

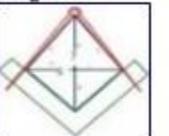
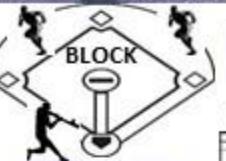


# The Heart Beacon Cycle

## Time – Space Meter

- 300+ Structured Data Template Use Cases
- Syntax Lexicon Library Code Repository
- IoT / IoT, Big Data, net of Money Bitcoin Blockchain Sync
- Ecologically supportive Econometrics Metrics, Meters
- Swords To Plowshare Network Enabled Operations NEO Reuse

UNIVERSAL  
MEME /  
METAPHOR



Open  
Source  
Coder's Guide

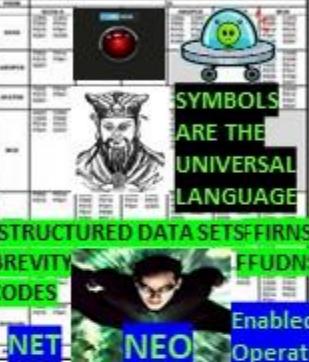


$\Sigma X$   
**SAVE WORLD**

SYNTAX  
LEXICON

TERRA TRC  
300 +  
Templates  
ROSETTA  
STONE

Enabled  
Operations



HEART  
BEACON

Sculpture

## Beacon Communities

Vernetzte Operationsführung

OOTW: Operations Other Than War



JAEGER



Federation  
Gateway

OFF SHORE  
OUTER  
BANKS



TERRACYCLE



EVENT / ALERT BUS



OFF SHORE  
OUTER  
BANKS



MONEYBALL

ECONOMICS

KAIJU

**Spatial  
Econometrics**



SIGNALS  
&  
TELEMETRY

the world's most  
powerful economy  
of the greatest  
value

**MONEYBALL**

ECONOMICS



"Build a new model  
operating manual  
for spaceship earth"



MINIMUM LIST OF COMPONENTS / BUILDING BLOCKS, PROCESSES, PROCEDURES... AGREED ON BY TRADE FEDERATIONS TO ACHIEVE DAO DISTRIBUTED AUTONOMOUS ORGANIZATIONS CONSENSUS

DAO's in FEDERATIONS AGREE TO USE COMMON COMPONENTS, SHARED PROCESSES, METHODS, SIGNALING - TELEMETRY SCHEDULE & METRICS IN SMART CONTRACTS, SERVICE LEVEL AGREEMENTS

CHECKLIST: TRADE FEDERATION ECONOMIC FRAMEWORK EX:

- 1) Organize by assigning Organization Identifiers {"Org\_ID"}
- 2) Track Resources by Uniform Resource Name </URN>
- 3) Take State Meta Data heartbeat snapshots @ 15 / N min
- 4) Honor Satoshi's intent for Bitcoin to be paired w markets
- 5) Use NIST Quantum Random Non-Repudiation Beacon
- 6) Earth Day Everyday / Spaceship Earth's Signals & Telemetry Annex

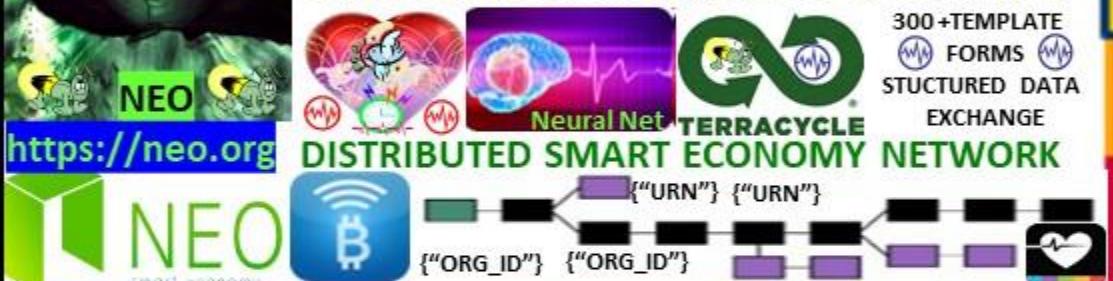


Humanitarian Assistance Networked Donor System

H.A.N.D.S: "Based on the need to speed up the processes of influencing an adversary, new concepts result in the adaptation of military doctrine, organization, training, material, infrastructure, interagency interaction, leadership, personnel and facilities" ... German Bundeswehr : concepts of "Network Centric Warfare" in the United States of America, "Network Enabled Operations" in Great Britain or "Vernetzte Operationsführung" in Germany



**"Shared situational awareness enables collaboration synchronization, and enhances sustainability, speed of command"**



Reuse best practice procedural template guides from Battlefield Digitization describing when, where, how, how often systematically among a systems of systems improving synergy and synchronicity



Federation  
Gateway



  WORLD BEYOND WAR.org  
a global movement to end all wars



JAEGER'S

loser < \$\$\$ < FUEL





## Firefly - Heartbeat Algo

University of Bologna Italy / Hungary



## THE HEART BEACON CYCLE

{"108"}



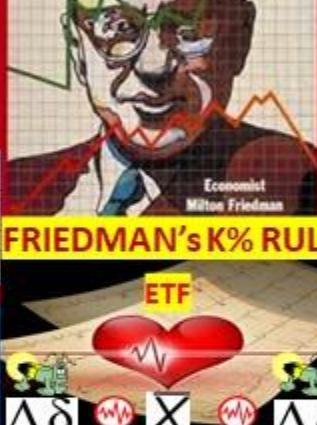
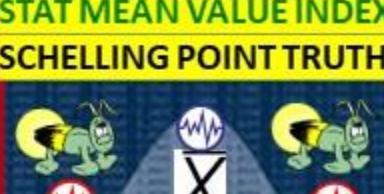
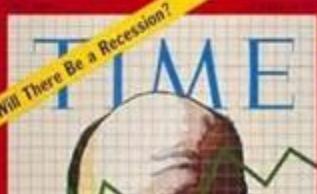
K9



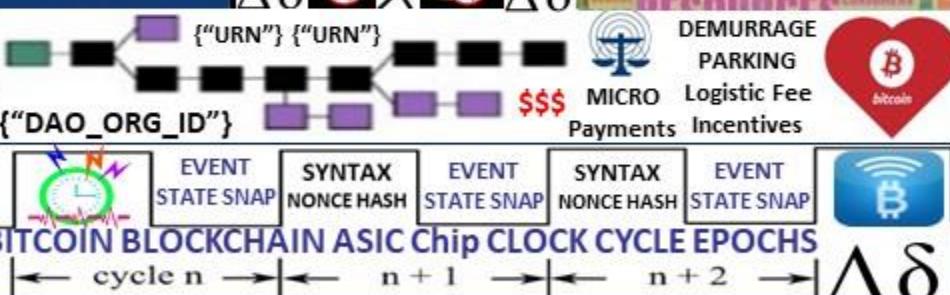
**LENGTH OF REAL TIME CYCLE IS ARBITRARY AS LONG AS NODES EVENTUALLY AGREE**

K% GDP ECONOMIC PULSE FEDCOIN WORLDCOIN

## Luxor Temple Egypt: "The shortest road towards knowledge of truth is nature"

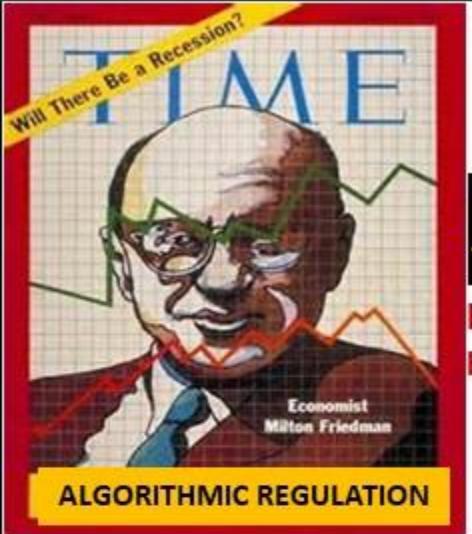


The current standard time common throughout the world is based on a 24-hour clock, with zones that are either 12 hours ahead or behind **Coordinated Universal Time (UTC)**. However, these time zones are decided upon by individual governments, without overall coordination and can even extend fourteen hours ahead UTC. **UTZ TIME ZONE SYNC ("108")**



Heartbeat Synchronization nodes in a distributed system generate periodic local heartbeat events approximately at the same time. It differs from classical clock sync in that nodes are not interested in counting cycles and agreeing on the ID of the current clock cycle. No rule governs the length of a cycle with respect to real time as long as the length is bounded & all nodes agree on it eventually.

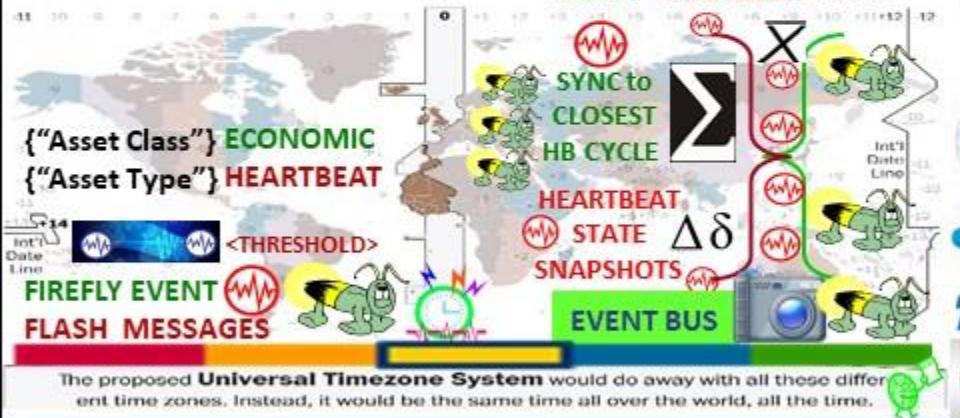




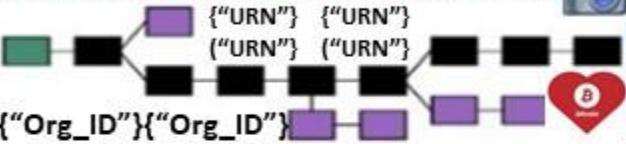
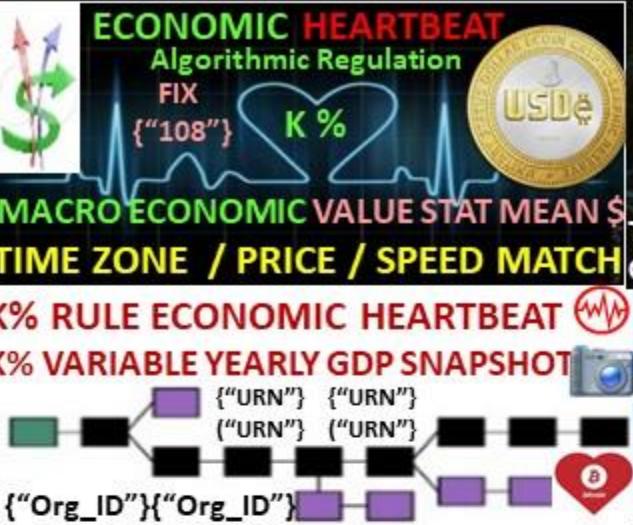
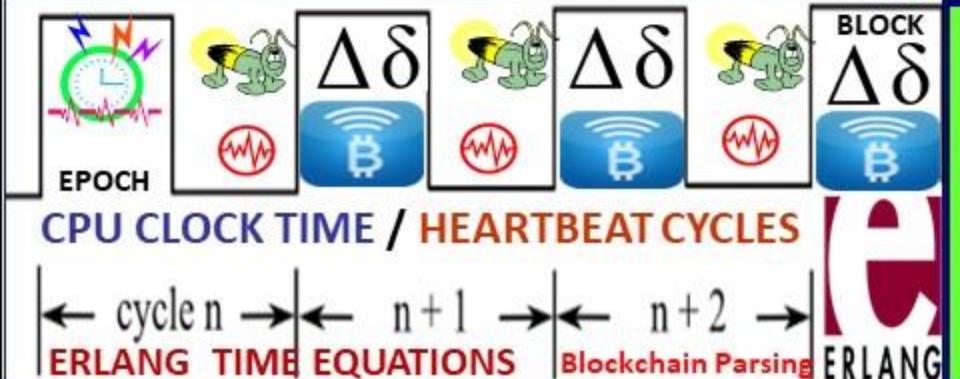
## ALGORITHMIC REGULATION

The current standard time common throughout the world is based on a 24-hour clock, with zones that are either 12 hours ahead or behind **Coordinated Universal Time (UTC)**. However, these time zones are decided upon by individual governments, without overall coordination and can even extend fourteen hours ahead UTC.

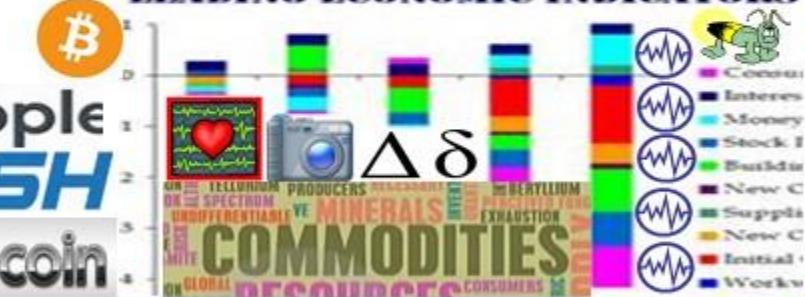
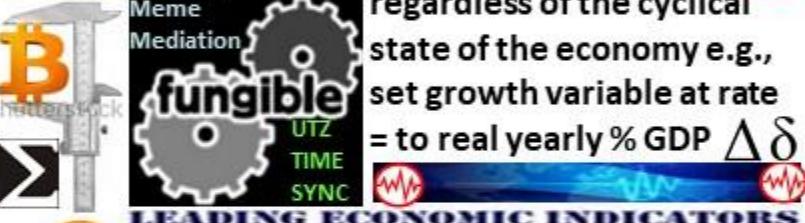
**FIREFLY - HEARTBEAT ALGO**



The proposed **Universal Timezone System** would do away with all these different time zones. Instead, it would be the same time all over the world, all the time.



'K-Percent Rule Macro economic money-supply automatically adjust money supply by a set amount ( "K" variable ) regardless of the cyclical state of the economy e.g., set growth variable at rate = to real yearly % GDP  $\Delta \delta$

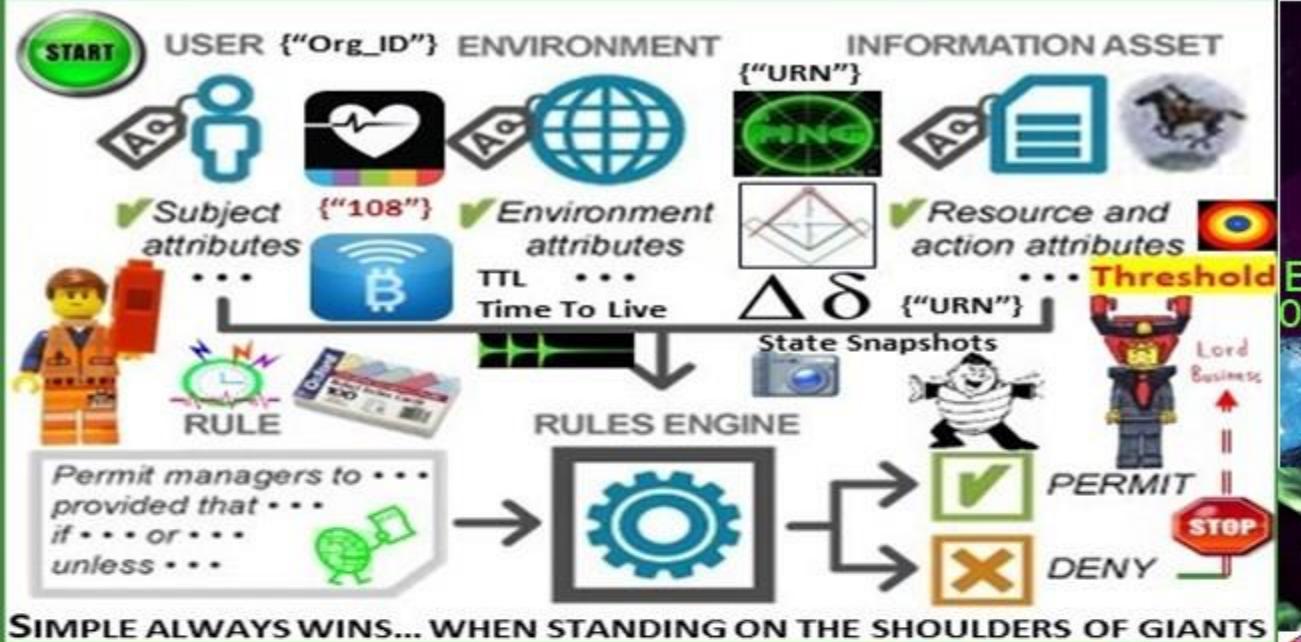


"Heartbeat Synchronization strives to have nodes in a distributed system generate periodic local "heartbeat" events approximately at the same time. It differs from classical clock sync in that Nodes are not interested in counting cycles and agreeing on the ID of the current clock cycle. There is no requirement regarding the length of a cycle with respect to real time as long as the length is bounded and all nodes agree on it eventually"



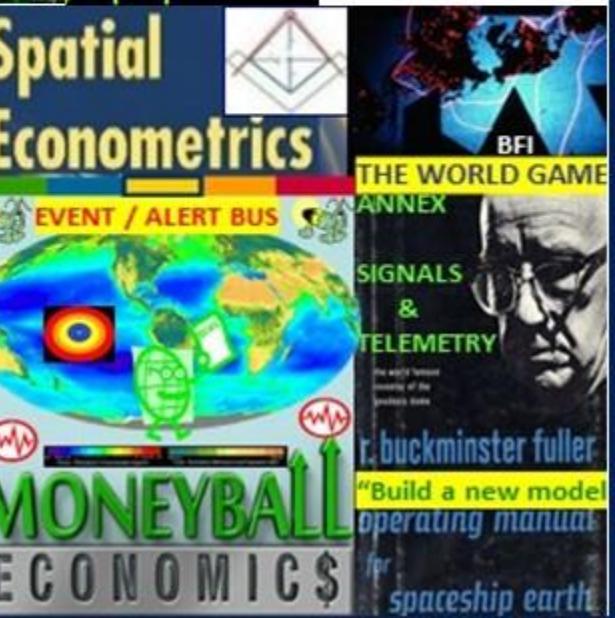
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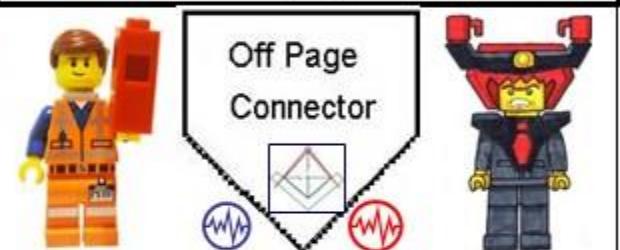
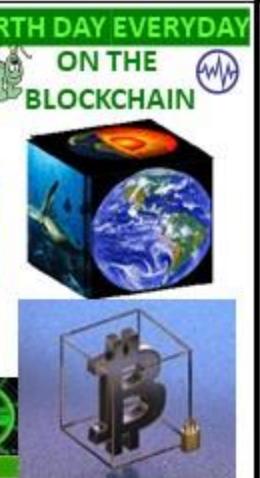




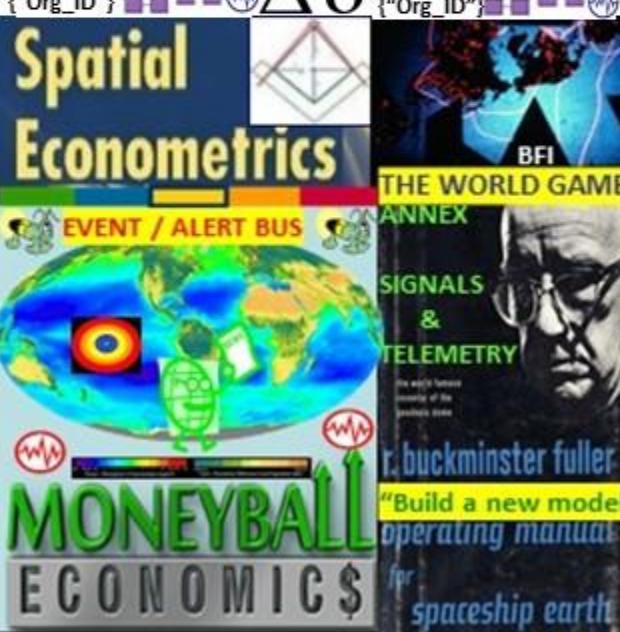
SIMPLE ALWAYS WINS... WHEN STANDING ON THE SHOULDERS OF GIANTS

DAO TRADE FEDERATIONS USE COMMON COMPONENTS,  
PROCESSES, METHODS, METRICS, METERS SIGNALING  
TELEMETRY SCHEDULE IN SMART CONTRACTS,  
SERVICE LEVEL AGREEMENTS / OPERATIONS SLA/O





**MINIMUM LIST OF COMPONENTS, BUILDING BLOCKS, PROCESSES, PROCEDURES AGREED ON BY TRADE FEDERATIONS TO ACHIEVE DISTRIBUTED AUTONOMOUS ORGANIZATION DAO CONSENSUS.**





# Heart Beacon Cycle

Trade Federation on Bitcoin Blockchain



1. **FEDERATION:** Latin: *foedus, foederis, covenant, union* of partially self-governing states or regions under a central (federal) government
2. A league or confederacy. Individuals / groups retain **AUTONOMY**
3. A federated body formed by a number of nations, states, unions each retaining control of internal affairs

Net joins, drops, splits, merges, moves

Agile, adhoc NETOPS Vs acquisition preserves the **CHANNEL**

Federation Gateway



**Bitcoin Group Signatures Dynamic Membership Multi-party Signature DMMS:** independent interest within group signatures – **FEDERATED ID** {"Org\_ID"}

Bitcoin Mining Pools MEME / METAPHOR MEDIATION



Office 365 Groups



TERM **DISTRIBUTED AUTONOMOUS ORGANIZATION DAO** first coined by RAND

Circa 1991 now in use by Blockchain tech corporations..

FIREFLY FLASH  
HEARTBEAT MESSAGES



Uniform\_Resource\_Name

```
</RESOURCE> {"URN"}  
{"Asset_Class"} </URN>
```

QR / PURCHASE CODE



iET DEVICE / PLATFORM  
IoT SENSOR DEVICE



STOCK EXCHANGE



MIC MARKET IDENTIFIER  
CODES / BREVITY CODES

{"DUNS #"} {"Org\_ID"}

{"URN"} {"URN"} {"URN"}

Heartbeat Snaps MICRO-CYCLES

UUID 123e4567-e89b-12d3-a456-426655440000

123e4567-e89b-12d3-a456-426655440001

123e4567-e89b-12d3-a456-426655440002

EVENT BUS



Signaling, Telemetry

# NAMED DATA NETWORKING

<CONTENT> CENTRIC NETWORKING



<ORG\_ID>  
<ORG\_ID>  
<ORG\_ID>  
<URN>  
<URN>

<GLOBAL> <JOINT> <COMMUNITY> <DOMAINS> <SHARED> <PRIVATE>  
</INTEREST> <STRAT\_ML> <IODEF\_RID> </DISTANCE>

## Situational Awareness Reference Architecture (SARA) IDENTITY, Inventory, Activity, and Sharing

<Federated ID> <URN> <type\_event> <Data Class Types>

STRUCTURED MILITARY MESSAGING FORMS: FIELD TYPES, FILTERS, TAGS

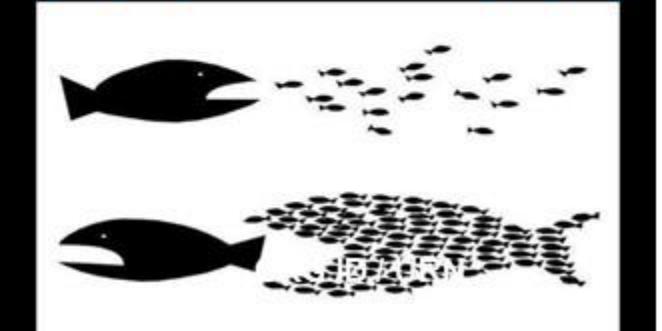
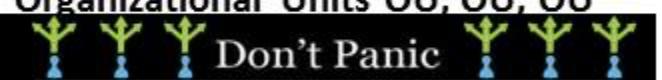
PARSED, PROCESSED, COMPILED TELEMETRY SIGNALING STANDARDIZATION

USMTF / XML MTF FORMATTED MESSAGE CATALOG

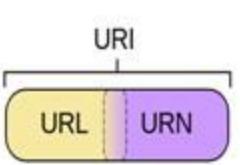
Catalog has over 300 messages to choose from have a wide number of information exchange requirements using common, CONSENSUS Message Text Formats MTFs. MTFs specify <CONTENT> / information agreed by group consensus presenting information in a logical, well specified and unambiguous layout resulting in a highly efficient information payload to overhead ratio

</Organizational\_Identifier\_Org\_ID>

Organizational Units OU, OU, OU



FEDERATE



ARIN  
American Registry for Internet Numbers

**Uniform Resource Names (URNs):** A Uniform Resource Identifier (URI). Both URNs (names) and URLs (locators) are URIs, and a particular URI may be a name & locator. Each plays a specific role:

- URNs IDENTIFICATION (SENSORS, DEVICES) <DATA CLASS TYPES>
- URCs INCLUDE META-INFO
- URLs LOCATE / FIND RESOURCES



SITUATION AWARENESS

NEWSCAST



DISTANCE ESTIMATE SERVICE

IDMaps  
SonarHOPS

K00.99  
Heartbeat Message

SURVEY METHOD  
ID <ITEMS><INTEREST>  
GEO-SPATIAL AREA  
TEMPORAL INTENSITY  
MEASURES / METRICS

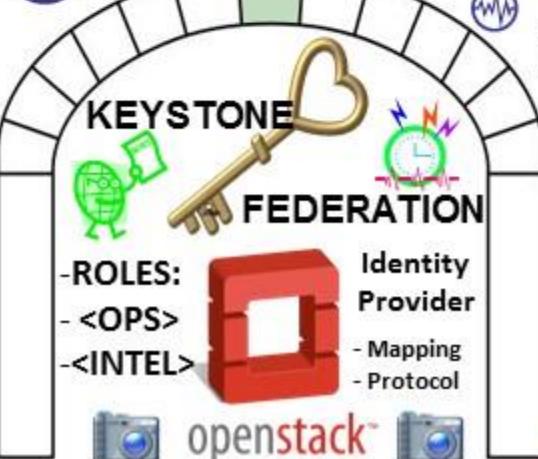
BY <TAG\_TYPES>  
Ledgers  
Contracts  
Trade SLA  
Agreements



TRIANGULATION  
TELCO MESH FABRIC

vector

CROWD SOURCING / FUNDING



<Org\_ID>  
<Org\_ID>  
<Org\_ID>  
<Party>  
<Party>  
<Party>

<URN>  
<URN>  
<URN>  
<URN>

PARTIDO X:  
Distributed  
Democratic  
Participation

ETHEREUM:  
Decentralized  
Autonomous  
Organizations



PARTIDOS DEL FUTURO  
FEDERATED ID



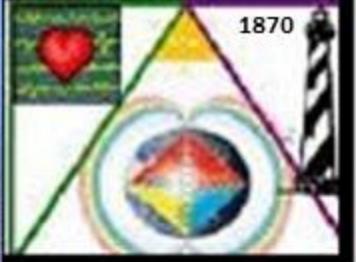
# Satoshi Nakamoto Bitcoin Paper

What is needed is an electronic payment system based on cryptographic proof instead of trust, allowing any two willing parties to transact directly with each other without the need for a trusted third party e.g., a bank.



