

+ Homomorphic encryption to allow computational work to be executed on encrypted data as PAX matches supply and demand.

+ Consensus is expected to be achieved by using a RAFT algorithm.

+ Ephemeral blockchain to be employed using a snapshot of 6 months for review and audit by the parties to transactions.

PAX DApp

The PAX DApp is comprised of API interfaces, smart contracts, and data stores. It leverages a set of external oracles to provide data to the smart contracts.
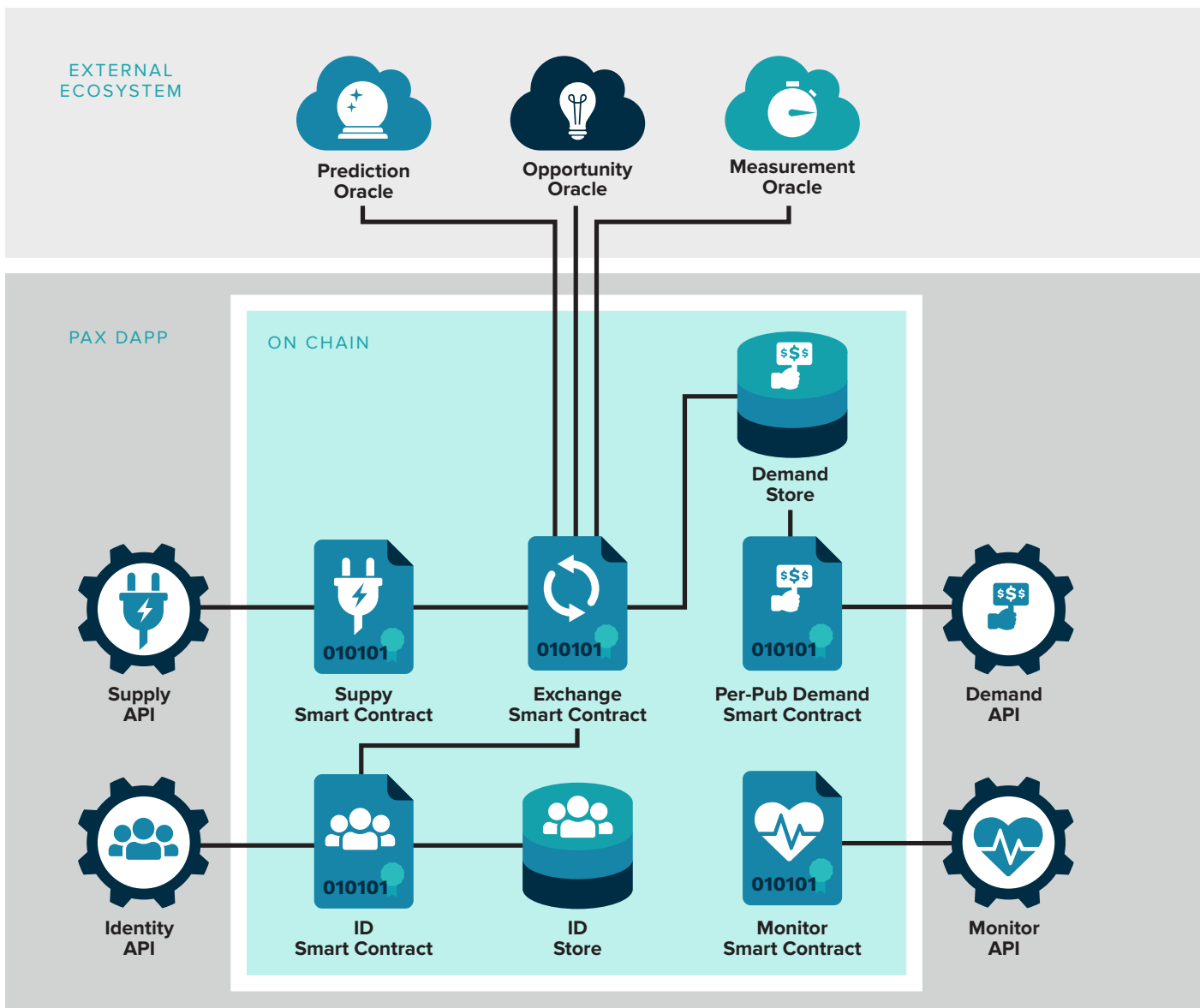
EXTERNAL API INTERFACES

Demand API - Used by advertisers to define campaigns. The Demand API will send messages to a smart contract specific to each publisher.

Supply API - Used to onboard supply, could be called by an SSP or Adserver. Sends a message to the Supply Smart Contract with details of supply.

Identity API - Used by publishers, advertisers, 3rd parties and individuals themselves to publish audience data to a user ID.

Monitor API - Used by external systems to monitor campaigns and offer settlement solutions.

FIGURE 1: THE PAX DAPP

EXTERNAL ECOSYSTEM

Prediction Oracle

Opportunity Oracle

Measurement Oracle

PAX DAPP

ON CHAIN

Demand Store

Supply API

Suppy Smart Contract

Exchange Smart Contract

Per-Pub Demand Smart Contract

Demand API

Identity API

ID Smart Contract

ID Store

Monitor Smart Contract

Monitor API

SMART CONTRACTS ON CHAIN

Supply Smart Contract - Used to choose a version of the Exchange Smart Contract and configure the exchange with oracles and auction dynamics.

Publisher Specific Demand Smart Contract - Accept demand from advertisers for specific publishers.

Monitor Smart Contract - Used to access transaction information.

Identity Smart Contract - Called by the exchange smart contract to discover which audiences an ID belongs to. Also manages ID/audience relationships and permissions for who can access audience data.

Exchange Smart Contract - Called by the Supply Smart Contract to run the auction.

DATA STORES

Demand Store - Demand from advertisers that has been sent to the associated publisher smart contract.

