



On Demand Crypto Market and Portfolio
Analysis, **Driven By Artificial Intelligence (AI)**

Seth Knapp, Sam Czertok, Lawrence Lanoff, Illana Fraines
Contact: Seth@tokenai.io or Sam@tokenai.io

Abstract	3
1. Motivation	4
2. TokenAI	7
3. Platform Overview & Key Components	8
3.1 Conceptual Model	8
3.2 TokenAI dApp	9
3.3 Smart Contract Management	9
3.4 TokenAI AI Platform (Meet Juliet)	9
3.5 The Algorithms & Anticipated Algorithms	10
4. Inside the TokenAI Platform	12
4.1 Individual Coin Analysis	12
4.2. Current Portfolio Rebalancing	12
4.3. Token Basket Generator	15
4.4. Portfolio & Performance Tracker	18
4.5 TAI Token	18
4.6 Service Options	18
5. Project Roadmap: Milestones Achieved & Anticipated Milestones	19
6. Potential Applications (TokenAI API)	20

ABSTRACT

It is our opinion that blockchains, and the tokens built upon them, will continue to transform and flourish. Despite the potential for resistance that transformative technologies seem to face, we strongly believe that the revolution that is taking place will forever change the way we store value.

TokenAI is an on-demand crypto market and portfolio analysis platform that is driven by our proprietary AI and built for this “New Token Economy”.

In a market where there are currently over 1,500 cryptocurrencies to choose from (*source: coinmarketcap.com*), along with having to learn and navigate new technologies and services, the potential points of friction for consumers can be cumbersome.

TokenAI aims to be the bridge that enables everyone - from those brand new to the crypto markets, to the most experienced crypto traders - to navigate these emerging new markets with more confidence by delivering an AI driven toolkit, offering what we anticipate to be the following three services: Individual Coin Analysis, Current Portfolio Rebalancing, and New Token Basket Generation.

1. MOTIVATION

Throughout the history of the modern financial markets, it is our belief, that the people's right to participate freely has been hindered, obstructed, and even at times, blocked altogether. These obstructions and hindrances to participation in said financial markets have created a greater level of centralization. We believe this is due, in part, to the reliance upon third parties and intermediaries in order to participate as a consumer.

As these systems evolve and grow in power, high quality information and access to sophisticated tools becomes more and more centralized, leaving consumers largely resigned to use financial products and services made available by incumbent financial institutions.

In our eyes, the question then becomes:

"How do you give consumers more of their autonomy back in determining how they want to impact and plan for their financial future, while still providing the same kind of access to rich information and sophisticated tools that many of the centralized financial institutions have access to?"

During the financial crisis that first hit in 2008 - at a time when it was possible that consumer trust in centralized financial institutions and markets was as low as it may have ever been - a potential beginning of a technological solution was released to the public in the Bitcoin protocol and its accompanying cryptocurrency called Bitcoin.

It's been close to 10 years since Bitcoin launched as an experiment and it has exploded in growth. Ethereum has added an additional level of simplicity and capabilities to this ecosystem. We strongly believe that cryptocurrency is creating a "new token economy" that is becoming a mainstream way of investing and transacting, while potentially giving the same consumers much of their autonomy back in deciding how they plan for their financial future.

While attempts have been made to attract more investors to this world; there are still barriers that still remain:

1. **Traditional financial structures:** Cryptocurrency in its current form is a hybrid of a financial product and software, spawning possibilities of transactional freedom that has not existed in the financial world since the days when bartering was the leading way to transact. This decentralized method of transacting does not work with the way traditional financial companies operate today.
2. **User experience:** While today's cryptocurrency markets and applications are significantly better than what was available at its advent, these systems are still not easy for the average user to understand. A user who wants to purchase or sell cryptocurrency or tokens has to navigate multiple apps, wallets and exchanges in order to participate. This is very time-consuming and can potentially create friction among consumers who want to enter the crypto markets and transact without having to understand the ins and outs of each application/exchange/technology.
3. **Risk:** Investment in cryptocurrency is still a speculative and risky endeavor. Most sophisticated users spend a lot of time and effort researching the new tokens on the market and the market trends. However, this is only a small segment of the total potential addressable market. By making strides in helping to reduce potential risk, there is greater opportunity to address the needs and concerns of the everyday consumer.
4. **Market growth:** Currently, there are over 1,500 different coins and tokens being traded (*source: coinmarketcap.com*), and more are added almost daily. While managing trades in a few coins generally is not cumbersome for most, addressing all the opportunities this fast growing market offers can be seen as nearly impossible.

