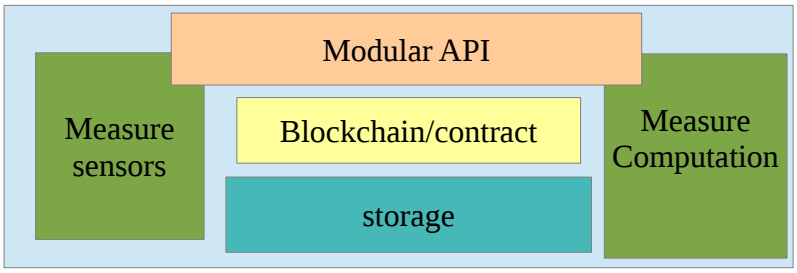
ModusEsse – Technical Founding Paper -Draft 1

Introduction

The next wave of Internet decentralization is underway. Built on the foundation of generations of mathematical and technological innovation in the field of cryptography and Internet networking. Blockchain technologies becoming the established backbone for decentralization. Self expression on the Internet has taken hold and now sensors add to the production of personal, environment and cultural data. These collective sensors are termed, the Internet of Things. In a personal sense, the term Quantified Self (QS) has been used to describe the use of this data for augmenting self intelligence, or wellbeing. This volume of personal data is growing exponentially and extracting intelligence in isolation or as a collective is becoming increasingly difficult as the complexity of the problems needing addressed also increases. This increasing problem complexity is an incentives to purse new scientific research to startup innovation however there is not current universal signal available to guide either the individual or knowledge workers. The ModusEsse measure will be a universal algorithmic probability applied to self and the entire blockchain to establish a problem complexity signal. This paper sets out how an AAE, an autonomous application environment technology can combine, blockchain and measurement (contract(context), sensor, computation, data i.e. intelligence extraction) for individuals on a decentralized Internet.

AAE Protocol Technology

AAE (autonomous application environment) – a decentralized modular application run and deployment container. The following diagram summaries it basic architecture:



AAE Protocol container

The main function of the container is to provide a secure application run environment for any hardware . In bitcoin these are referred to wallets, with the core bitcoin and extra security wallets like https://bitcoinarmory.com/ .

Independent place where EsseCoins are created

A new esseCoin is made in a peer to peer contract (context, sensor, computation code, data) by applying a universally applied algorithmic probability calculation.

Algorithmic Probability Calculation http://en.wikipedia.org/wiki/Algorithmic_probability

[I cannot say I can join all the dots on this but gut feel says Doug Engelbarts collective intelligence dove tail is problem complexity. I am taking heart that a universal objective measure can be found and applied (even if that objective measure includes subjective raw ingredients), http://en.wikipedia.org/wiki/Kolmogorov_complexity shows how compute resources can be used as a measure. And I think a more expansive application of this thinking can provide a far better, quantums better, signal to humans than one based on subjective price (i.e. a monetary concept).

Why should this be the case? Because the Algoritmic Probablity calculation includes a measure of reality in more granularity than money. Money simply excludes or more accurately is not able to compute practically such granularity of reality. While compute complexity score is also a proxy for reality is has much more going for it. NB. Compute complexity is the dove tail to intelligence thus collective IQ, Dougs goal.]

Two types of Essecoins can be made.

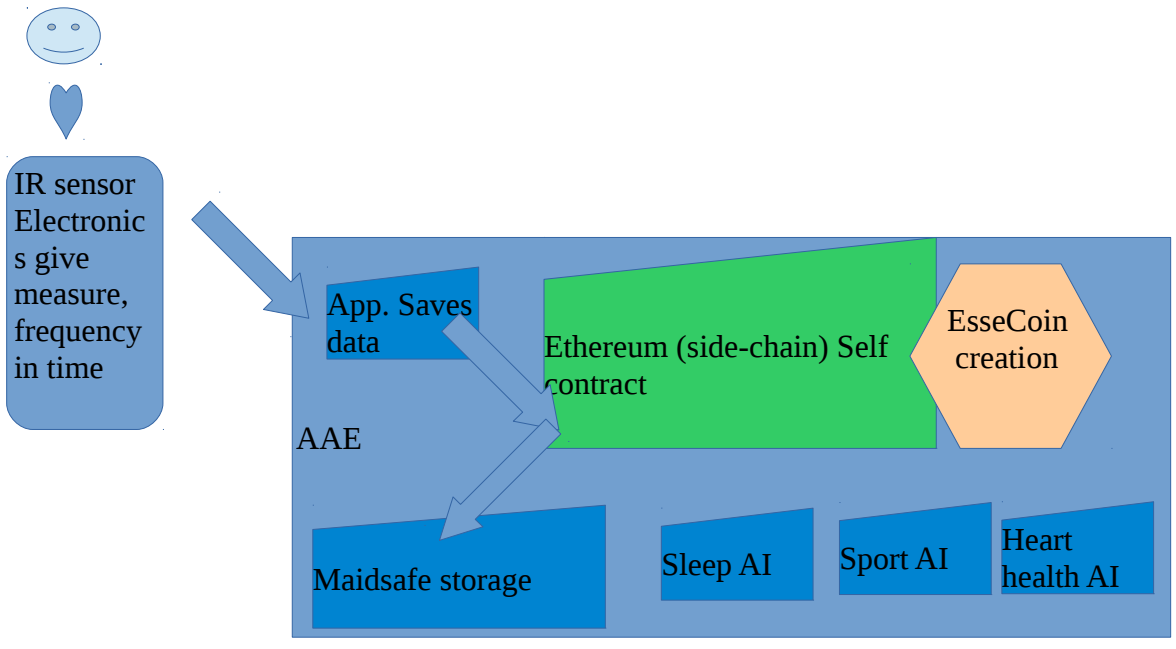
Self Contracts
Where an individual choose to record and put on the record their own sensor data. A self subjective value is put on this data.