Identity Store - IDs and associated audiences, including publisher and advertiser permissioning.

EXTERNAL RESOURCES

Prediction Oracle - Used by the Exchange Smart Contract to determine an Expected Time on Screen for every creative sent to it by the Exchange Smart Contract. The oracle will utilize as much contextual, user and other data as possible to it to predict how long a reader will spend with an ad and return those values to the Exchange Smart Contract. Parsec will be operating the first Prediction Oracles, and we expect a competitive marketplace for prediction services.

Opportunity Oracle - Reviews the URL, IP address and other contextual and environmental data points sent to it by the Exchange Smart Contract. The oracle returns a set of key value pairs that describe the opportunity. This data is used to filter demand and to inform the Prediction Oracle. PAX will be partnering with contextual relevance and anti-fraud vendors to operate Opportunity Oracles.

Measurement Oracle - The Measurement Oracle checks to make sure data used for matching was accurate and informs the Exchange Smart Contract how much time was spent with the ad.

Marketplace Details

Step 1: Demand published

DEMAND IS DEFINED AS

AUDIENCE(S)	CREATIVE	CPS BID	TARGETING	SPEND LIMIT
1243,144	44.3	$0.02	Sports, No California	$400,000
774, 134	980.3	$0.015		$40,000

Orders for media are sent from the demand API to a Smart Contract created by each publisher. Orders contain the following specifications:

+ Audiences are defined and stored in the Identity Smart Contract.

+ Creative refers to the creative of an advertiser—via an ID.

+ Targeting around time of frequency, day, geo, content or other environmental data.

+ Spend limit is total spend by a campaign and should be capped at this amount.

Note: All transactions are denominated in fiat currency. The PAX token (PXT) is used to pay the marketplace for clearing a transaction, not for media.

Step 2: Identity

The Identity Store is a mapping of IDs to Audiences. IDs are expected to be associated with several audiences.

Each ID/Audience pair has an owner. Publishers, advertisers and third parties can each own pairs. Permission to access an audience will be granted to a publisher and advertiser in the smart contract. An audience can also be set to open access to either publishers or advertisers. All audiences that a publisher has permission to use will be returned, with certain audiences marked as only applicable to a specific advertiser. Some audiences will have a price in fuel for each use that will be deducted from the

advertiser's wallet.

Step 3: Opportunity

Inventory enters PAX when a javascript tag calls the Supply API, which in turn sends a message to the Supply Smart Contract.

The Supply Smart Contract gets the following information about the opportunity: ID, URL and IP address. In future versions this data can be augmented with more information about the opportunity, also known as first-party data.

TABLE 2

INPUTS OF SUPPLY FROM PUBLISHER		
User ID	URL	IP Address

The Supply Smart Contract calls the Exchange Smart Contract with publisher specific configuration. Configuration could include things like auction mechanics, or which Prediction Oracle or Measurement Oracle to use.

The Exchange Smart contract requests audiences associated with User ID from the Identity Smart Contract.

At the same time, the Exchange Smart Contract calls the Opportunity Oracle for contextual information about the page or client that can be used in targeting. For example, targeting geography, dayparting, url blacklists, and context for brand safety.

The Exchange Smart Contract evaluates outstanding demand from the Demand Store by matching the User ID and context to demand. These matches are sent to the Prediction Oracle which predicts the amount of time that the user is expected to spend with each creative.

Predictions are sent to the Exchange Smart Contract which then runs the auction and picks winning demand. Auction inputs will be recorded as market participants will want transparency into wins/losses. Only complete auction details will be shared with the advertiser who made the bid. The auction is Cost Per Second bid times Expected Time on Screen, raised to a factor.

*Auction: Bid Rank = CPS * eTOS^X*

Where X is a factor used to increase the value of subsequent seconds, the better the Oracle predicts an ad will perform, the lower cps bid required to win.

PAX considers the expected time to be a quality score, and to that end it may be augmented to include additional factors that impact attention or user experience. The calculation may not be an equally-weighted decision, and the quality score could increase in impact as it grows to place a greater reward on quality. For example, the 5th second someone is predicted to view an advertisement is worth more than the 4th, the 4th more than the 3rd and so on. The hard problem being solved is predicting how long someone will spend with an advertisement, which we refer to as the Expected Time on Screen.

Note: The auction mechanics a publisher is using should be public, and the Prediction Oracle they use will be configurable and public. It's possible that Prediction Oracles will be scored based on how accurate its predictions are.

The Exchange Smart contract writes the winner of the auction to the blockchain.

Step 4: Ad is run and monitored

The Supply API writes the tag of the winning ad to the page. A Measurement Oracle verifies that the UserID and URL are consistent to the submission to the Exchange Smart Contract, and measures the amount of time the ad was in view for.

The results are written to the blockchain, including the transaction value. Results are recorded (and fuel is charged) even if the ad doesn't accrue time because it never came into view.

Step 5: Verification and clearing

All parties involved in a transaction will be able to check the record of that transaction. Third parties can be designated as well. Multi-party zero-knowledge transactions will be used to achieve required confidentiality.

The advertiser can update audiences in the Identity Smart Contract after each opportunity, based on how long the person has spent with the ad.

The transaction fee, which we refer to as Fuel, associated with the transaction will be split between the nodes running the network, Opportunity Oracle, Prediction Oracle, and Measurement Oracle. This fee will be paid with PXT tokens.

Billing for the delivery of advertising spend will be executed in U.S. dollars outside of the PXT blockchain during PXT Beta. Parsec may in the future create or adopt an additional token to facilitate the actual payment for the media. Adoption concerns by

the participants in the marketplace at this point in time outweigh the advantages of creating the additional token for media payments.

