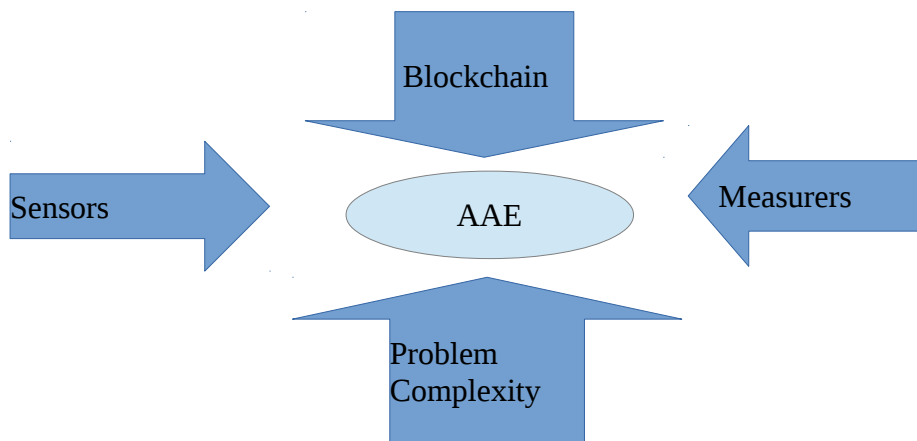


# ModusEsse (THEmeasure) – Self Intelligence on the blockchain.

Founding Paper Draft 1

## Introduction

Measuring self intelligence on a peer or peer to peer basis would further the evolution of being. The next wave of Internet decentralization is underway. Currency/banking with bitcoin and others on the way, such a ethereum.org decentralizing Law and peer to peer data storage networks via e.g. maidsafe.net. These utility blockchain technologies fundamentally disrupt and further open up the decentralization frontier of innovation. Individuals are the building blocks of intelligence and the augmenting of this intelligence can be achieved by self measuring using sensors to put more of life on the record. Problem complexity for an individual and as a collective means the discovery of new knowledge and its application is becoming increasingly difficult. Current technology aims to solve the complexity by centralizing data in data centers and by centralizing problem solving algorithms (increasingly AI, artificial intelligence in nature) in the hands of centralized bodies, corporate or government. ModusEsse provides a decentralized Autonomous Application Environment to allow individuals to measure their life and share self intelligence peer to peer to address complex collective problems. Measurers take sensor data and extract meaning to augment self intelligence. The measurers require an incentive signal from the individual to reward complex problem solving. An EsseCoin will be the reward mechanism. Historically, wealth, health and wellbeing are not measured directly, proxy 'value' mechanisms like money are used along with centralized trust institutions. EsseCoin decentralizes the capture of sensors and computation (the measurers) and blockchain utilities to produce a bottom up fabric for individuals and society to evolve.



## EsseCoin

The cryptocurrency for the ModusEsse decentralized network.

Pronounce 's'

## Price signal

In a monetary system of any type the most powerful component of its impact on the world is that of providing a price signal to all participants. When the goal of economics of any school requires the allocation of scarce resources then, a universal pricing mechanism is all powerful i.e. money. But what about in a post monetary system, what is the equivalent of a price signal?

## Knowledge signal

As an economy becomes more decentralized the individual participants also become more autonomous

yet they still need to tap into the collective intelligence of the world. A knowledge signal will be the mechanism that individuals will use to draw data, information or knowledge from the collective. This knowledge signal can contain more than just a simple numeric value. The knowledge signal needs to be context aware i.e. dynamic to its situation and address the certainty or doubt given all the knowledge available. The knowledge signal encapsulates proof of data and proof of computation. For example:

**MKP** – me knowledge probability

**NKP** – network knowledge probability

It can be envisioned individuals in society asking for a MKP in various contexts e.g. what is your MPK for weight loss? Answers me = personal trainer K 23 P 83% Network 7bn K 39 P 88%.

### **Proof of data - Solving the subjective value problem** (bitcoin mining prime numbers)

Money of any type, fiat or crypto is a proxy value. It does not directly measure value or record reality. esseCoin is different, it is backed by data (of reality). Putting a value on data when each individual can measure the same data differently is the fundamental problem the esseCoin is addressing. In short how can we trust the underlying data tied to the esseCoin?