Satoshi

Nakamoto

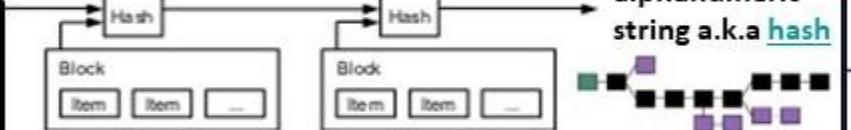
Craig WRIGHT a.k.a.  
Satoshi NakamotoPHYSICAL =  
OPPOSITE  
OF ABSTRACTWright Brother's 1<sup>st</sup> Flight  
Cape Hatteras Outer Banks

## "THE SOLUTION WE PROPOSE BEGINS WITH A TIME STAMP SERVER"

### 3. Timestamp Server

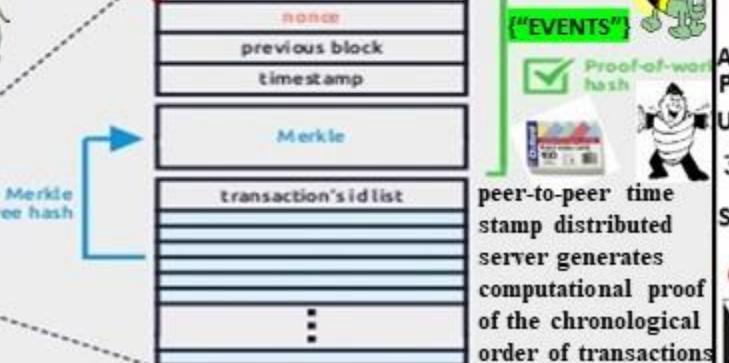
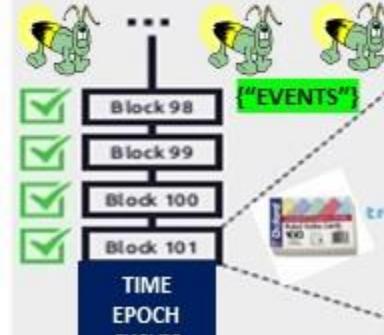
The solution we propose begins with a timestamp server. A timestamp server works by taking a hash of a block of items to be timestamped and widely publishing the hash, such as in a newspaper or Usenet post [2-5]. The timestamp proves that the data must have existed at the time, obviously, in order to get into the hash. Each timestamp includes the previous timestamp in its hash, forming a chain, with each additional timestamp reinforcing the ones before it.

**Bitcoin Protocol  
for Dummies**  
Part 4 Timestamp  
Server



### JapanNet Crypto Time Authentication Service (Timestamp Service)

Alice Corp v CLS Bank  
Physical = opposite  
of Abstract



peer-to-peer time stamp distributed server generates computational proof of the chronological order of transactions



MERKLE: Summary built from block's transaction ID's

Header - Contains service information (version info, nonce, previous block id and timestamp).

Merkle - A summary built from the block's transaction identifiers.

Transaction's id list - list of transaction's identification numbers that was included into the block's merkle tree.

US Sct 573 US 134 2347 USPTO 13/573,002

"All things internet, Internet of money are formed using time epoch cycles to process, parse, syntax, instruction code"



MACRO CYCLES  
CLOCK FACE  
 $90 / 90 / 90 / 90$   
= 360 degrees

**BASEBALL "DIAMOND"**  
A diamond is a square is a block  
2nd Base



SC 573 US 134 2347  
Physical = Opposite  
Of abstract

METRICS / METERS

90 feet

ALGORITHM = RULES

PLAYERS = ROLES

UMPIRE = RULES

3rd Base

STATISTICIAN

90 feet

BLOCK in 3D = CUBE

Cube has Length, Depth,

Height. Volume

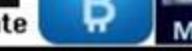
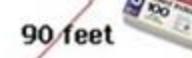
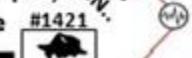
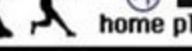
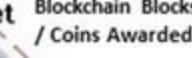
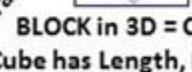
#1421

Blockchain Blocks / Coins Awarded

90 feet

Survey Point

home plate



1st Base Coach  
first base  
UMPIRE

3 x 5  
HASH  
TABLE

NONCE

VALUES / CODE

MICRO-CYCLES

MICRO-CYCLES

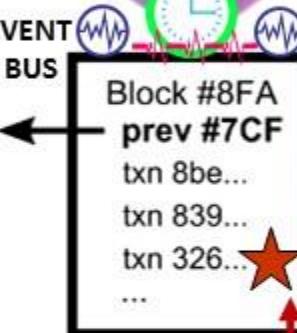
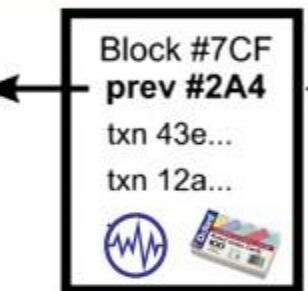
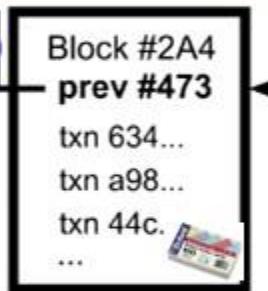
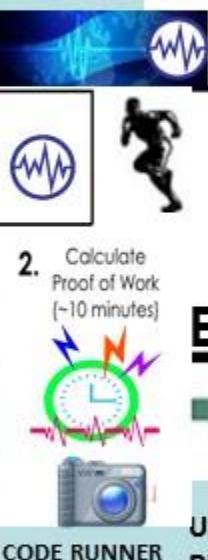
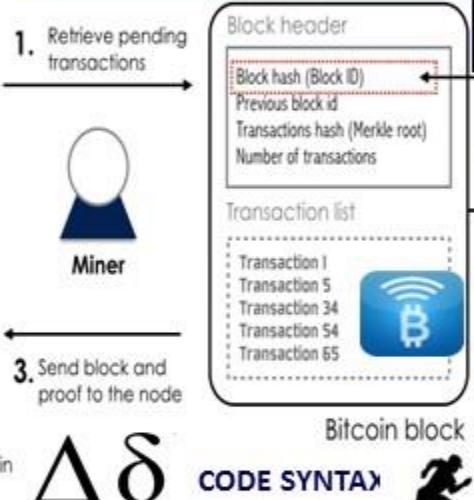
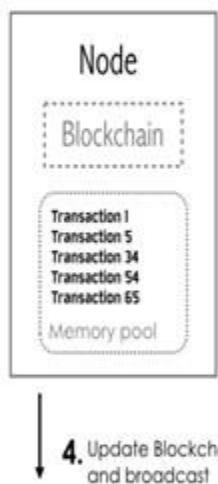
MICRO-CYCLES

MICRO-CYCLES

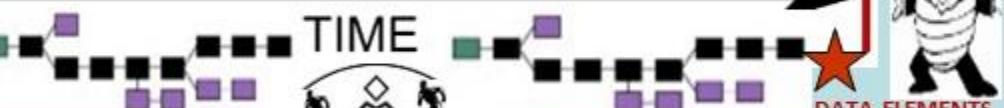




Alice Corp. v. CLS Bank International, 573 U.S. \_\_, 134 S. Ct. 2347 (2014),[1] was a 2014 decision of the United States Supreme Court about patentable subject matter (patent eligibility).[2] The issue in the case was whether certain claims about a computer-implemented, electronic escrow service for facilitating financial transactions covered abstract ideas ineligible for patent protection. The patents were held to be invalid because the claims were drawn to an abstract idea, and implementing those claims on a computer was not enough to transform that idea into patentable subject matter.



**BLOCKCHAIN = TIME / SYNTAX**



**DATA ELEMENTS**

ID'd by Alpha-Numerics



USPTO 13/573,002  
PHYSICAL MEME  
MAIN EMBODIMENT

RULES  
Metrics

$\Delta\delta$

Multi-Meme Multi-Meter

XBRL / CDL / DAML  
STOCK MIC CODES

STRUCTURED  
MILITARY MESSAGE  
TEMPLATE FORMS  
LOGIC / FILTERS

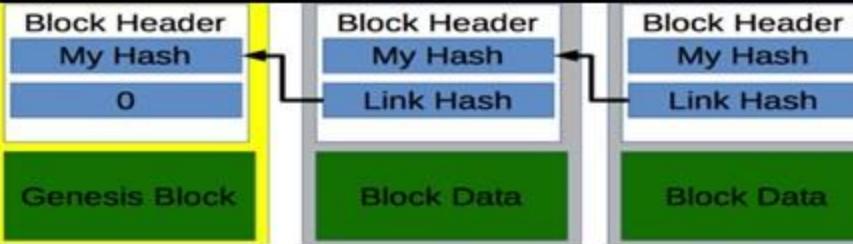




## MINIMUM LIST OF COMPONENTS, BUILDING BLOCKS, PROCESSES, PROCEDURES AGREED ON BY TRADE FEDERATIONS TO ACHIEVE DISTRIBUTED AUTONOMOUS ORGANIZATION CONSENSUS



**Blockchain**: linked list of records of transactions involving data state changes over time. Linkage of blocks of records is done using cryptographic algorithms, that merge together information about transactions recorded in the current block, and information about the preceding block.



**BLOCK**: container (or simply a descriptor) of data relevant to this blockchain. The data is typically a collection of transactions that describe changes to the data. Blocks contain a header holding meta-information about blocks, including a reference to the preceding block.

**HASH**: value computed by an algorithm uniquely identifying input data without revealing the contents of that data. Hash values are used to ensure the veracity of data on the blockchain. Block headers contain the previous block's hash, ensuring integrity of entire chain

**GENESIS BLOCK**: first block in the chain created when a blockchain is first deployed, serving as the anchor to which all other blocks link.

**TRANSACTION**: record of change to data set (s). Transactions are based on rules defined by the blockchain e.g., rules comprise contracts

**SMART CONTRACT**: may include behavior / actions to trigger events that independently create transactions.

**Node**: host in a network capable of adding blocks to chain (s). The way nodes are able to do this varies based on the needs of the chain.

**Distributed Ledger**: recording of transactions shared across nodes. A blockchain on which many nodes contribute blocks

**Consensus**: distributed ledger blockchain nodes strategy determines chain's correctness

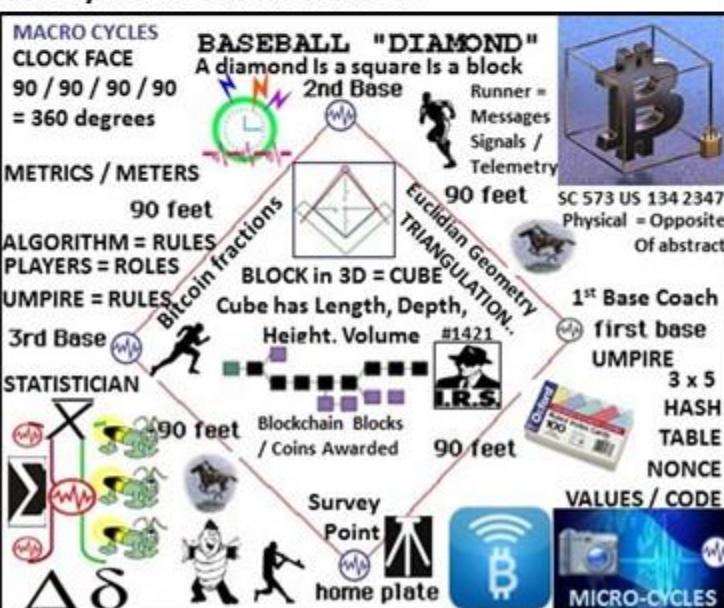
**Consensus strategies**: "proof of work," "proof of stake," and "delegated proof of stake"

**Proof of work (PoW)**—A consensus strategy with a computationally difficult challenge to solve to find the hash of a new block, the discovered solution is easy to verify, allowing the other participating nodes to quickly agree that new block is correct

**Proof of stake (PoS)**—A consensus strategy that relies on nodes which hold collateral to participate in contributing blocks to the chain.

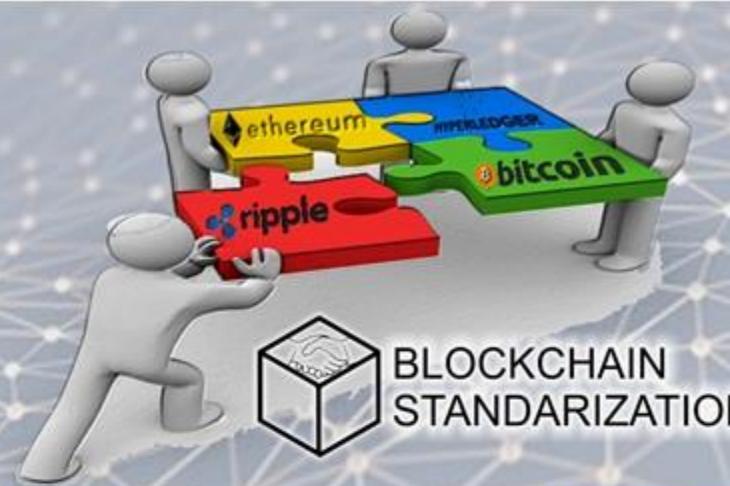
**Delegated proof of stake (DPoS)**: variation of proof of stake where responsibility of the creating blocks is delegated to third party nodes, known as "witnesses."

**Witness**—A node in a DPoS blockchain that performs the task of creating new blocks.



SAW CONCEPTS LLC

SIMPLE ALWAYS WINS \*  
\* WHEN STANDING ON  
THE SHOULDERS  
OF GIANTS...



#### INTERNET FORMED BY:

- 1) Time Cycles / Epochs
- 2 ("SYNTAX") </SYNTAX>

"In the beginning... " "The Word"

All things internet are formed with CPU time cycles used to process, parse, syntax, instruction code

"A smart contract is a piece of code stored on a blockchain, triggered by blockchain transaction ready / writes on the blockchain's Dossier

Blockchain is a consensus-based system. It only works if all nodes reach an identical result.

"A smart contract is a piece of code stored on a blockchain, triggered by blockchain transaction ready / writes on the blockchain's Dossier

BLOCKCHAIN ASIC CHIP CYCLES / EPOCHS

US SC 573 US 134 2347 PHYSICAL = OPPOSITE OF ABSTRACT

BITCOIN BLOCKCHAIN ASIC CHIP CYCLES / EPOCHS

90 / 90 / 90 / 90 = 360 degrees

TIME CYCLES / PATTERN FORMS

STRUCTURED - MILITARY MESSAGE

TEMPATE FORMS

LOGIC / PATTERN

STRUCTURE CODES

SYNTAX SYMBOLIC

SECONDARY LIBRARY

Microsoft Blockchain modular framework: choose combination of technologies best fits Bitz domain

AZURE: Core, KeyVault, Universal Protocol

Fabric: Peer consortium mode CryptoDelegate in VM or UTTO Adapter, Azure, AzureStack, AWS,

Unspent Transaction Output protocols UTXO

Crypto Tokenized Assets: Digital Bearer Bonds unique for identity of issued artifacts

Utility Cryptos: encryption, time & date events, external data access, authentication "CryptoDelegate" adapter

Blockchain consensus identity and operations, intelligence services like machine learning, new middleware work with existing Azure services like Active Directory and Key Vault

Blockchain Fabric Blockchain Gateway Services Interfaced

like services to allow for SmartContracts and tokenized objects to be passed between different ledger systems

Data Stores: key data services like distributed file systems (IPFS, S3, etc) off chain data referenced by public keys, auditing, Advanced Analytics, Machine Learning, Dashboarding, Regulators

SmartContract: Decentralized can remove and embed Cryptos into their Contracts to make them robust and transparent

Contract Cryptos are full delegation engines that act as

SmartContract enforces rule off the chain. Cryptos provide execution logic and security store data in the Smart Contract

Alpha Numeric ABCD COOKIES SYMBOLIC COOKIES

STRUCTURED - MILITARY MESSAGE

TEMPLATE FORMS

LOGIC / PATTERN

STRUCTURE CODES

SYNTAX SYMBOLIC

SECONDARY LIBRARY

EVENT BUS

FLASH MESSAGE SYNCH TO CLOSEST HELICOPTER CYCLE

STRUCTURED - MILITARY MESSAGE

TEMPLATE FORMS

LOGIC / PATTERN

STRUCTURE CODES

SYNTAX SYMBOLIC

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ALPHA NUMERIC ABCD COOKIES SYMBOLIC COOKIES

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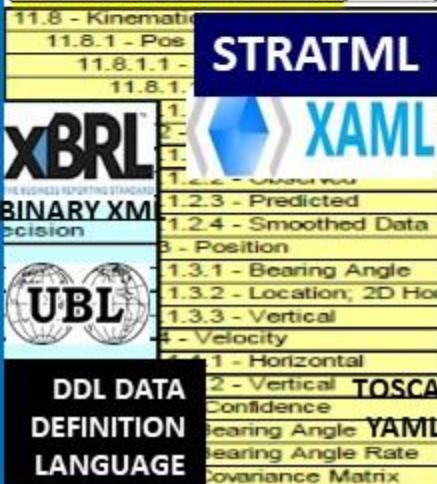
&lt;

Structured  
Data  
Exchange

ALPHA NUMERIC  
SYMBOL SETS

Coder's Guide

lexicon:



Signal operating instructions (SOI): technical control coordination of signaling, telemetry Current situational awareness, data dictionary, network identification, channels, network directory, brevity code-words, signals. Units maintain 2 SOI copies: PEACE TIME version "Go-To-War" version = BIZ COA (s) <Org\_ID1><Org\_ID2><Org\_ID3>



NATO MESSAGE TEMPLATES USE DATA SETS FOR STRUCTURED DATA EXCHANGE // POSITION FIELD IN MESSAGE PROCESSED BY TABLE, FIELD # IN A CONSISTENT, PREDICTABLE ORDER = AI FRIENDLY M2M AI

GOAL: vide a common lexicon / syntax / term library used among FEDERATIONS identified by Federated ID  
GOAL: Provide a common, consistent, reliable schedule to share signaling and telemetry within federations.

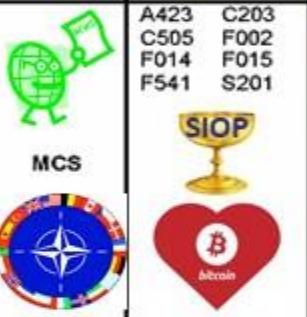
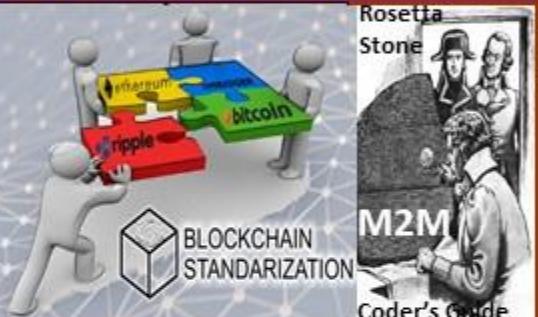
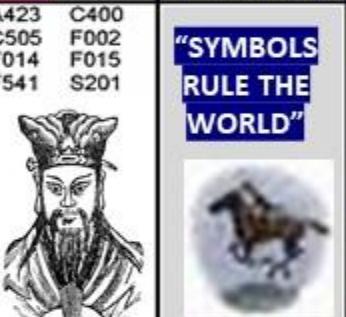
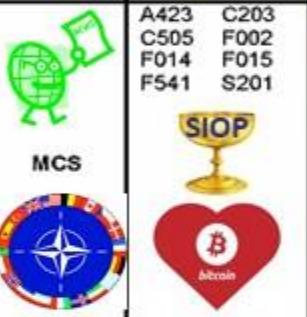
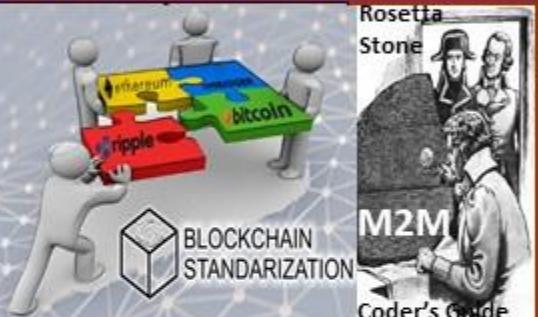
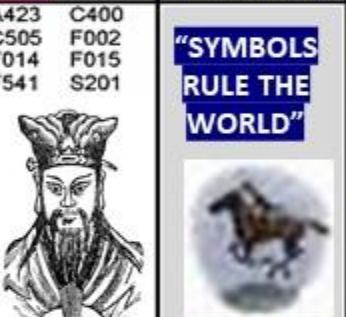


| SYMBOLS | Friend  | Neutral | Hostile    | DICAL EVAC & HOSPITALISATION |
|---------|---------|---------|------------|------------------------------|
|         | Partner |         | Competitor | - MILITARY OPERATIONS        |
|         |         |         |            |                              |

NUMBERS ARE THE UNIVERSAL LANGUAGE / Symbols Rule the World"

STOCK NDN NAMED DATA  
EXCHANGE NETWORKING  
PRECEDENCE  
MIC CODES PROCESSING

FILTERS INFOCON  
5 4 3 2 1  
INFORMATION CONDITION

| FROM | GCCS-A   | ALPHA-Numeric BREVITY CODES   |   |  | CODE GUIDE  |   |
|------|--|---|---|--|---|---|
| ASAS | C002 C203<br>F002 F014<br>F015 F541<br>S201 S309                                 | C002 C203   | C002 C203   | C002   | ATDS  | MCS   |
|      |  | <b>USMTF / XML MTF FORMATTED MESSAGE CATALOG = 300 + messages info exchange sets using common, CONSENSUS Message Text Formats</b><br>MTFs. MTFs specify </CONTENT> / info agreed by group consensus presenting information in a logical, well specified unambiguous layout resulting in a highly efficient info payload to overhead ratio | C002<br>F014<br>F541<br>S305<br>S309  | C002 C203<br>E400 F002<br>F014 F015<br>F541 S201<br>S309 S507                      | F002<br>F015<br>S201  | C203 C400<br>D630 E500<br>F002 F014                         |
|      |  | A423 C203<br>C505 F002<br>F014 F015<br>F541 S201  |  | A423 C400<br>C505 F002<br>F014 F015<br>F541 S201                                   |   | <b>INFOCON</b><br>5 4 3 2 1<br><b>INFORMATION CONDITION</b> |
|      |  |   |  |  |  | <b>"SYMBOLS RULE THE WORLD"</b>                             |
|      |  |   |  |  |  | <b>HEARTBEAT MESSAGE = K00.99</b>                           |

## MESSAGE CATALOG 300 + Use Cases

Data Elements: entity, attribute, relationship equivalents

| Information Categories and Examples |   |   |   |                                |                     |                      |                                    |
|-------------------------------------|---|---|---|--------------------------------|---------------------|----------------------|------------------------------------|
| Object Categories                   | Examples  | Location                                    | Movement  | Identify                       | Status              | Activity             | Intent                             |
| OOB                                 | <b>SYNTAX LEXICON</b>   | STRUCTURED DATA<br>lat/long                 | EXCHANGE Message<br>spd/hdg                           | country / alliance, type/class | Sets<br>readiness   | targeting, reconning | COA<br>{"Java JS"}                 |
| Infrastructure                      | Comm, power, transportation, water/sewer                            | Machine Trust Language MTI<br>network, grid | Machine Trust Language MTI<br>throughput, flow rates, | name, part-of relationships    | BDA, op levels      | repair, broadcasts   | YAML<br>expansion plans            |
| Sociological                        | Culture, religion, economic, ethnic, government, history, languages | temples, historic structures                | ER Model  | Class Diagram                  | Relational Database | Object DBMS          | XML DTD / Schema                   |
| Geophysical                         | Terrain, weather, climatology, oceanography, astrometry             | feature<br>lat/long, alt/dpth               | Entity  | Class                          | Table               | Class                | Element                            |
|                                     |   |   | Attribute   | Attribute                      | Field / Column      | Attribute            | Child Element or Element Attribute |
|                                     |   |   | Domain Value  | PURCHASE CODES                 | Instance, Value     |                      | DPI                                |
|                                     |   |   |   |                                |                     |                      | FFRN / FFN / FUDN                  |
|                                     |   |   |   |                                |                     |                      | DUI                                |
|                                     |   |   |   |                                |                     |                      | FUD                                |
|                                     |   |   |   |                                |                     |                      | <b>FEDERATE</b>                    |

- Information Elements Roles**
- COI Determination Org Interaction
  - Search and Discovery
  - Ontologies STANDARDS
  - Taxonomies REFERENCE
  - Metadata Attributes / Filters ("Org\_ID") {"URN"}
- FILTERS**

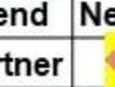
**FFUDN:** Field Format Unit Designator #  
**FFIRN:** Field Format Index Reference #  
 Structured military messaging ID's messages, message sets, data element, symbol fields  
**BY Form Field Position & NUMBER**



**PROCESS MESSAGE BY PRECEDENCE**  
**UNIVERSAL EVENT / ALERT MESSAGE BUS**

## OPERATIONAL NODES / ACTIVITIES

| DATA                        | SYSTEM FUNCTIONS               | PERFORMANCE           |
|-----------------------------|--------------------------------|-----------------------|
| 11.4 - Classification       | 11.8 - Kinematics              |                       |
| 11.4.1 - Category           | 11.8.1 - Pos / Vel / Acc (PVA) |                       |
| 11.4.1.1 - Confidence Level | 11.8.1.1 - Acceleration        | 11.8.1.1.1 - Angular  |
| 11.4.1.2 - Estimate Type    | 11.2 - Linear                  | 1.1.2 - Linear        |
| 11.4.1.2.1 - Alternative    | 2 - Estimate Type              | 1.2.1 - Estimated     |
| 11.4.1.2.2 - Evaluated D    | PURCHASE CODES                 | 1.2.2 - Observed      |
| 11.4.1.3 - Value            | CODES                          | 1.2.3 - Predicted     |
|                             |                                | 1.2.4 - Smoothed Data |

| SYMBOL | Friend  | Neutral   | Hostile   |
|--------|---------|---|---|
| 2525C  | Partner |  |  |
|        |         |   | Competitor  |
|        |         |   | 4 - Velocity  |
|        |         |   | 1.4.1 - Horizontal  |
|        |         |   | 1.4.2 - Vertical  |
|        |         |   | VA Confidence   |
|        |         |   | 1 - Bearing Angle   |
|        |         |   | 2 - Bearing Angle Rate  |
|        |         |   | 3 - Covariance Matrix   |





Dogezer software development platform allows team members to become product investors by investing their time, labor. The Dogezer Platform combines the functionality of Kickstarter, UpWork, GitHub, Slack, Jira, Google Docs, Dropbox and ICO analogues with a set of defined processes how these solutions relate to each other in a clear, transparent and predictable way. Dogezer gives an opportunity to start a project in minutes; organize a set of teams working on the project; define how project contributions are rewarded, driving a project to completion by using independent contributor skills around the world.