Scaling and Privacy Requirements

Data privacy - Data that describes advertising supply and demand should be private and only visible to the parties involved, oracles and verification services. The nodes running the blockchain must be shielded from the data exchanged on the network. We assume an encryption system using homomorphic encryption and zero-knowledge proofs will be developed to handle multi-party zero knowledge transactions.

PAX is partnering with companies who are developing blockchain technology that addresses these privacy requirements.

Identity - Data owners need to be able to set permissions on data and track its use on the blockchain. Again, zero-knowledge proofs and homomorphic encryption will be employed to hide identity data from nodes and other parties outside of the transaction.

We will likely implement functionality via an ephemeral blockchain that will destroy transaction data after a six month period, offering incremental identity protection.

Blockchain transaction scaling - In most instances the window for ad serving starts to close after around 1 second. When the system takes longer, the opportunity to serve an ad greatly diminishes. We expect that scaling the speed of transactions will be solved with an off-chain tactic such as state channels.

PAX Protocol Fuel and Tokens

The PAX protocol will use three major inputs to complete a transaction as described below.
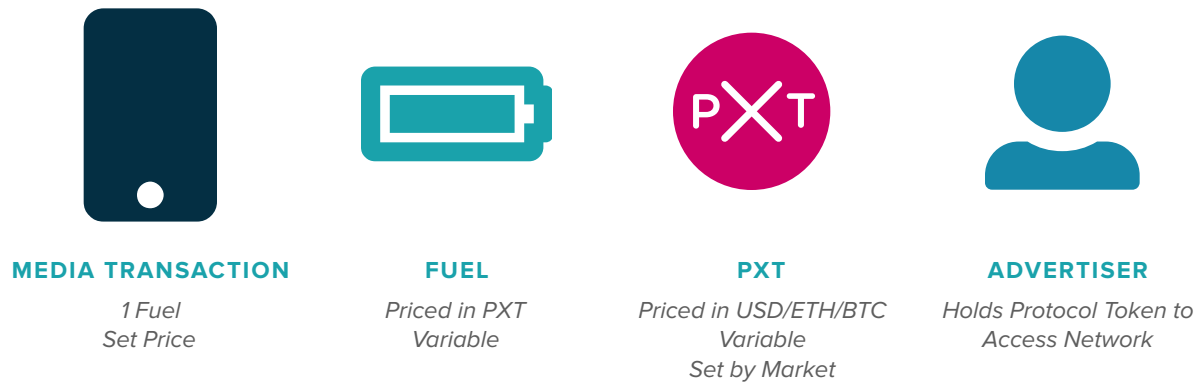
TABLE 3

DIGITAL ASSETS USED TO COMPLETE PAX TRANSACTION	DESCRIPTION
Advertisement Opportunity (Supply)	Digital right to display an advertisement on a publisher's locale.
Fuel	Fee for completing a transaction via smart contract on PAX.
PXT (Parsec eXchange Token)	Decentralized token used to buy Fuel for PAX.

Advertisers use Fuel to pay for transactions on PAX. This Fuel is the only fee charged by the exchange for executing a transaction. The price of the Fuel will be a fee to be received by PAX protocol and various services provided on the decentralized exchange. The flat fee will be reduced as volume on the exchange increases. See "Fuel Pricing."

PXT is a decentralized token to be used by the PAX protocol. A holder of PXT has the right to use the PAX protocol, and is the only way to facilitate payment of fees (Fuel) on the exchange. The initial price of a PXT will be determined in an initial token sale to be conducted by Project PXT Ltd., an affiliate of the PXT Foundation, and is expected to fluctuate depending on market conditions after its sale.

Figure 2 displays the relationship between Fuel, PXT and the Advertiser on the PAX.

PAX
PARSEC ATTENTION EXCHANGE

MEDIA TRANSACTION	**FUEL**	**PXT**	**ADVERTISER**
1 Fuel *Set Price*	*Priced in PXT* *Variable*	*Priced in USD/ETH/BTC* *Variable* *Set by Market*	*Holds Protocol Token to* *Access Network*

An advantage of adopting a native app token, PXT, as the currency on the PAX protocol instead of outside cryptocurrencies, is insulation from currency risks including price volatility arising from other cryptocurrency markets. Additional benefits of adopting PXT include:

+ Community governance incentives can be created through the token, allowing for governance of the specific community that users must buy a stake in through purchase of PXT.

+ Monetary policy for the specific community can be achieved through a token independent of the overall blockchain protocol that the community is developed upon.

+ Incentive alignment is created between the developers and members of the network through the use of the PXT, solving the chicken and egg problem for network effect based systems.[1]

+ PAX protocol may use PXT as rewards and incentives for members of the network.[2] See "PAX Consortium Incentivization."

---

1 The Coinbase Blog. (2016). Blockchain Tokens and the dawn of the Decentralized Business Model. [online] Available at: https://blog.coinbase.com/app-coins-and-the-dawn-of-the-decentralized-business-model-8b8c951e734f [Accessed 29 Dec. 2017].

2 Medium. (2017). Value of the Token Model – Fred Ehrsam – Medium. [online] Available at: https://medium.com/@FEhrsam/value-of-the-token-model-6c65f09bcba8 [Accessed 24 Oct. 2017].

PAX
PARSEC ATTENTION EXCHANGE

Fuel Pricing

Fuel is charged by the PAX protocol for executing a transaction on the exchange. By designating prices in Fuel, transaction fees are decoupled from the value of PXT, thereby insulating it from fluctuations in PXT pricing.[3]

Initial fees are anticipated to be set at 1 Fuel per transaction. It is expected that fees will be reduced according to a predetermined schedule as adoption of the marketplace becomes robust. See Table 7 below.

