

Delphy Foundation:

Revolutionary Platform for Predicting Future Events

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Abstract

Delphy is an open-source, decentralized, mobile prediction market platform built on Ethereum. The Delphy App is a light Ethereum node that runs on mobile devices.

Delphy uses incentives to allow participants in a market to communicate, instantly and transparently, their wisdom regarding the outcome of upcoming events, effectively predicting the future. We designed Delphy from the start to be decentralized, which makes it difficult to manipulate prediction results.

In Delphy prediction markets, DPY tokens are used (i) by Delphy users to pay for a certain prediction through Delphy and (ii) to incentivize Delphy users (through the payment of a fixed number of DPY tokens) to virtually “buy and sell” “outcome shares” in the Market. Users virtually “buy and sell” such “outcome shares” based on what they see as the probability at any given moment and agree on a virtual “price” that such transactions will occur. As long as a prediction is active, the virtual price continues to fluctuate and indicates the probability of an outcome according to the crowd’s wisdom. When a Market matures, meaning the market Event transpires in the real world, Delphy determines the winning outcome based on the Oracle of the Event. There is no payment of any form (whether in Fiat or DPY tokens) between the buyers and sellers with respect to the purchase and sale of the “outcome shares”. There are no “winners” and losers” once the Market matures and there will be no payment of winnings (whether in the form of DPY tokens or otherwise) to “winners” or a deduction of assets (whether in the form of DPY tokens or otherwise) from the “losers”.

The Delphy platform implements three of the necessary conditions for crowd wisdom put forth by James Surowiecki; diversity of opinion, independence in making opinions, and decentralization of organization.

2- Prediction Markets

There are two main methods used in scientific predictions; the first is statistics and mathematical models, and the second is machine learning and data mining. In essence, these two methods use historical data and software systems to generate predictions.

In recent years, a third method, "social analysis", is increasing as a trend in the prediction market. The market uses incentives to allow the public, not just identified experts, to contribute their own experience and wisdom, pooling market information together to help make decisions and allowing the group to be more intelligent than a single individual or expert.

2.1 Theory and Operation

Scientific prediction methods have been around since the start of the Information Age. Theories underlying the prediction markets include the Efficient Capital Markets Hypothesis (ECMH) and the Hayek Hypothesis. These hypotheses help explain how information is aggregated such that market prices provide accurate estimates on the likelihood of future outcomes.

According to ECMH, capital markets are so efficient in reflecting information about individual stocks and the stock market as a whole, that no amount of analysis to forecast future stock prices can beat the market. The Hayek Hypothesis assumes that market prices are the means to aggregate disparate pieces of information. The market works even when people only have a limited knowledge about their surrounding environment and other parties involved.

In essence, the market collects the judgements and confidences of parties involved in the same event, which results in a prediction of the future outcome of the event. Similar to the stock market, which serves to assign a price to the future estimated value of a stock, “prediction markets” assign a value to a belief about the future (a prediction).

Specifically, prediction markets usually predict the outcome of an event by asking questions about possible outcomes. Each possible outcome has its own probability. The sum of the probabilities of all the outcomes is equal to 100%. The probability of an outcome represents the transaction price of the outcome in the market.

James Surowiecki, a well-known journalist in the U.S., put forth three conditions for crowd wisdom: diversity of opinion, independence in making opinions and a decentralized organization. Similarly, prediction markets work best when market participants have different backgrounds, do not base their decisions on the opinions of others, and base their opinions on local knowledge.

Prediction markets have three characteristics:

1. Efficient collection of diverse and disparate information.
2. Effective and transparent incentive mechanisms to obtain truthful and relevant information.
3. Near real-time information updates, so that result manipulation becomes quite difficult.

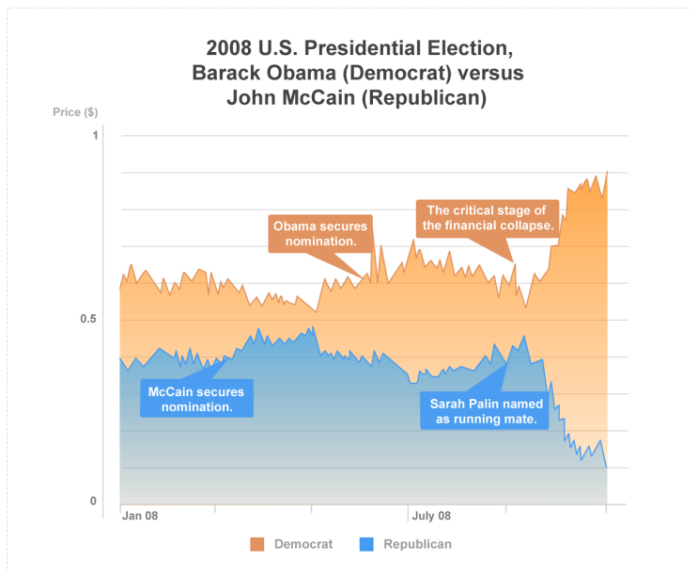
Prediction markets are widely used in many sectors, including but not limited to insurance, national defense, healthcare, public management, sports, entertainment, and even within companies.

For example, in 1996, HP Labs and the California Institute of Technology co-chaired a three-year prediction market experiment. The study conducted 12 different predictions with 20 to 30 employees from different HP Labs departments (business, finance, marketing, etc.) Experiments showed that more than 75% of the predictions were more accurate than HP’s official predictions.

In 2003, the U.S. Department of Defense publicized a "Policy Analysis Market" (later dubbed as a "terrorism futures market"), which mainly predicted the political and military turmoil in eight Middle Eastern countries as well as the response from the U.S., aimed at improving America’s intelligence gathering capability around the world. U.S. Senators later rejected and canceled this prediction market.

In 2005, Google announced its use of a prediction market within the company to predict product release dates, new office openings and other strategic events.