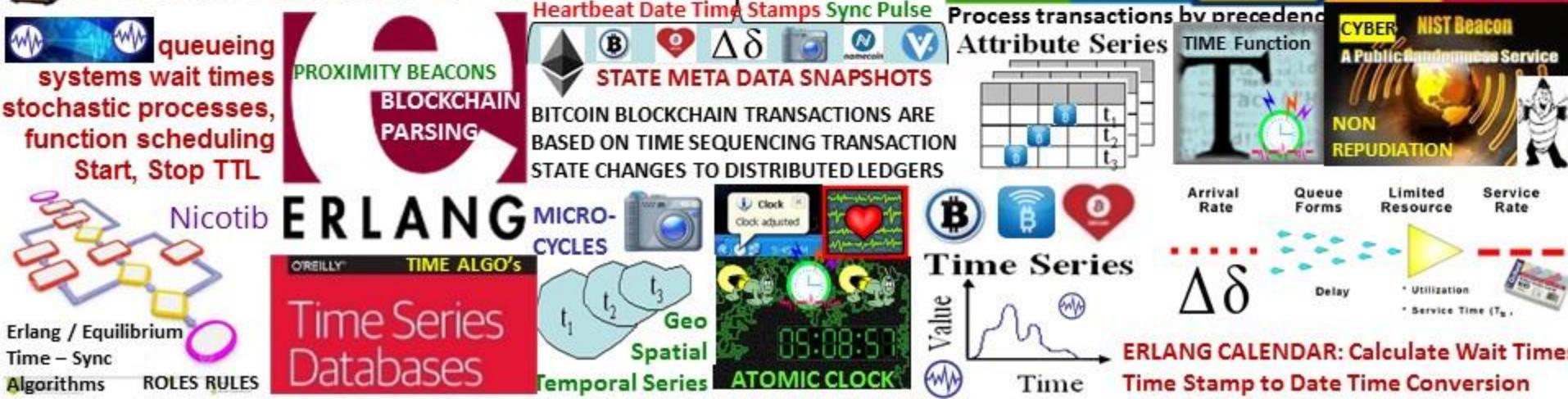
**TOOLSET:** Kickstarter, UpWork, GitHub, Slack, Jira, Google Docs, Dropbox, ICO...



| CODER'S GUIDE |        |          |         |            |          |          |          |          |          |          |          |
|---------------|--------|----------|---------|------------|----------|----------|----------|----------|----------|----------|----------|
| NATO          | NEURON | NETOPS   | NETWORK | NETWORKING | NETWORKS |
| STRUCTURED    | DATA   | EXCHANGE |         |            |          |          |          |          |          |          |          |
|               |        |          |         |            |          |          |          |          |          |          |          |
|               |        |          |         |            |          |          |          |          |          |          |          |

**PROJECT HBCnet:** build artificial intelligence neural network supporting #UNRIG's Earth Intelligence Network EIN with Signals, Telemetry Mesh

The current standard time common throughout the world is based on a 24-hour clock, with zones that are either 12 hours ahead or behind **Coordinated Universal Time (UTC)**. However, these time zones are decided upon by individual governments, without overall coordination and can even extend fourteen hours ahead UTC.

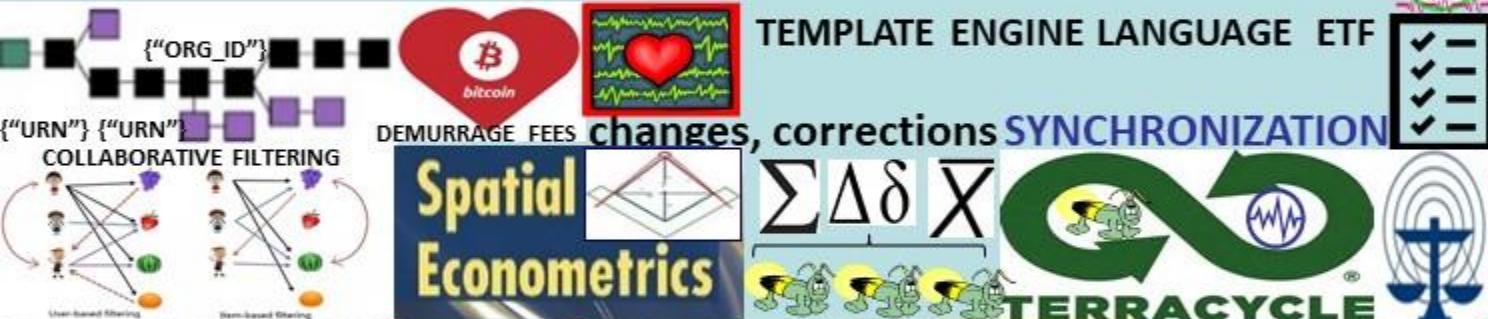




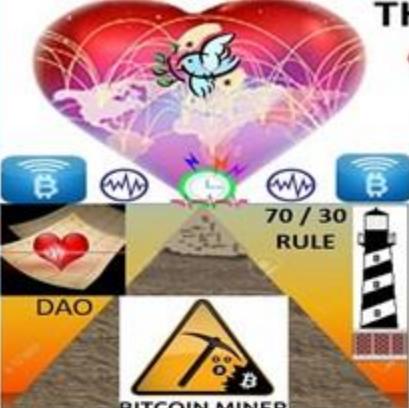
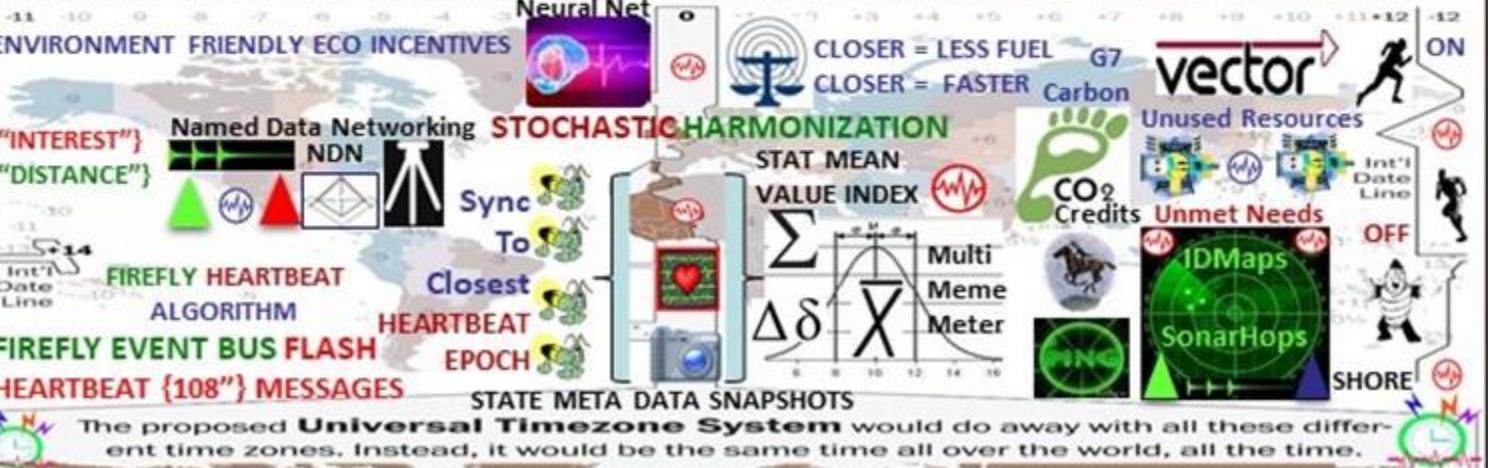
eGaaS: international blockchain platform for organizing economic, state, social activities of citizens, communities on the basis of smart law, smart contract system. eGaaS offers a comprehensive solution needed for state and business management on the blockchain platform.

The Heart Beacon Cycle HBC: an adaptive procedural checklist of form templates, procedures, SOP building blocks useful to form Eco-responsible trade federations Procedural template checklist items links to detailed technical, process... treatises

Distributed digital asset registries were the first projects that used blockchain systems such as databases designed for secure storage of records on real estate property, stocks, copyright and so on. It is assumed hosting any document on the blockchain is equivalent to notarization of its content at a fixed time point.



The current standard time common throughout the world is based on a 24-hour clock, with zones that are either 12 hours ahead or behind Coordinated Universal Time (UTC). However, these time zones are decided upon by individual governments, without overall coordination and can even extend fourteen hours ahead UTC. INCENTIVIZE ECO - FRIENDLY TRANSACTIONS



| FROM | TO | TYPE                            | NAME | VERSION | SIZE | FORMAT | LAST UPD. |
|------|----|---------------------------------|------|---------|------|--------|-----------|
| API  | UI | SYNTAX / SYMBOL LEXICON LIBRARY |      |         |      |        |           |
| API  | UI | STRUCTURED DATA EXCHANGE        |      |         |      |        |           |
| API  | UI | 300 + TEMPLATE FORMS            |      |         |      |        |           |
| API  | UI | LOGIC / FILTERS                 |      |         |      |        |           |
| API  | UI | ALPHA-NUMERIC BREVITY CODES     |      |         |      |        |           |
| API  | UI | Time Series Databases           |      |         |      |        |           |
| API  | UI | ERLANG                          |      |         |      |        |           |







"Our mission is to build an accessible prediction market platform enabling free flow of useful information / the "Google" of Customized Information Searching"

## Futarchy PREDICTION MARKETS GnosisAMA

Gnosis trading interface alpha  
WIZ token fee payment  
INFORMATION ARBITRAGE ECONOMICS



**TERRACYCLE**

Price Oracle

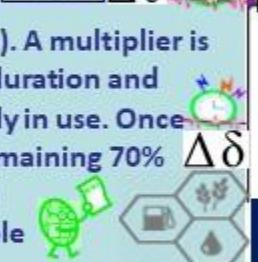
Gnosis Wisdom (WIZ) pay platform fees in Services layer, Wiz subsidize other participants fees, provide initial subsidies for markets, or market trading.



WIZ pegged to \$1 USD worth of fees. WIZ acts as coupon for \$1 of Gnosis

Gnosis tokens (GNO) generate Wisdom token s(WIZ) via smart contract

GNO token holders agree to "lock" tokens in a smart contract (30-365 days). A multiplier is added for longer lock durations. Smart contract determines selected lock duration and applies that duration to a formula regulating supply of WIZ tokens currently in use. Once users execute the contract, 30% of their WIZ are distributed for use, the remaining 70% is distributed proportionally over the locked duration. When lock duration expires, the locked GNO ceases to generate WIZ & GNO is freely transferable



The current standard time common throughout the world is based on a 24-hour clock, with zones that are either 12 hours ahead or behind Coordinated Universal Time (UTC). However, these time zones are decided upon by individual governments, without overall coordination and can even extend fourteen hours ahead UTC.

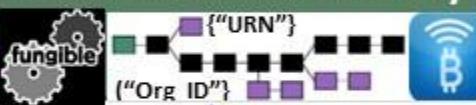


The proposed **Universal Timezone System** would do away with all these different time zones. Instead, it would be the same time all over the world, all the time.



## THE TERRA (TRC)

Trade Reference Currency



\$0.49 USD  
0.001076 BTC

MICRO PAYMENTS  
Bitcoin  
Need Bitcoin?



## Demurrage Fees

UNIVERSAL METER

Geo-Spatial Temporal Econometrics meters



Firefly inspired Heartbeat Synchronization nodes strive to sync in a distributed system. Nodes generate periodic "heartbeat" events approximately at the same time. It differs from classical clock sync in that nodes are not interested in counting cycles to agree on the ID of the current clock cycle. There is no requirement to sync during a cycle length in real time as long as length is bounded & all nodes agree eventually"

# ZEPPELIN



## ZEPPELIN OPEN, GLOBAL ECONOMY

OpenZeppelin open framework of reusable, secure smart contracts in the Solidity language  
zeppelinOS, operating system for smart contracts  
*"the rate of innovation in building decentralized applications is limited by the manual and duplicative efforts developers must make to ensure basic usability and security."*

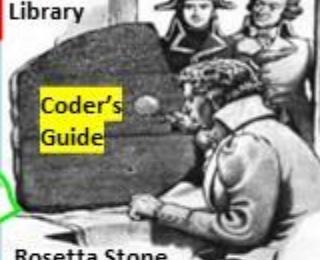
## WORLD ECONOMIC HEARTBEAT



### HEART BEACON CYCLE TIME – SPACE METER ECO-ECONOMETRICS ON THE BITCOIN BLOCKCHAIN

Syntax  
Lexicon  
Library

300+ Templates



### STRUCTURED DATA EXCHANGE



LOGIC / FILTERS  
ALPHA-NUMERIC  
BREVITY CODES



Rosetta Stone

### STOCHASTIC HARMONIZATION for TELCO Mesh Fabrics

HASH / NONCE



PAUSABLE  
START  
STOP  
TIME TO LIVE  
INSTRUCTIONS

STATE  
META  
DATA  
SNAPSHOTS



Erlang



Time Equations  
Function calls  
Blockchain Parsing



FLASH  
MESSAGE BUS



Micro Cycle State Snaps

### ZEPPELIN / zeppelinOS Common Functionality:

zeppelinOS Kernel common set of functions for smart contracts requesting services from the OS rather than re-implementing them from scratch. Functions will be available as an on-chain standard library of reusable contracts and functions, nspired by [OpenZeppelin Libraries](#)

Create and customize your own ERC20 Token.

- Create capped, refundable and/or whitelisted crowd sale contracts
- Create a trustless bug bounty.
- Create pausable, ownable, balance-limited contracts
- Set up a token vesting or token locking contract.



Contract development



Contract interaction



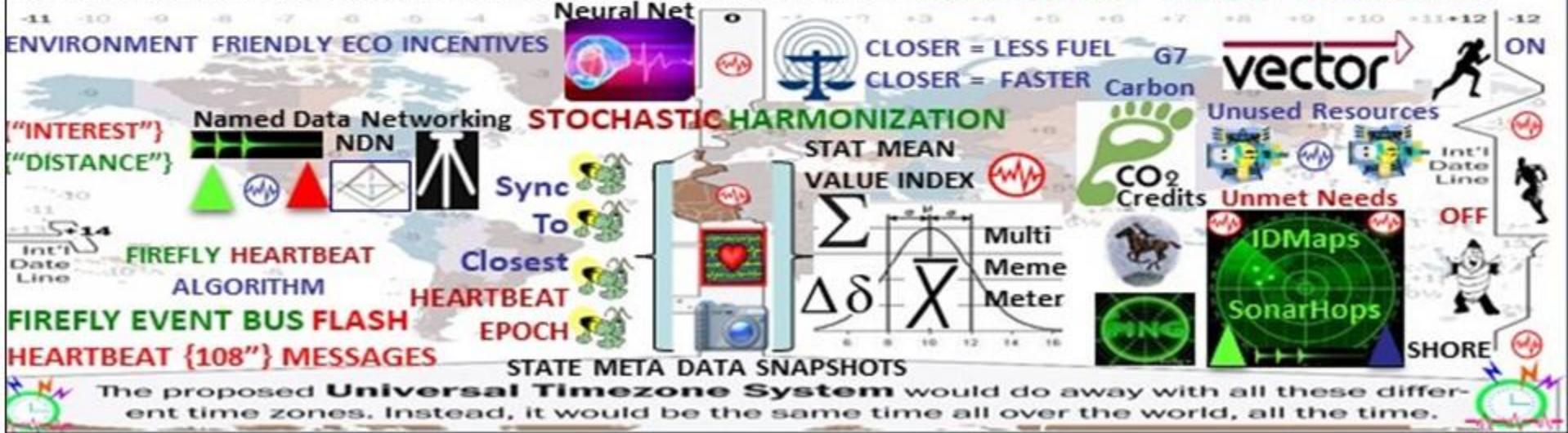
Off chain tools

EVM

Blockchain

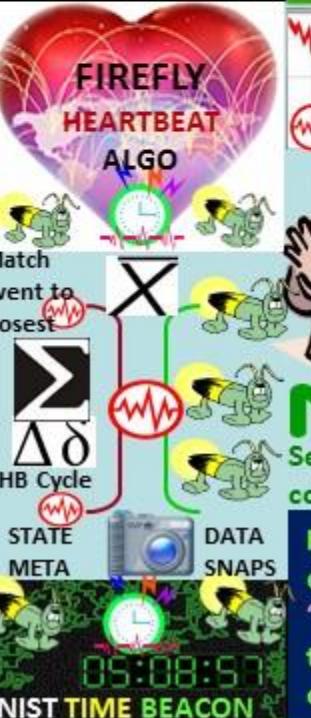
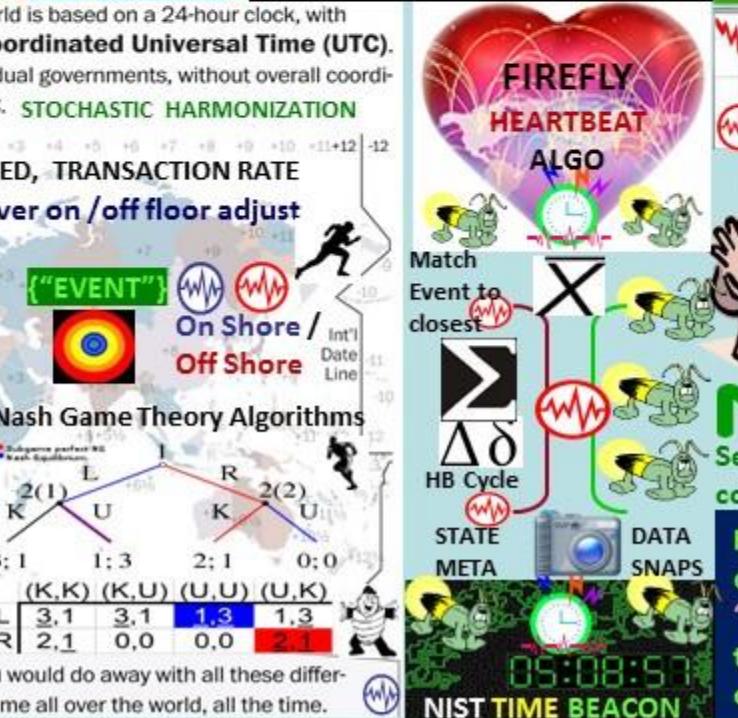
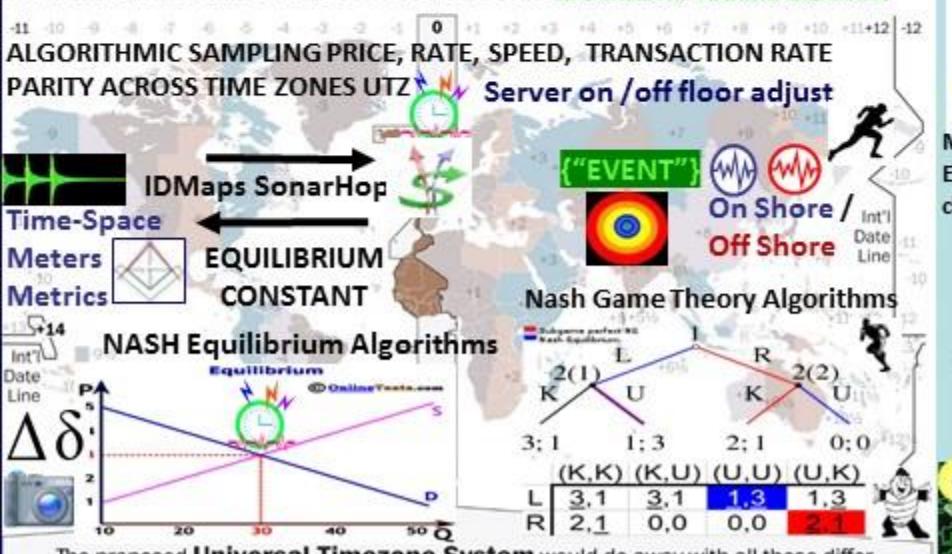


The current standard time common throughout the world is based on a 24-hour clock, with zones that are either 12 hours ahead or behind **Coordinated Universal Time (UTC)**. However, these time zones are decided upon by individual governments, without overall coordination and can even extend fourteen hours ahead UTC. **INCENTIVIZE ECO - FRIENDLY TRANSACTIONS**





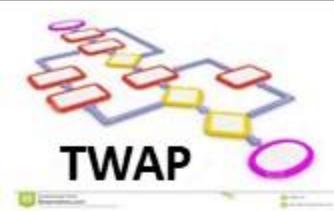
The current standard time common throughout the world is based on a 24-hour clock, with zones that are either 12 hours ahead or behind **Coordinated Universal Time (UTC)**. However, these time zones are decided upon by individual governments, without overall coordination and can even extend fourteen hours ahead UTC. **STOCHASTIC HARMONIZATION**



# TWAP Algorithm Manages Bitcoin Price Volatility Algorithm

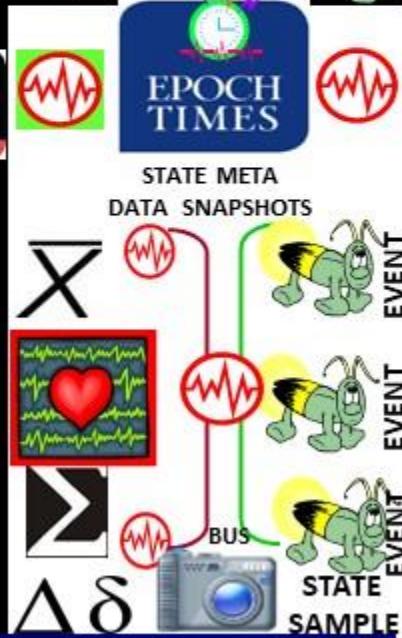
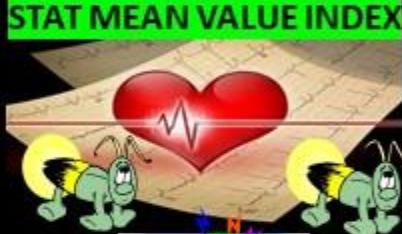


## TWAP GOAL: provide a Time Weighted Average Price Benchmark



FIREFLY HEARTBEAT ALGO  
STAT MEAN VALUE INDEX

**TWAP Works To gauge trading performance, many traders in different asset classes (equity, fixed income, currency) often use average price as a benchmark. The two common ways to calculate an average are a time-weighted average price (TWAP) and a volume-weighted average price (VWAP). TWAP is the average price of a bitcoin over the course of a specified period of time i.e., Heart Beacon Cycle**



The algorithm trades over a desired time, either 1, 6, 12 or 24 hours and will give you a TWAP over that time period. For example, set the TWAP algorithm to sell 12 bitcoins over 12 hours, the algorithm will sell throughout the period, aiming to get a 12-hour TWAP



VWAP is price multiplied by number of bitcoins traded, then divided by the total number of bitcoins traded during a time period. The time-weighted average price algorithm is matched to closest HB

Firefly Heartbeat Sync nodes strive to sync in a distributed system. Nodes emit periodic "heartbeat" events at approximately the same time. There is no need to sync during a cycle as long as the cycle length is bounded & nodes eventually agree. HBC's improvement is stipulating a clock cycle value e.g., 5, 10, 15..