TABLE 4

PAX FUEL PRICE BY SPENDING IN THE PAX MARKETPLACE				
$\leq$ \$.5 billion	$\leq$ \$1 billion	$\leq$ \$2 billion	$\leq$ \$3 billion	$\leq$ \$5 billion
1 Fuel	.875 Fuel	.75 Fuel	.625 Fuel	.5 Fuel

PAX protocol may in the future incorporate price differentiation for different types of creative and services on the PAX marketplace that would be beneficial to the marketplace. In this case, for new and expanded services, the PAX protocol may incorporate a different type of transaction with different Fuel costs. Fuel costs and conversion rates may change from time to time.

As adoption of the PAX marketplace grows and becomes robust, transaction costs are expected to decrease, which in turn is expected to drive further demand for the PXT.

---

3 Ethereum?, W. (2017). What is the "Gas" in Ethereum?. [online] CryptoCompare. Available at: https://www.cryptocompare.com/coins/guides/what-is-the-gas-in-ethereum/ [Accessed 24 Oct. 2017].

PXT Tokens Format

PXT decentralized protocol tokens will be issued by the PXT Foundation as an ERC-20 token. Use of an ERC-20 token allows for seamless integration with a robust blockchain environment and provides all required tools for implementation and maintenance of the PXT. For instance, there are many wallets that are ERC-20 compliant in the marketplace as well as exchanges that accept tokens issued using the ERC-20 protocol.

Currently, PAX protocol is planned to be built to support the ERC-20 token protocol. If it is decided in the future that a non ERC-20 blockchain would be the best application for PAX, PXT tokens will be exchanged for that blockchain's token protocol at that time.[4]

---

4 GitHub. (2017). ethereum/EIPs. [online] Available at: https://github.com/ethereum/EIPs/blob/master/EIPS/eip-20-token-standard.md [Accessed 24 Oct. 2017].

Competitive Landscape

There have been several advertising marketplaces proposed using blockchains. By our analysis most exhibit one or more shortcomings:

Using Blockchain for Truth (not Trust) - When services are essentially a data source, either for measurement, audience or publisher data it is most likely overkill to use blockchain technology. Since a single source is being trusted for information there's little reason not to call an API or check a URL owned by that source rather than force it into a distributed system. Blockchains are best at making transactions cheaper by reducing the cost of trust, not replacing databases or APIs.

Incompatible Products - Thinking about building a blockchain DApp? A good litmus test is "Can i create a futures contract using this metric?" That is to say, can a transaction be defined such that if criteria are met, both sides agree to execute it? This is important because smart contracts are essentially futures — agreements to execute an order if certain conditions are met.

An example of an incompatible service is Real Time Bidding. In RTB every impression is evaluated by a buying platform called a DSP. The DSP places a bid for each impression on behalf of a buyer, valuing each one differently. This bidding model was necessitated by the opacity of the impression, and won't work in smart contracts because of the difficultly of distributing DSP logic.

Private Blockchain - A permissioned blockchain is really just a distributed ledger. It's hard to make an argument that they are decentralized or transactions are really trustless.

Competitive Advantages

PAX's advantage comes from four core differentiators:

1   A PRECISE AND SCALEABLE METRIC

The cost per second model allows PAX participants to transact based on a metric that accurately reflects consumer attention.

Time-based metrics reduce complexity and help brands scale digital campaigns easily.

2   A PROVEN ALGORITHM FOR PREDICTING ATTENTION

Based on historical data from three years of campaigns totaling over a billion seconds of attention, the Parsec Prediction Engine is able to accurately price supply.

While the Parsec Prediction Engine will be just one of many Prediction Oracles, the ability to run the first instance of this service removes a crucial barrier to launching the exchange.

3   A SUCCESSFUL BUSINESS MODEL

The current Parsec marketplace has run over 200 campaigns totaling more than $13mm of transactions. We are translating this business to the blockchain to create more efficient transactions.

PAX has the support of some of the largest buyers of digital media; IPG and Omnicom.

4   A NEW PROTOCOL THAT ALLOWS FOR PRIVACY AND SPEED.

PAX will run on its own protocol, which will utilize zero-knowledge proofs to ensure that sensitive transaction data is only made available to the pertinent members of a transaction.

Elements of the protocol will run in state-channels, allowing PAX to achieve the speed and scalability required to serve millions of ads to thousands of publishers.

Parsec's Existing Business

Parsec has 40 employees based in NYC, Chicago, Los Angeles and London. We sell mobile advertising to dozens of brands through partnerships with exclusively top tier publishers in the US and UK.

It's our goal to build publishers and advertisers a more efficient marketplace for media, priced using attention metrics. To understand how we deliver attention, see examples in our gallery. All stakeholders benefit from Parsec:

+   Brands are offered guaranteed consumer attention and a completely new source of data in time-spent. Some brands are already using this data to test creative, learn more about audiences and intelligently sequence ads.

+   Publishers gain insight into how much time people choose to spend with ads, a proxy for relevance and creative quality.

+   Readers are delivered a politely interruptive experience that they're fully in control of, containing higher quality and more relevant creative.

Economic Incentive for Quality

Parsec factors predicted engagement in our auction, creating an economic incentive for better creative and relevant targeting. The longer we think someone will spend with an ad, the less an advertiser pays per second. For years pundits have clamored for better digital ads, now Parsec has created incentives for them.

PAX
PARSEC ATTENTION EXCHANGE

Our Success to Date

Since launching 3 years ago, we have built a profitable business working with over 75 major brand advertisers like BMW, Exxon, Ben & Jerry's and Chase, represented by every holding company including Omnicom, Publicis, IPG, Dentsu and WPP. Most importantly, time-based advertising has been proven to work for brands. We have conducted over 50 studies that looked at the impact of time on brand metrics, such as brand awareness, brand recall and purchase consideration, and _found positive correlation_ in every instance.