### **Solving 'gaming the system' problem** (bit coin double spend)

Tied to existing human monetary and contract systems e.g. fiat or bitcoin with elasticity in pricing denominated and created in esseCoins via a Smart Contract put a price on the 'subjective' peer to peer exchange of value back by agreed sensor and measured data. Over time society/culture will appreciate the value of esseCoin. At some point it can be envisioned that fiat or crypto monetary currencies will have seen to have served their purpose and will not be used anymore.

### **Seeding esseCoins**

Each new participant downloading a AAE wallet would be given a default amount of esseCoins. This would be like say, each human born has X value of data. This number would be completely subjective. In existing Crypto currencies seeding of a blockchain, such as pre-mining provides such a mechanism.

### **How to value the seed issuance?**

Pure bytes of data logged? How can we be sure tied to identity? Some made up ratio? Or some mathematical principal not thought up yet. Looking for this to be naturally determined.

### **Relative and Absolute Value**

esseCoin is a post monetary construct. In a monetary world, how much money you have matters and thus relative comparisons can be made. The concept of absolute value and relative value does not exist in esseCoins. What does exist now is the esseCoin Measurement protocol: is a world where you can Trust and use the underlying data of reality to further each and every participant in the networks own subjective or augmented intelligence agenda.

### **Incentives:**

**Individuals** – augment intelligence, freedom, accuracy of reality, simulation of the future.

**Measurer** - (miner/farmers) sensors, ML, AI, AGI: Essie coin [attention value of beings will guide and motivate further evolution of algorithms/sensors to solve more complex problems.]

## **AAE Protocol Technology**

### **Introduction Autonomous Application Environment Protocol (see technical paper)**

#### **AAE core Protocol**

A trusted autonomous and independent technology for the creation of esseCoin based on sensors and computation measurement scale agreed in a Self or Peer to Peer data smart contract.

#### **Role of the blockchain**

The role of the blockchain technology as applied to a cryptography based currency is two fold, facilitate a decentralized ledger system peer to peer that can be trusted due to mathematics. Peer to peer transaction proof of work providing a disincentive to defraud the system. In a post monetary currency the goal become different. The two main goals are to provide trust in the data of reality and the measurers (sensors, computation, contracts) that facility the peer to peer exchange of the data. Therefore the updating of each blockchain entry is not just a mere process of updating all with the 'transactions of reality' but showing their impact on the individual. What human visualization measure is best to achieve this, a numeric number or a probability or some ratio of certainty? Can such a universally understand human unit be created and trusted?

#### **Wider Internet interactivity**

The evidence from bitcoin application developer community has show they build new infrastructure around the core blockchain technology, for example exchange to convert bitcoin to fiat or other crypto currencies or gold or basically anything. Such exchanges might choose to include esseCoin however, the equivalent of an exchange in a post monetary concept is much different. The role of the exchange will be to support the pricing of reality by activity e.g. how many esseCoins to put up for loosing 10lbs of weights in ABC context with sensor Y in a dynamic contract? The computation software could also have esseCoin pricing mechanisms, where the price really means the value to the individual and network in terms of reality.

#### **Adoption evolution**

The decentralization of money, the decentralization of law, the decentralization of intelligence.

#### **Key Existing market/environment factor pre esseCoins**

Trusted independent sensors and adoption at a key saturation level, ie wearables gone main stream?

Trusted measurement criteria, science or socially used, height, but not pain (not yet).

Established smart contract protocol, bitcoin smart contract or ethereum.

#### **Adoption cycle**

**Phase one** can begin by introducing the contract value in esseCoins. A purely human subjective valuing of value in addition to a monetary consideration. Over time humans will be come esseCoin price aware (maybe with the support of value exchanges). This can be seen as a big behavior change ask for the masses in the short run but those adopting bitcoin and ethereum would find it a natural progression.

**Phase two** Context aware esseCoin. As the core value of solving ever increasing complex personal (e.g. wellbeing) or collective problems (e.g. climate change) then instant value represented in esseCoins will become self evident. As this value matches those intuitive in human intelligence, adoption will speed up naturally.

