



**AMPEX ASSET EXCHANGE**

~ By Ampex Technologies.

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# Project Overview

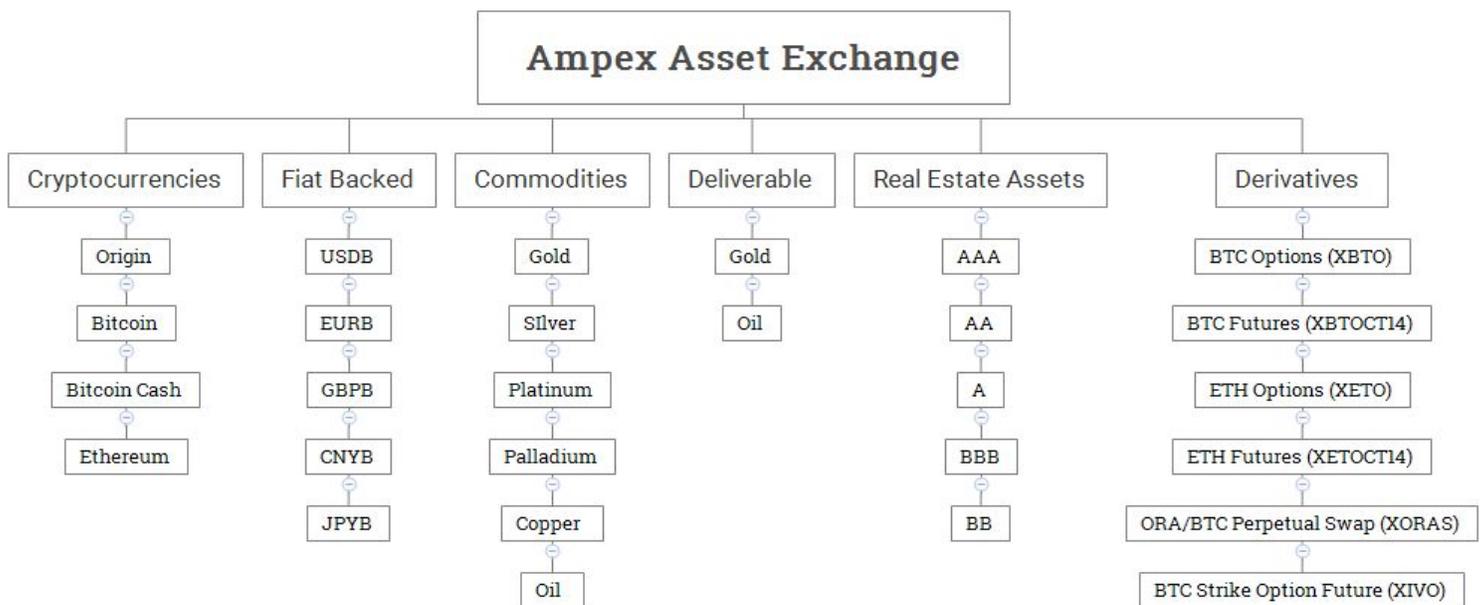
Each module described here is designed with the others in mind. The project aims to satisfy multiple needs in both cryptocurrency and trading markets. Each module performs a task to this end. The design of each module took consideration of the others, so each should be considered when observing a single design.

## Section ( 01 ) Exchange ( Ampex )

### 1.1 Ampex Overview

The Ampex asset exchange offers commodities, forex, and cryptocurrencies all in one market place, which opens the high frequency trading of these assets to anyone.

Our vision is to build a barter system where real world assets can be traded through tokens that provide a proof of stake system. Each token can be held in personal wallets on a decentralized network.



## 1.2 Platform

Ampex offers many different options for investing, trading, and commerce.