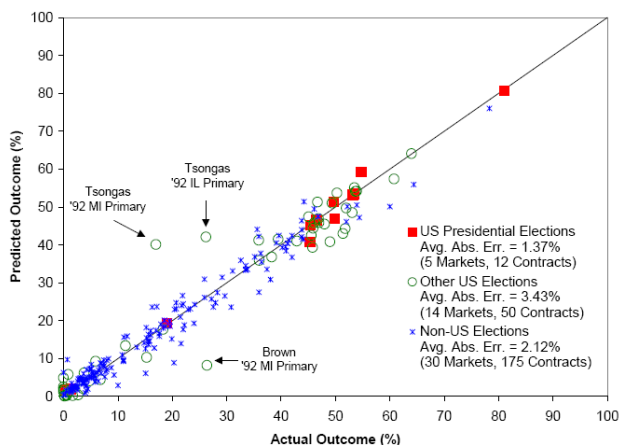
Intrade.com is a famous political prediction market where the participants can trade presidential election results from different countries. The accuracy of the predictions is incredible. For example, in the 2004 U.S. presidential election, Intrade.com predicted which states Bush and Kerry would win, and the predictions were surprisingly similar to the election results.



2.2 Accuracy

Prediction markets trades on the probable outcome of future events. The future price of contracts reflects the dynamic expectation of the probability of those events. The market is able to amalgamate the collective wisdom of all the participants. Experiments show that the prediction market is often more accurate than traditional predicting tools. It also has many other advantages, like continuous real-time information gathering, active participation, information disclosure, high efficiency, and measurability.

Consensus Point, a website whose chief scientist is Dr. Robin Hanson, once announced that the accuracy rate of its prediction markets was 92%. In 2008, a survey found that Iowa Electronic Markets (IEM) of the University of Iowa predicted five presidential elections more accurately than ordinary polls in 74% of all cases. The election data in the figure below clearly shows that the market predictions are quite accurate.



The long-term prediction market has a great advantage in accuracy over individual predictions. The more participants, the more accurate the market will be. The following two reasons might help explain why:

- 1) Due to the complexity of events, no individual can possess a complete set of information. The knowledge is distributed amongst a group of people.
- 2) Prediction markets provide a mechanism for those with insightful ideas to put forth their information. When different ideas occur, people will vote by altering their trading practices, rather than simply succumbing to the current consensus from peer pressure.

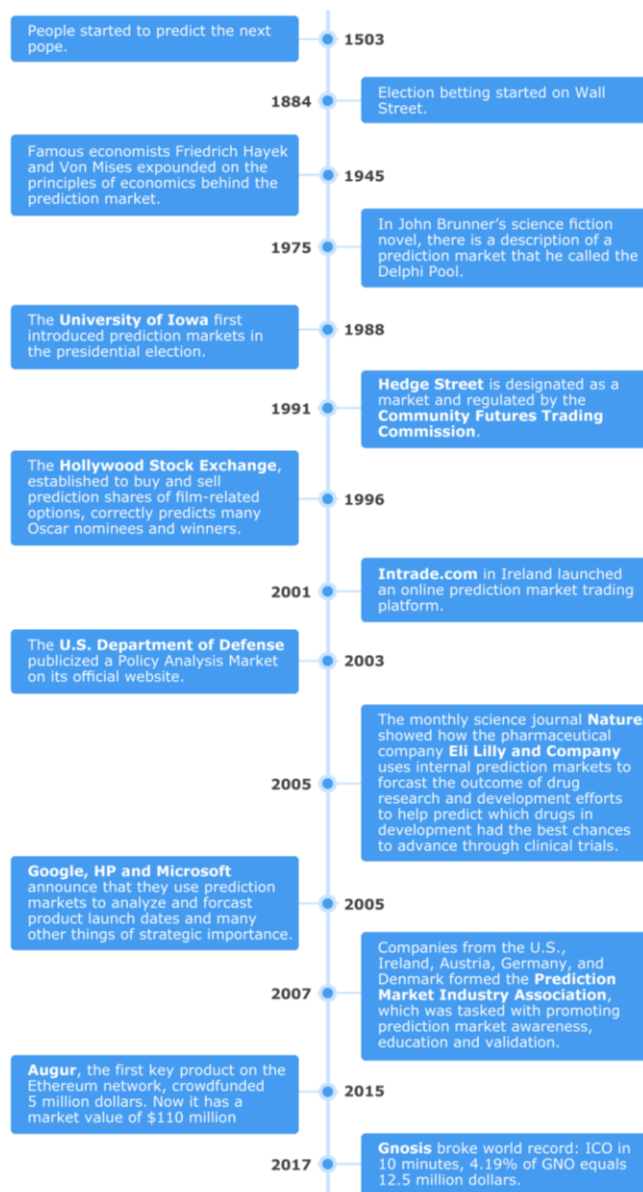
The prediction market, as accurate as it is, also faces some challenges. It represents public opinion, which can be influenced by many factors.

Segmented prediction markets also lack liquidity. People are only concerned about big things or those things related to their own interests; therefore, it is difficult to collect enough samples to generate general predictions. Many people participated when the prediction was about the U.S. presidential election between Clinton and Trump, but it would be another story if it were a presidential election in a small developing country in Africa.

The prediction market has also made some big mistakes, the Brexit vote, for example. On June 23, 2016, the day of the Brexit vote, prediction markets forecast that the probability rate of staying in the European Union (EU) was 85%, whereas the reality was that exiting the EU won by a small margin.

2.3 History

The following timeline shows important historical events related to prediction markets.



2.4 Comparison with Traditional Methods

The following table compares prediction markets with other common methods of gathering information and opinions.

	Prediction Market	Poll	Experts' Opinions/Panel
Sampling	People participate actively	Random sampling	Recommendations screening
Scale	Big	General	Small
Frequency	Continuous; until the event ends	Once	Once; periodic
Method	Interactive	Solitary	Solitary; interactive
Content	Predicting the probability of events	Expressing personal preference	Personal preference + probability of events
Weight	Depended shares purchased	Equal	Uncertain
Truth-telling Motivation	Economic returns	None	Popularity
Opinions Update	Reflects participants view changes via price movement; continuous	One-time analysis; discontinuous	One-time analysis
Accuracy	High	Average	Very high
Execution	Set up trading market	Large-scale interviews questionnaires	Selecting experts

2.5 Redefined by Blockchain

Although prediction markets work well, their current centralized implementation has plenty of shortcomings.

First, centralized markets cannot prove their own innocence. Many markets are suspected of having been manipulated, subjecting users to financial loss. Second, market finances are usually highly supervised, which results in a lack of user participation and limited transaction volume, thus keeping it out of the mainstream. For example, in the United States, the CFTC forced the famous prediction market *intrade.com* to close because it failed to comply with U.S. laws. Third, there is a certain conflict of interest between the prediction markets and current experts, social opinion leaders, and public opinion polling organizations.