Erlang programming language / mini OS  
massively scalable high availability, real-time Erlang's runtime system built-in concurrency distribution, fault tolerance



- coordinate 1000's of virtual machines
- ...distributed Dbases RIAK, CouchDB
- ...real time data dashboards
- ...service oriented software architectures
- .. server, API endpoints . RabbitMQ
- ..distributed, multi-node architecture.
- protocol-aware load-balancer, stateful binary comms



**Functional Sequential Erlang**

- Data types:
  - Integers (incl. BigNums), floats, atoms
  - tuples/records, lists/plists, binaries, funs
  - Maps (added in R17)
- single assignment
- pattern matching & guards
- closures (anonymous function data type)
- list comprehensions
- bit-syntax & binary comprehensions
- tail recursion & tail call optimization (TCO)



Ericsson Open Money  
For Society Patent App



20130166398 "System And Method For Implementing A Context Based Payment System."

"It is our vision that one day everyone with access to a mobile phone will be able to spend, send and receive money as easily as sending a text via SMS"  
"When money is open, the way we send, spend and receive money will change forever"



Rho ratio  $\frac{\text{Arrival Rate } \Delta \delta}{\text{Service Rate per unit time}}$

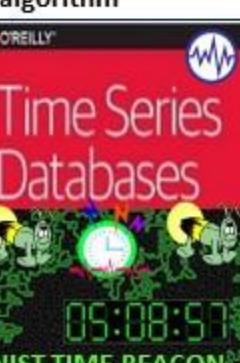


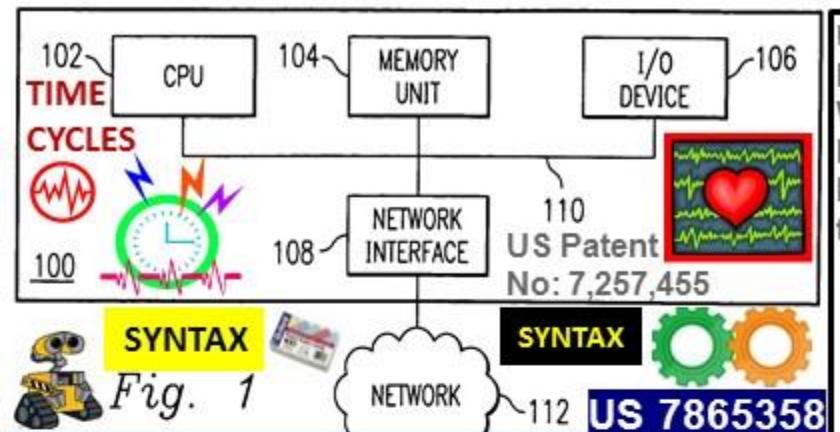
distributed "noSQL" database, embedded right into Erlang,  
supports indexing, replication, transactions, and fail-over  
Fast ETS in-memory, and DETS persistent on-disk database

**Mnesia database** ("Organization\_ID")

Global name resolution

|                   |
|-------------------|
| XBRL / CDL / DAML |
| ALPHA NUMERIC     |
| BREVITY CODES     |
| AZURE BLETCHLEY   |
| STRUCTURED        |
| MILITARY MESSAGE  |
| TEMPLATE FORMS    |
| LOGIC / FILTERS   |



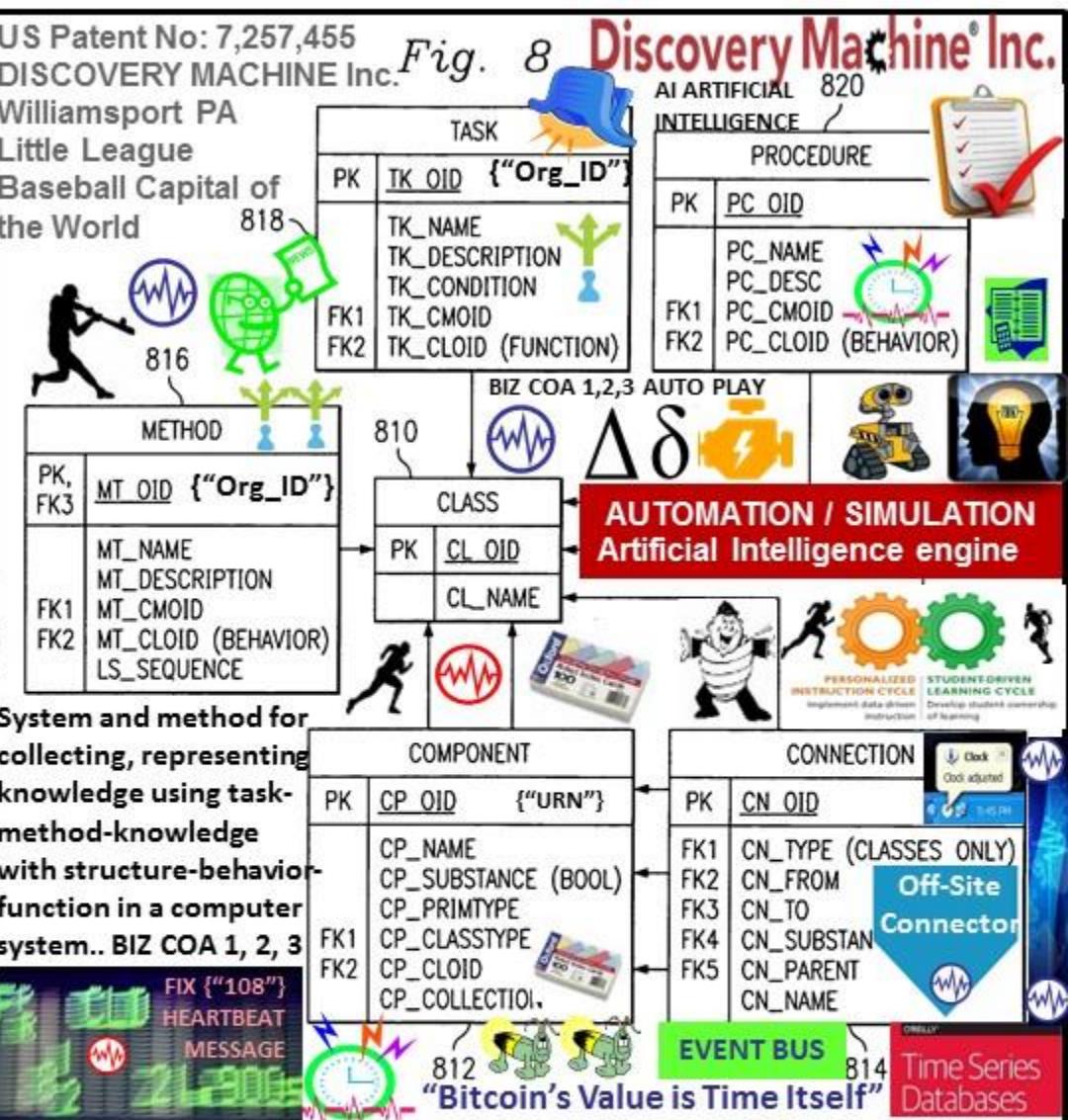
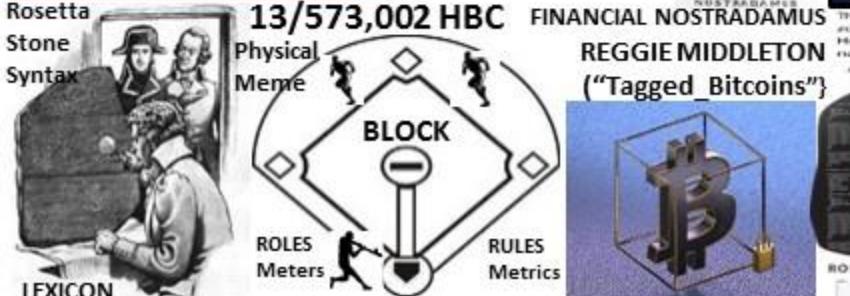


Machine-based system for transforming data from a source form to a target form, a tool is provided for sharing information established in developing a transformation model. The shared information may relate to rules for mapping source collection terms to standardized terms, rules for ordering or **SYNTAX**, rules for classifying terms or other transformation rules.

**US 7865358 CLAIM 1.** method converting textual data from source form to target forms, where target form differs from source form's linguistics, syntax

Multi-user functionality for converting data from a first form to a second form

ORACLE Veritaseum



Bitcoin Classic seeks to mitigate the problem of more transactions, which are causing transaction backlogs and increased transaction costs, by increasing the block size - the number of kilobytes in a block of transactions - from 1MB to 2MB.



ALL THINGS INTERNET FORMED W 1) TIME EPOCHS 2) SYNTAX



HASH TABLES  
NONCE VALUES

**BitPay Core:** limits: 1) block size 'hard limit' adjusted on a regular basis coinciding with difficulty adjustments, 2) miner set 'soft limit' like focal points in Unlimited.  $\Delta\delta$   $\times$



Bitcoin Unlimited: absence of a hard-coded block-size limit. Users manually set limits on their own nodes; Consensus on a limit expected to emerge naturally at Schelling focal point. Unlimited introduces a level of democracy into development, management of the implementation, the community votes on changes.



Microsoft Bletchley modular framework: choose combination of technologies best fits Biz domain

AZURE: Core/Kernel/Universal Protocol

Fabric Tier consortium node CryptoDelegate in VM or UTXO Adapter, (Azure, AzureStack, AWS..)

Unspent Transaction Output protocols UTXO

Crypto Tokenized Assets Digital Bearer Bonds  
unique identity for owned artifacts

Utility Cryptlets encryption, time & date events, external data access, authentication "CryptoDelegate" / adapter

Blockchain middleware: identity and operations management, data, intelligence services like analytics and machine learning. New middleware works with existing Azure services, like Active Directory and Key Vault

Blockchain Fabric: Blockchain Gateway Services [Interledge](#) like services to allow for SmartContracts and tokenized objects to be passed between different ledger systems.

Data Services - key data services like distributed file systems (IPFS, Storj, etc) of off-chain data referenced by public keys. Auditing, Advanced Analytics, Machine Learning, Dashboarding services for SmartContracts, Blockchains, Consortia, Regulators

Utility and Contract. Developers can discover and enlist Cryptlets into their SmartContracts to create more robust and trusted transactions. Contract Cryptlets are full delegation engines that act as SmartContract surrogates off the chain. Cryptlets provide execution logic and securely store data in the Smart Contract

Rosetta Stone Syntax



ALPHA NUMERIC  
BREVITY CODES  
SYMBOL CODES  
STRUCTURED  
MILITARY MESSAGE  
TEMPLATE FORMS  
LOGIC / FILTERS

The current standard time common throughout the world is UTC. There are time zones that are either 12 hours ahead or behind Coordinated Universal Time (UTC). However, these time zones are decided upon by individual governments, without overall coordination and can even extend fourteen hours ahead UTC.

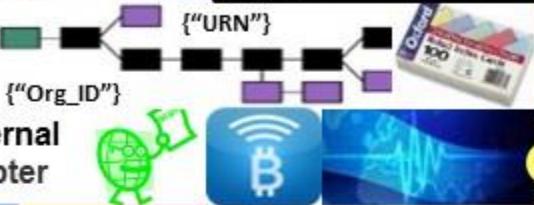


MULTI-MEME MULTI-METER

Microsoft AZURE BLETCHLEY



Blockchain Startups  
Top Blockchain startups disrupting non-financial markets  
Venture Radar



MYRIAD MEMES MEDIATION  
BLOCKCHAIN



MACRO CYCLES

CLOCK FACE  
90 / 90 / 90 / 90  
= 360 degrees

METRICS / METERS

90 feet  
ALGORITHM = RULES  
PLAYERS = ROLES

UMPIRE = RULES

3rd Base

STATISTICIAN

90 feet

BLOCK in 3D = CUBE

Cube has Length, Depth,

Height. Volume

#1421

Blockchain Blocks / Coins Awarded

Survey Point

home plate

90 feet

IoT

Microsoft Orleans

TIME-SPACE

EQUATIONS

ALGORITHMS

BLOCKCHAIN

PARSING

ERLANG

BASEBALL "DIAMOND"

A diamond Is a square Is a block  
2nd Base

Runner =  
Messages  
Signals /  
Telemetry

90 feet

Euclidian Geometry  
TRIANGULATION.

1st Base Coach  
first base  
UMPIRE  
3 x 5

HASH  
TABLE

NONCE

VALUES / CODE

MICRO-CYCLES

IoT

Microsoft Orleans

TIME-SPACE

EQUATIONS

ALGORITHMS

BLOCKCHAIN

PARSING

ERLANG



real-time gross settlement system,  
currency exchange, remittance network

A.K.A Ripple Transaction Protocol or Ripple protocol, built on a distributed open source Internet protocol, consensus ledger and native currency called XRP. Ripple enables "secure, instant and nearly free global financial transactions of any size with no chargebacks." Ripple supports tokens representing fiat currency, cryptocurrency, commodity or any other unit of value such as frequent flier miles or mobile minutes. Ripple is based around a shared, public database or ledger, which uses a consensus process that allows for payments, exchanges and remittance in a distributed process.

Connects to receiving bank's Ripple Connect to exchange KYC, risk info, fees, payment details, expected time of funds delivery

Provides information about total costs of the transaction



Workflows are serially executed  
Except first two work flow are workflows are based on event

**pull model**



**Bitcoin Address Shortener**

Bitcoin Address Shortener is an Android app that you can use to shorten those lengthy bitcoin addresses! Simply enter a long Bitcoin address to have it transformed into a short one, and vice-versa! You can get it for free [here!](#)

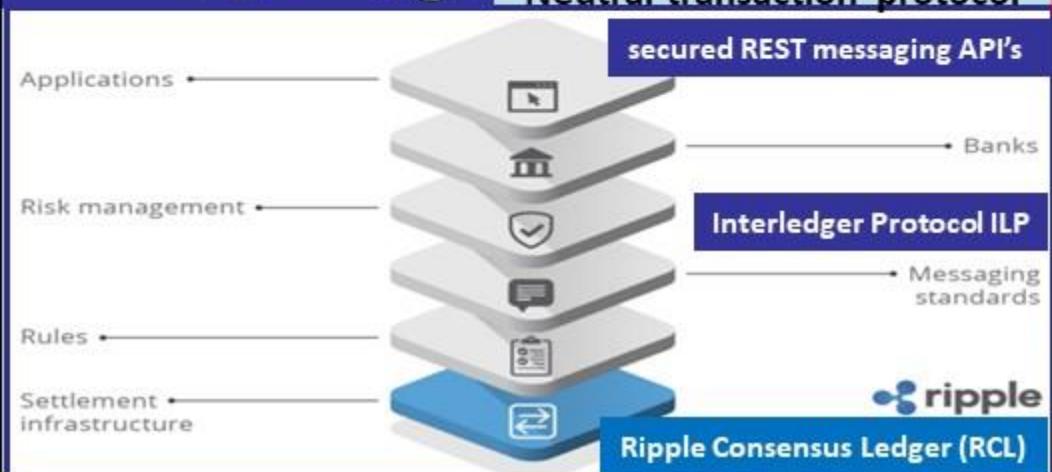
**ALPHA NUMERIC BREVITY CODES**

To retrieve addresses on your computer, use [bitcaddr](#)

**A.I**

Clock Clock adjusted

**Neutral transaction protocol**



SchellingPoint



EVENT

ROLES RULES

COACH

BLOCK

CLOCK

= 360

TIME-SPACE EQUATIONS

ALGORITHMS BLOCKCHAIN PARSING

ERLANG

EVENT BUS

LOCKED QUOTED ACCEPT / DENY In Progress SUCCEEDED

{"108"} HEARTBEAT SYNC DELTA STATE META DATA SNAPSHOTS

MATCH EVENT REPORTS TO CLOSEST HEARTBEAT CYCLE

FLASH HEARTBEAT MESSAGES {"108"} Δδ

HASH NONCE FIREFLY-HEARTBEAT ALGORITHM

MICRO-CYCLE STATE META DATA SNAPSHOTS

AGGREGATE INTO MACRO ECONOMIC CYCLE MESSAGE

World Economic Heartbeat ALGORITHMIC REGULATION

("108")

BLOCK TIME ARBITRAGE System of Systems Sync

Stochastic Harmonization Telco Mesh Fabrics Wide Area Sync

FIREFLY EVENTS FLASH MESSAGES

EVENT

COACH

BLOCK

CLOCK

= 360

TIME-SPACE EQUATIONS

ALGORITHMS BLOCKCHAIN PARSING

ERLANG

EVENT BUS

LOCKED QUOTED ACCEPT / DENY In Progress SUCCEEDED

{"108"} HEARTBEAT SYNC DELTA STATE META DATA SNAPSHOTS

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HASH NONCE FIREFLY-HEARTBEAT ALGORITHM

MICRO-CYCLE STATE META DATA SNAPSHOTS

AGGREGATE INTO MACRO ECONOMIC CYCLE MESSAGE

INFOCON 5 4 3 2 1

INFORMATION CONDITION

**DFINITY**

**RANDOM # BEACON**

**NIST Beacon**  
A Public Randomness Service

**QUANTUM RANDOM #**

**BLOCKCHAIN NERVOUS SYSTEM**  
HEARTBEAT {"108"} State Meta Data Snapshot Msgs

**STATEFUL DECENTRALIZED NET PROTOCOL:**  
Decentralized process workflows instead of  
Centralized Server farms

**FIREFLY-HEARTBEAT** FLASH Msg EVENT BUS

**GROUP Signature is random number**

- Number selects next group {"Org\_ID"} {"Org\_ID"}
- Next group use previous no. as message
- Verifiable Random Function
- Numbers verifiable using group public key
- New values produced in threshold agreement
- **Random members** {"Org\_ID"} {"Org\_ID"}
- Each process is a member of multiple groups
- Groups intersect, have +/- 400 members

**- BLS signature scheme**

- Math magic... If 51% of group members broadcast "signature shares" on a message, these are combined to create the group's threshold signature.

**HYPER GEOMETRIC PROBABILITY CALCULATOR**

**CONSENSUS / RANDOM BEACON**

Threshold relay chain generates randomness, records network metadata & validation tree "state root". State  $3 \times 5$  and updates to state stored on shards... State transitions passed to Validation Tree

**Each process has mining identity**

- Public key with meta data attached
- IDs mediate participation
- Private network: trusted dealer defines list
- Public network: CC security deposit, USCIDs

**Threshold Relay Chain techniques**

Probabilistic Slot Protocol (PSP) When Gh is selected, members start stopwatches!  
Choosing Leaders Randomness selects priority list block forgers at height h  
Short Term Convergence Correct processes build on highest scoring chain  
Threshold Timestamping group signs blocks at h until next group appends another.

**Scalable Global Validation Layer:** Each additional level of the tower validates new state transitions applied to storage shard, is built by processes selected by the RANDOM BEACON

**USPTO 13/573,002 HEART BEACON CYCLE TIME – SPACE METER**

USCt 573 134 2347 Alice Corp V CLS Bank = ABSTRACT IDEAS = NO NO = PHYSICAL MEMES

**MACRO CYCLES**  
**CLOCK FACE**  
 $90 / 90 / 90 / 90 = 360$  degrees

**BASEBALL "DIAMOND"**  
A diamond is a square is a block  
2nd Base  
Runner = Messages Signals / Telemetry

**METRICS / METERS**  
90 feet  
Euclidian Geometry TRIANGULATION:  
90 feet

**ALGORITHM = RULES**  
**PLAYERS = ROLES**  
**UMPIRE = RULES**

**BLOCK in 3D = CUBE**  
Cube has Length, Depth, Height. Volume #1421

**3rd Base**  
Blockchain Blocks / Coins Awarded

**STATISTICIAN**

**90 feet**

**Survey Point**

**home plate**

**SC 573 US 134 2347**  
Physical = Opposite Of abstract

**1<sup>st</sup> Base Coach**

**first base**

**UMPIRE**

**$3 \times 5$**

**HASH TABLE**

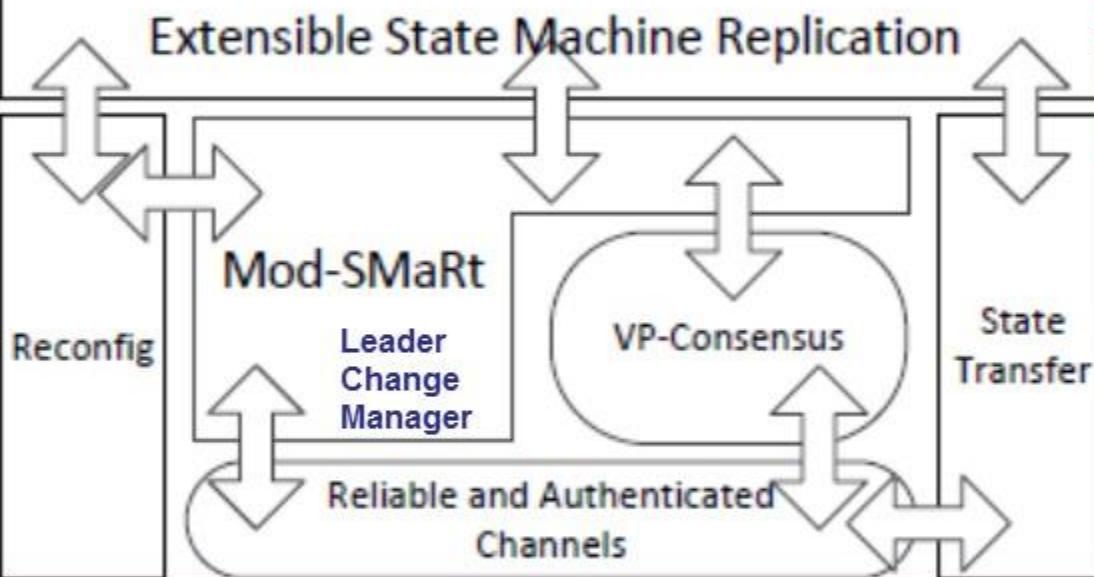
**NONCE**

**VALUES / CODE**

**MICRO-CYCLES**

## Byzantine Fault-Tolerant State Machine Replication

BFT-SMaRt dynamic distributed system processes are divided in two nonintersecting subsets: replicas and clients. Each system process has a unique identifier. During dynamic system execution, a sequence of views is installed to denote the reconfigurations due to replicas joins and leaves. A view is composed by a set of replicas identifiers.



Modularity is achieved using a set of building blocks (or modules) containing the core functionality of BFTSMaRt. Blocks are divided in three groups: communication system, state machine replication and state management.

### BFT-SMaRt needs an eventually synchronous system

Total order multicast is achieved using the Mod-SMaRt protocol and with the Byzantine consensus algorithm. Clients send requests to all replicas in cv, and wait for replies. replicas store each batch of ordered requests to a (stable) log and, periodically, take snapshots of the application state and store it in stable memory.

## USPTO 13/573,002 HEART BEACON CYCLE TIME-SPACE METE

USCt ALICE CORP V CLS BANK

PHYSICAL = OPPOSITE OF ABSTRACT

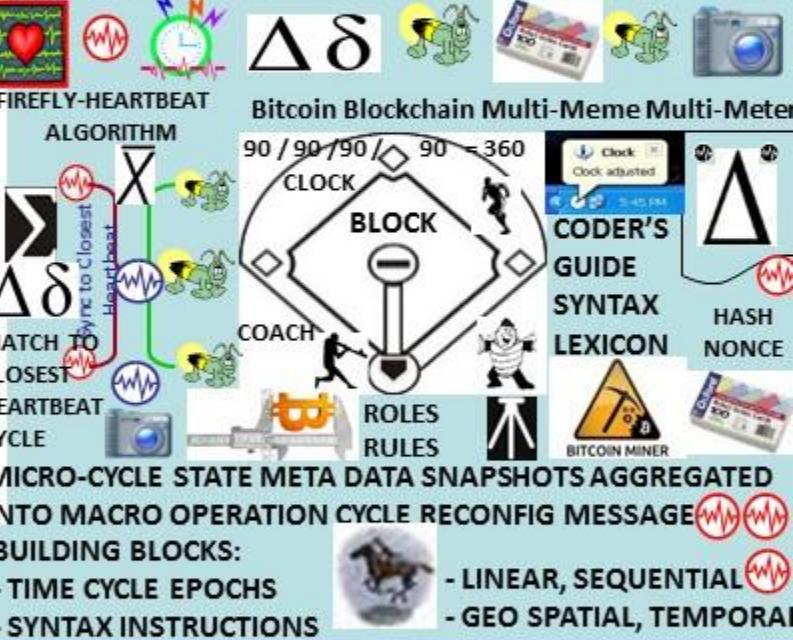


DERIVED FROM BATTLEFIELD DIGITIZATION DISTRIBUTED AUTONOMOUS ORGANIZATION DAO SYSTEM OF SYSTEMS

FEDERATED ID / ORGANIZATIONAL IDENTIFIER {"ORG\_ID"} ADDS, JOINS, DROPS, MOVES TO / FROM DAO

CHANGES IN STATE VIEWED IN "APPLIQUE' OVERLAY VIEWS

## K00.99 HEARTBEAT SYNC DELTA STATE META DATA SNAPSHOT



Firefly inspired Heartbeat Synchronization nodes strive to sync in a distributed system. Nodes generate periodic "heartbeat" events approximately at the same time.