Parsec is considered the leader in attention-based advertising and has grown over 100% year over year since inception.
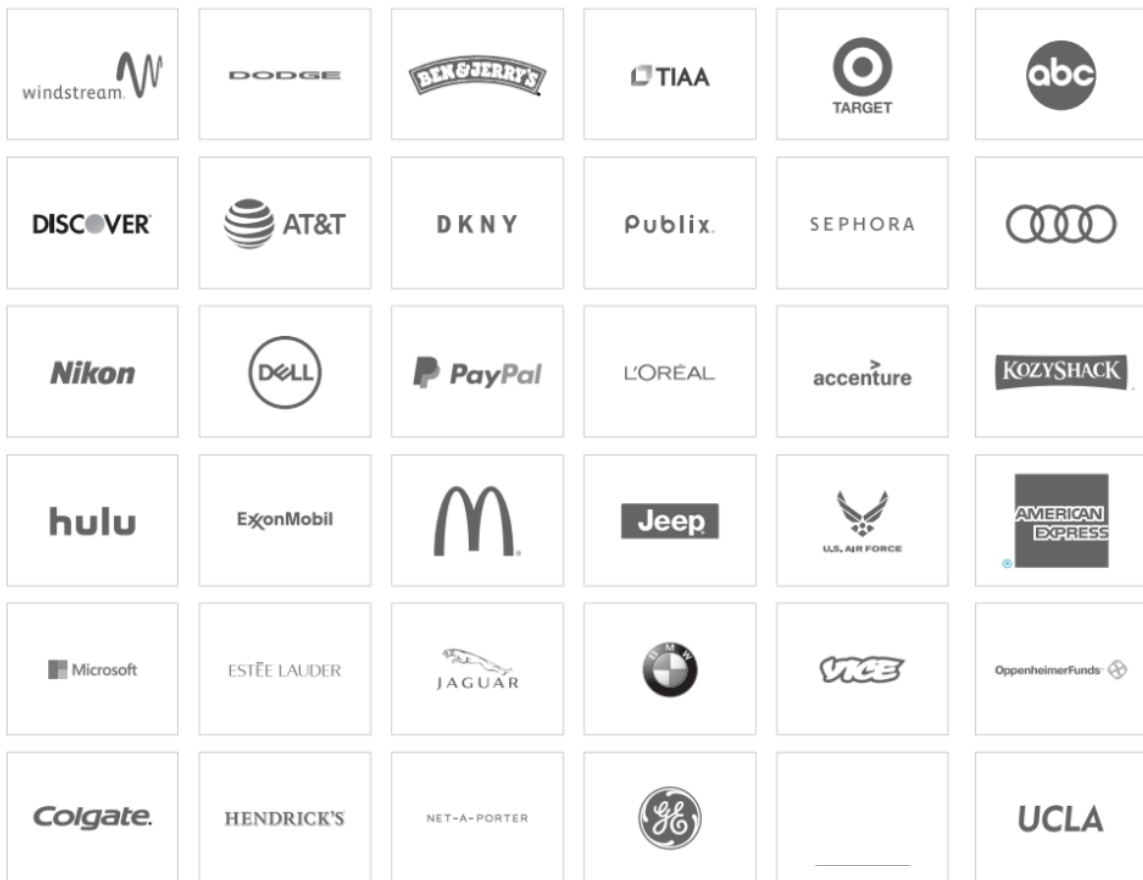
Case Studies

Parsec has published case studies with a number of advertisers to illustrate the power of cost per second.

+ BMW - http://www.parsec.media/case-study/bmw/

+ ABC - http://www.parsec.media/case-study/abc/

+ Jaguar - http://www.parsec.media/case-study/jaguar/

+ Dell - http://www.parsec.media/case-study/dell/

+ New Era - http://www.parsec.media/case-study/new-era/

Parsec Advertisers

Some of the brands we work with:

Expansion Beyond Display

Currently, our product operates on the mobile web and is delivered by our full page in-line format. However, CPS and its associated efficiencies aren't limited to the mobile web. Any advertising experience where the consumer is in control of how long they pay attention to creative can be sold using CPS. We plan to offer video, native content and even augmented reality advertising on our marketplace in the future.

PAX
PARSEC ATTENTION EXCHANGE

Team

Parsec was founded by digital media veterans Marc Guldimann and Diane deCordova. The company is managed by:

+ Marc Guldimann, CEO - CEO/Founder of Spongecell and Enliken. SDS from Carnegie Mellon.

+ Diane deCordova, COO - Google, Next New Networks, Reflect (Procter & Gamble), Yahoo!, Excite@Home. London School of Economics M.Sc., Princeton University A.B.

+ Zach Kubin, VP Sales and Strategic Partnerships - Onswipe, Joule, Mediaedge, Flying Point Digital, Young & Rubicam. Hamilton College B.A.

+ Perry Papadopoulos, VP of Production & Engineering - Eponym, MSF Global Solutions. Rice University.

TABLE 5

PXT CIRCULATION	
15 billion	Total Issued
Up to 30%	To be sold in Token Distribution Event to the public and private sale.
Up to 20%	To be allocated to Parsec Consortium Partners Incentives.
10%	To be issued to founders and employees of Parsec (4 year vesting schedule).
40% or More	Reserves to be held by Parsec.

+ James Crowell, GM Blockchain Technologies - Dixon Hughes Goodman, EY, Booz Allen Hamilton, Microsoft. Cornell Univ. MBA, NYU Stern Certificate, Williams College, B.A.

+ Adrian Domek, VP Programmatic Product and Partnerships - Genesis Media, GLO Gaming, ADP. Albion College B.A., Wayne State M.A., Columbia Stats & Probability

PAX
PARSEC ATTENTION EXCHANGE

+ Hayley Eden, VP Finance - Adama Holdings, Valiant, PSL Group, Madison Square Garden. Baruch College.