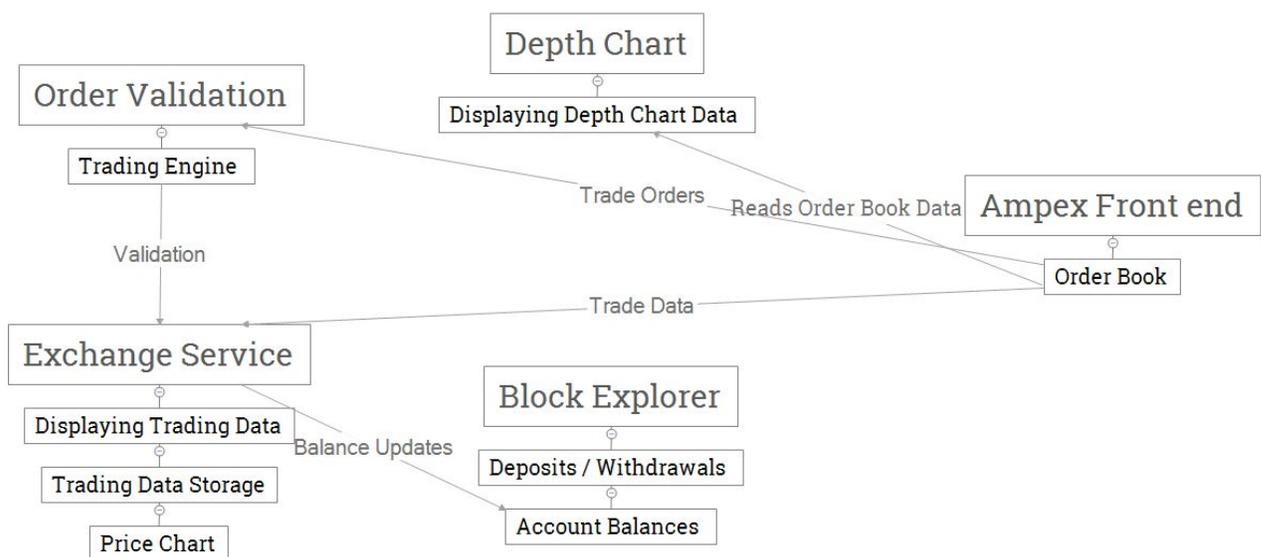
### Commerce

Since 2001 the minimum requirements for a day trading account are an initial balance of \$25,000, as well as maintaining a balance of \$15,000. For many individuals, insufficient capital prevents them from participating in global markets. Ampex removes restrictions by allowing anyone, anywhere to trade these assets through tokens that are backed by open positions in our trading account.

## 1.3 Infrastructure

Multiple servers are used to create a load bearing system:

- Order Validation/Processing Service sends orders to Trading Engine and Validates with Exchange Service
- Trading Engine sends completed orders to the Exchange Service
- Exchange Service stores all trading data
- Block Explorer and Wallet Service communicate with Exchange Service
- Exchange Service sends relevant data to web services to disseminate relevant trade data
- Front End will communicate with web services to read relevant trade data



## 1.4 Development

### 1.4.1 Trading Engine Alpha

We have completed various stages of stress testing on the trading and matching engine.

#### *Test 1: Raspberry Pi*

For this test, we wanted to see how well the engine would hold up running on very underpowered infrastructure and the results were very surprising. The Ampex Engine was able to handle 9000 matched trades per second on the Raspberry Pi.

#### *Test 2: MacBook*

This test was conducted to see how the engine would compare to the Raspberry Pi in performance and reliability. In this case, Ampex was efficiently running over 200,000 trades per second.

### **Conclusion**

From the figures, we have presented the confidence in the engine is very high. The exchange can easily handle periods of extreme volatility. For example, during the Winklevoss ETF crash markets across the world were struggling to remain online with 10,000 BTC being sold at once, resulting in a large number of exchanges halting trading, as well as preventing clients from profiting or minimizing loss.

## 1.5 Security

- Multiple servers will manage Account keys.
- The Front End is in a massive data center with many layers of security.
- The Account keys are in a completely different location with equal security measures.
- To compromise the security an attacker would have to know our hidden IP for both locations and need to carry out an attack simultaneously on both servers.
- Cold storage Multi-Sig is also available to all our clients creating a nearly impossible environment for an attacker to steal funds.
- All cold storage keys are on an offline wallet with a multi signature system where both the exchange and the client need to sign to withdraw the funds.

# Cryptocurrency: Origin (ORA)

Origin is built with the security of bitcoin and the flexibility of ethereum, specialized for financial assets.