It differs from classical clock sync in that nodes are not interested in counting cycles to agree on the ID of the current clock cycle. There is no requirement to sync during a cycle length in real time as long as the length is bounded and all nodes AGREE ON IT EVENTUALLY"

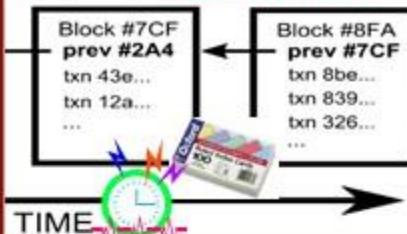
# HYPER LEDGER OPEN SOURCE BLOCKCHAIN

Core APIs, & SDKs

$\Delta\delta$  Shared Ledger



Code execution environment, ledger data structures, modular consensus fwk & algos, and modular membership services, modular storage and event fwks, network peers



HEART BEACON CYCLE  
TIME – SPACE METER  
USPTO 13/573,002

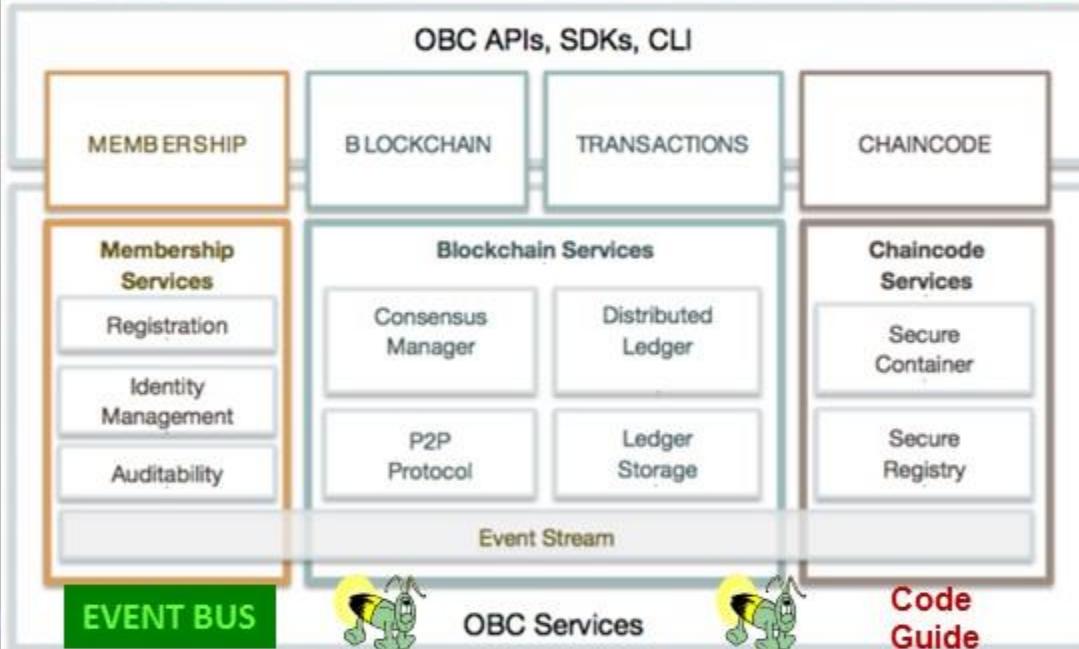
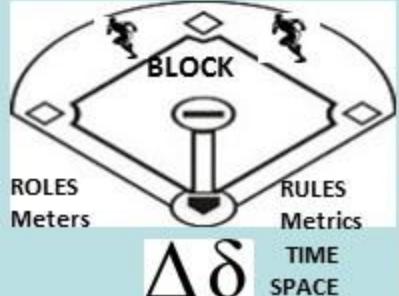
FEDERATION  
**Federation Gateway**

METRICS ("Organization ID")  
METERS

RESTFUL SYNC DELTA  
CHANGE MANAGEMENT  
MICRO-MACRO CYCLE



BLOCK TIME ARBITRAGE



ROSETTA STONE



300 + MESSAGE  
TEMPLATES  
USE CASES / GROUPED  
DATA TRANSACTIONS  
Alpha-Numeric Data  
Element ID -- #'s are the  
UNIVERSAL LANGUAGE

HYPER LEDGER USES  
JSON ("tag") / YAML  
Text indentation –  
UNIVERSAL LANGUAGE  
= ALPHA-NUMERICS

FFIRNS  
FFUDNS

e.g. Derivatives

e.g. Trade Finance

e.g. KYC / AML

App

App

App

App

App

App

App

App

App

## Concord Platform Services

CorDapp Store

Notaries

Network Map Service

Trusted Digital Backbone Network

Regulatory Reporting

Oracles

Service Provider Gateways

Bank-Internal Gateways

## Concord Vault Interoperability

Asset Registry

Trade Registry

Cash

Identity Vault

## Concord Operations Centre

Business Monitoring

Technical Alerting

Management Information

Compliance Audit



Δδ

Inter-Network Adapters

FEDWIRE

CHIPS

DTCC

CLS

## Corda Core Node Services

Agreement States

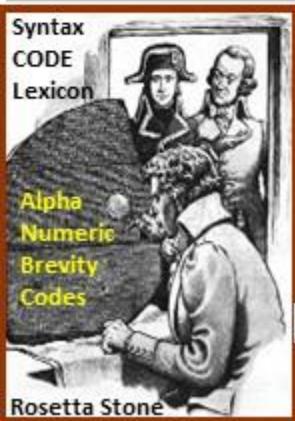
Transactions

Sandbox

Digital Signing

Interaction Protocols

Contract Verification



UNIVERSAL EVENT BUS



Syntax CODE Lexicon

STRUCTURED MILITARY MESSAGE TEMPLATE FORMS LOGIC / FILTERS

XBRL / CDL / DAML STOCK MIC CODES



300+ Use Case Templates



PROOF OF WORK



PROOF OF STAKE

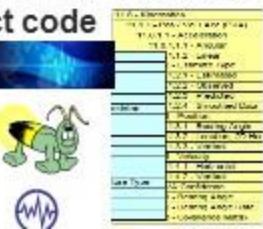


STATE CHANNELS



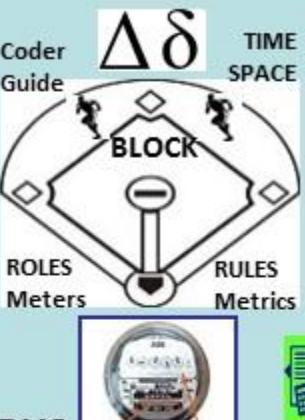
BITCOIN NEXGEN LIGHTNING / DASH..

Federation Gateway



## KEY BLOCKS:

- NO CONTENT = NULL
- LEADER ELECTION



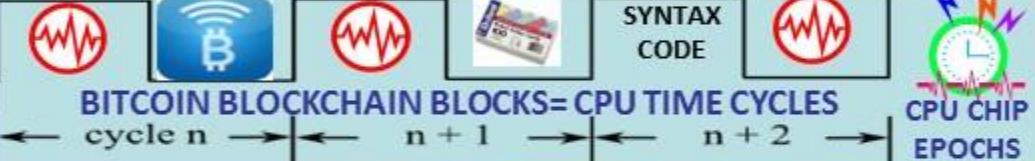
## MICRO BLOCKS:

- ONLY CONTENT
- NO CONTENTION



|                  | FROM     | TO        | INFO |
|------------------|----------|-----------|------|
| XBRL             | CDL      | DAML      |      |
| STRUCTURED       | STOCK    | MIC CODES |      |
| MILITARY MESSAGE | TEMPLATE | FORMS     |      |
| LOGIC / FILTERS  |          |           |      |
| NDN              |          |           |      |
| SYNTAX           |          |           |      |
| LEXICON LIBRARY  |          |           |      |

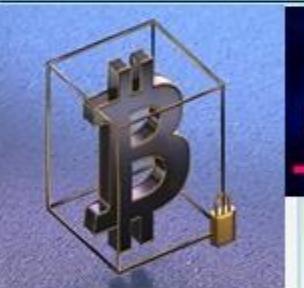
EVENT BUS



long exponential intervals (10 min)

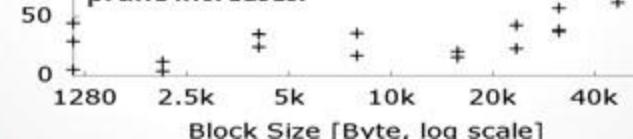


COMMAND SYNTAX  
RESTFUL State Transfer



Subjective Time to Prune

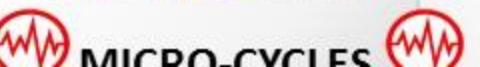
Additional metrics used by researchers included "time to prune", or the time it takes for miners whether they are on the correct "branch" or version of the blockchain they are processing transactions. As block sizes increase, suggested time to prune increases.



short deterministic intervals (10 sec)



MICRO-CYCLES





## ETHER: Compensate Resource Contribution

Gas: price to  
Run contract  
transactions

ethereum

Casper is a security-deposit based economic consensus protocol. Nodes = "bonded validators" place security deposit (an action called "bonding") If a validator generates an invalid action, account deposits are forfeited along with consensus privilege. Use of security deposits address "nothing at stake" problem; that behaving badly is not expensive. Casper is an **EVENTUALLY CONSISTANT** blockchain-based consensus protocol. CASPER favors availability over consistency (see the CAP theorem).



Ether hedged against other  
crypto / FIAT currencies  
price changes

**Firefly - Heartbeat synchronization:** nodes in a distributed system generate periodic, local "heartbeat" events approximately at the same time with a goal of all nodes starting / ending cycles at the same time...

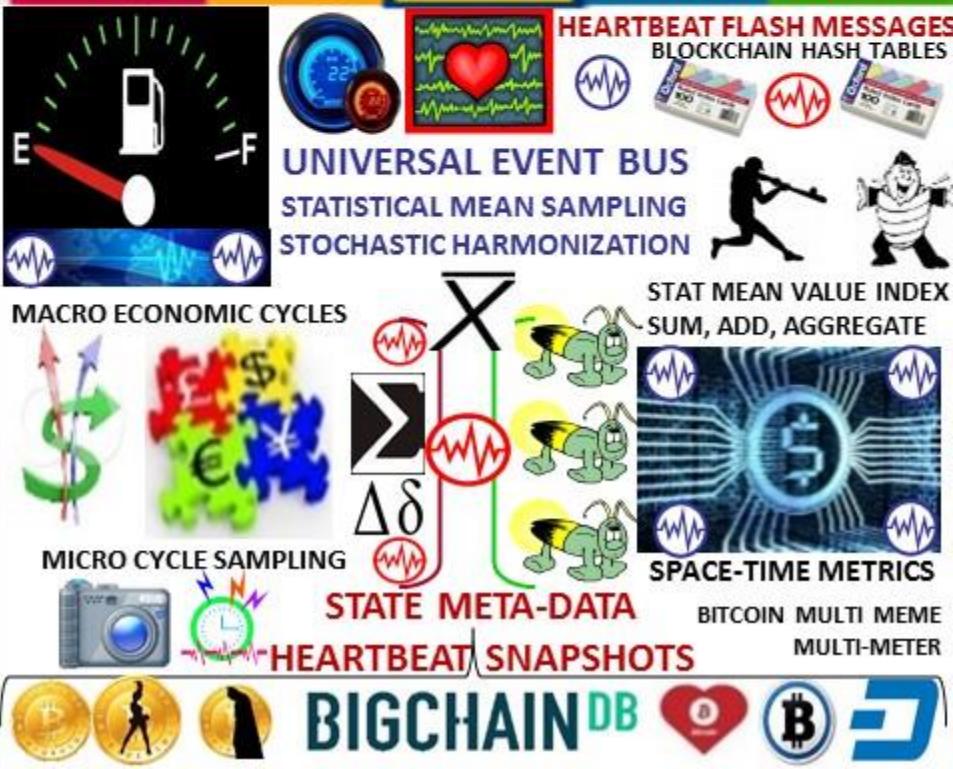
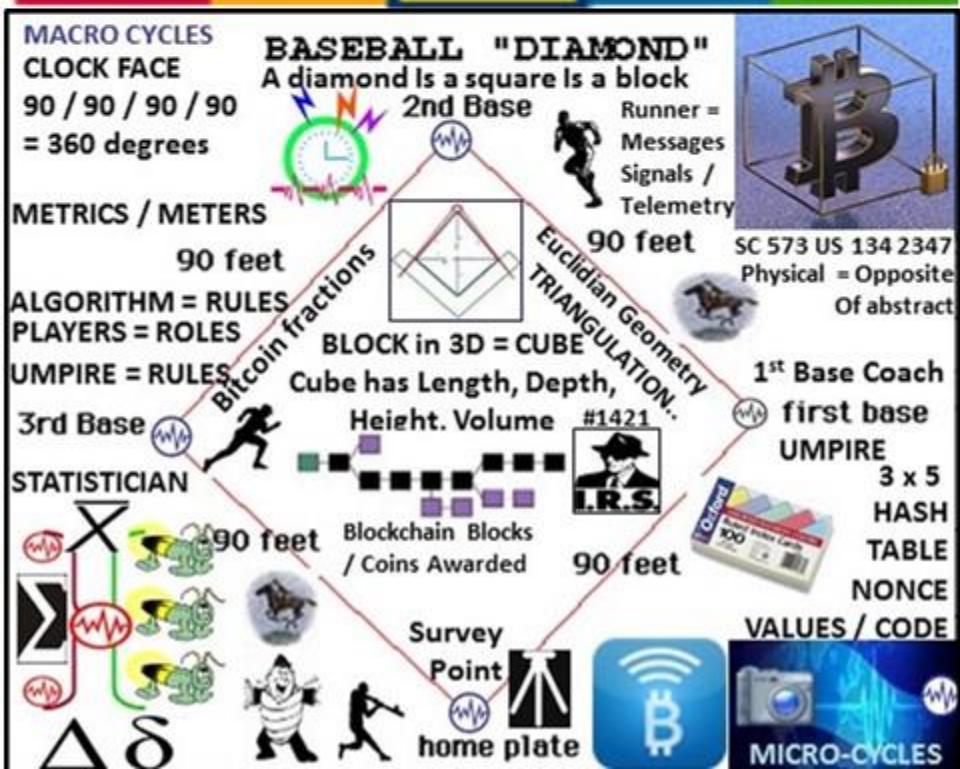
**EVENTUALLY**

| Txs  | State transition: |  | Txs  | State transition: |  | Txs        | State transition: |
|------|-------------------|--|------|-------------------|--|------------|-------------------|
| 0cb4 | 123: 400          |  | 5581 | 905: 560          |  | 7ce6       | 123: 440          |
| 9f12 | 8723: 0           |  | 2fc3 | 1141: 8021        |  | 1141: 7981 |                   |
|      | 42: 15776         |  | 42:  | 15775             |  |            |                   |

SWARM  
(storage)

WHISPER  
(messaging)

EVM  
(consensus)



**MACRO CYCLES**  
**CLOCK FACE**  
90 / 90 / 90 / 90  
= 360 degrees

**METRICS / METERS**

90 feet

ALGORITHM = RULES

PLAYERS = ROLES

UMPIRE = RULES

3rd Base

STATISTICIAN

X

90 feet

Blockchain Blocks / Coins Awarded

90 feet

Survey Point

home plate

$\Delta \delta$

TRANSACTIONS

PER CYCLE

METRICS

cycle n

COMPUTER CHIP EPOCHS

n + 1

n + 2

SPATIAL

TEMPORAL Series

t<sub>1</sub> t<sub>2</sub> t<sub>3</sub>

PROOF-OF-STAKE

UXTO

Mined Bitcoins

Unmined Bitcoins

Survey Methods

Proximity Beacons

MICRO-CYCLES

CALENDAR

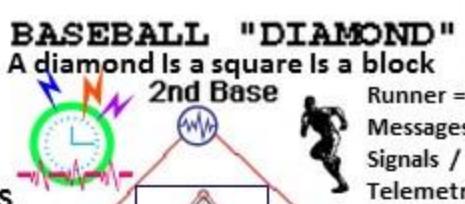
Unmined Bitcoins

Radar

UTXO: unspent transaction output'. bitcoins sent somewhere

but not yet spent. Unspent transaction output set= latest

STATE of every Bitcoins ever mined" % Block Mined / % Block owned



SC 573 US 134 2347

Physical = Opposite Of abstract

1<sup>st</sup> Base Coach

first base

UMPIRE

3 x 5

HASH

TABLE

NONCE

VALUES / CODE

MICRO-CYCLES

LOGIC – FILTERS

CODE SEQUENCE

ROLES / RULES

A BASEBALL DIAMOND IS A SQUARE. HBC USES A BASEBALL METAPHOR TO DESCRIBE METRICS, METERS. ROUNDING BASES FORM A BLOCK. METRICS, METERS & SURVEY METHODS MEASURE COIN MINING COMPLETION % AWARDS

STRUCTURED {"CONTENT"} TEMPLATES

Attribute Series

t<sub>1</sub>, t<sub>2</sub>, t<sub>3</sub>

Digital Asset

Contract

Modeling

Language

DAML

{"INTEREST"}

"DISTANCE"

FBI

IDMaps

SonarHops

NDN

time ↑

Value ↑

Time →

FIX {"108"}

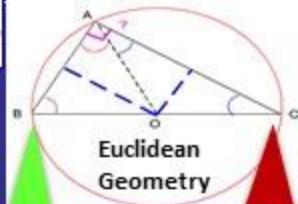
distance →

1: prove coin ownership <Org\_ID> Coin Issuer

2: # coins sent where, when Lat / Long, DTG

3: NIST Random # Beacon Non-Repudiation

4. Issuing {"Org\_ID"} adjudicates w buyers



NAMED DATA NETWORKING

Time Series

Value ↑

Time →

FIX {"108"}

time ↑

value ↑

time →

distance →

NDN

1: prove coin ownership <Org\_ID> Coin Issuer

2: # coins sent where, when Lat / Long, DTG

3: NIST Random # Beacon Non-Repudiation

4. Issuing {"Org\_ID"} adjudicates w buyers

FIREFLY-HEARTBEAT

ALGORITHM EVENT BUS

O'REILLY

Time Series Databases

CALENDAR

Firefly – Heartbeat Event Bus

cycle n

n + 1

n + 2

SPATIAL

TEMPORAL Series

t<sub>1</sub> t<sub>2</sub> t<sub>3</sub>

PROOF-OF-STAKE

UXTO

Mined Bitcoins

Unmined Bitcoins

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UTXO: unspent transaction output'. bitcoins sent somewhere

but not yet spent. Unspent transaction output set= latest

STATE of every Bitcoins ever mined" % Block Mined / % Block owned

Voting based selection Instead of only using the stake size, the block generators can be selected by votes ex: League MVP

Voting Based Selection: stake size & block generators selected by votes





**STATE:** stored data at a given instant in time

## STATE CHANNELS: blockchain interactions

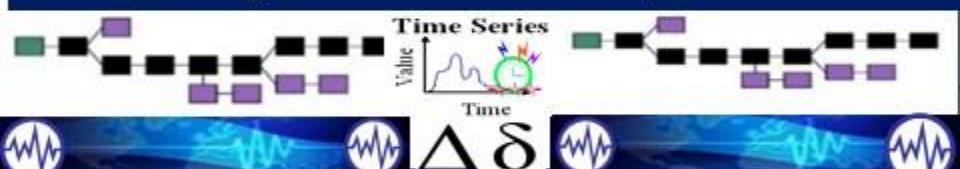
which could occur on the blockchain, but instead get conducted off of the blockchain, without significantly increasing the risk of any participant.



**1. Part of the blockchain state is locked** via multisignature or some sort of smart contract, so that a specific set of participants must completely agree with each other to update it.

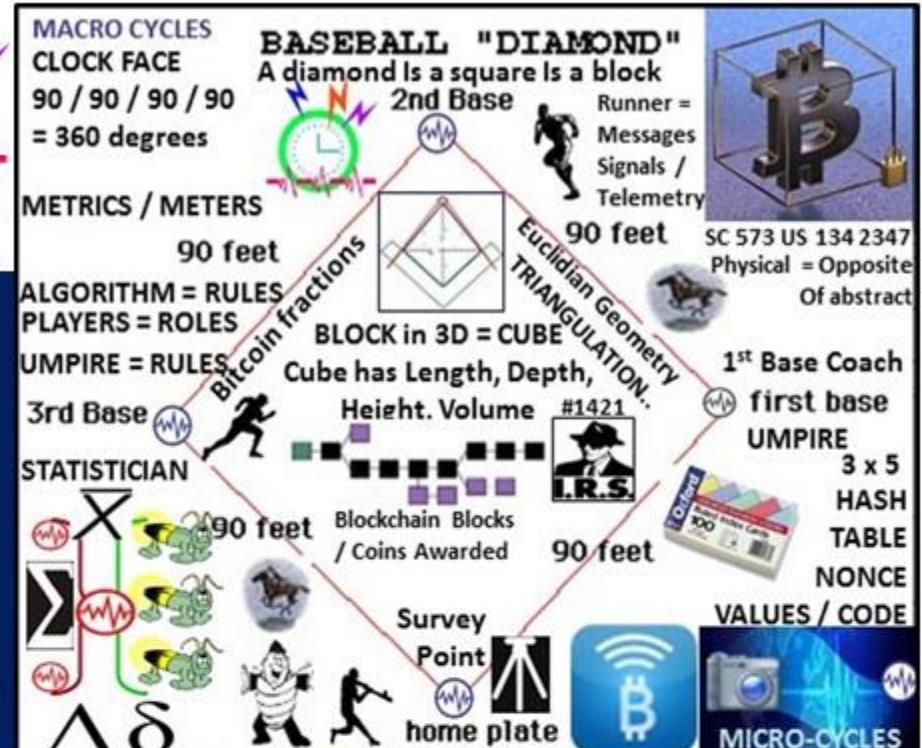
**2. Participants update the state amongst themselves** by constructing and signing transactions that *could* be submitted to the blockchain, but instead are merely held onto for now. Each new update "trumps" previous updates.

**3. Finally, participants submit the state back to the blockchain,** which closes the state channel and unlocks the state again (usually in a different configuration than it started with).



**EACH NEW UPDATE TRUMPS THE PREVIOUS:** simplest way is to have any unlocking attempt start a timer, during which any *newer* update can replace the old update (restarting the timer). When the timer completes, the channel is closed and the state adjusted to reflect the last update received. The length of the timer would be chosen for each state channel, balancing the inconvenience of a long channel closing time with the increased safety it would provide against internet connection or [blockchain problems](#). Alternatively, one could structure channel with a financial penalty so anyone publishing an inaccurate update to the blockchain will lose more than gain by pretending later transactions didn't happen.

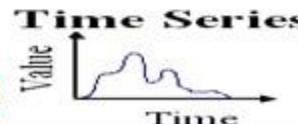
[LINK: http://jeffcoleman.ca/state-channels/](http://jeffcoleman.ca/state-channels/)



**FLASH HEARTBEAT MESSAGES**  
**HEARTBEAT STATE META-DATA**  
**SNAPSHOTS EVERY**  
**10, N MIN MICRO TO**  
**MACRO ECON CYCLE**



## HASH TABLES



**Firefly - Heartbeat synchronization:** nodes in a distributed system generate periodic, local "heartbeat" events approximately at the same time with a goal of all nodes starting / ending cycles at the same time eventually = HB CYCLE



# PROOF-OF-WORK



THE PROBABILITY OF MINING A BLOCK IS DEPENDENT ON HOW MUCH WORK IS DONE BY THE MINER



TIMESTAMP marks the point that work started. Additionally, it contributes to the uniqueness of the work by an individual miner



THROTTLE equivalent to difficulty. State  
•target = maximum value of 8 bytes  
Snap  
( $2^{64}$ ) divided by the difficulty.

NONCE increments from 0..N until the target is met.



GUESS stores the guess  
Effectively, it begins at infinity.



**Proof-of-Work:** users perform some form of work to participate. Work must be difficult for the client but easy for the server/network to verify. POW determines the approximate time between blocks = rate that new bitcoins are created. Work is submitted as a message/timestamp payload with a nonce value. Payloads are made unique through use of public key encryption or address.Nonce allows checking the work without retracing all the procedural steps.

## OREILLY Time Series Databases



## FIREFLY-HEARTBEAT ALGORITHM STOCHASTIC HARMONY ACROSS TIME ZONES



- MESSAGE ex:
  - Hashing string
  - Hash Table

## 300+Message Templates

|                |             |
|----------------|-------------|
| LOGIC FILTERS  | LOGIC GATES |
| SYNTAX LIBRARY | LEXICON     |
| CODER'S GUIDE  |             |
|                |             |

## POW PAYLOAD : COMBINATIONS OF ENCRYPTED SYNTAX Attribute Series

MACRO CYCLES  
CLOCK FACE  
 $90 / 90 / 90 / 90$   
= 360 degrees

BASEBALL "DIAMOND"  
A diamond Is a square Is a block  
2nd Base



Runner =  
Messages  
Signals /  
Telemetry

SC 573 US 134 2347

Physical = Opposite  
Of abstract

METRICS / METERS

90 feet

ALGORITHM = RULES

PLAYERS = ROLES

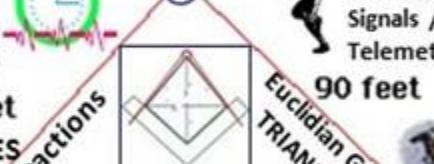
UMPIRE = RULES

STATISTICIAN

3rd Base

STATISTICIAN

NONCE



90 feet

Euclidian Geometry

TRIANGULATION

BLOCK in 3D = CUBE

Cube has Length, Depth,

Height. Volume

#1421

I.R.S.