**Phase three** Context aware esseCoin value plus a probability of its applicability given collective knowledge. To achieve this natural adoption based on human intelligence will need to see esseCoins evolve beyond subject contracts to the comprehensive and all encompassing 'proof of knowledge' measurement.

### **Adoption by developers of Dapps**

Dapps were introduced by bitcoin (wallets) and ethereum projects. These developers bring day to day integration with all aspects of use. Why will website and mobile app developers choose to select Dapps as a main development environment? Dapps will run in existing web and mobile environment with the decentralized plumbing talked to in addition to the WWW protocol. In the medium term there could be a breakthrough to a post browser dominated web UI.

### **Case studies**

#### **Examples:**

#### **1. Self example**

##### **1.1 Individual with a personal trainer & gym membership (wellbeing)**

An individual joins ABC gym, the contract concluded on the ethereum platform. In addition to access to the gyms facilities they conclude a Peer to Peer Ethereum contract with a personal trainer. This 'smart' contract adapts to measurement feedback data points. For each of these data points an agreed sensor mechanism is used, pictures taken, weight, body fat, pulse rate, and the Personal trainer sets target goal they 'guarantee' to deliver. The timing of assessment is also detailed. The individual also agrees on the contract to follow the activities recommended by the trainer. They include reference to their own personal tracking e.g amiigo wearable data.

The smart contract is set live. The individual has chosen to setup an AAE tool and enter into other smart contracts with a range of measurer applications, e.g. bone mass, mental wellbeing, sleep analysis. A smart contract is also entered into with storage and CPU utility service e.g. maidsafe.net. Their chose display devices is via HTML5 websites. A smart contract to share data collected in the gym by the gym owner and individual is also agreed.

The personal trainer also sets up an AAE container. This manages all the smart contracts between them and the gym and all the individual customers. They ask for access to personal data to be shared by a set of Measurer services that assist with generating personalized exercise programmes. They use a bitcoin smart contract to pay the gym for being a privilege provider at their facility.

The gym owner has a bitcoin smart contract to pay the rent to their landlord as well with rented sports equipment and built in sensors. They use a AAE to provide data utility services give back data to the individuals and to provide feedback to sensor manufacturers and Measurers.

The personal training activities proceed day by day and the chosen weekly agreed mechanism trigger payment points. The data captured is used to incentives the personal trainer and their support Measurers to further improve the assessment contract. The same data fuels sensor innovation to measure more accurately.

This is a finite well being contract and the close of the contract, data and value is shift across all parties via EsseCoins.

### **Data & Contract Flows**

Peer 1 individual wanting to improve fitness, specifics lose weight – gain muscle mass.

Peer 2 personal trainer, want to help individual achieve fitness goals.

Today, contract put in place between two parties (usually via gym but we will simplify)

Contract Between Peers1 and Peer1. Objective loose 12lbs 8lbs muscle gain. Price 20 week programme, times Monday Wednesday and Friday of each week.

EsseContract: As above, but the sensor agreed was a fitbit wifi scales and fitcheckersensorapp.com. The parties agree to put a value of 50 esseCoins. [BIG QUESTION IS HOW IS THIS BASE VALUE SET??? SOME THING FOR THURSDAY CONVERSATION.]

### **Scaling up Look?**

Four person world, two peer contracts, same goal different measuring esseCoins.

#### 1.2 Individual chiropractor (health-pain)

(based on personal experience) 20 years ago a burning pain started to be experienced during long distance walks but then disappeared. 10 years ago this burning neck shoulder pain became more frequent and over the last 2 years it felt like the pain was becoming constant and chronic. As a QS'er you try a combination of exercises and try to understand what is causing the pain, poor computer posture and long hours at, injuries in other parts of the body reducing the frequency of swimming training and a re-ignited passion for playing the violin for hours on end. Any cause and affect there or is it just getting old? As the exercises seemed to work and then not and then an acute pain affect sleep night after night the result was a series of panic attacks. Another individuals knowledge was sought. I decided a chiropractor was a better choice than the physiotherapist I had tried a couple years earlier. Through friends recommendation and web search I concluded on paying for an assessment that lead to 10 treatments and an ongoing monthly checkups. A pain questionnaire is used as the 'success' feedback mechanism between the practitioner and me. The treatments and more important exercise routine has reduced the chronic status of the pain but the battle goes on figure out the underlying cause.