## 2.1 The Origin Network

### 2.1.1 Design

RESTful web service based relays allow anything REST compatible to communicate with the network. Relays work by running the entire core system and have full copies of the blockchain that can be served over REST or streamed over websockets.

### 2.1.2 Purpose

The Origin network serves as a power supply for the Ki Global Hedge, providing a means of securing transactions and running contracts to pass tokens back and forth. As an incentive to donate computing power to the network, block rewards and transaction fees are paid out to miners the same way they are paid in many other cryptocurrencies including Bitcoin.

## 2.2 Protocol Structure

### 2.2.1 Blockchain

The current blockchain architecture utilizes similar design aspects to Bitcoin for collision management, proof of work, and transaction/block verification.

### 2.2.2 Transactions

Transaction information is serialized into easily transmittable data in JSON format that is transferred via a custom packet architecture using the Netty library as the network handler. A RESTful service is planned for integration with the exchange

### 2.2.3 Tokens

Tokens are similar to normal coins in a cryptocurrency, but they are not mineable, and piggyback off the Origin blockchain in order to do transactions. The tokens on the Origin system are linked to real world assets and track their

value, allowing people to trade commodities and other resources on the chain or at the Ampex exchange.

## **2.3 Origin Token Structure**

Origin tokens are the only mineable currency on the network. Block rewards and transaction fees are paid in Origin, with the starting block reward being 100 tokens and decreasing steadily with each block instead of sudden decreases like Bitcoin.

## **2.4 Platform Integration**

### **2.4.1 Overview**

The Origin network, including Ki, will be closely tied to the Ampex Exchange, and with the REST service in place, will be able to be tied to other exchanges and financial services with ease.

### **2.4.2 Example**

As an example, a user could buy Ki with Bitcoin on the Ampex Exchange, where it would be converted to USD and posted to a trading account, and be used to purchase the backing assets for the Ki token(s) in question. The automation and speed behind this allow for near instantaneous trading of assets and currencies through Ki on the Ampex Exchange.

Using the previous example, a user wanting specific assets rather than the asset backed Ki token(s), could purchase the assets they want (gold, silver, palladium, etc.) with the same ease and convenience.

## **2.5 Origin Software**

The Origin software includes code for a full node in the currency, a miner, and the wallet management software.

### **2.5.1 Origin Full Node**

Running a full node allows a user to have a complete local copy of the block chain and participate as a relay in the network to transmit block and transactions. A lite node is planned that will not require a full local copy of the blockchain.

### **2.5.2 Wallet**

The wallet management side allows a user to send transactions, manage their balance, change addresses, view recent transactions, and print all transactions of their current address to an excel readable format.

### **2.5.3 Miner**

The Origin Miner uses SHA-3 512, a high security hashing algorithm developed by an independent research group unaffiliated with the NSA (unlike Bitcoin's SHA-2 256, which was directly developed by the NSA). The miner has been highly optimized and will run on most hardware supporting OpenCL 1.0 or above.

On Nvidia's GeForce GTX 1080 Ti GPU at stock clocks the miner currently mines at 1.3 billion hashes per second on average. A standard hashing library, called BouncyCastle, would need to process between 2,600GB and 5,200GB of input data per second to achieve the same hashrate. The miner only needs to process ~270.4GB of input data per second to achieve this hashrate.

These numbers were generated with the following formulae:

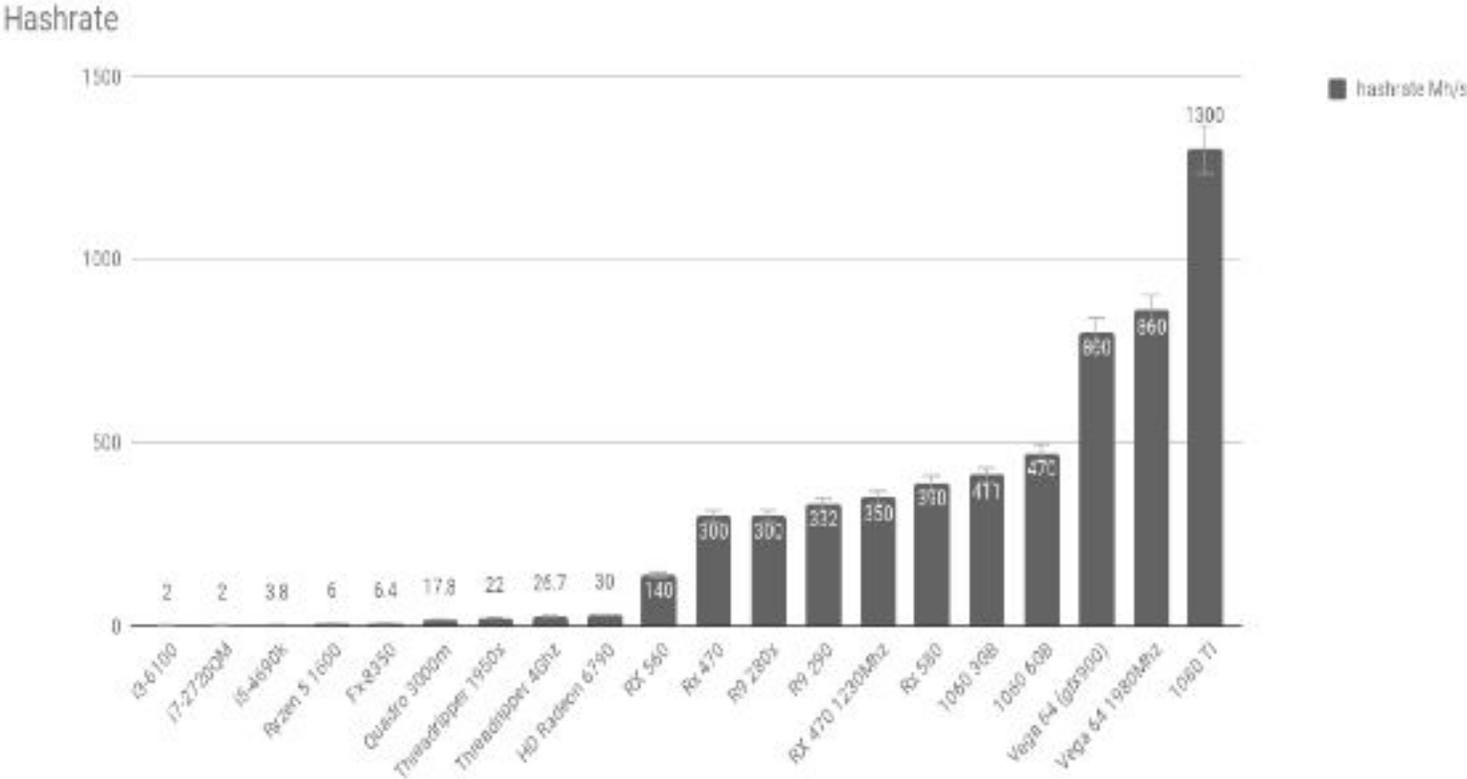
BouncyCastle:

$$\text{Total-Input-Data/second} = \text{Hash/second} * \text{Size-Of-Input}$$

$$\text{Total-Input-Data/second} = (\text{Hash/second} * (208 \text{ bytes} + (\text{Size-Of-Input} / (2^{32}-1)))$$

Where Size-Of-Input is between 2000-4000 bytes and (for the 1080 TI) Hash/second is 1,300,000,000. This major optimization was achieved by breaking the hashing algorithm into two distinct parts, where the “absorb” function of the sponge algorithm is completed once, then the sponge data is reused (200 bytes) with a modifier of 8 bytes in the “squeeze” function to create the desired hash, resulting in the 208 byte constant.

The algorithm has been optimized to the point of surpassing the de-facto standard in SHA-3 hashing speeds, a program called “Hashcat”. In tests, every card was able to surpass its hash rate on hashcat by ~10%. The following is a graph of approximate hash rates on cards and CPUs tested from different vendors and series:



### 3.0 Origin Tokens

Origin will boast a number of different commodities, currencies, and financial assets all on one blockchain.