Parsec's board currently consists of Marc Guldimann, Diane deCordova, and Michael Berolzheimer, Managing Partner of Bee Partners.

The company has a high caliber roster of advisors with agency, publishing and tech experience including:

Brendan Spain (FT VP Advertising), Tim Hanlon (CEO the Vertere Group), Mark McNeely (Founder/CEO Intelevision), Richard Pinder (former CEO UK/Int'l Crispin Porter), Lindsay Nelson (Vox CMO), Robert Birge (former CMO Lola and Kayak), Adam Shlachter (Group Nine CMO), Ernest Lupinacci (Anomaly founder), Kai Hsing (SVP Bustle), Greg Smith (Tremor, Ericsson, McKinsey).

Token Distribution Event

It is anticipated that the PXT blockchain protocol will be initialized and executed by PXT Foundation [date] at the [Ethereum block number].

The tokens will be pre-mined and Project PXT Ltd. is expected to apply to list PXT on exchanges after the token distribution event. PXT tokens do not expire, allowing for an individual token to be reused on the PAX.

It is anticipated that the pre-sale and token distribution event will be conducted by Project PXT Ltd., a Cayman Islands limited company and a wholly-owned subsidiary of PXT Foundation. All proceeds from the pre-sale and token distribution event will be paid to Project PXT Ltd.

Upon initiation of the PXT blockchain protocol, PXT tokens are expected to be distributed as follows:

The terms of any pre-sale or token distribution event will be set forth in the applicable sale documents.

As it is currently planned, the token distribution event will be capped at $75 million USD.

After the token distribution, the price of a PXT token is expected to fluctuate based on market forces.

Use of Funds

Proceeds received by Project PXT Ltd. are expected to be used as follows:

Project PXT Ltd. has entered into a service agreement with Parsec for the provision of certain services relating to the development of PAX. [95%] of the proceeds are expected to be paid to Parsec for the following activities pursuant to the service agreement:

+ 30% to hire more developers to support accelerated advancement of the PAX marketplace.
+ 35% invested in PAX marketplace infrastructure development.
+ 20% spent on marketing capabilities.
+ 5% reserved for legal costs.

+10%
held by Project PXT Ltd. and / or Parsec as contingency funds.

- Software
- Infrastructure
- Marketing
- Legal & Administration
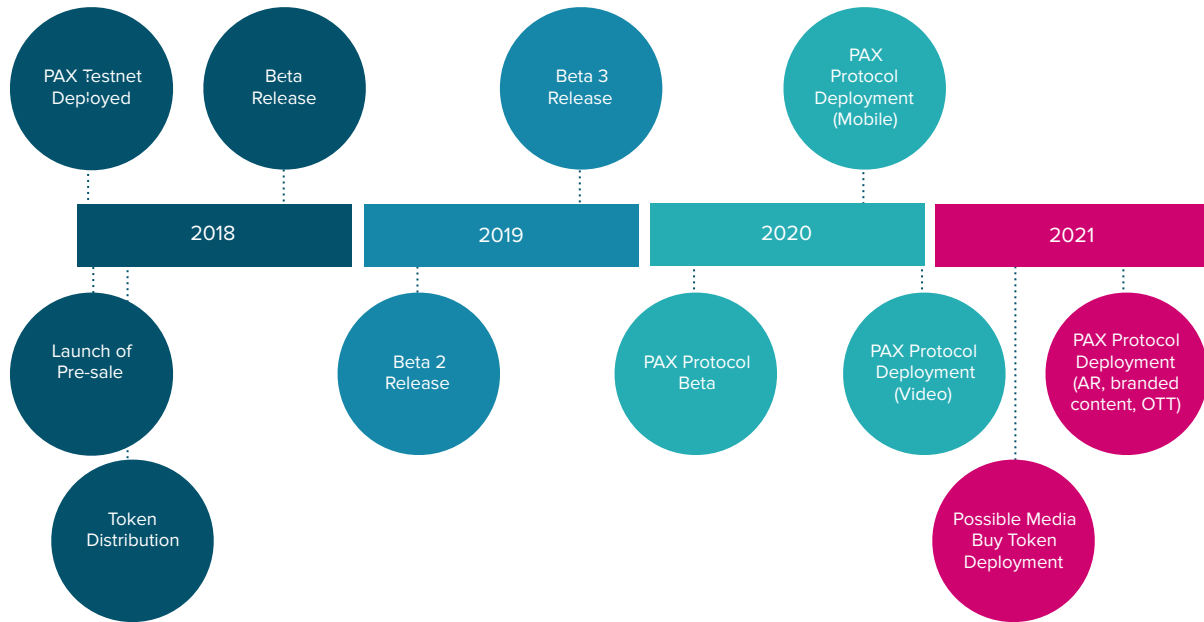- Contingency

30%
35%
20%
5%
10%
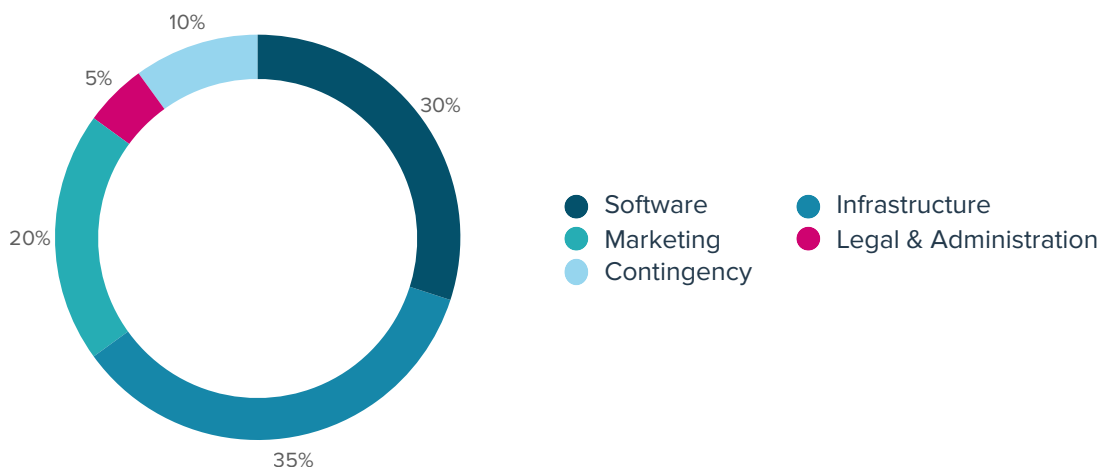
PAX Consortium

Parsec is building a Consortium of industry stakeholders who are committed to the vision of PAX and its ability to bring transparency and uniformity to advertising.