The emergence of the crypto markets as a potentially viable, consumer first investment option, is creating a new kind of opportunity. That said, the barriers to entry and potential bottlenecks in accessing said crypto markets, creates a unique contradiction in our current setup.

It is in this amalgamation of current market and societal factors discussed above that we feel the opportunity lies to create solutions that more easily pave the way for more people to participate in the emerging crypto markets.

2. TokenAI

TokenAI is an on-demand crypto market and portfolio analysis platform, driven by Artificial Intelligence (AI). Our aim is to enable crypto traders to harness the power of our proprietary AI driven toolkit, in an effort to help maximize portfolio performance, and potentially reduce the friction that can be associated with trading in the crypto markets.

A democratized AI driven toolkit. We anticipate our proprietary AI to be used for a basket of services such as: individual coin analysis, rebalancing of your current portfolio, and the generation of an entirely new token basket based on parameters the user sets themselves. It is also our belief that a toolkit like this should be made readily accessible to users everywhere, in an easy to use, cost effective manner.

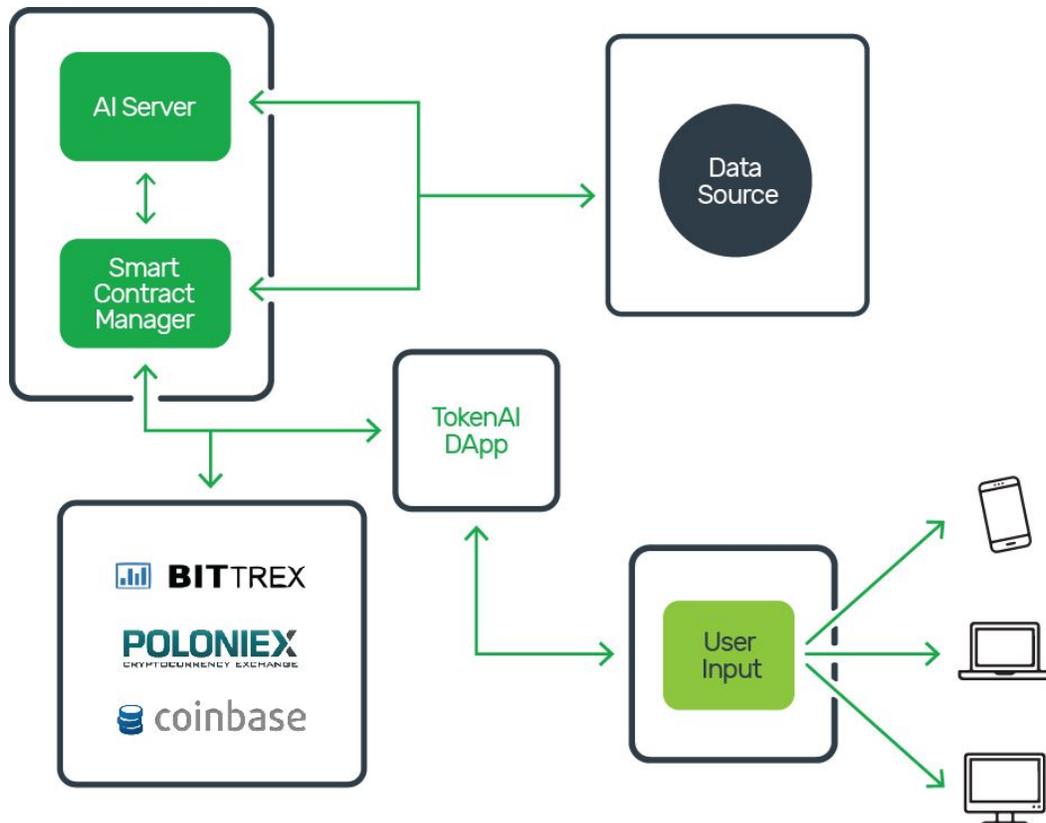
Built for the blockchain. This AI powered toolkit is being powered by Big Data from the blockchain, where these tools can interact with smart contracts. It is through these interactions on the blockchain that our AI, and any subsequent AIs we develop, can learn and grow.