Peer to Peer Contracts
Where two contracting parities accept to exchange data on the basis of an agreed independent sensor and measurement standard. To establish a subjective value with an incentive not to game or produce fraudulent or simply make up sensor data and measurment data. The esseCoin value will be set in conjunction with a traditional fiat or crytocurrency base monetary value contract. The logic being it is now costly for the peers to collude to make EsseCoins and thus establish a status of being a Trusted source of self data to exchange with.

Blockchain self organization
The current blockchain technology like bitcoin and ethereum provide a trusted decentralized open ledger and transaction processing environment. They can be described as being procedural or functional repetitive task minded, with mathematics logic providing the backstop of trust. The next step forward for a blockchain is to provide it with some self organization but again with a backstop of trust based on mathematical logic to provide universal trust. Making a blockchain more dynamic and thus more complex to keep up to date is a challenge but the Universal Algorithmic Probability core code will make this possible. [think of cisco routers 1.0 hardware yes no traffic boxes and now software based logical routers with some simple intelligence to route traffic better].

DataFlow - wearable sensor for pulse rate

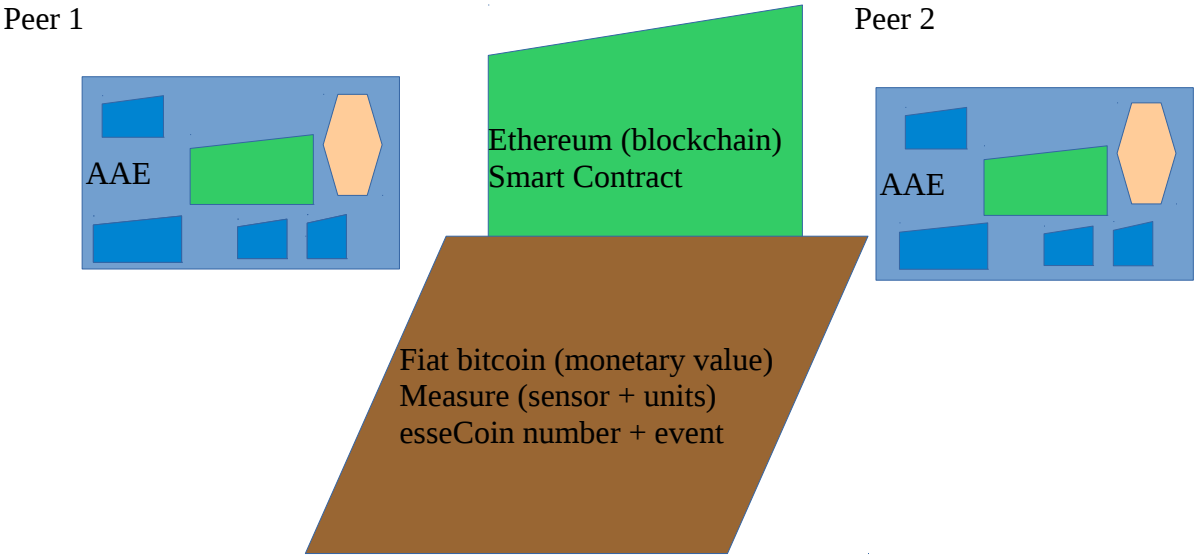
Self Contract flow



Bockchain events:

1. First use of AAE
2. First use of Sensor + App.
3. Setting up Maidsafe or ther decentralized storage
4. AI modules providing data insights to AI to future simulations
5. Each flow of measure from the sensor (ideally sensor should have built in blockchains)

Peer to Peer contract flow



Modular API (application programming interface)
The primary building block for the AAE is the individual. All individuals will be free to independently perform self discovery of intelligence. The modular nature of the API allows the combining of multiple AAE for an individual or for those that want to combine self discovery on a Peer to Peer basis to aid the discovery of more complex collective problem solving. The AAE modularity also acts as the glue for existing decentralized technologies like storage and blockchain contracts and transactions.