Today, with the rise of peer-to-peer blockchain technology, prediction markets can take advantage of decentralization and popularize their applications. First, blockchain data is replicated across the network, and its tamper-proof implementation enables prediction platforms to prove their own innocence. Second, decentralization also allows prediction markets to gain global liquidity and the ability to maintain a massive amount of users. Third, blockchain-based prediction markets can attract more insiders and professionals to participate by using token incentives.

2.6 Delphy: The Decentralized Prediction Market Platform

Delphy is a decentralized social mobile prediction market platform built on Ethereum. The intrinsic decentralization of Ethereum ensures that predictive results are hard to manipulate which promotes information diversity, independent decision-making and a decentralized organization.

Delphy is a mobile application platform for the prediction market and an ecosystem for Prediction as a Service (PaaS). Users can participate in prediction market transactions anytime and

anywhere, as well as use the Delphy API and SDK to custom-tailor all kinds of vertical field prediction markets.

The following chart summarizes the similarities and differences between Delphy and existing decentralized prediction markets:

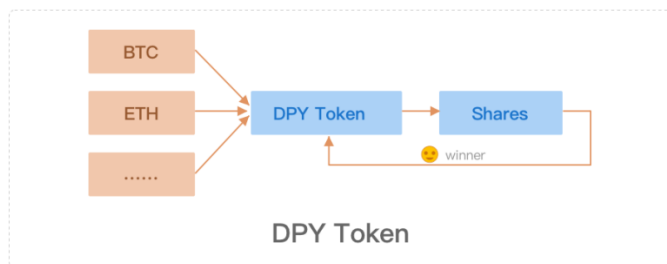
Delphy vs. Existing Decentralized Prediction Markets			
Features	Delphy	Gnosis	Augur
Distributed Oracle	√	√	√
Contract Fund Ownership	√	√	√
Token Holder Responsibilities	×	×	√
Scalability	√	√	×
Application Environment	√	√	×
ResearchMarket-Based Governance Protocol	×	√	×
Multi-platform Compatibility Standards	√	√	×
Mobile App Light Ethereum Client	√	×	×
Customizable	√	×	×
Event Filter	√	×	×
Social	√	×	×

3~ Delphy Market Mechanism

3.1 Market Making

3.1.1 DPY Token

Delphy will issue its DPY token, which is based on the Ethereum smart contract and complies with ERC20 standards. ERC20 based tokens enable Ethereum wallets, exchanges and other smart contracts to interact with a variety of tokens in a common way. The DPY token, generated by Delphy smart contracts, will be released during the Delphy ICO. In Delphy prediction markets, DPY tokens are used (i) by Delphy users to pay for a certain prediction through Delphy and (ii) to incentivize Delphy users (through the payment of a fixed number of DPY tokens) to virtually buy and sell “outcome shares” (the “shares”) in the Market. Users virtually buy and sell such shares based on what they see as the probability at any given moment and agree on a virtual “price” that such transactions will occur. As long as a prediction is active, the virtual price continues to fluctuate and indicates the probability of an outcome according to the crowd's wisdom. There is no payment of any form (whether in Fiat or DPY tokens) between the buyers and sellers with respect to the purchase and sale of shares.



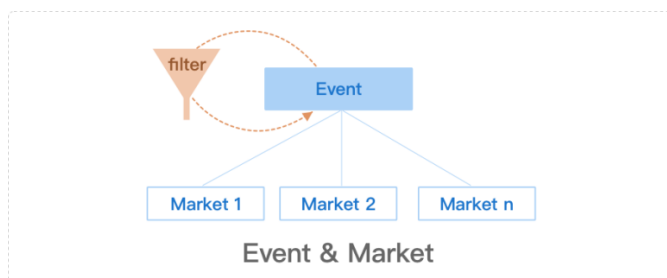
3.1.2 Create Event

An “Event” refers to a future event of interest to be predicted in Delphy in the form of question and answers. For example, “Will it rain at 9AM tomorrow in Washington D.C. ?”

In Delphy, users can create Events based on future events in the real world by using the Event Editor and Event Template. When creating an Event, clients submit a detailed description, all possible outcomes, the Oracle that determines the outcome, and other information as needed.

Events can be open or invitation only. All Delphy users can participate in an open Event, while an invitation-only Event is only visible and available to invited users.

The created Event enters a temporary Event Pool in Delphy. The system also has an Event Filter, which filters out illegal or unethical events, such as predictions on the assassination of a country's leader or the overthrow of a government. After filtering, the remaining Events enter the system's Live Event Pool to create Markets



3.1.3 Create Markets

After users create an Event, they build a corresponding prediction market to provide a trading platform for participants.

Users can search the system's Live Event Pool, select the Event they are interested in, and create a Market.

3.1.4 Scoring & Trading

Delphy uses the Logarithmic Market Scoring Rule (LMSR) to calculate the virtual price of every outcome in the market in real-time as traders start to virtually buy and sell shares. LMSR provides virtually unlimited market liquidity. This is different from traditional non-LMSR prediction markets and the stock market.

In general, the more shares of a particular outcome that are virtually purchased, the higher its virtual price will be, while the more it is virtually sold, the lower the virtual price. In Delphy, users can find out real-time virtual prices and trends for each outcome. There is no payment of any form (whether in Fiat or DPY tokens) between the buyers and sellers with respect to the purchase and sale of shares.

To incentivize Delphy users to virtually buy and sell shares in the Market (and assist with the accuracy of a prediction), Delphy users will be paid a fixed number of DPY tokens for their participation in the Market.

3.1.5 Market Closure

When a Market matures, meaning the market Event transpires in the real world, Delphy determines the winning outcome based on the Oracle of the Event. There are no “winners” and losers” once the Market matures and there will be no payment of winnings (whether in the form of DPY tokens or otherwise) to “winners” or a deduction of assets (whether in the form of DPY tokens or otherwise) from the “losers”.

Certain transaction fees (e.g., the gas required by Ethereum) occur when a market creation and trading. Delphy will withhold a nominal fee to cover all necessary transaction costs associated with the Market.

When the Market is liquidated, the Event & Market is officially closed with no future transactions allowed in that particular market. If the Oracle associated with the Market cannot decide the outcome, or users dispute the correct outcome, Delphy will provide a variety of ways to resolve the dispute.

3.1.6 Messages & Comments

Every Market in Delphy usually comes with a list of all necessary outcomes and a comment area where traders can leave messages showing why they choose what they did and the rationale for their choice. Such event-based social activities provide more trading signals than the prediction virtual price alone. Delphy also provides functions like peer-to-peer messaging, OTC trading, etc.