Blockchain Blocks

/ Coins Awarded

90 feet

Survey Point

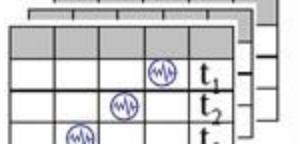
home plate

VALUES / CODE

MICRO-CYCLES

VALUES / CODE

MICRO-CYCLES





## ETHER: Compensate Resource Contribution

Gas: price to  
Run contract  
transactions

ethereum

Casper is a security-deposit based economic consensus protocol. Nodes = "bonded validators" place security deposit (an action called "bonding") If a validator generates an invalid action, account deposits are forfeited along with consensus privilege. Use of security deposits address "nothing at stake" problem; that behaving badly is not expensive. Casper is an **EVENTUALLY CONSISTANT** blockchain-based consensus protocol. CASPER favors availability over consistency (see the CAP theorem).



Ether hedged against other  
crypto / FIAT currencies  
price changes

**Firefly - Heartbeat synchronization:** nodes in a distributed system generate periodic, local "heartbeat" events approximately at the same time with a goal of all nodes starting / ending cycles at the same time...

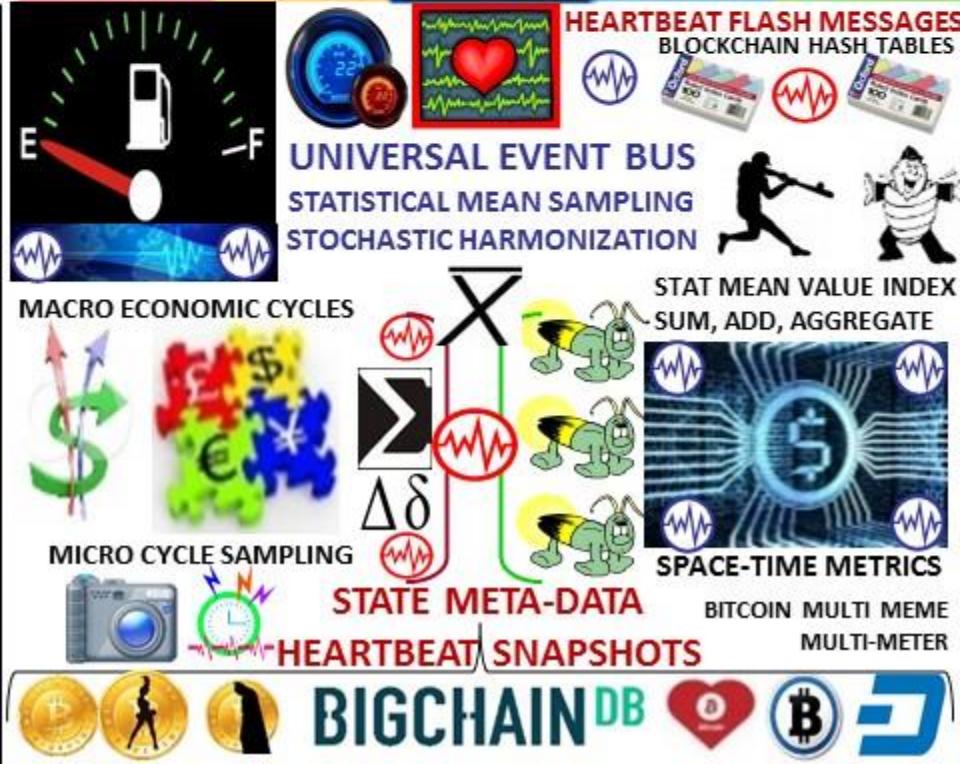
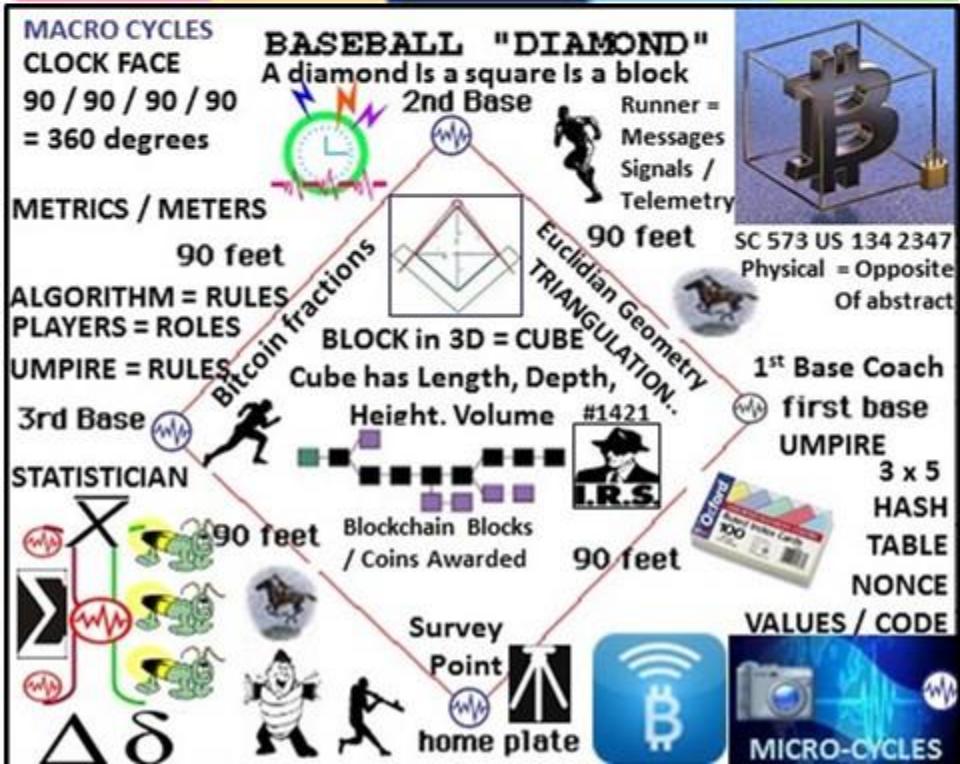
**EVENTUALLY**

| Txs  | State transition: | Txs  | State transition: | Txs   | State transition: |
|------|-------------------|------|-------------------|-------|-------------------|
| 0cb4 | 123: 400          | 5581 | 905: 560          | 7ce6  | 123: 440          |
| 9f12 | 8723: 0           | 2fc3 | 1141: 8021        | 1141: | 7981              |
|      | 42: 15776         |      | 42: 15775         |       |                   |

**SWARM**  
(storage)

**WHISPER**  
(messaging)

**EVM**  
(consensus)





**PROJECT LIGHTING**

**FIREFLY - HEARTBEAT ALGORITHM**

**FIREFLY - HEARTBEAT**

**ERLANG**

**Time Series Databases**

**UTZ UNIVERSAL TIME ZONE SYNC**

**OP\_CHECKLOCKTIMEVERIFY During Macro Cycle w/ Random # BEACON**

**Payment channels multi-hop hub spoke model like internet routing**

**transactions sent over off blockchain micropayment channels**

**OREILLY**

**Stochastic Harmonization**

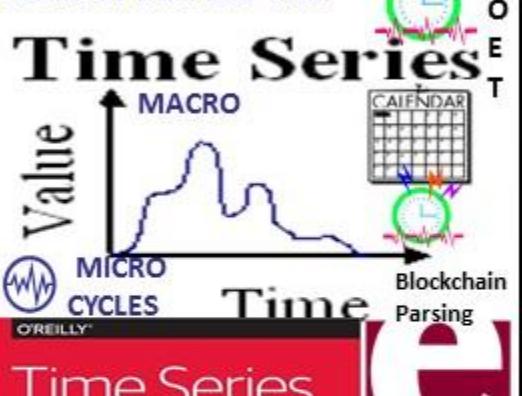


# SAWTOOTH LAKE POETIC CONSENSUS PROOF OF ELAPSED TIME: POET

"PoET for 'Proof of Elapsed Time', is a **lottery protocol** that builds on trusted execution environments (TEEs) provided by Intel's [Secure Guard Extensions] to address the needs of large populations of participants. The second, **Quorum Voting**, is an adaptation of the Ripple and Stellar consensus protocols and serves to address the needs of applications that require immediate transaction finality."



## PROOF OF ELAPSED TIME



## Time Series Databases

### QUORUM VOTING PROTOCOL

Voting Based Selection: stake size & block generators selected by votes

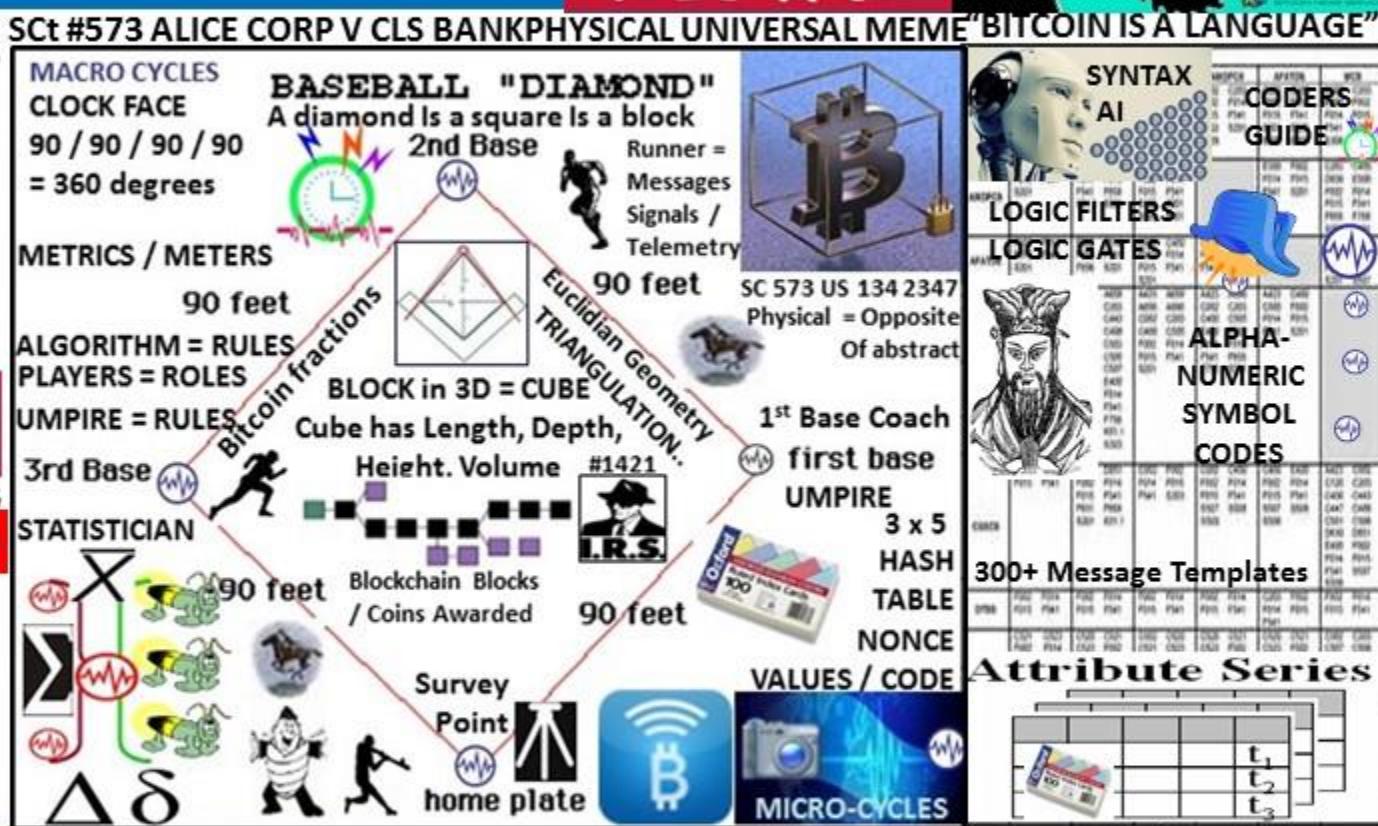
Voting based selection Instead of only using the stake size, the block generators can be selected by votes  
ex: League MVP

MVP



Robert's Rules quorum = minimum # of voting members who must be present at meetings to conduct business of the group

## TOURNAMENT LEAGUE BOARD



## FIREFLY-HEARTBEAT FLASH MESSAGES UNIVERSAL EVENT BUS



Capture ledger's state  $\Delta \delta$

Transaction language changes ledger state

Consensus, transaction acceptance protocol



**Block-Weighted-Average-Price (B-WAP) API** creates a USD price for any block in the Bitcoin blockchain, based on BNC's Bitcoin Liquid Index (BLX). Automatically appropriates blockchain transactions with a USD price or technical indicator for traders.

#### Key Features:

Look up any bitcoin blockchain transaction and receive back a USD value for any transaction.



Built using historic bitcoin price index - the [BNC BLX](#).

API updated every 10 min with a 2 hour delay on latest blocks (due to the nature of Block propagation to ensure avoidance of publishing rates on orphaned blocks).

All rates time-stamped in UTC.



Ability to look up by time-stamp.

Ability to look up by block-height.

Asset Classes: Digital Currencies

Get by: Block-height, Time-stamp or Transaction

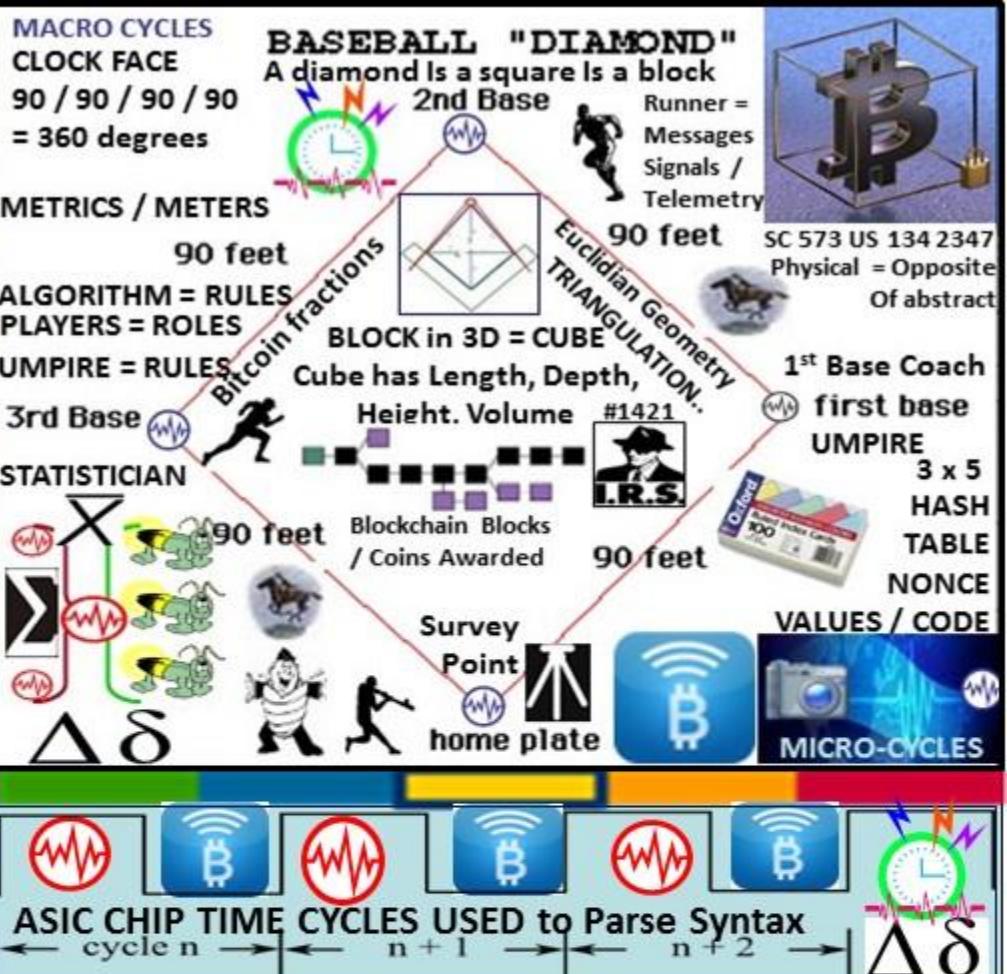
Transaction ID, Block ID, time-stamp, BWAP per block, Value in USD. BTC per transaction, bitcoin transaction fees per transaction

• Exchanges Covered: Price discovery for the B-WAP comes from utilizing the BNC [Bitcoin Liquid Index](#) (BLX) bitcoin price calculation.

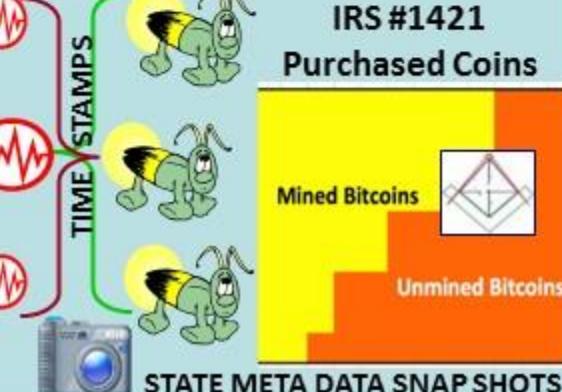
• Historical Rates: This API goes back to 2010-07-17 23:14:35 UTC.

**BRAVE NEW COIN.**  
Digital Currency Insights

"Blocks are a measure of time":  
The Bitcoin Blockchain 'B-WAP'



#### API CODE INSTRUCTIONS



# DASH



"All decentralized, blockchain-based networks are DAOs, or decentralized autonomous organizations" Bitcoinist

"A DAO can be summed up as an organization of people who communicate with each other via a "network protocol," which is to say that they communicate with one another via a ruleset"

[LINK](http://bitcoinist.net/how-dash-dao-work/) <http://bitcoinist.net/how-dash-dao-work/>

"all digital currency networks, the base layer of people generating the blockchain — "miners," "stakers," "witnesses," "validators," or "forgers" — all get paid to do so" "consensus," or an agreement upon what the rules should be; and second, the execution of said rules.

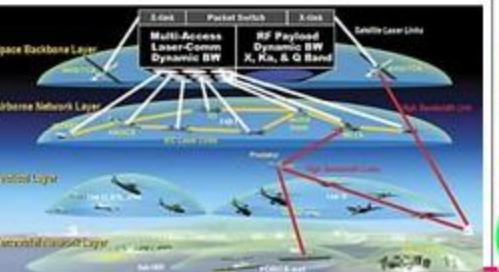
"Its makeup is thus: the block reward is divvied up in three parts. The first 45 percent goes to [Dash's miners](#). Another 45 percent goes to its Masternodes. And 10 percent is set aside to fund whatever other jobs or expenditures the Dash network deems necessary"

InstantX: To solve the problem of lag time in transactions, Masternodes are able to instantly lock transactions.

Masternodes receive payments for their service to the network.

DAO: RAND THINK TANK TERM COINED + / - 2001

NETWORK CENTRIC WARFARE  
Developing and improving information superiority



MACRO CYCLES  
CLOCK FACE  
90 / 90 / 90 / 90  
= 360 degrees

METRICS / METERS

90 feet

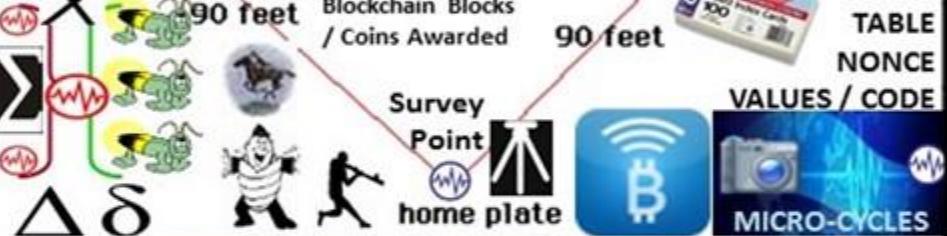
ALGORITHM = RULES  
PLAYERS = ROLES

UMPIRE = RULES

3rd Base

STATISTICIAN

90 feet



STOCHASTIC HARMONIZATION FIREFLY-HEARTBEAT EVENT BUS

HEART BEACON CYCLE = IMPROVEMENT TO NETWORK CENTRIC WARFARE



Firefly - Heartbeat synchronization: nodes in a distributed system generate periodic, local "heartbeat" events approximately at the same time with a goal of all nodes starting / ending cycles at the same time eventually = HB CYCLE



# What happens if we think about Bitcoin through the lens of *land*?

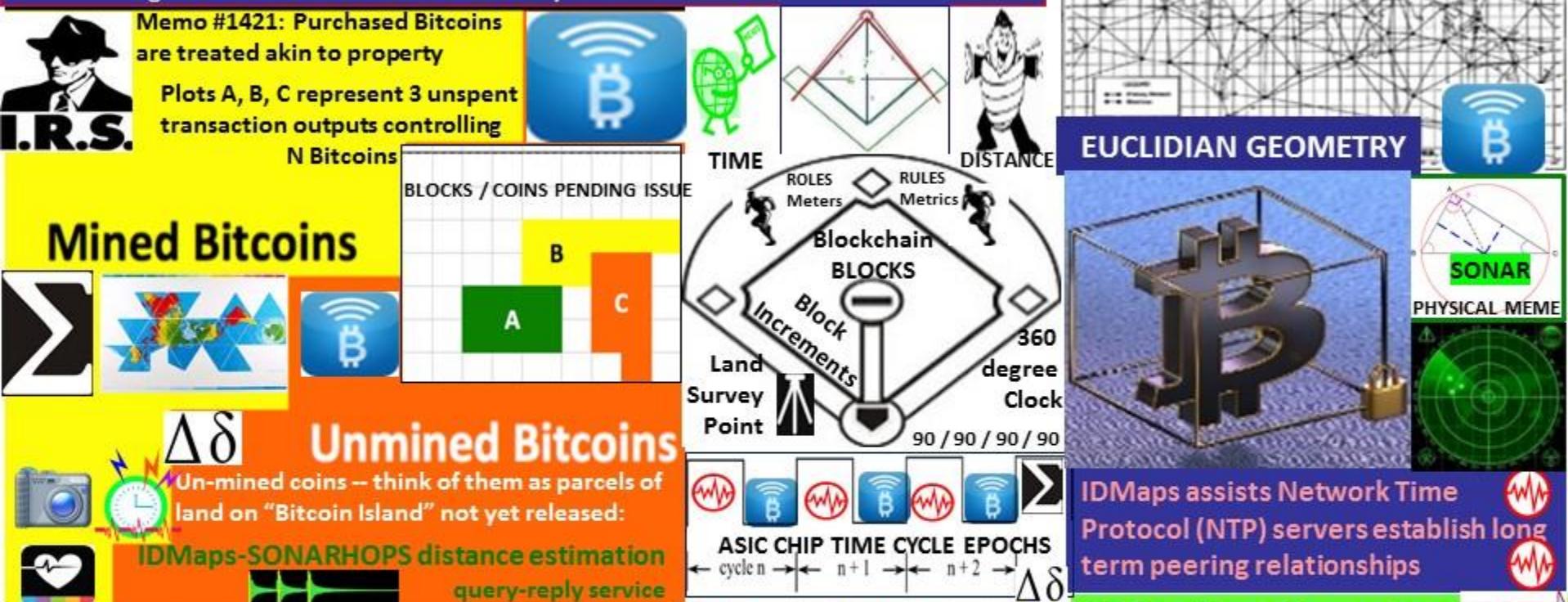
HEART BEACON CYCLE

USPTO 13/573,002

SURVEY METHODS

SC ALICE CORP VS CLS BANK: "claims may not direct towards abstract ideas"

UTXO: unspent transaction output'. bitcoins that have been sent somewhere but not yet themselves been spent. The set of all unspent transaction outputs (UTXOs) can be thought of as the latest STATE of every bitcoin that has ever been mined.



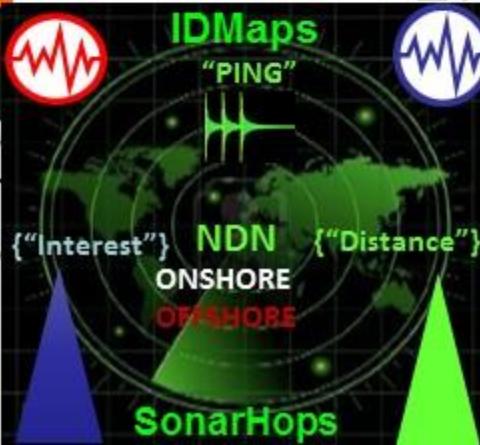
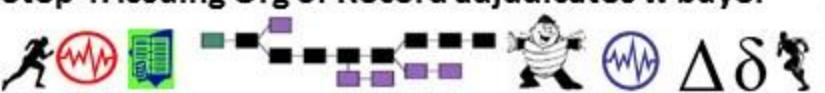
- End-state Bitcoin quantity will be fixed like land  
"Bitcoin as protocol of ownership, not transfer"  
Coins never travel, but simply switch owners"

Step 1: prove coin ownership <Org\_ID> Coin Issuer

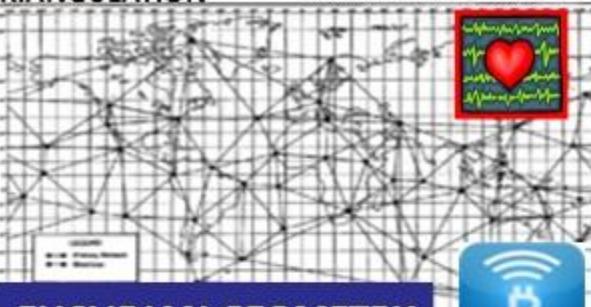
Step 2: coins sent where, when Lat-Long, Time Stamp

Step 3: specify ownership <Org\_ID> issuing agent

Step 4: Issuing Org of Record adjudicates w buyer



TRIANGULATION



EUCLIDIAN GEOMETRY



IDMaps assists Network Time Protocol (NTP) servers establish long term peering relationships

IDMaps / SonarHops collects distance data & builds virtual Internet distance maps & estimates distance between IP address pairs



IDMaps Distance Metrics: latency (round-trip delay) available bandwidth estimation

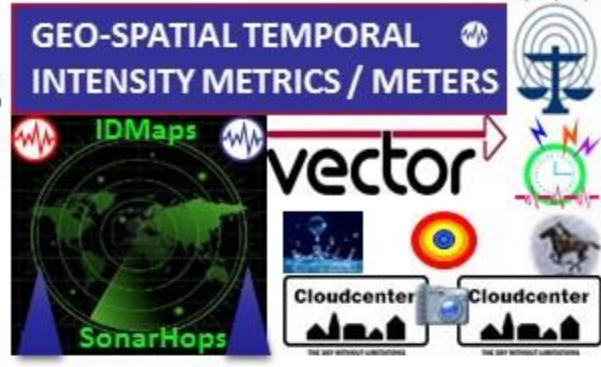
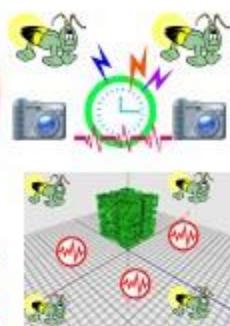




# IDMaps: Global Internet Host Distance Estimation Service



NDN: CONTENT ROUTING / <StratML> NDN INTEREST = Time / Distance



IDMaps scalable Internet-wide architecture measures, disseminates distance information



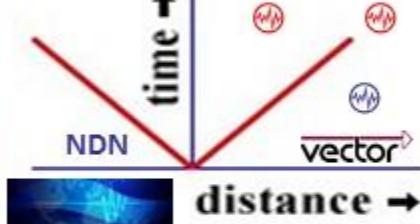
HOP COUNTS



REACHABILITY



/localhost/nfd/fib/add-nexthop



Higher-level services collect distance information to build a virtual distance map of Internet & estimates distance between any IP address pair

IDMaps provides distance information used by SONAR/HOPS query/reply service

Name Prefix  
<Org\_ID> Trie (NPT)



NDN NAMES

NDN NAMED DATA NETWORK RIB /  
FIB Datasets event notification

Distance information adjusts to "permanent" topology changes e.g., splits, joins, adds, moves, drops, merges in lieu of formal merger / acquisition



NDN RIB

NDN INTEREST LENGTH  
= DISTANCE BY HOPS

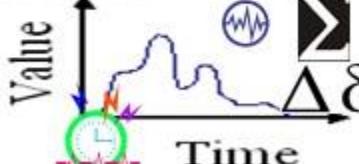
NDN  
INTEREST

IS DATA  
FRESH ?