Decentralized model. The utility that we believe really differentiates the TokenAI platform is that we are not a centralized fund powered by AI, nor are we a centralized exchange, which means users will not need to deposit investment funds with us, and we never control your personal wallet keys. The user will control their own funds and keys at all times.

When you deposit funds directly into a centralized fund, or provide private information to a centralized database, it can leave you open to vulnerabilities and increase the risk of tampering and even theft. With the focus on a decentralized model, we aim to arm our platform users with an AI powered toolkit to enable and empower them in their investment decisions and portfolio building, while keeping all the power to manage their information and investments in the user's own hands.

3. Platform Overview and Key Components

3.1 Conceptual Model



The TokenAI platform has the potential to provide a variety of tools and resources to allow both sophisticated and less sophisticated users to engage in commerce and take greater advantage of the token market.

3.2 TokenAI dApp

The TokenAI decentralized app (dApp) will be the access point for users of the TokenAI platform.

This is where users actually interface with our anticipated service offerings, modify their user information and/or settings, and access other features of the TokenAI platform.

3.3 Smart Contract Management

The TokenAI platform and the subsequent services that we anticipate offering will be accessed solely by our proprietary token (TAI), which will be managed by a smart contract.

The “Smart Contract Manager” will control all flow of TAI on the TokenAI platform from the initial purchase of the token on the platform, to the use of it for our anticipated service offerings, and any other possible transfers and uses within the TokenAI platform.

3.4 TokenAI AI Platform (Meet Juliet)

Our AI driven platform is powered by our proprietary artificial intelligence we named Juliet. Juliet is the brand on top of the technology, and “she” has already begun to build a fan following on social networks such as Twitter.

(NOTE: Juliet is not currently available to the public and is not controlling the social media accounts that share her likeness, rather, this is a way for us to market and brand our technology in a more human way.)

The technology itself drives our anticipated basket of services that we are referring to as a “toolkit”. Our proprietary algorithms analyze the crypto markets in various ways to identify potential opportunities and signals that will fuel the insights and recommendations made via our various services that we anticipate to offer, as further outlined below.

3.5 The Algorithms and Anticipated Algorithms

(NOTE: Some of the services listed below will not be available for the initial launch and will be added over time. We anticipate the initial iterations of the AI Risk Optimization Module, the AI Social Module, and the AI Anomalous Movement Module to be available upon anticipated launch.)

The TokenAI algorithms will track changes and trends in the cryptocurrency market and social media and are, and will be designed to identify opportunities that exist beyond what the standard individual and crypto investor can identify.

The TokenAI platform is a set of AI modules that contain algorithms that can be combined to produce a new token basket recommendation from scratch, make recommendations based on analysis that could potentially optimize portfolio performance, and analyze individual coins and propose positive or negative signal insights.

We think of the modules as individual AIs - each continuously learning from different sources of data - and all at the user's disposal.

The AI Anomalous Movement Module will quantify typical movement across cryptocurrencies. This module will have the ability to both alert the user of movement and autonomously build recommended trades based on the detected anomalies.

The AI Mimicking Module will allow users to train the AI to mimic and adapt to their own trading preferences, allowing them to enhance their trading. This module will watch trades the user makes and as it observes trading habits, it will begin suggesting similar trades, once a sufficient level of trust is developed.

The AI Social Module will use sentiment analysis from news and discussion on major news sites, blogs, and social media. This module will give the user deep analysis of the global sentiment regarding particular cryptocurrencies (even from sites in languages the user may not speak or be able to read) and provide the ability to construct trades based on trends and influencers invisible to most users.

The AI Risk Optimization Module will use the historical data from the cryptocurrencies to quantify and help users identify the amount of risk they are willing to accept. With the immaturity and lack of sophistication of many traders in these markets, having a well-quantified risk profile is crucial to long-term success.

The AI Market Manipulation Avoidance Module assumes that there may be bad actors who attempt to manipulate currency prices and exchange operations. By monitoring activity across all of the exchanges, this module will provide users and exchanges with information on true price discovery and risk alerts.