3.2 Scoring Principle

The Logarithmic Market Scoring Rule (LMSR), proposed by Dr. Hanson, is an automated market creating mechanism that always maintains a consistent probability distribution to reflect the market's evaluation of each event outcome. LMSR is becoming the de facto standard for prediction markets, as it has many excellent features, such as, infinite liquidity, and the modularity of independent relationships. Many internal prediction markets and projects, such as Inklings Markets, Microsoft, YooNew, Google and General Electric, are using LMSR as a virtual pricing mechanism.

In a prediction market, when the market is created from Event Φ , Φ 's outcome can be one of the following types:

- **Binary**

“Will Donald Trump run for re-election?”

The outcome can only be “Yes” or “No”.

- **List**

“Which pharmaceutical company will release a drug for Diabetes from 5/1/2018 to 5/1/2019?”

The outcome will be in a list of 32 items.

- **Range**

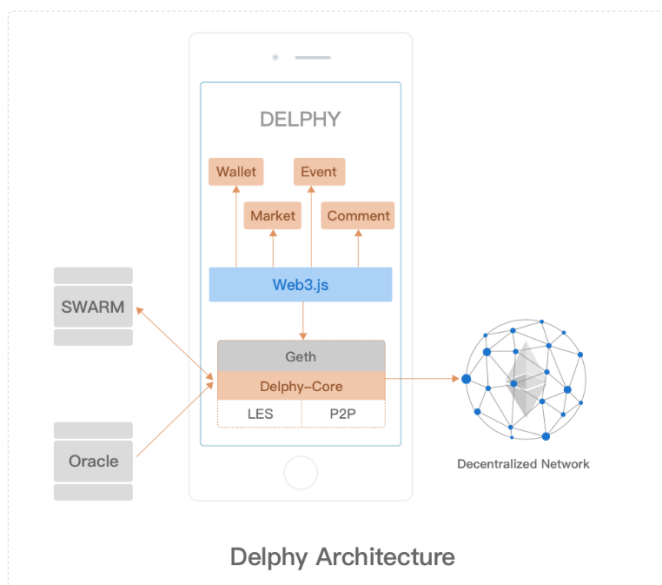
“What will be the average customer rating for the new product launch be?”

The outcome will have a wide range.

LMSR decides how to determine the virtual share price of each event outcome, and the probability of each outcome at any point of time.

4- Delphy Architecture

Delphy is a decentralized social prediction market platform built on Ethereum and the Delphy App is a light Ethereum client running on mobile devices. Delphy is an open source project with contributions from around the world.



4.1 Delphy Core Elements

4.1.1 Ethereum

Ethereum is a public, open-source, distributed platform, based on blockchain technology that features smart contract (scripting) functionality and provides a decentralized, trustworthy and permissioned asset issuing and trading infrastructure for Delphy.

Ethereum is essentially a social computing platform. Delphy is a prediction market of social networks and a mobile Distributed Application (DApp). As a DApp on the public Ethereum blockchain, Delphy helps promote Ethereum to the mass market.

4.1.2 Smart Contract

Delphy takes advantage of Ethereum smart contracts to issue DPY tokens, create Events and Markets, connect Oracle and Event filters, as well as to complete virtual pricing, trading, matching, liquidity, and so on.

4.1.3 Swarm

Swarm is a decentralized file management mechanism that helps Delphy store static files and metadata related to Events and Markets in prediction markets to provide distributed storage and retrieval services for Delphy mobile applications.

4.1.4 Light Ethereum Subprotocol (LES)

LES is a mechanism designed for mobile devices (such as smartphones, etc.) that only downloads the head of a block rather than the entire block during blockchain synchronization. It provides fully secure blockchain access, but does not participate in mining or consensus formation.

4.2 Delphy Mobile App

With the ubiquity of smartphones and the success of platforms such as Telegram and Wechat, Delphy adopts the "born mobile" strategy. Delphy takes advantage of the LES protocol of Ethereum to provide a decentralized prediction market as a mobile application. It is a light Ethereum client running independently on mobile devices rather than just browser-based or stand-alone desktop applications.

The Delphy mobile app uses LES to run the Geth and web3.js framework on smartphones, providing powerful and secure functions. Users can easily create Events, create a Market according to the Event they have interest in, set the Event & Market description and metadata, quickly query the Event & Market for virtual share price and movement, buy or sell shares and make payments of DPY tokens in different Markets.

4.3 Oracle

Oracle is the information release mechanism for the real outcome of Events in Delphy. Oracle determines the predicted outcome of an Event in Delphy by providing a series of APIs, which Delphy uses to determine the outcome of the prediction market to achieve the final settlement.

Oracle can be centralized (such as RealityKeys and Oraclize), as well as multi-centralized. A centralized Oracle is enough when a predictive application only needs a single data point to verify the results.

For example, in predicting an NBA game, the results on the NBA official website may be enough. For a multi-centralized Oracle, we will devise an incentive mechanism and implement the “m out of n” mode and Oracle's dispute resolution solution.

4.4 Delphy Features

4.4.1 Delphy App is a Light Ethereum Client

Delphy is a mobile platform running a light Ethereum client based on LES. The Delphy App supports all the functions of an Ethereum full node, except mining, and leverages the P2P protocol to communicate directly with the other nodes in the Ethereum network. This greatly improves efficiency and makes the Delphy App, SDK and API powerful and scalable.

4.4.2 Naturally Mobile

Smartphones are the preferred platform choice for Delphy to develop its application. The Delphy iOS and Android mobile apps will launch simultaneously with the Delphy platform, and will improve user friendliness, maximally meet users' needs, and boost the popularization of Ethereum and its development environment.

4.4.3 Customizable

Users can create Markets using the same Event with different preferences. Each Market may have a different Oracle, and dispute arbitration mechanism. Users with different preferences can choose their own Markets for transactions and really achieve personalized market creation and cooperation.

4.4.4 Event Filter

User-created Events enter a temporary Event Pool provided by Delphy. The system provides a default Event Filter that filters out illegal or unethical events, such as predictions on the assassination of a country's leader or the overthrow of a government. Delphy also provides Filter APIs for users to create their own Event filters to comply with the laws, regulations and customs in their own countries and jurisdictions. Delphy reserves the right to create Event Filters to comply with the laws, regulations and customs in their own countries and jurisdictions.