What I could do via an AEE. Replace the pain questionnaire with a smart contract. I have taken weekly photo of my posture pre starting and during the treatments. I got told X muscle are short. So,

OK, I put that on the record, agree a sensor to measure the muscle length e.g. via photo and then time period to measure those. In time a 3D scanner sensors would increase accuracy of position of individual muscles and bones and be available in home and during chiropractor treatments.

## **2. Research knowledge PtoP**

Scientist new AI algorithm (cancer)

A cancer researcher with 25 year career, starting out at an University research lab before spending, 8 years in a commercial company before moving to lead a team at the UK's largest cancer charity research effort on skin cancer. Aware of quantified self and their own slow progress and limited access to computer modeling resources, sensors and staff, takes the bold move to put their molecular chemistry and cell biology knowledge on the blockchain via a smart contract. Other University, commercial and charity researcher admire the bold move and act like wise. The machine learning and AI community developers come aware of this new knowledge that needs to be programmed and applied. Likewise, the wearable sensor hardware innovators start a number of crowd funding campaigns to provide new sensors that will more accurately provide data to process.

## **3. Sensor**

New sensors for monitoring X (sensor)

The current generation of wearable sensor require a physical touch between an individual and the sensor to measure O2 levels. The accuracy of measurement is not as high as expected. A tinkerer working on monitoring the human body electromagnetic field for pulse rate with out touch releases the electronic code and hardware spec. on a smart contract. A startup entrepreneur pickups on this innovation and sees a way to apply it to O2 levels.

## **4. Measurer**

Prediction Machine learning Open source code e.g. <http://prediction.io/> A QS'er, developer and self taught data scientist downloaded a copy of Prediction IO to perform personal data experimentation. They chose to run the code in an AAE on their own data only. After, weeks and months the algorithm is tweaked to provide actionable activities and foods to improve their sleep quality. Would this ML work for others? They reach out to a friend and enters into a PtoP smart contract and the code is synced via the two AAE's. The sleep predictions come out for his peer friend are favorable. Word gets out and the app spreads peer to peer. The smart contract between friends include the opensource code, sensor used and visualization utilities. The initial developer knows there is still more progress to made and maybe the aggregation of all the peers data running the app. would lead to more improvements in sleep and a better scientific understanding of the science of sleep.

They put out a smart contract request to share data, explaining this would involve running experimental code and be a secure AAE module. 60% of the network using the starting app sign the contract. New progress is made. Word gets out to the existing sleep scientific community and to one University researcher in particular that researches in the area and that had signed up the basic self sleep code app. They believe their knowledge made into a app could help conclude the next frontier. They reach out to the core developer and they agree to work together along with a 3 other coders. A new smart contract is put out to the Peer network and 30% agree to participate in the updated app. This leads to fundamental new understanding of sleep, all those in the network update their apps and sensors. A range of knowledge is produced including meditation techniques to chemical(drug medicine) to boost sleep quality and thus daily awake time intelligence for the individual improves dramatically.

## **Community**

Core founders  
Core developers  
QS  
Machine learners  
Existing crypto  
Sensor (kicker starts to DIY)

### **Key technical people to find**

ethereum core developer or experience of building an app.  
Mathematician or cryptographer  
CMO – person to design marketing message of whole concept  
Project manager  
Director of Engineering  
Documentation/technical writer  
Governance credibility  
Others??

### **Funding**

Issue of EsseCoins through a crypto public offering, accepting, Bitcoin, Ether or Safe Coins.

### **Govern-ship – setup DAO (decentralized autonomous organisation)**

Opensource foundation, building on Linux, bitcoin, ethereum style.

### **TimeTable**

September-December 2014 – founding documentation, technology road map, core team build.

January-June 2015 – build of prototype Protocol

July-September 2015 – build of first application

October 2015 – CryptoIPO of EsseCoins

March 2016 – beta release of ModusEsse protocol.

September 2016 – Full 1.0 protocol release