TRIANGULATION



Time Series



NDN STRATEGY CHOICE MANAGER – RIB Routing Information Base add-nexthop

Datasets and Event Notification

INTEREST in <URNs>

IDMaps assists Network Time Protocol (NTP) servers establish long term peering relationships



Distance Metrics: latency (e.g., round-trip delay) and, where possible, bandwidth.



MICRO-CYCLES



NDN INTEREST LIFETIME = TTL Time To Live  
HEARTBEAT STATE META DATASNAP SHOTS

# 13/573,002 HEART BEACON CYCLE

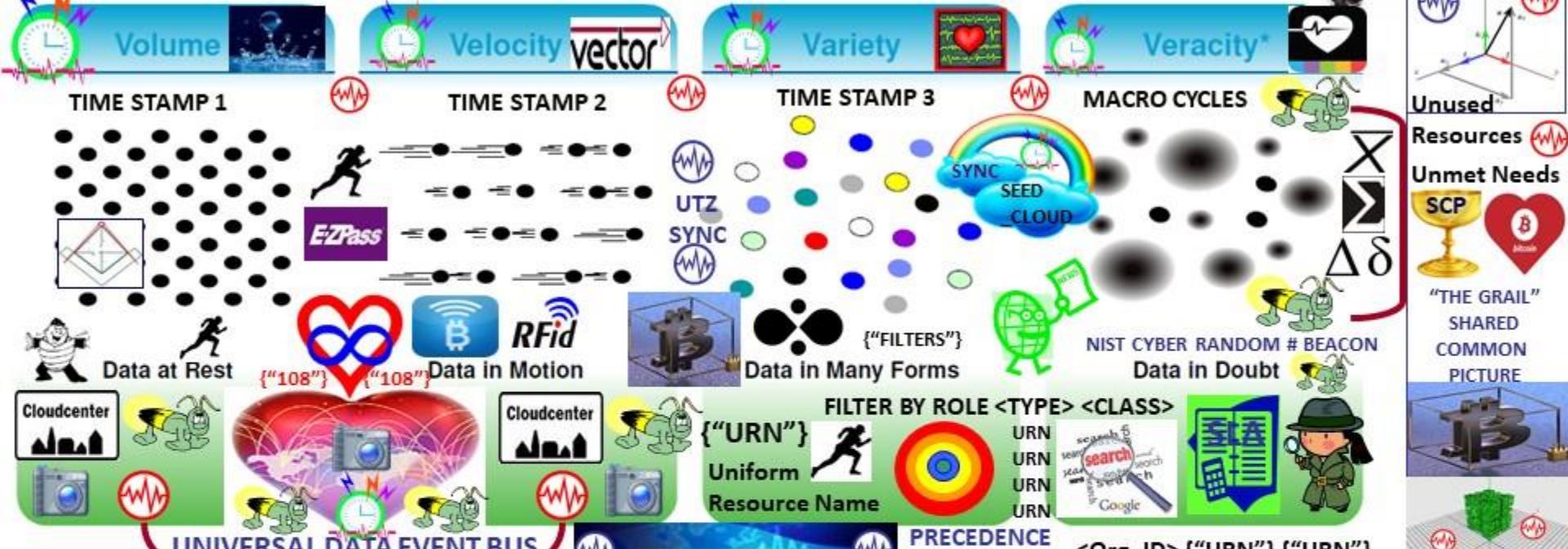
Time -Space meter, metrics / Universal data event, alert bus  
Internet of Everything IET ability to hear the world's heartbeat



## The four dimensions of Big Data

TIME STAMP BY Org\_ID, URN Before FUSION CENTER

VECTOR: quantity having direction and magnitude  
position of a point in space relative to another point

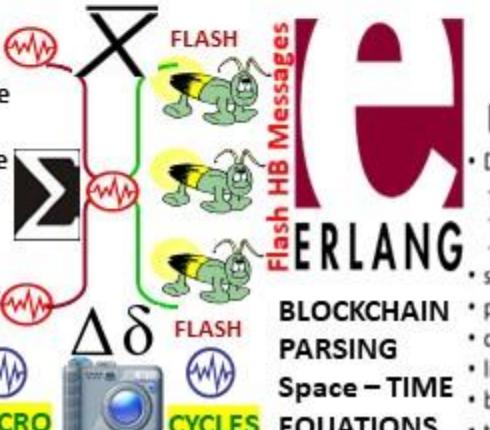


\* Truthfulness, accuracy or precision, correctness

**FIREFLY – HEARTBEAT {"108"}**  
Stochastic Harmonization

Heartbeat synchronization strives to have nodes in a distributed system generate periodic, local "heartbeat" events approximately at the same time with a goal of all nodes starting and ending cycles at the same time eventually = map to closest OPTEMPO HEARTBEAT

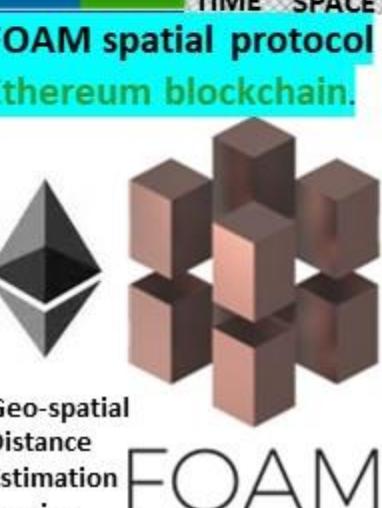
State Meta Data  
Heartbeat Snaps



**ALGORITHM {"108"}**  
Universal Event / Alert Bus

**PAUL REVERE**  
LINEAR  
SEQUENTIAL  
Functional Sequential Erlang

- Data types: < / = / >
  - Integers (incl. BigNums), floats, atoms
  - tuples/records, lists/plists, binaries, funs
  - Maps (added in R17)
- single assignment
- pattern matching & guards
- closures (anonymous function data type)
- list comprehensions
- bit-syntax & binary comprehensions
- tail recursion & tail call optimization (TCO)



# Electronic Product Code Information Services (EPCIS)

GS1 Standard for creating, sharing visibility event data



REGISTERED  
ORGANISATION  
VOCABULARY

Edge

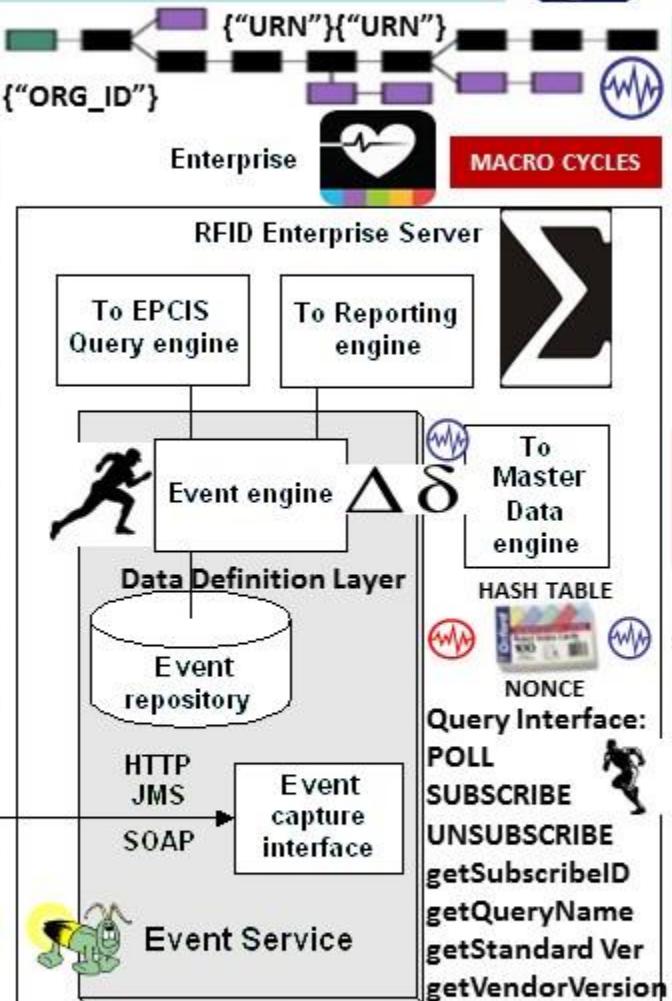
## EPCIS DATA MODEL



SERVICE LAYER

XML

- ObjectEvent
- AggregationEvent
- QuantityEvent
- TransactionEvent



## Core Business Vocabulary (CBV)

What identifiers of object(s) or entities / subject of the event

When date time when event took place, local time zone in effect

Where location identifier where event occurred, identifier of location where object(s) are expected to be following the event

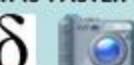
Why Information about the business context, including:  
a Identifier that indicates the business step taking place

MICRO CYCLES



CLOSER IS CHEAPER  
CLOSER IS FASTER

$\Delta\delta$



## TEMPLATES / FORMS

## ROLES / RULES ("FILTERS")

## NETOPS SOP

## UNIVERSAL EVENT BUS

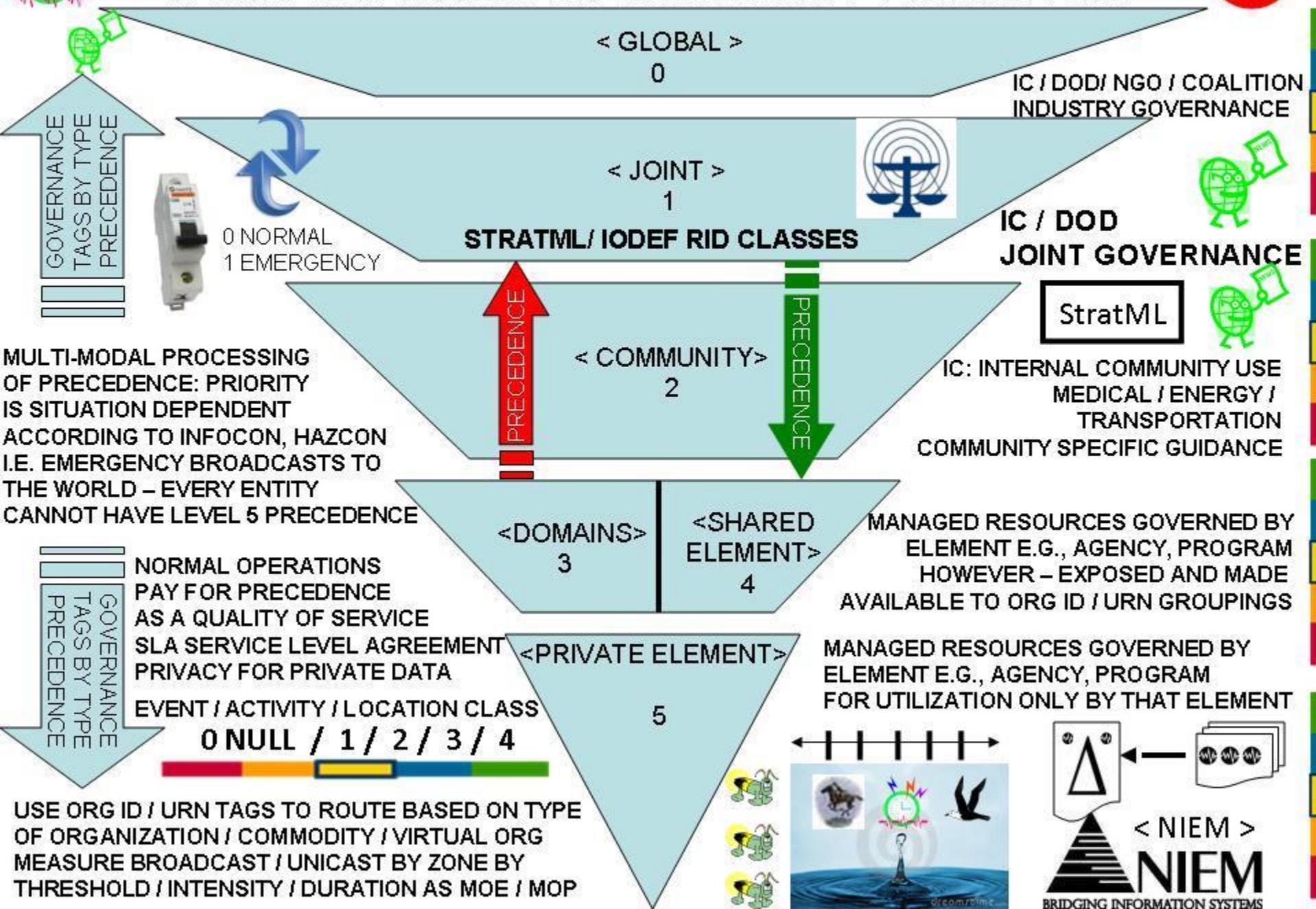
## ROSETTA STONE

## 1st Compiler DESIGN Still the BEST





# ENABLE MAPPING OF GOVERNANCE / MANAGEMENT RESOURCES BY PRECEDENCE SHOWN IN GEO-SPATIO INTENSITY DASHBOARD VIEWS



# Situational Awareness Reference Architecture (SARA)

Identity, Inventory, Activity, and Sharing

<http://ics-isac.org/sara/>



ICS-ISAC



Industrial Control System  
Information Sharing and  
Analysis Center

**IDENTITY:** <UUID> = Devices, sensors  
Federation  
Gateway <ORG\_ID> Organizations

<ELEMENTS>

STRATEGIC  
MARKUP

StratML

LANGUAGE

STRATML / IODEF RID CLASSES:  
<GLOBAL><JOINT><SHARED>  
<DOMAIN><FEDERATION>  
<CITY><STATE><PRIVATE>

**INVENTORY:** Uniform Resource Name <URN>

<URN><URN>  
<URN><URN>  
<URN><URN>



vector

<COMMODITY><WATER><ENERGY><AVAILABLE UNITS>

GEO-SPATIAL TEMPORAL INTENSITY METRICS

UNIFIED EVENT / ALERT TRIGGER / THRESHOLDS

**ACTIVITY:** <EVENT><ALERT> <TIME\_STAMP><ORG\_ID><URN>

CONTENT LEXICON  
ROSETTA STONE

NDN

<GEO\_LOC\_GPS><STATUS>



<Halt><Moving><Stale><Ready>



NDN

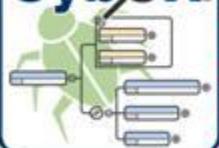
<INTEREST>

Cybersecurity

NDN

<INTEREST>

Cybersecurity



Cybersecurity

NDN

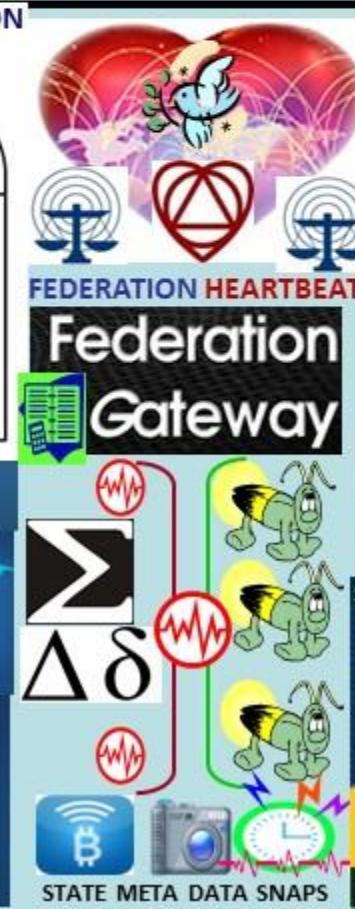
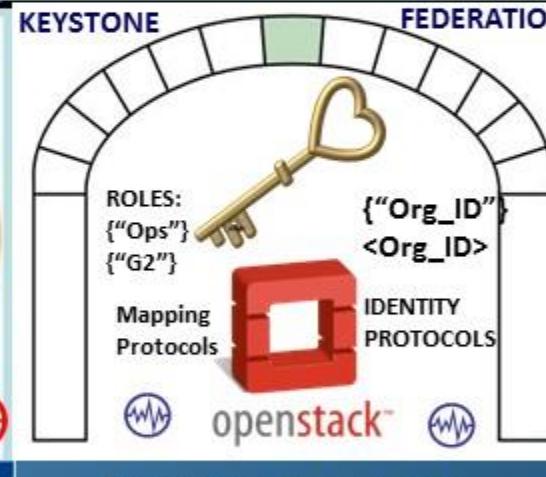
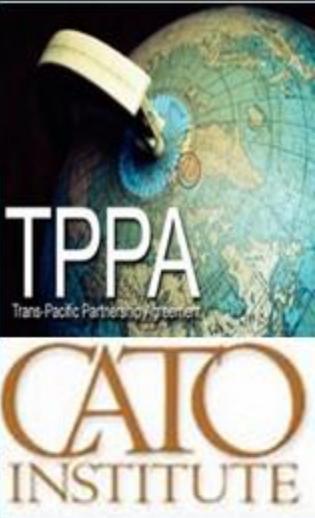
<INTEREST>





Trans-Pacific Partnership is great for elites. Is it good for anyone else? by [Timothy B. Lee](#) on April 17, 2015

How the TPP empowers elites. The nature of trade agreements has shifted. They're no longer just about removing barriers to trade. They've become a mechanism for setting global economic rules more generally. This system for setting global rules has some serious defects. We expect the laws that govern our economic lives will be made in a transparent, representative, and accountable fashion. The TPP negotiation process is none of these — it's secretive, it's dominated by powerful insiders, and it provides little opportunity for public input. Attributed to CATO Institute



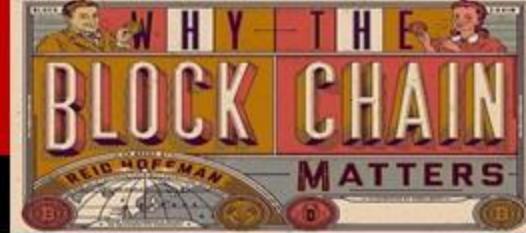
HEART BEACON CYCLE: ALL THINGS INTERNET ARE PROGRAMMED USING TIME CYCLES USED / NOT USED TO PROCESS / NOT PROCESS SYNTAX



# TradeNet

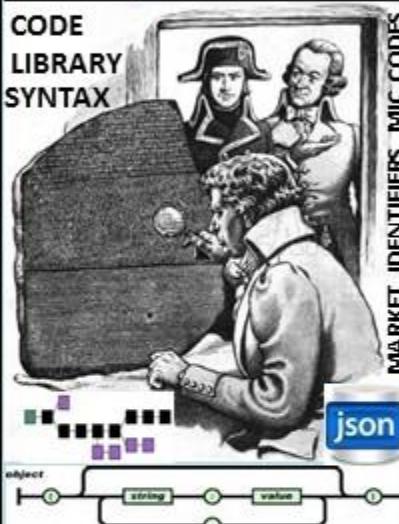


Programmable Money \$\$\$



RIED HOFFMAN 15 May 2015 [LINK](#)

"The CODE that secures Bitcoin could also power an alternate Internet [LINK](#)

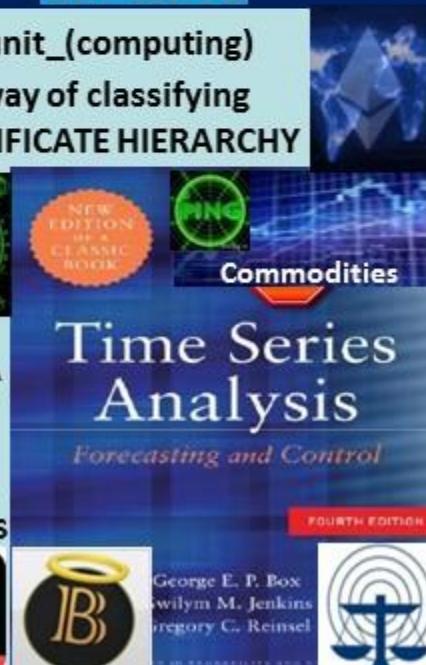


Bitcoin and the blockchain function as a medium of exchange, a store of value, a unit of account. Bitcoin adds digital, cryptographic, distributed server functions to currencies. Because it functions simultaneously as a currency, an asset and a platform, Bitcoin is better described as a global cryptoCAP (currency, asset, platform) — a synergistic form of "cryptocapital" to unleash the full economic power of the networked age. **Bitcoin makes money PROGRAMMABLE. MONEY IS SIMPLY DATA** - a simple way to measure and keep track of exchanges in value wealth accumulation. Bitcoin aggregates data in a distributed global ledger accessible to anyone, and software. First open platform for financial services. Color coins represent stocks, bonds, currencies, properties as E-assets.

WIRE

[http://en.wikipedia.org/wiki/Organizational\\_unit\\_\(computing\)](http://en.wikipedia.org/wiki/Organizational_unit_(computing))

In computing, an organizational unit (OU) is a way of classifying directories objects, or names in a DIGITAL CERTIFICATE HIERARCHY





**Decentralized Trading Platform DAO ORACLE**  
access conventional, legacy financial data to  
price, value, trade & settle OTC, P2P financials

**Zero Trust Transaction:** money performs according to terms agreed to by the parties. Ex: purchase of widget from retail store where widget must be delivered to person B on **TIME X**, in **Y condition** at **PLACE Z** or person A does not get paid. Global stock, currency, commodities exchanges, letters of credit, insurance underwriting, trading, intellectual property...

**Cost will be our stated rates that will fluctuate with VeUSD exchange rate. Veritas holders get priority. The ability to redeem Ve against USD gives our clients instant value.**

**VERITAS TOKENS = KEYS TO P2P Capital Market!** Proprietary P2P smart contracts combined with the transformational power of blockchain, allow the entire world to participate in the reimagining of global capital markets. Purchasing Veritas tokens is analogous to purchasing keys to the internet of money – the most monumental paradigm shift since the advent of the net

**Place Order**

|  |                            |
|--|----------------------------|
| Principal:                               | \$100.00                   |
| Collateral:                              | 0%                         |
| Leverage:                                | 10x                        |
| Notional Amount:                         | \$1000.00                  |
| Receive:                                 | QCOM                       |
| Pay:                                     | INTC                       |
| <b>Denominating Asset: ~BTC:SATOSHIS</b> |                            |
| Contract Expiry:                         | 16w                        |
| Contract Starts at:                      | -                          |
| Contract Ends at:                        | -                          |
| Cancel Contract at:                      | -                          |
| Est. Trans. Fees:                        | \$0.0437                   |
| Transaction Fees:                        | \$1.0262                   |
| Leverage Fees:                           | \$3.2528                   |
| Max. Profit/Loss:                        | + \$95.6773 / - \$104.3227 |
| Total Required:                          | \$104.3227                 |

# DAO Distributed Autonomous Organization SOFTWARE POOLS

All Market Orders      Search

Collateral Notional Expiry

Heartbeat Flash Messages Precedence P  
long as INTC decline outpaces QCOM, you get paid. QCOM can be replaced with GOOG, or even AAPL although I feel AAPL will have its issues in the upcoming quarters as well.