4.4.5 Social

The Delphy App is a social prediction market interface. Predicting is a social event, and Delphy includes commenting, P2P messaging and OTC, to let users socialize with each other on a single platform.

5- Delphy Applications

Delphy is a mobile platform for the prediction market and an ecosystem of the Predictions as a Service (PaaS) platform. Users can participate in transactions in any prediction market anytime and anywhere, as well as use the Delphy API and SDK to customize prediction markets based on different vertical field parameters. Delphy is applicable to prediction markets for insurance, national defense, health care, public management, sports, entertainment, and even markets within organizations.

5.1 Science & Discovery

Prediction markets have the potential to allocate global scientific research and development resources and efforts more effectively. An efficient mechanism to aggregate data on leading experts' beliefs on the plausibility of successfully accomplishing scientific goals will help focus resources to more realistic projects. Additionally, many scientific research studies provide data that unfortunately are not reproducible. Currently, the scientific community has increased concern on this topic. Data to gauge the costs associated with irreproducible preclinical research have recently been estimated at US\$28 billion a year in the United States. Governments and companies are investing billions to further exploration of initially flawed research. Prediction markets will provide a mechanism to easily recognize the studies with findings that will be difficult to replicate.

5.2 Fake News

Social media platforms and increasing news sources have made it easy to start and propagate fake news. A group of 16 political scientists and legal scholars in a Science publication, "We must redesign our information ecosystem in the 21st century to reduce the spread of fake news and to address the underlying pathologies it has revealed." Their studies report a false story reaches 1,500 people six times quicker, on average, than a true story does. The consequences associated with fake news are incalculable as deaths have occurred by people believing and trying to discover the validity of fake news. The uncertainty fake news brings to our society about the validity of real news and the prospects of future economic factors create tremendous damage to GDP growth.

A prediction markets platform focused on "News Validation" makes it extremely costly for false news to persist as truth.

Individuals who know news to be bogus have a financial incentive to share their unique information.

5.3 Points of Interest (PoI)

With the improvement of people's living conditions, tourism has become an important leisure activity for Chinese people. However, because the tourism resources are centralized and limited, most scenic spots are extremely crowded for people travelling during holidays. Only a few famous spots can avoid such congestion. Predicting in advance which scenic spots have relatively fewer visitors is appealing to most people.

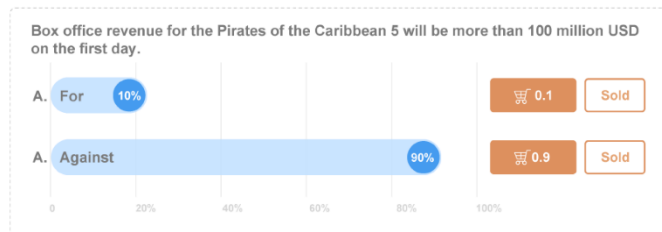
West Lake - a world-renowned scenic spot in the Zhejiang Province of China, took measures to limit the number of tourists it receives each year, because the number often vastly exceeds the maximum carrying capacity set by the country. In recent years, the area has also adopted technology to analyze large amounts of tourist data, providing a reference point and a basis for managing tourist numbers. The technology also sets appropriate tour routes, dynamically processes tourist information and helps develop business strategies.

5.4 Entertainment

The entertainment industry is one of the most prosperous industries in the world. According to China's "13th Five-Year Plan", the market cap of the culture and entertainment industry will reach ¥450 billion for 2015, and may be ¥1 trillion in 2020, with the television and film sector alone being valued at ¥500 billion.

Prediction markets can be widely used in the entertainment industry, for such things as forecasting auditions of variety shows, ratings, movie box office results and so on.

It is notable that Hollywood already has a box office prediction market. It demonstrated its amazing accuracy with its predictions for the 2007 Academy Awards Ceremony. The Hollywood Stock Exchange successfully predicted 32 out of the 39 nominations via ranking by transaction prices, and it correctly predicted seven out of the eight main awards before the ceremony officially began.

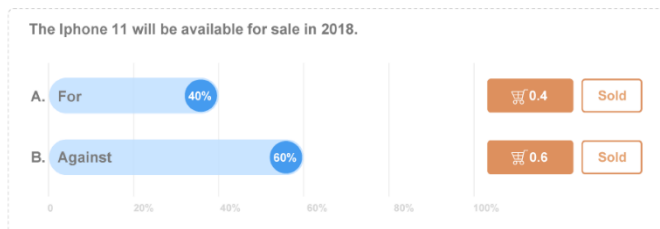
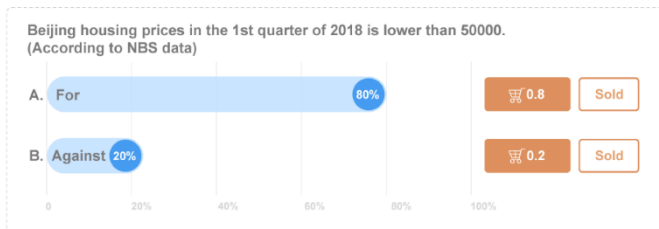


5.5 Housing Prices

Housing prices is a topic that concerns most people, as the house is usually the highest asset holding for most households, but key opinion leaders (KOL) and third-party transaction reports are currently the main data sources used to predict current housing prices.

Obviously, the prediction market, with the public participating to express their viewpoints, can intuitively reflect current housing price expectations. In addition to purchasers and sellers, this data also provides valuable reference points for governmental macro-control policies and real estate company investment plans.

Although there are several channels to collect housing price data, the prediction market will use data released quarterly from official government sources such as the U.S. House Price Index or the National Bureau of Statistics of China to ensure data reliability.



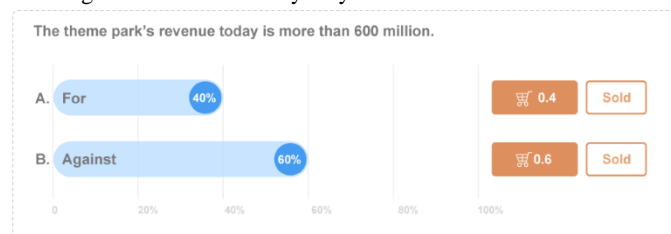
6- Legal Matters and Risk Factors

5.6 Games

The online game market size is huge and continues to grow. According to the "2016 China Game Industry Report", the market cap of China's game industry exceeded ¥160 billion and shows no signs of slowing anytime soon. In the U.S., the market cap exceeded \$17 billion.