List of assets to be listed on the Origin blockchain with the type of reserve backing:

Hedged Tokens	
Ki	Physically Backed
QI	Crypto Backed
Metals	
Gold	Physically Backed
Silver	Physically Backed
Platinum	Physically Backed
Palladium	Physically Backed
Copper	Futures contract reserved
Fiat Currencies	
USDB	Account Backed
EURB	Account Backed
JPYB	Account Backed
CNYB	Account Backed
GBP	Account Backed
CADB	Account Backed
AUSB	Account Backed
Energy	
Oil	Futures contract reserved
Natural Gas	Futures contract reserved
Heating Oi	Futures contract reserved
Softs	
Wheat	Futures contract reserved
Corn	Futures contract reserved
Soybeans	Futures contract reserved
Cocoa	Futures contract reserved
Sugar	Futures contract reserved
Over the Counter Tokens	
Oilx	Physically Backed / Deliverable
AUX	Physically Backed / Available for Pickup

### 3.1 Assets

The goal of Origin is to put commodities on the blockchain, for use as a store of value, speculation and commerce.

Origin Physical Backed Assets

Origin is capable of running 124 different assets simultaneously. Some of these are backed by futures contracts and others are backed by real world assets. In this case we have made assets that are deliverable or available for pickup.

We currently have 2 tokens that are available for pickup or delivery:

- OilX
- AUX

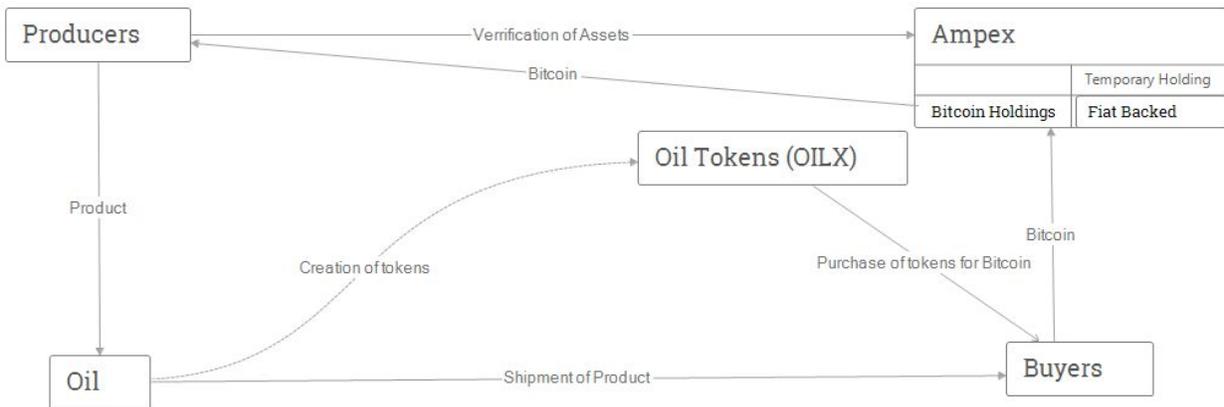
### 3.1.1 Oil Tokens

One oil token will be worth 1 barrel of crude oil and will be traded in the following pairs:

- OilX / Bitcoin
- OilX / Gold
- OilX / Origin
- OilX / USDB

Procedure:

- 1.) Verification of assets.
- 2.) Once the product has been verified the tokens will be listed on the Ampex Asset Exchange under the OTC section where they can be purchased.
- 3.) The tokens can now be sold for one of the already mentioned assets.
- 4.) After the sale, Ampex will convert the asset received (in this case Bitcoin) into a fiat backed token.
- 5.) Shipment of product.



“6.) The fiat tokens are now converted back into Bitcoin and sent to the producers.

## 3.2 Origin Real Estate Backed Assets

In addition to providing physically backed tokens we will also back tokens with mortgage notes.

The structure of our platform will be completely transparent so that there can be no fiascos such as the financial crisis of 2008 in the United States that was caused in part by subprime lending and packaging of these bad loans into bonds that were rated ridiculously high for what was in them. We strive to offer stable products that are trustworthy. We will offer lower tier products such as our BB sets that are higher risk but greater payout, and they will be comprised of appropriate loans to fit the rating scale.

### 3.2.1 Token creation process:

#### Stage 1

Identifying low risk mortgages to package into a mortgage pool. We look for the highest quality notes to package and this process is fully transparent, allowing each investor to review all details of each mortgage note that we package.