Future Updates and Releases

Consortium members will include media agencies, data platforms, advertiser and publishers. For an initial period, each consortium member will have access to a shared wallet funded by Project PXT Ltd. from the treasury. Additionally, members will have the right to purchase discounted tokens for a period following the public token sale. These tokens will have resale restrictions.

Anticipated PAX Roadmap

PAX Testnet Deployed

Beta Release

Beta 3 Release

PAX Protocol Deployment (Mobile)

2018

2019

2020

2021

Launch of Pre-sale

Beta 2 Release

PAX Protocol Beta

PAX Protocol Deployment (Video)

PAX Protocol Deployment (AR, branded content, OTT)

Token Distribution

Possible Media Buy Token Deployment

PAX
PARSEC ATTENTION EXCHANGE

Appendix

DISCLOSURE

THIS WHITE PAPER IS NOT AN OFFER TO SELL OR A SOLICITATION OF AN OFFER TO BUY ANY SECURITIES. THERE ARE MAJOR RISKS ASSOCIATED WITH PARSEC, PXT AND THE PAX MARKETPLACE. There are no assurances provided that PXTs will be issued or that the Marketplace will be successful.

This document is for informational purposes only and does not constitute an offer or solicitation to sell tokens, shares or securities in Parsec, PXT Foundation, Project PXT Ltd., or any related or associated company. Any such offer or solicitation would only be made by a confidential offering memorandum and in accordance with applicable securities and other laws. None of the information or analyses presented are intended to form the basis for any investment decision, and no specific recommendations are intended. Accordingly, this document does not constitute investment advice or counsel or solicitation for investment in any security. This document does not constitute or form part of, and should not be construed as, any offer for sale or subscription of, or any invitation to offer to buy or subscribe for, any securities, nor should it or any part of it form the basis of, or be relied on in any connection with, any contract or commitment whatsoever. Parsec expressly disclaims any and all responsibility for any direct or consequential loss or damage of any kind whatsoever arising directly or indirectly from: (i) reliance on any information contained in this document, (ii) any error, omission or inaccuracy in any such information or (iii) any action resulting therefrom.

The Parsec eXchange Token, or "PXT" is a cryptographic token issued by the PXT Foundation and adopted by the PAX marketplace as its currency of choice. At the time of this writing, (i) PXT have no known uses outside the PAX marketplace, (ii) PXT cannot be exchanged for goods or services, and (iii) PXT are not listed on any known exchanges.

PXT TOKENS ARE NOT AN INVESTMENT AND MAY NOT HAVE ANY VALUE. There is no guarantee—indeed there is no reason to believe that PXT tokens will increase in value. It may and probably will at some point decrease in value. Those who do not actually use their PXT honestly and fairly on the PAX marketplace may lose their right to use PXT tokens on the PAX marketplace. PXT is not evidence of ownership or right

to control of any entity or organization. Controlling PXT does not grant its controller ownership or equity in Parsec, or the PAX marketplace. PXT tokens do not grant its holder any right to participate in the control, direction or decision making of Parsec or the Parsec marketplace.

Risks and Uncertainties

Participation in the PAX marketplace and related activities involves a high degree of risk. You should carefully consider the risks and uncertainties described below before deciding to participate. If any of these risks occur, we may be materially and adversely affected. We may also be harmed by risks and uncertainties not currently known to us or that we currently do not believe are material.

RISKS RELATING TO THE PAX MARKETPLACE

Risk that the PAX marketplace, As Developed, Will Not Meet Expectations: Project PXT Ltd. has entered into a service agreement with Parsec for the development of the PAX marketplace. The PAX marketplace is in its early stages of development and may undergo significant changes before release. Any expectations or assumptions regarding the form and functionality of the PAX marketplace, or PXT (including participant behavior) may not be met upon the release of the PAX marketplace, if at all, for any number of reasons, including mistaken assumptions or analysis, a change in the design and implementation plans and execution of the Parsec marketplace, or other factors.

Risk of Insufficient Interest in the PAX marketplace: It is possible that the PAX marketplace will not be adopted or used by a large number of businesses, individuals, and other organizations and that there will be limited public interest in the creation and development of distributed applications. Such a lack of interest could negatively impact the PAX marketplace.

Risk of Lack of Adoption or Use of the PAX Marketplace: If the PAX marketplace is unable to gain market adoption or use, you may be unable to utilize the PAX marketplace for media transactions. As a result, notwithstanding any other adopters of the PXT token, the value of PXT tokens may be materially harmed. If this happens, the PAX marketplace will be unable to attract additional users, publishers and advertisers, and Parsec's business may suffer.

Risk of Alternative, Unofficial PAX marketplace or platforms: Alternative applications using the same open source code and protocol underlying the PAX

marketplace could be established, and the official PAX marketplace may have to compete with these alternative, unofficial PXT-based applications, which could potentially negatively impact the PAX marketplace and PXT, including its value.