For games in the prediction market, we call our APIs within the games to provide players with the game playing methods and mechanism instead of relying on game developers to include the methods and mechanism.

When it comes to games like theme parks, players can meticulously build and operate their own theme parks and even invite friends to join. For example, players can buy land, hire employees and set game facilities the way they want them.



5.8 Governance Policies

The prediction market can help all organizations maximize the efficiency of its human resources. It helps pool the knowledge, wisdom and experience of all stakeholders, enhance the overall competitiveness of the organization, and provide a channel for all employees to express themselves and contribute to the development of the organization. More importantly, it improves the sense of participation, which means a lot to the Millennial Generation.

Therefore, a prediction market within the organization can help managers and administrators better understand employees' ideas and guide the organization's operation.

For example, Microsoft once used a prediction market to forecast whether a product would be delivered on time. Within the first three minutes of the transaction, the price of "on time" went down, meaning that participants had no faith in the product being delivered on time. The project manager held a meeting to discuss how to solve the delay problem, and the price went back up. Ultimately, the product was not delivered on time because end users were not satisfied with some of its performance.

This example shows that a prediction market, by collecting all kinds of information, can help refine the governing policies inside an organization.

Microsoft is not the only company that has deployed a prediction market. For the past ten years, many Fortune 500 companies, including HP, Best Buy, General Electric, Google and IBM, have been doing the same thing.

Economist David Rothschild believes that using prediction markets in business decisions has two purposes. One is to inform participants what may happen in the future so that they can collect information and resources more efficiently, and the other is to make them know how the various factors affect prediction results.

In addition, prediction markets also help organizations more effectively manage economic and social risks, such as a decline in consumer demand, disease outbreaks and epidemics, and environmental disasters.

6.1 Delphy Legal Structure

A non-profit foundation, Delphy Foundation Limited ("Delphy Foundation"), has been established in Singapore with respect to Delphy, which will act as an independent legal entity to organize a core team to develop such a decentralized prediction market platform and application. However, the operation and use of Delphy per se will be fully subject to and dependent on the community's autonomy and the Delphy Foundation will merely be a garden-variety member within the community who may put forward proposals or suggestions on Delphy's self-governance without supreme or distinguishable power of authority.

The Delphy Foundation will sell, in the form of private sales and crowdsale, DPY tokens that are designed to be used on the Delphy platform. DPY will serve as the payment method and unit of account for users to use Delphy's services. Nobody will be responsible to repurchase or redeem any sold DPY. DPY, as a kind of virtual commodity with practical uses, are not securities or speculative investment instruments. The Delphy Foundation does not guarantee any intrinsic value of or economic return from DPY. DPY does not represent any real-world assets or rights (such as shares, voting rights, etc.) of the Delphy Foundation. The typical target users of DPY are crypto-token and blockchain veterans.

No U.S. citizens, permanent residents, or green card holders are allowed to participate in the DPY crowdsale, thus the Delphy Foundation will not sell DPY to the foregoing persons.

The Delphy Foundation will use proceeds from the sale of DPY at its own discretion, which include expenses for technical development, marketing, compliance, financial audit, business development, etc.

Delphy contains a completely decentralized prediction market on top of Ethereum. Anyone around the world can access, free of geographical restrictions, the inherent functions of Delphy by, and only by, consuming DPY. The Delphy platform has neither a physical presence nor association with the territory or fiat currency of any country or region. Nevertheless, regulatory authorities in various countries around the world may confront Delphy with interrogatories and supervision. To satisfy and comply with the local laws and regulations, the Delphy platform may be out of service in certain jurisdictions. The Delphy Foundation and its team will endeavor to seek a "sandbox policy" or safe harbor treatment to allow Delphy to better serve the users.

6.2 Disclaimers

The Delphy Foundation does not make, and hereby disclaims, any representation or warranty with respect to Delphy or DPY (such as merchantability or fitness for particular purposes), except those expressly specified herein. Each purchaser's decision to participate in the DPY crowdsale and purchase any DPY shall be made based on his/her own knowledge of Delphy and DPY and the information disclosed in this Whitepaper. Without prejudice to the generality of the foregoing, each purchaser will, upon the launch of Delphy, accept DPY on an "as is" basis, irrespective of the technical specifications, parameters, performance or function thereof.

The Delphy Foundation hereby expressly disclaims its liability, and shall in no case be liable to any person, for:

- (1) any person's purchase of DPY in violation of any anti-money laundering, counter-terrorism financing or other regulatory requirements that are imposed in any jurisdiction;

- (2) any person's purchase of DPY in violation of any representation, warranty, obligation, covenant or other provision under this Whitepaper, and the resulting failure or inability to make his/her payment or to claim relevant purchased DPY;
- (3) early termination of the DPY crowdsale for any reason;
- (4) failure or abortion of Delphy development and resulting failure to deliver DPY;
- (5) delay or rescheduling of Delphy development and resulting failure to meet any anticipated milestone;
- (6) any error, bug, flaw, defect or otherwise of the source code of Delphy;
- (7) any malfunction, breakdown, collapse, rollback or hard fork of Delphy or the blockchain of Ethereum;
- (8) failure of Delphy or DPY to meet any specific purpose, or unfitness for any specific use;
- (9) utilization of the proceeds raised through the DPY crowdsale;
- (10) failure to timely and completely disclose any information relating to the development of Delphy;
- (11) any purchaser's divulgence, loss or destruction of the private key of his/her crypto-currency or crypto-token wallet (inter alia, the private key of the Delphy wallet used by that purchaser);
- (12) any default, breach, infringement, breakdown, collapse, service suspension or interruption, fraud, mishandling, misconduct, malpractice, negligence, bankruptcy, insolvency, dissolution or winding-up of any third party crowdfunding portal of DPY;
- (13) any difference, conflict or contradiction between this Whitepaper and an agreement between any purchaser and any third party crowdfunding portal;
- (14) trading or speculation of DPY by any person;
- (15) listing or delisting of DPY on or from any exchange;
- (16) DPY being classified or treated by any government, quasi-government, authority or public body as a kind of currency, securities, commercial paper, negotiable instrument, investment or otherwise that may be banned, regulated or subject to certain legal restrictions;
- (17) any risk factors disclosed in this Whitepaper and any damage, loss, claim, liability, punishment, cost or other adverse impact that is caused by, associated with, in connection with, incidental to or consequential to that risk factor.