#### Stage 2

once we have selected all the mortgages we categorize them based on past performance and credit rating into the following categories with the lowest risk lowest reward starting at AAA and going down to BB with a higher risk and higher yield.

All non personal information will be available for each mortgage in each token pool, running on the Origin blockchain.:

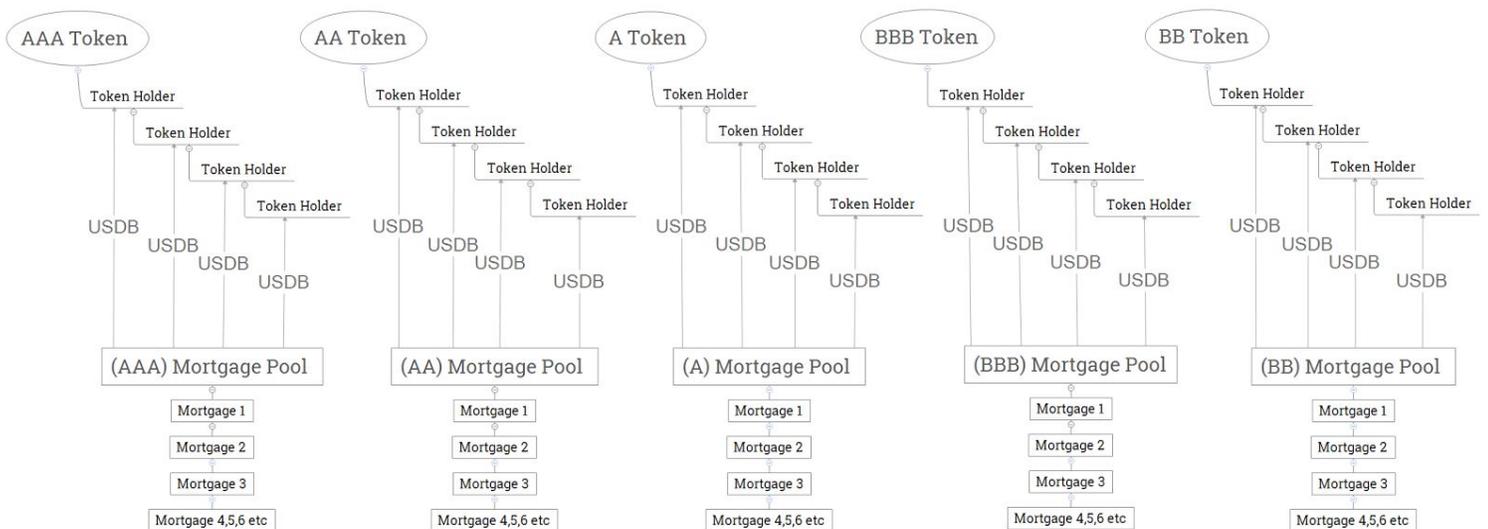
- AAA
- AA
- A
- BBB
- BB

### Stage 3

After the token has been created it will be listed on the Ampex Derivatives Exchange for purchase by investors.

### Stage 4

Payouts will be made through our USD backed token where the investor can choose to reinvest or trade funds for Bitcoin, Gold, etc



## 3.3 Ki Global Hedge

Maximization of the purchasing power.

Cryptocurrencies have completely changed the game, revolutionizing the industry showing the entire world that a new financial system can be created that is fair, open, and outside of the market manipulation.

Lifeform has developed a solution to hedge against fiat currencies by using inflation against them. This hedge incorporates five major fiats: USD, EUR, GBP, GBP, and CNY to counter the volatility in the forex markets. On top of the fiats we use real world physical assets: Gold, Silver and Palladium. These commodities offset the inflation from the fiats. The quantity percentage of each asset has been determined by our AI algorithm by feeding it market data from 1980. The result is a near perfect hedge from inflation, that we have named Ki Global Hedge. The performance of Ki is absolutely astonishing for example:

\$100 USD in 2007 now has \$82.42 worth of purchasing power in 2017 or -17.52% loss in value. now looking at Ki, 100 Ki purchased at the same time in 2007 would have \$108.37 of purchasing power or a 8.37% increase in value.