Risk of Security Weaknesses in the PAX Core Infrastructure Software: The PAX marketplace consists of open source software that is based on other open source software. There is a risk that the Parsec team, or other third parties may intentionally or unintentionally introduce weaknesses or bugs into the core infrastructural elements of the PAX marketplace interfering with the use of the marketplace, including the loss of PXT.

Risk of Malfunction in the PAX Marketplace: It is possible that the PAX marketplace malfunctions in an unfavorable way, including one that results in the loss of PXT tokens held by all users.

Risk of Dissolution of the Parsec Project: It is possible that, due to any number of reasons, including an unfavorable fluctuation in the value of Ether, development issues with the PAX marketplace, the failure of business relationships, or competing intellectual property claims, the Parsec project may no longer be viable as a business or otherwise and may dissolve or fail to launch.

RISKS RELATING TO PXT TOKENS

Risk of Losing Access to PXT Due to Loss of Credentials: Purchasers of PXT tokens may be associated with a digital wallet account until they are distributed to the purchaser by Project PXT Ltd. The wallet can only be accessed with login credentials selected by the purchaser. The loss of these credentials will result in the loss of PXT tokens held by the digital wallet. It is recommended that purchasers safely store their credentials in one or more backup locations geographically separated from the working location, but there is no guarantee that doing so will not prevent a loss of credentials.

Risks Associated with Purchaser Credentials: Any third party that gains access to or learns of the purchasers login credentials or private keys may be able to dispose of the purchasers PXT. To minimize this risk, the purchaser should guard against unauthorized access to their electronic devices.

Risks Associated with Business Failure: As of the date of this white paper, the PAX marketplace are the sole adopters of the PXT tokens. If any of the risks relating to the PAX marketplace occur, the value of PXT tokens may be materially harmed and may

become non-existent. Holders of PXT tokens may have no other avenues of use of PXT tokens.

Risk of an Illiquid Market for PXT: There very well may never be a secondary market for PXT. PXT tokens have not been listed on any exchange and may not be listed after their issuance, if at all. If PXT tokens are not accepted for purchase and sale by any exchange, holders of tokens may not be able to purchase or resell them when desired, or at all. Even if exchanges do develop, they will likely be relatively new and subject to regulatory oversight, which can be subject to frequent interpretations and changes. They may therefore be more exposed to fraud and failure than established, regulated exchanges for other products and have a negative impact on PXT.

Risks Associated with Protocol: The PXT blockchain protocol and this white paper is expected to be executed by Project PXT Ltd., a Cayman Islands limited company. If Project PXT Ltd. is unable to do so for any reason, including insolvency, PXT tokens may never be issued, or may not be maintained after issuance.

Risks from Taxation: The tax characterization of PXT is uncertain. You must seek your own tax advice in connection with purchasing PXT, which may result in adverse tax consequences to you, including withholding taxes, income taxes, and tax reporting requirements.

Risk of PXT Mining Attacks: As with other decentralized cryptographic tokens and cryptocurrencies, the blockchain used for the PAX marketplace is susceptible to mining attacks, including double-spend attacks, majority mining power attacks, selfish-mining attacks, and race condition attacks. Any successful attacks present a risk to the PAX marketplace, PXT, and expected proper execution and sequencing of Ethereum contract computations. Despite the efforts of the Parsec team, the risk of both known and novel mining attacks exists.

RISKS RELATING TO BLOCKCHAIN TECHNOLOGIES

Risks Associated with the Ethereum Protocol: PXT and the PAX marketplace are based on the Ethereum protocol. As such, any malfunction, unintended function, unexpected functioning of or attack on the Ethereum protocol may cause the PAX marketplace or PXT to malfunction or function in an unexpected or unintended manner. Ether, the native unit of account of the Ethereum protocol may itself lose value in ways similar to PXT, and also other ways.

Risk of Weaknesses or Exploitable Breakthroughs in the Field of Cryptography:
Advances in cryptography, or technical advances such as the development of quantum computers, could present risks to cryptocurrencies and the Parsec platform, which could result in the theft or loss of cryptocurrencies including PXT.

OTHER GENERAL RISKS

Risk of Theft and Hacking: Hackers or other groups or organizations or countries may attempt to interfere with the PAX marketplace or the availability of PXT in any number of ways, including service attacks, Sybil attacks, spoofing, smurfing, malware attacks, or consensus based attacks.

Risk of Uninsured Losses: Unlike bank accounts or accounts at some other financial institutions, funds held using the PAX marketplace or Ethereum network are generally uninsured. In the event of any loss, there is no public insurer, such as the FDIC, or private insurer, to offer recourse to the purchaser.

Risk of Unfavorable Fluctuation of Ether and Other Currency Value: As described further in this White Paper, Project PXT Ltd. has entered into a service agreement with Parsec for the development of the PAX marketplace. The proceeds of the token distribution will be denominated in Ether, and could be converted into other cryptographic and fiat currencies. If the value of Ether or other currencies fluctuates unfavorably during or after the token distribution event, the Parsec team may not be able to fund development, or may not be able to develop or maintain the PAX marketplace in the manner that it intended.

Risk of Unfavorable Regulatory Action or Private Lawsuits in One or More Jurisdictions: Blockchain technologies have been the subject of scrutiny by various regulatory bodies around the world as well as private parties. The functioning of the PAX marketplace and PXT could be impacted by one or more regulatory inquiries, governmental actions, or private lawsuits, including the licensing of or restrictions on the use, sale, or possession of digital tokens like PXT, which could impede, limit or end the development of the PAX marketplace and increase legal costs.

Unanticipated Risks: Cryptographic tokens are a new and untested technology. In addition to the risks discussed in this document, there are risks that the Parsec team cannot anticipate. Further risks may materialize as unanticipated combinations or variations of the discussed risks or the emergence of new risks.

CONFIDENTIAL

PAX
PARSEC ATTENTION EXCHANGE