6.3 Risk Factors

The Delphy Foundation believes that there are numerous risks involved in the development, maintenance and running of Delphy, many of which are beyond the control of the Delphy Foundation. Each DPY purchaser should peruse, comprehend and consider carefully the risks described below in addition to the other information stated herein before deciding to participate in the DPY crowdsale campaign.

Each DPY purchaser should pay particular attention to the fact that, while the Delphy Foundation is established in the Republic of Singapore, Delphy and DPY lie in cyberspace only without physical presence and hence do not fall within or pertain to any specific jurisdiction.

Participating in the DPY crowdsale campaign shall be an action based upon prudent decision and will be deemed as the relevant DPY purchaser having been fully aware of and agreed to take all the risks below.

- (1) **Termination of the Campaign**
The DPY crowdsale campaign may be early terminated, in case of which a purchaser may only be refunded with part of his/her payment as a result of the Bitcoin / Ether price volatility and/or the expenses incurred by the Delphy Foundation.
- (2) **Insufficient Information Availability**

Delphy is at the stage of development as of the date of this Whitepaper and its philosophy, consensus mechanism, algorithm, code and other technical specifications and parameters could be updated and changed frequently and constantly. While this Whitepaper has contained the then up-to-date key information of Delphy, it is not absolutely complete and is subject to adjustments and updates that the Delphy Foundation might make from time to time for certain purposes. The Delphy Foundation is not in a position, nor obliged, to keep the purchasers closely posted on every detail of Delphy development (including its progress and expected milestones no matter whether rescheduled or not) and therefore will not necessarily provide the purchasers with timely and full access to all the information relating to Delphy that may emerge from time to time. The insufficiency of information disclosure is inevitable and reasonable.

- (3) **Regulatory Measures**

Crypto-tokens are being, or may be, overseen by the regulatory authorities of various jurisdictions. The Delphy Foundation may receive queries, notices, warnings, requests or rulings from one or more regulatory authorities from time to time, or may even be ordered to suspend or discontinue any action in connection with the Campaign, Delphy's development or DPY. The development, marketing, promotion or otherwise of Delphy or the DPY crowdsale campaign may be seriously affected, hindered or terminated as a result. And since regulatory policies could change from time to time, existing regulatory permission or tolerance on Delphy or the DPY crowdsale campaign in any jurisdiction could be just temporary. DPY could be defined from time to time as virtual commodity, digital asset or even securities or currency in various jurisdictions and therefore could be prohibited from being traded or held in certain jurisdictions pursuant to local regulatory requirements.

- (4) **Cryptography**

Cryptography is evolving and cannot guarantee absolute security at all times. Advances in cryptography, such as code cracking, or technical advances such as the development of quantum computers, could present risks to all cryptography-based systems including Delphy. This could result in the theft, loss, disappearance, destruction or devaluation of the DPY held by any person. To a reasonable extent, the Delphy Foundation will be prepared to take proactive or remedial steps to update the protocol underlying Delphy in response to any advances in cryptography and to incorporate additional reasonable security measures where appropriate. The future of cryptography or security innovations is unpredictable while the Delphy Foundation will try its best to accommodate the continuing changes in the domains of cryptography and security.

- (5) **Development Failure or Abortion**

Delphy is still in the process of development, rather than a finished product ready to launch. Due to the technological complexity of the Delphy system, the Delphy Foundation could be faced with unforeseeable and/or insurmountable difficulties from time to time. Accordingly, the development of Delphy could fail or abort at any time for any cause (including insufficiency of funds). The development failure or abortion would result in non-availability of the purchased DPY for Crowdsale to any purchaser.

- (6) **Theft of Crowdsale Proceeds**

There may be attempts to steal the crowdsale proceeds received by the Delphy Foundation (including the fiat currency amount converted therefrom). Such a theft or attempted theft may affect the ability of the Delphy Foundation to fund the development of Delphy. While the Delphy Foundation will adopt cutting-edge technical solutions to keep the crowdsale proceeds safe, certain cyber thefts could be hardly unpreventable.

- (7) **Flaws in Source Code**

Nobody can guarantee the source code of Delphy to be flaw-free. It may contain certain flaws, errors, defects and bugs, which may disable some functionality for users, expose users' information or otherwise. Such flaws, if any, would compromise the usability, stability, and/or security of Delphy and consequently bring adverse

impact on the value of DPY. Open source codes rely on transparency to promote community-sourced identification and solution of problems within the code. The Delphy Foundation will work closely together with the Delphy community to keep improving, optimizing and perfecting the source code of Delphy onwards.

(8) Unpermissioned, Decentralized and Autonomous Ledger
There are three prevailing categories of distributed ledger adopted among the contemporary blockchain projects, namely, unpermissioned ledger, consortium ledger and private ledger. Delphy's underlying distributed ledger is an unpermissioned one, which means it is publicly accessible and useable to everyone on a permission-free basis. While Delphy is initially developed by the Delphy Foundation, it is not owned, operated or otherwise controlled by the Delphy Foundation. The community of Delphy, which is spontaneously formed and is open, decentralized and admission-free to join, is composed of users, fans, developers, DPY holders and other participants worldwide who are mostly not connected with the Delphy Foundation in any manner. Such a community will be decentralized and autonomous as to the maintenance, governance and even evolution of Delphy while the Delphy Foundation will merely be an active player in the community peer to others without supreme or arbitrary authority, irrespective of its earlier efforts and contributions to the genesis of Delphy. As a result, it is not at the mercy of the Delphy Foundation how Delphy would be governed or evolve after the Launch.

(9) Update of Source Code
The source code of Delphy is open and could be updated, amended, altered or modified from time to time by any member of the community of Delphy. Nobody is able to foresee or guarantee the precise result of an update, amendment, alteration or modification. As a result, any update, amendment, alteration or modification could lead to an unexpected or unintended outcome that adversely affects Delphy's operation or DPY's value.

(10) Security Weakness
The blockchain of Delphy rests on open-source software and is an unpermissioned distributed ledger. Regardless of the Delphy Foundation's effort to keep the Delphy system secure, anyone may intentionally or unintentionally introduce weaknesses or bugs into the core infrastructural elements of Delphy which the security measures adopted by the Delphy Foundation is unable to prevent or remedy. This may consequently result in the loss of DPY or any other digital tokens held by a purchaser.