(NOTE: In this module, the algorithm will monitor and analyze transactions and look for anomalies, such as a large purchase of a specific coin that also coincides with another factor such as increase communication about the coin on social media, that could then create a red flag that the AI could potentially warn the user about.)

As we develop the algorithms we expect more features will be added. Machine and deep learning allows us to analyze unstructured data (like financial information on news sites, blogs, across social media, etc.) and potentially reveal patterns not previously identifiable by only human eyes – this allows for an entirely new approach and potentially more accuracy in trading decisions.

What we are building is a platform that learns and adapts to cryptocurrency markets as they themselves grow, something that could only be implemented using the tools of artificial intelligence and machine learning.

4. Inside the TokenAI Platform

(NOTE: some features may not be available at platform launch)

We anticipate offering what we call an “AI as a Service” (AiSaaS). This is a basket of services we are calling a “toolkit” that will be driven entirely by Juliet, our proprietary AI. The services we anticipate offering as part of this “AI driven toolkit” are: Individual Coin Analysis, Current Portfolio Rebalancing, and Token Basket Generator.

4.1 Individual Coin Analysis

This function of our proprietary AI driven toolkit is probably the most straightforward. When logged onto your personal user portal within the TokenAI platform, a user will simply select a specific coin in the “Individual Coin Analysis” function, and Juliet will provide almost instantaneous analysis of the specified coin. She will let the user know whether she’s picking up any “positive” or “negative” signals based on her analysis of the current market and past trends, that would indicate if she’d recommend trading for said coin or recommend holding off.

4.2 Current Portfolio Rebalancing

We anticipate that many of our users will be experienced crypto traders who hold their own handpicked token baskets. This function of the “toolkit” is designed for the trader who would like to leverage Juliet’s insights for their own personal portfolio.

With this function, a user can have their current holdings analyzed and then be provided with a “rebalanced” version of their portfolio as recommended by Juliet. The aim of this function will be to provide users with AI driven insights into how they can reappropriate and redistribute their current holdings in an effort to help maximize overall portfolio performance.

The below chart is an example of how a user of this function's Portfolio Rebalancing recommendation could look.*

Symbol	Price	AI Balanced Ratio	% Change	TAI	Market
				11.3704	6.02976
ALF	0.001176	1.0000%	-37.35%	-0.3735	-1.1952
ANC	0.084407	1.5000%	-11.93%	-0.17895	-0.38176
ARG	0.047949	3.8462%	-1.03%	-0.0309	-0.03296
BQC	0.00282	3.8462%	-17.07%	-0.5121	-0.54624
BTB	3.24	3.8462%	-14.69%	-0.4407	-0.47008
BTC	104.45	8.0000%	10.08%	0.8064	0.32256
BTG	0.585998	3.8462%	-26.26%	-0.7878	-0.84032
CAP	0.027474	3.8462%	-37.56%	-1.1268	-1.20192
BTE	0.019841	1.4000%	-20.82%	-0.29148	-0.66624
CSC	0.009574	3.8462%	101.26%	3.0378	3.24032
CNC	0.009818	3.8462%	76.29%	2.2887	2.44128
CRC	0.133694	3.8462%	8.20%	0.246	0.2624
DVC	0.000063	4.7500%	20.35%	0.96662	0.6512
DGC	0.034285	3.8462%	23.17%	0.6951	0.74144
FRC	0.007091	3.8462%	-18.97%	-0.5691	-0.60704
IXC	0.003902	4.0000%	6.00%	0.24	0.192
JKC	0.000269	3.8462%	-18.06%	-0.5418	-0.57792
KGC	0.001542	2.0000%	-37.40%	-0.748	-1.1968
LTC	2.98	5.7500%	3.55%	0.20412	0.1136
MNC	0.053762	3.8462%	116.79%	3.5037	3.73728
NMC	0.624057	6.0000%	8.05%	0.483	0.2576
SBC	0.001361	4.0000%	-5.18%	-0.2072	-0.16576

TRC	0.175962	3.8462%	39.44%	1.1832	1.26208
WDC	0.008776	3.8462%	0.65%	0.0195	0.0208
XNC	0.000034	3.8462%	-41.83%	-1.2549	-1.33856
YAC	0.018124	3.8462%	11.97%	0.3591	0.38304

**This Data is used for example purpose only and is based on a partial capture from the TokenAI database. It should not be used as investing advice or for any purpose other than demonstrating how the Rebalancing function works.*

The highlighted rows indicate portfolio rebalancing recommendations based on signals the TokenAI proprietary algorithm picked up on during analysis of the specified coins, along with current and past market trends. The newly proposed allocations can be found in the category with the header "AI Balanced Ratio".