As can be seen from the performance of Ki it more than counters inflation and provides a return on the original capital.

### 3.3.1 Ki to Fiat:

Ki is always backed at a 1:1 ratio to our reserves so inflation of the currency from the backing will never occur. Investors can be assured that value of their assets is secure.

Since Ki is derived from 8 assets that Lifeform holds in reserve. The price of Ki reflects the value of the combined assets. When an individual chooses to sell the Ki for fiat they have two options.

1.) They may withdrawal Ki form Ampex, in this case we will sell the proportional amount of the reserves and credit the individual with our USD backed token.

2.) The individual may also sell their Ki to another individual on the Ampex exchange that are wishing to purchase. The price they choose to sell or buy at is determined by the free market, although we do provide market data about the price that we purchase Ki for.

### 3.3.2 Implementation of Ki:

The goal of Ki is to transition and replace existing fiat currencies by offering a low volatility, impenetrable security, and fast transaction speeds. Ki is going to change the way we think of currency.

Ki can be easily sold for Bitcoin and other cryptocurrencies, as well as fiat backed tokens. making it perfect for investing, transactions and a low volatile store of value.

With our “Multi Token Wallets” all origin tokens including Ki will be held in the same wallet. By doing this all origin wallets will support Ki as the platform expands Ki will have significantly larger market share.

### 3.3.3 Uses for Ki:

As a hedged counter inflationary currency Ki is making it easier for business to pay salaries at a fair rate to the USD without the burden of inflation.

As can be observed from the past performance of Ki it is an excellent way to store value with low volatility and complete transparency of the real-world assets that back it.

This currency is also a an extremely safe way to transact, due to the fact that the all users have access to data providing value and price information. Since it is a diversity backed currency and can be sold with ease, it is an excellent solution.

## 4.0 Business Model

### 4.1 Target market

- Our geographic target location for the time being is north america. We plan the release the platform globally, although we feel this target is the most effective way to gain market exposure during the growth phase.
- Demographic target for users is male aged 25 to 40 with interests in financial services, technology, and investing.
- Psychographic target is investors is in the expansion, development and deployment of a truly free market economy. Combined with the trading freedom that this platform

provides. This creates an environment to grow new ideas collaborate to design and grow a new world changing economy.

#### 4.2 One Year Goals

- 1 Month – Launch the Origin public ICO
- 3 Months – Ampex asset exchange moves into beta testing
- 4 Months – Ampex goes live with BTC/ORA, ETH/ORA, BTC /ETH, BTC/USDB
- 6 Months – New currency pairs EURB, GBPB, JPYB, CNYB, Gold, Silver, Platinum, Palladium
- 6.5 Months – Ki Global Hedge goes live
- 7 Months – New commodities are added to Ampex
- 9 Months – Beta testing of physically backed oil tokens
- 10 Months – Reaching a 100 million dollar market capitalization.

#### 4.3 Fee Structure

- Deposit: No Fee
- Withdrawal: Standard Network Fee
- Trading Bitcoin/Altcoin: 0.25% for takers, 0% makers
- Trading Commodities: 0.5% for takers , 0% makers
- Trading Forex: 0.3% for takers, 0% makers

#### 4.4 Ampex Competitive Advantages

- First exchange to offer forex, commodity, and cryptocurrency high frequency trading.
- No minimum deposit to trade commodities.
- Ability to keep funds free from inflation and major cryptocurrency volatility.
- Asset pairs between commodities and cryptocurrencies i.e. Bitcoin/Gold.
- Multiple fiat backed tokens for users to trade in any currency they wish.
- Commodity speculation during exit hours.
- Futures and swap contracts with up to 100x leverage on cryptocurrencies, commodities and forex.
- In addition to providing our clients with a global hedge; Ki we offer a solution for clients to create their own hedge by using Origin tokens.

##### 4.4.1 Origin/Ki Competitive Advantages

- Diversification across five fiat currencies and three precious metals
- Mineable version of currency Inflation protection
- Reduced volatility
- Currency integrated within exchange
- All in one platform

· Asset Backed Currency

This whitepaper is an outline of our current and future developments, and is subject to change, as development continues.

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