(11) "Distributed Denial of Service" Attack
The Ethereum is designed to be public and unpermissioned and therefore may suffer cyber-attacks of "distributed denial of service" from time to time. Such attacks will adversely affect, stagnate or paralyze the network of the Delphy system and accordingly render the transactions thereon delayed to be recorded or included in the blocks of the Ethereum blockchain or even temporarily unable to be performed.

(12) Insufficiency of Processing Power
The rapid growth of Delphy will be accompanied by a surge of transaction numbers and demand of processing power. If the demand of processing power outgrows how much the nodes of the Ethereum blockchain network can then provide, the network of Delphy could be destabilized and/or stagnated, and there could be fraudulent or false transactions such as "double-spending" to arise. In the worst-case scenario, the DPY held by the purchasers could be lost, and rollback or even hardforking of the blockchain of the Ethereum could be triggered. All these aftermaths would do harm to the usability, stability and security of Delphy and the value of DPY.

(13) Unauthorized Claim of DPY for Crowdsale
Any person who gains access to the DPY purchaser's registered email or registered account by deciphering or cracking the purchaser's password will be able to claim the purchased DPY for Crowdsale in bad faith. As such, the relevant purchased DPY for Crowdsale may be misst to the person whomever claims that the

same through the purchaser's registered email or registered account, which sending is not revocable or reversible. Each DPY purchaser shall take care of the security of his/her registered email and registered account throughout by taking such actions as: (i) using a highly secure password; (ii) refraining from opening or responding to any scam emails; and (iii) keeping strictly confidential all the secret or personal information about himself/herself.

(14) Private Key of DPY Wallet
The loss or destruction of a private key required to access DPY may be irreversible. DPY are controllable only by possessing both the relevant unique public and private keys through the local or online DPY wallet. Each purchaser is required to safeguard the private keys contained in his/her own DPY wallet(s). Where such private key of a DPY purchaser is lost, missing, divulged, destroyed or otherwise compromised, neither the Delphy Foundation nor anyone else will be able to help the purchaser access or retrieve the related DPY.

(15) Inflation
Subject to the specific underlying protocol at the launch of Delphy, the total quantity of DPY may slightly increase over time, and could further increase because of the adoption of a patch or upgrade of Delphy source code. The resulting inflation of DPY supply could lead to the drop of market price, and consequently DPY holders (including the purchasers) could suffer economic losses. It is not guaranteed that a purchaser or DPY holder would be compensated or made good somehow for the DPY inflation.

(16) Popularity
The value of DPY hinges heavily on the popularity of the Delphy system. Delphy is not expected to be popular, prevalent or widely used soon after the Launch. The worst-case scenario is that Delphy may even remain marginalized in the long run, appealing to only a minimal portion of the users. By contrast, a significant portion of DPY demand could be of speculative nature. The lack of users may result in increasing volatility of DPY market price and consequently compromise Delphy's long-term development. The Delphy Foundation will not (nor has the responsibility to) stabilize or otherwise affect DPY's market price if there is any such price.

(17) Liquidity
DPY is not a currency issued by any individual, entity, central bank or national, supra-national or quasi-national organization, nor is it backed by any hard assets or other credit. The circulation and trading of DPY on the market are not what the Delphy Foundation is responsible for or pursues. Trading of DPY merely depends on the consensus on its value between the relevant market participants. Nobody is obliged to redeem or purchase any DPY from any DPY holder (including the purchasers). Nor does anyone guarantee the liquidity or market price of DPY to any extent at any time. To divest his/her DPY, a DPY holder would have to locate one or more willing buyers to purchase the same at a mutually agreed price, which attempt could be costly and time-consuming and does not necessarily bear fruit. And there could be no crypto-currency exchange or other marketplace having DPY listed thereon for trading.

(18) Price Volatility
Cryptographic tokens, if traded on public markets, usually have extremely volatile prices. Fluctuations in price over short periods of time frequently occur, which price may be denominated in Bitcoin, Ether, US Dollars or any other fiat currency. Such fluctuations could result from market forces (including speculations), regulatory changes, technical innovations, availability of exchanges and other objective factors and represent changes in the balance of supply and demand. The Delphy Foundation is not responsible for any secondary market trading of DPY no matter whether or not there would be such markets for DPY. Therefore, the Delphy Foundation neither is obliged to tame the price volatility of DPY nor cares about that. The risks associated with DPY trading price have to be taken by the DPY traders themselves.

(19) Competition

Delphy's underlying protocol is based on an open-source computer software such that nobody claims copyright or any other type of intellectual property right of the source code. As a result, anyone can legally copy, replicate, reproduce, engineer, modify, upgrade, improve, recode, reprogram or otherwise utilize the source code and/or underlying protocol of Delphy in an attempt to develop a competing protocol, software, system or virtual platform or virtual machine, which is out of the Delphy Foundation's control and may consequently compete with or even overshadow or overtake Delphy. Besides, there have been and will be various competing blockchain-based platforms that compete with Delphy. The Delphy Foundation will in no case be capable of eliminating, preventing, restricting or minimizing such competing efforts that aim to contest with or overtake Delphy.

8~ Team

8.1 Core Team

Bo Wang: Founder

Master Degree of Information Economics from Michigan University, Bachelor Degree of Information Management from Peking University. Blockchain entrepreneur and technical expert. Co-founder of Factom and Wanglutech, which brings Blockchain technology to a greater range of applications.

Fox Holt: VP of Business Development

MBA from Cornell University, double-degree of Computer Science and Economics from Centre College. Held leadership roles' in GE, Morgan Stanley, and founder and CEO of Orthogonal Inc and Torque Tech Capital. Almost 20 years of experience in diverse range of industries and markets ranging in size from start-ups to multinational organizations.

Mike Li: Product Managing Director

Founder and lead developer of JUZI Browser, ranked No. 6 among all internet browsers in China. More than 10 years of experience in developing and product operation management. Original member of early Qihu 360.

Jane Zhang: Marketing Partner

10 years experience in Internet and Venture Capital. Unique combination of marketing, financial and technical work experience in China. Creation Ventures, KPCB China, APEC China Business Council, Qihoo 360. Participated in investment project Tantan.

8.2 Council and Advisory Board

Bo Shen: Founder of Fenbushi Capital

James Gong: Founder of ChainB.com

Roland Sun: Partner of Broad & Bright

Gang Wu: Founder of Bixin.com

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