The assumption made in this model was that the hypothetical user was allocating 3% of their total portfolio principal to each coin, or in other words, a perfectly even distribution and allocation of funds per coin.

As mentioned above, the highlighted rows indicate a signal that would trigger Juliet to recommend a rebalance, and if you refer again to the category labeled "AI Rebalanced Ratio", you will notice % allocations that are either greater or less than the 3% allocation this "user" currently has allocated to the highlighted coin. These are the newly proposed allocations made by Juliet, that are intended to help maximize the overall performance of the "user's" current holdings or portfolio.

The yellow highlighted area is the overall percent change for this weekly market snapshot. The "percent change" is the overall change in value of the coin for the period that this snapshot was taken. The yellow highlighted section labeled "TAI" shows the overall performance of the portfolio had the "user" gone ahead and made the proposed changes in our Portfolio Rebalancing function. The yellow highlighted section labeled "Market" shows the overall performance of the "user's" portfolio had they made none of the recommendations made in our Portfolio Rebalancing function, or not used our service altogether, and maintained an evenly indexed token basket.

Again, this is a hypothetical use case as it was not a snapshot from an actual user, however, it was an actual snapshot of this technology being used on the token basket shown above.

4.3 Token Basket Generator

This anticipated function has the potential to truly empower and enable users in their participation in the crypto markets.

In this function, (the third anticipated function of our AI driven toolkit) users will have the ability to generate a token basket from scratch, based on specific parameters they set themselves.

Number of Tokens. This feature will allow users to decide the size of the actual token basket they wish to generate in number of tokens.

For example, if a user selects “20 tokens” as their specified parameter, Juliet will perform analysis to determine the 20 most ideal tokens for the basket as based on the other parameters set by the user.

Market Cap. A user can select the market cap of tokens Juliet will analyze based on order of ranking by size.

For example, if a user selects “Top 100” as the specified parameter, Juliet will only perform analysis on coins with a market cap in the top 100.

Juliet has about 500 coins (this is a fluid number) she can select from. This is based primarily on 3 factors:

1. **Market cap of individual coin.** To ensure liquidity for the token purchasers who utilized Juliet’s insights, we purposefully removed tokens with low overall market capitalization from Juliet’s list of recommendations. In this scenario, “market capitalization” is the total number of coins in circulation, multiplied by the price of the coin.
2. **Availability on exchanges.** Juliet is connected to four different exchanges: Bittrex, Poloniex, Cryptopia, and Binance. She will only analyze and select coins that are listed on the aforementioned exchanges.

3. **Trading volume.** The coin must also have enough current trading volume to be analyzed by Juliet. Current trading volume is an essential consideration as trading volume needs to be high enough to ensure liquidity into and out of the desired coin, at the desired price. Market cap analysis alone is not enough of an indicator to truly determine liquidity.

Exchange. Another parameter a user will set for generating a recommended token basket from scratch is selecting a specific exchange they wish Juliet to perform all her analysis from. A user can also select “All”, which means Juliet will perform analysis for this function for the specific user on all exchanges she follows.

Principal. Because the impact of Juliet’s analysis is based on the “weight” she places on the coins she selects based upon certain signals, the final parameter a user will enter is the desired principal amount the user wishes to spend on all the coins in the basket. For example, if a user enters \$1,000 as the desired principal amount to be analyzed, Juliet will then recommend actual amounts to be invested specifically into each coin she places in her recommended token basket based entirely on the parameters set by the user.