Blockchain/Contract (smart)
The backbone of trusted decentralization comes from the blockchain. Many blockchains exist starting with currency(bitcoin) and now contract (ethereum.org) for the decentralization of law. The AAE will be compatible and use such technologies.

- adding a contract to the blockchain
  outcome based and dynamically updated given reality experienced good or bad

- seeding THEmeasure (contract, context, sensor, computation) across the networking

How to seed the sensors across the network initially i.e. be sure when its says apple watch or amiigo wearable that sensors data structure is know. Part of installing an AAE will involve putting the type of sensor on the blockchain and then getting a census on how each sensor is described will occur.

- only going forward blockchain i.e. no peeling back just like bitcoin

The two parts above i.e. a decentralized blockchain peer to peer ledger plus the ability to update the local THEmeasure software.

- encryption of contract (the sensor specification, context(any thing available e.g gps co ordinates) and computation (source code of measure software, at electronics to API level)

Contract are not static entities, they are always live and updated with sensor/computations measures. The data will be encrypted as it passes through the contract. Goal is for the data to be easy to move around in AAE computation environment securely but also provide a disincentive to make up the sensor or computation data i.e. this will be expense in electricity and CPU time.

Storage

Each individual has the right to keep a copy of their life on the record. Decentralized storage technologies promises to provide unlimited and secure peer to peer access, e.g. maidsafe.net. The AAE will use such saving protocols.

THEmeaure

Sensors and Measurers are in effect the same fundamental concept, a means of recording reality. However its useful to categorize the Sensor as some independent hardware mechanism to record reality which Measurers use as the base ingredients from the Sensors to extract more value given any context.

Granularity of reality	Sensors	Measurement	Augmented Intelligence
Examples			
Movement	Accelerometer Units, metre per second Metre based on human creation of distance between two places in space and time.	Distance, time, speed, laws of motion physics What does this mean? Given context means anything. Measurers can take fundamental building senor data and combine with other data i.e. a specific context and extract value, i.e. create more data via Machine learning to AI. Example: movement in connection with loosing weight or bone strength or heart health or sporting achievement goal etc.	The individual is free to use a range of sensors, measusers and then to use that follow their own volition or put up as data in a future esseCoin contract peer to peer.

Measure Sensors:
The ability to measure will increasing come from personal and environment sensors. The range and function of the sensors is vast and growing exponentially. The AAE will begin with 'light' data volumes that can be managed, heavier, voice, video data will follow.

Measure Computation:
The sensors capture the data, but what does it mean? What self intelligence or collective intelligence can be extracted? The AAI will provide a place for a broad range of application from statistics, data mining, machine learning, AI or AGI to run.

Reward Measurers
Self and collective intelligence needs an incentive mechanism to direct evolution. Measurers will be rewarded when new discoveries are established ie rewarded with EsseCoins.
[need some mathematic formula for this. NB. Mining leads adoption in bitcoin, if we take a discovery rewarding then, that implies in the future, ie new knowledge can only be reward once established, but at the same time the individuals and society at large need a future looking mechanism to direct problem solving ingenuity eg. To sort my left knee pain to cure Cancer.]
Forward incentives and rewarding proof.

Proof of knowledge, science, it works
When to decide to reward a measurer? Bring in new knowledge. Formula, deployment in code, sensor or feedback mechanism ie display, human machine interaction.
Problem, all will claim breakthroughs, or set low proof measures to game success.

esseCoins
The cryptocurrency of the AAE. How individual, sensor, measurers, cryp0-stack use?

Fundamental Technology Challenges:
- volume of data
- integration with sensors
- running complex measurer code
- run any hardware environment
- realtime – feedback visualization augmentation, implant
- Security, privacy.

How address each of these: see separate papers.

Open source
The code will freely available and governed by ModusEsse Foundation. Embracing decentralized technology tools, gitchain etc.

Developer adoption
Core – visionary crusaders, QS'ers, Engelbart followers

Sensors – wearables 2.0 leaders, kickstarter/indiegogo/crypto crowd funding starups, DIY, open source, medical, academia.

Measurers – data mining as service, AI, AGI, open source prediction projects, exist centralized QS as a service website/apps.

Existing decentralized: bitcoin, ethereum, maidsafe, crypto communities.

AAE Developer Projects (paper needing written for each)

Contract creation – UI and context input and use of ethereum platform

Encryption of data, sensor and computation measured

Numeric value and probability calculations (Universal algorithmic probability)

Peer to Peer Blockchain updating and sharing