Token Basket Generator Use Case

User selected parameters:

Number of Tokens: 28

Market Cap: Top 250

Exchange: All

Principal: \$1,000

Symbol	Quantity	Price (USD)
SRN	37.534	\$0.6431
XLM	76.848	\$0.3141
EMC	7.079	\$3.4098
SNT	164.315	\$0.1469
BTM	66.059	\$0.3654

XRP	28.63	\$0.8431
WAVES	4.024	\$5.9984
ZIL	590.169	\$0.0409
LTC	0.129	\$187.221
DASH	0.085	\$525.304
SMART	205.631	\$0.218
XEM	132.274	\$0.3389
ETH	0.061	\$734.667
VEN	11.728	\$3.8222
VERI	0.24	\$187.011
CNX	6.796	\$6.5959
WTC	2.712	\$16.5289
BTC	0.005	\$9,268.67
PART	2.036	\$22.02
QASH	50.591	\$0.6816
NXS	12.247	\$2.8155
BNT	8.43	\$4.0905
NXT	212.594	\$0.1622
PAY	25.535	\$1.3504
KMD	10.101	\$3.4138
AE	18.016	\$1.914
MKR	0.042	\$830.437
ZEC	0.11	\$313.018

**This is an actual token basket recommendation that was generated on-demand, at 9:41 am PST on Monday, March 12th, 2018, based on the hypothetical parameters set forth above.*

4.4 Portfolio & Performance Tracker

To help alleviate the need for a user to track their own trades and portfolio performance and to improve the overall user experience, we anticipate offering portfolio and performance tracking features in the dApp.

These performance metrics and portfolio tracking features will be displayed in a visual and aesthetically pleasing format, and are being designed first and foremost, with the user and improving their overall experience in mind.

4.5 TAI Token

The sole means of accessing the TokenAI platform's basket of AI driven services is a proprietary digital token called TAI. We believe that developing our own proprietary token is the best, most efficient solution to interact on the blockchain and remove third parties from the transaction approval process.

Since the TokenAI platform is not a centralized investment or crypto trading platform, the TAI token is simply used as the means of paying fees for access to and use of the TokenAI platform.

4.6 Service Options

We anticipate offering two service options. Both are fee based, depending on the user's desired level of use of the TokenAI platform.

1. **Individual transactional fees.** This is a "per use" fee applied to individual actions on the TokenAI platform. These fees are paid every time a user uses one of the services offered in the AI driven "toolkit".
2. **Monthly unlimited service fees.** This is a fee that is applied once per month to users who opt in to this service. This model would be categorized as a "Software as a Service" (SaaS) in the traditional sense. TokenAI platform users who opt in to this model will receive unlimited monthly use of the AI driven "toolkit".

5. Project Roadmap: Milestones Achieved & Anticipated Milestones

(NOTE: All anticipated project milestones and release dates are subject to change)

Achieved Milestones

- **February 2017:** Development Begins
- **June 2017:** Alpha of Algorithm
- **August 2017:** v1.1 Algorithm
- **September 2017:** API created, allowing for 3rd Party Access
 - Link to 4 major exchanges, making actual trading via AI possible*
- **October 2017:** Fully autonomous, live, real money trading with proprietary AI**

Anticipated Milestones

- **Q3 2018:** Anticipate Product Launch
 - (Includes): Rebalancing Algorithm, Portfolio Tracker, Token Basket Generator
- **Q4 2018:** Anticipate Social Sentiment Module tool to be made available
- **Q1 2019:** Anticipate mobile app and mobile transaction launch
- **Q1 2020:** Anticipate TokenAI being made available worldwide

*TokenAI's proprietary AI connected to actual exchanges as API. Trading is taking place on exchanges, not TokenAI platform.

**"actual trading" and "real money trading" are not being executed on our platform. TokenAI is not an investment or trading platform.

6. Potential Applications (TokenAI API)

The TokenAI API is a protocol that will allow third party services to connect to the TokenAI platform and leverage the work TokenAI has done to optimize its services.

Exchanges. This is a potential TokenAI use case that could be used by exchanges that want to offer additional services to their members such as smarter transaction recommendations and/or portfolio optimization through rebalancing and optimized funds allocation recommendations.

Cryptocurrency oriented service providers. This potential ancillary use case for the TokenAI API is for cryptocurrency service providers who want early warnings of a traffic surge, or a pending DDos attack. The service provider could write code that calls on the API to predict such events and better prepare for them.