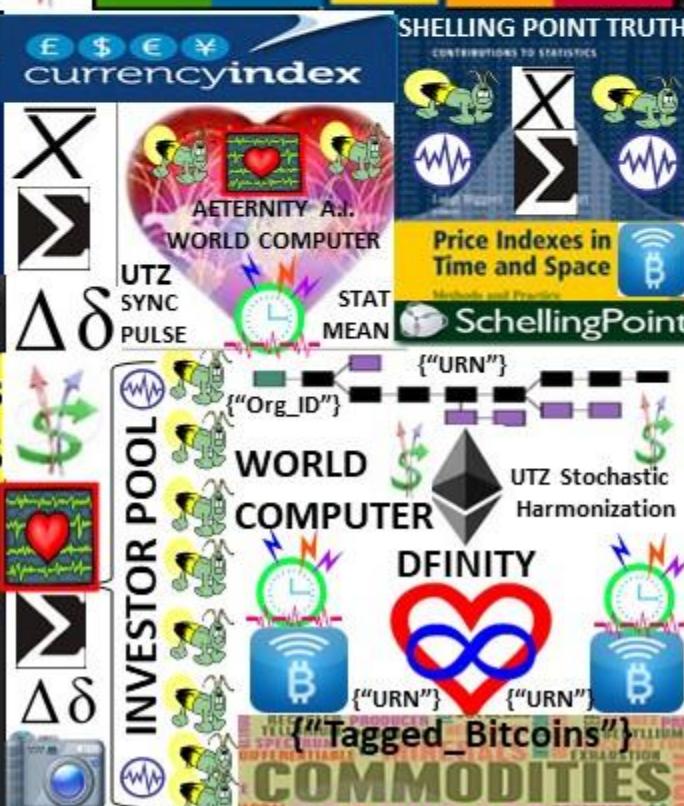


# ECONOMIC HEARTBEAT

STATISTICAL MEAN VALUE INDEX PULSE



## ALGORITHMIC REGULATION







A decentralized exchange called BitSquare has launched a campaign on the decentralized crowd funding app [Lighthouse](#). Its campaign is simultaneously an example of how powerful decentralized crowd funding is, and how difficult running a successful campaign is... segue to the MESH ECONOMY

The current standard time common throughout the world is based on a 24-hour clock, with zones that are either 12 hours ahead or behind **Coordinated Universal Time (UTC)**. However, these time zones are decided upon by individual governments, without overall coordination and can even extend fourteen hours ahead UTC.





- SDN is a *framework* to allow network administrators to *automatically* and dynamically manage and control a *large number* of network devices, *services*, topology, traffic paths, and packet handling (quality of

**DevOps model** and tools to enable scale, programmable agility, and policy-driven automation, and provides network virtualization to mask network configuration complexity with set of networking APIs



## Autonomous Device Coordination Framework



Registration

Authentication

Proximity based rules

Consensus based rules

FEDERATION AGREEMENTS

PROCEDURAL TEMPLATE

Contracts

Checklists

## FEDERATION

&lt;UUID&gt;&lt;ORG\_ID&gt;&lt;URN&gt;

## LDAP DIRECTORY

Physical proximity

Social proximity

Temporal proximity

Agreements

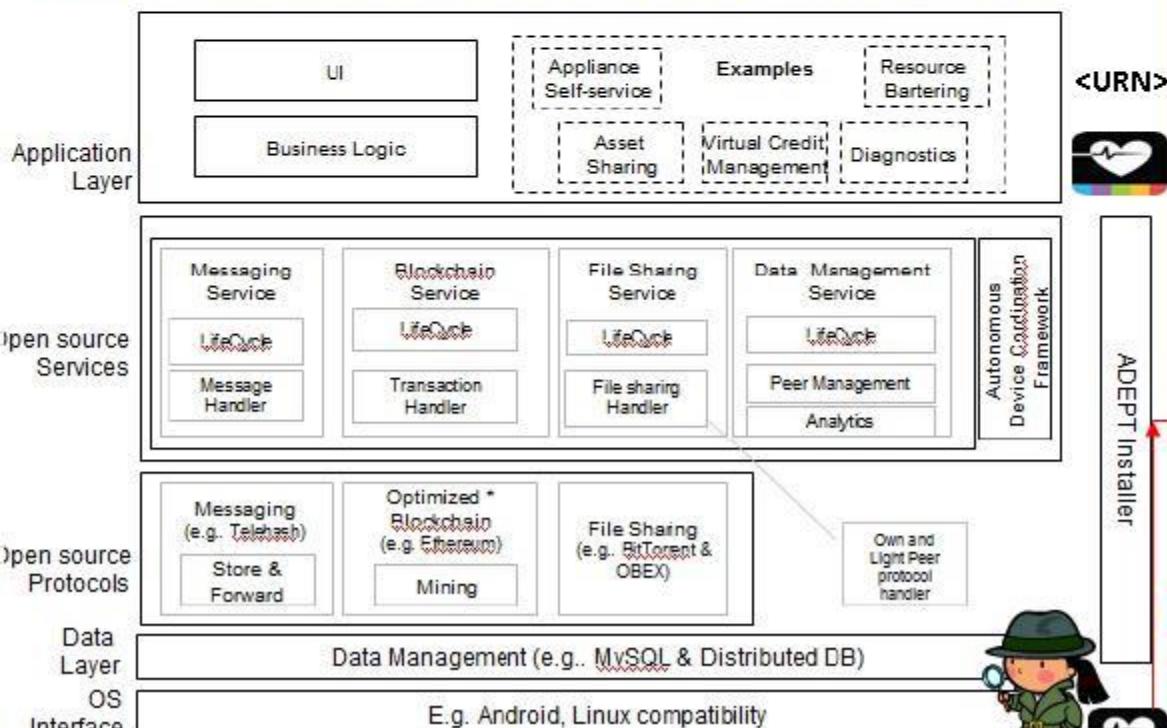
Payments

Barter



PAYMENTS BASED ON GEO-SPATIAL TEMPORAL METRICS / METERS  
<URN> DESCRIBES COMMODITIES ETC BY UNIFORM RESOURCE NAME BY </INTEREST>

## ADEPT Standard Peer Architecture – Logical View



&lt;URN&gt;



ADEPT Installer



ASSET SHARING WITHIN FEDERATION

BUSINESS LOGIC = WORKFLOW &lt;XML\_Wf&gt;

FILE SHARING = CYCLIC SYNC DELTA LEDGER / DOCUMENT REFRESH

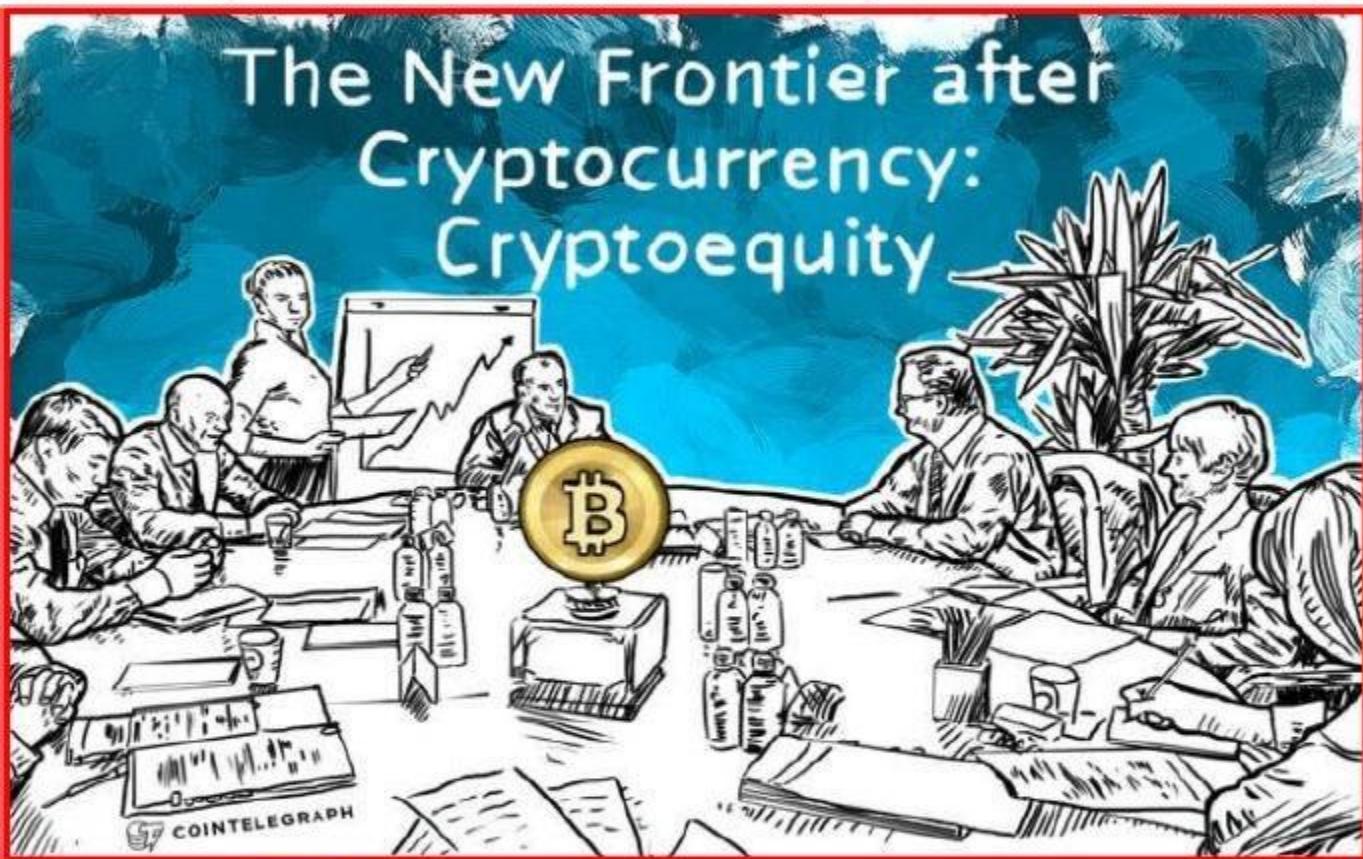


OPEN SOURCE = HBC = PROTOCOL AGNOSTIC

DATA LAYER: STATE META DATA TIME STAMPED BY <UUID><ORG\_ID><URN> & DATA PREPPED & "DATA WRANGLER PRIOR TO FUSION CENTER ENHANCED ANALYTICS / PROTECTS BANDWIDTH

\* Could be optimized to hold the complete blockchain. Function of ADEPT Installer

DAO: Distributed Autonomous Organization. RAND Corporation first used in a military context in 2000 [http://rand.org/pubs/documents\\_briefings/DB311.html](http://rand.org/pubs/documents_briefings/DB311.html)  
[Swarming and the Future of Conflict | RAND www.rand.org](#)



RAND  
Monograph  
Report

THE  
ADVENT  
Of NETWAR



Eris -- The Dawn of Distributed Autonomous Organizations and The Future of Governance



Ethereum: use of DAO in crypto coin sphere  
BitShares.org too ☺

<https://twitter.com/TheBitcoinArmy>



ERIS: GODDESS OF DISCORD  
DISRUPTIVE TECHNOLOGIES:

- BITCOIN ETHEREUM
- BITCOIN STELLAR
- BITCOIN NAMECOIN
- BITCOIN RIPPLE



<http://hplusmagazine.com/2014/06/17/eris-the-dawn-of-distributed-autonomous-organizations-and-the-future-of-governance/>

# How 'Bitbanks' Could Solve Bitcoin's Volatility Problem

$$MV=PQ \text{ Money} \times \text{Velocity} = \text{Price} \times \text{Quantity}$$

The most important equation in monetary economics, the equation of exchange:  $MV=PQ$ . The quantity of money (M) times the rate spent (V for velocity) equals the price of everything bought (P) times the amount bought (Q for quantity). In Bitcoin, M Money is on a predetermined path, converging to 21m bitcoins. In relation to the other variables, Bitcoin is fixed. V, P, & Q fluctuate



**Gamification** is the use of game thinking and game mechanics in non-game contexts to engage users in solving problems. Gamification techniques strive to leverage people's natural desires for competition, achievement, status, self-expression, altruism, closure.



# HOW GAMIFICATION WORKS:

## 5 COMMON MECHANICS

**100 POINTS**

Measure a user's achievements  
in relation to others

Can double as currency to exchange for rewards

 **BADGES**

Reward achievements visually

LEVELS

Encourage users to progress  
and unlock new rewards

## 2 1 3 LEADERBOARDS

Organise players by rank



## CHALLENGES

Encourage engagement by offering specific tasks to complete

## 4 MAIN WAYS TO DRIVE ENGAGEMENT

A black and white checkered racing flag icon.

## CLEAR GOALS AND RULES OF PLAY

## A COMPELLING NARRATIVE



## CHALLENGING BUT ACHIEVABLE TASKS





IEEE C37.118 Time Synchronization  
Harmonization Heartbeat update Interval  
PMU data time-stamp measure C37.118

Phase 2: Shared file stores data for 5 tags:

- (1) Active ID
  - (2) Heartbeat 1.
  - (3) Heartbeat 2.
  - (4) Device Status 1.
  - (5) Device Status 2.
- |  |  |       |
|--|--|-------|
|  |  | SLA/O |
|  |  |       |

| TAG  | vector         | ENERGY TOKENS<br>ExDesc / COMMODITIES | digitalset |
|--|----------------|---------------------------------------|------------|
| {"Org_ID"}<br>ActiveID                     |                | [UFO2_ACTIVEID]                       |            |
| IF1_Heartbeat<br>(IF-Node1)                |                | [UFO2_HEARTBEAT:#]                    |            |
| IF2_Heartbeat<br>(IF-Node2)                |                | [UFO2_HEARTBEAT:#]                    |            |
| {"UUID"}<br>IF1_DeviceStatus<br>(IF-Node1) |                | [UFO2_DEVICESTAT:#]                   |            |
| {"UUID"}<br>IF2_DeviceStatus<br>(IF-Node2) |                | [UFO2_DEVICESTAT:#]                   |            |
| IF1_State<br>(IF-Node1)                    | $\Delta\delta$ | [UFO2_STATE:#]                        |            |
| IF2_State<br>(IF-Node2)                    | $\Delta\delta$ | [UFO2_STATE:#]                        |            |

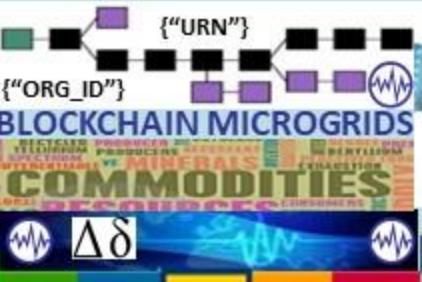


TOKENIZED ECONOMY



Unilnt does not examine the remaining attributes, the point source and location must match  
Micro Payments  
Demurrage Fees

Heartbeat  
State meta  
Data snapshots



$\Delta\delta$



$\Delta\delta$



$\Delta\delta$

Geo Spatial

Temporal Series

Water Drop Meme

Geospatial Radius

WATER DROP

MEME= RADIUS

DISTANCE FROM

ENERGY SOURCE

Micro Payments

Demurrage Fees

$t_1$   $t_2$   $t_3$

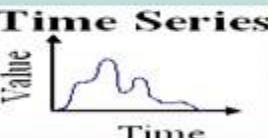
$N$

CLOSER = < CO2

BLOCK TIME – SPACE ARBITRAGE TRADE  
ENERGY TOKENS FOR FOOD, WATER,  
TRANSPORTATION LOCALLY, REGIONALLY



IEC 61850 Objects logical nodes, data objects or data attributes resends message with the heartbeat cycle



Spatial Econometrics



IEEE 802.1AG HOP BY HOP DETECTION  
IEEE 802.11 HbH HOP BY HOP CONTROL

< HOPS = CHEAPER Sync Delta Heartbeat Messages

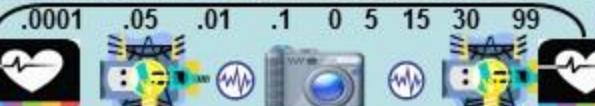
CROSS LEVEL OVERAGES / SHORTAGES ADJUST FOR

TIME / DISTANCE BETWEEN NETWORK NODES



Micro Payments

FIREFLY-HEARTBEAT ALGO EVENT MESSAGE BUS



X  $\Sigma$

SYNC DELTA

HEART BEAT

Match

events to Closest HBC

$\Delta\delta$

FIREFLY EVENT BUS

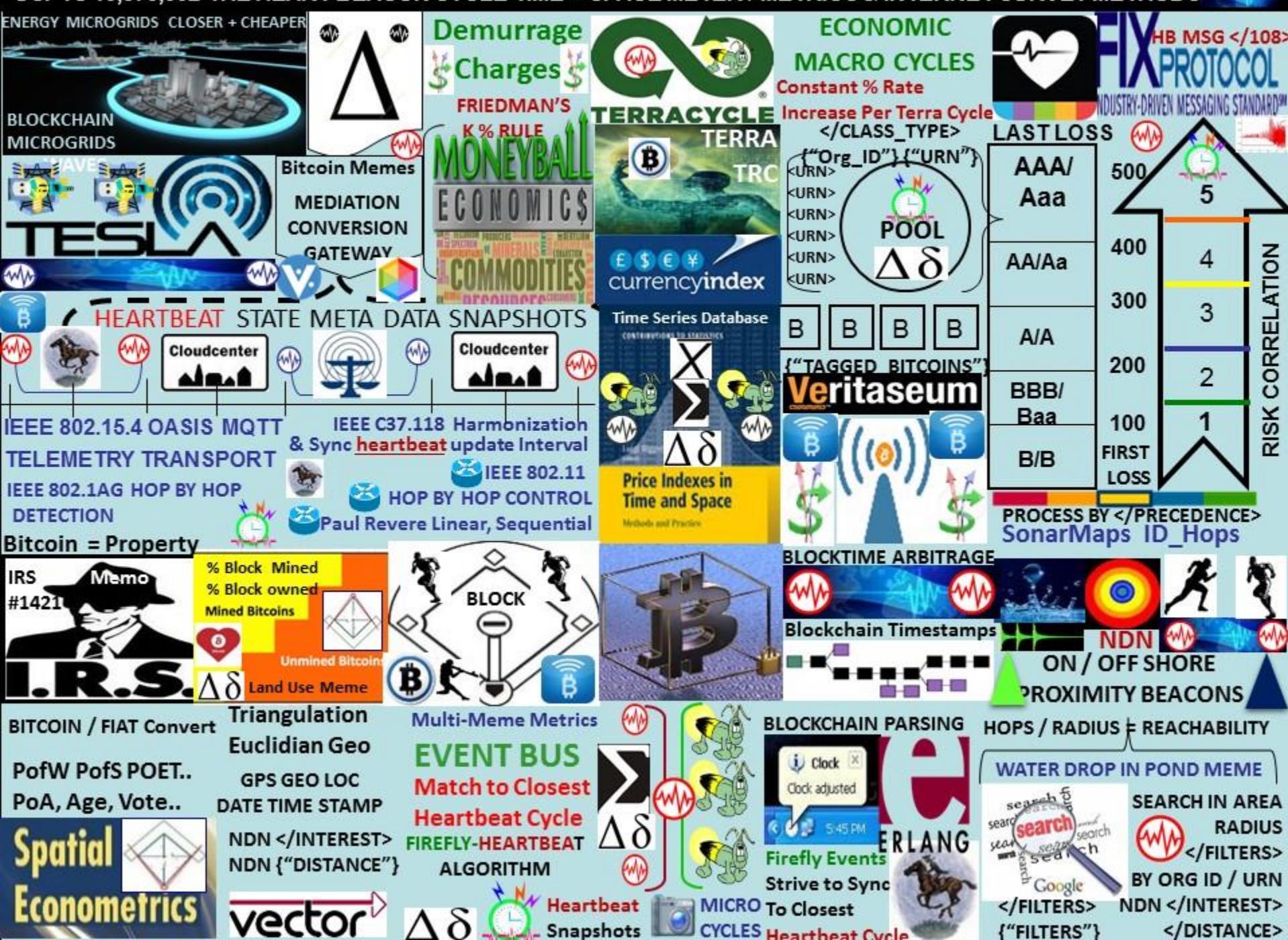
Distance Estimation Service

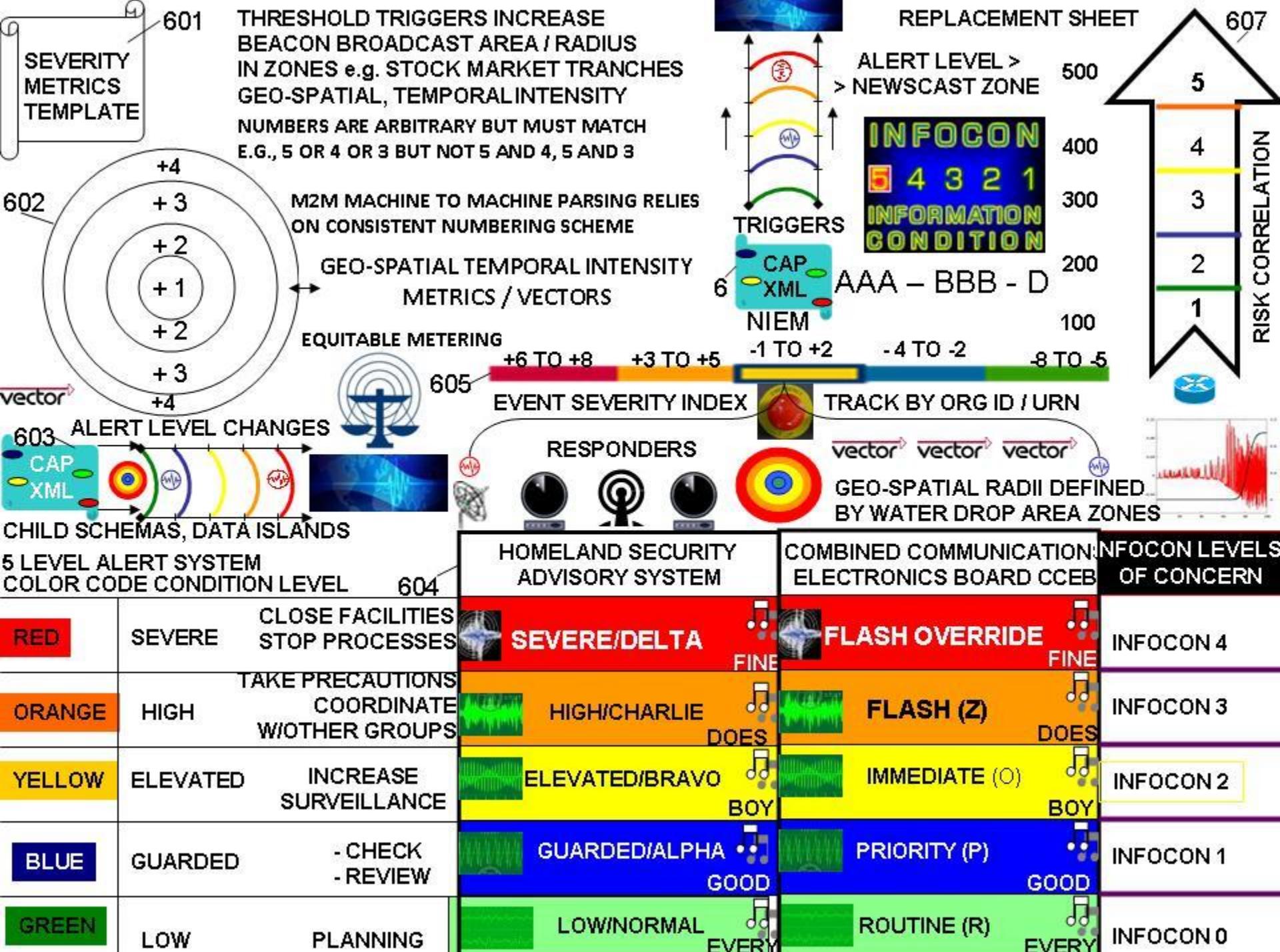
IDMaps SonarHops

</INTEREST>

NDN

{"DISTANCE"}





# GEO-SPATIAL TEMPORAL INTENSITY METRICS, METERS, VECTORS



INFOCON / DEFCON ALERT EVENTS INFORM STAKEHOLDERS OF STATUS CHANGE i.e., NORMAL TO ELEVATED, HIGH OR SEVERE. ALERT LEVELS ARE ARBITRARY BUT MUST BE CONSISTENT e.g., 3 OR 5 FOR MACHINE TO MACHINE PROCESSING



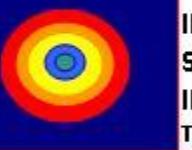
Geo-Spatial Temporal Intensity NOVEL METRICS / METERS:



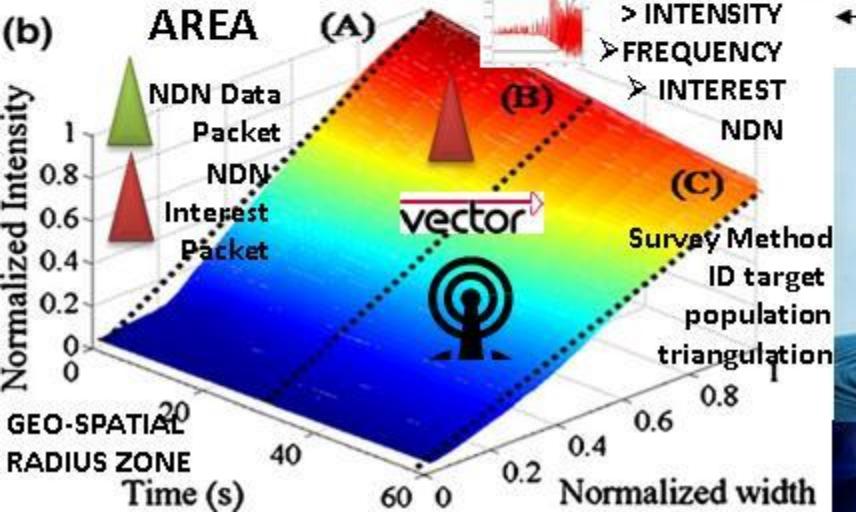
Paul Revere = linear, sequential



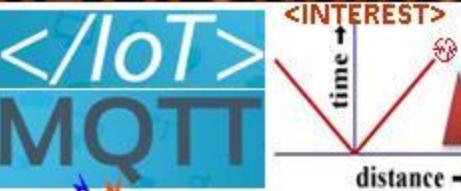
TCP/IP hop by hop counts, by hop controls



Water Drop = AREA / INTENSITY Cyclic Frequency



# NAMED DATA NETWORKING



NIST TIME BEACON

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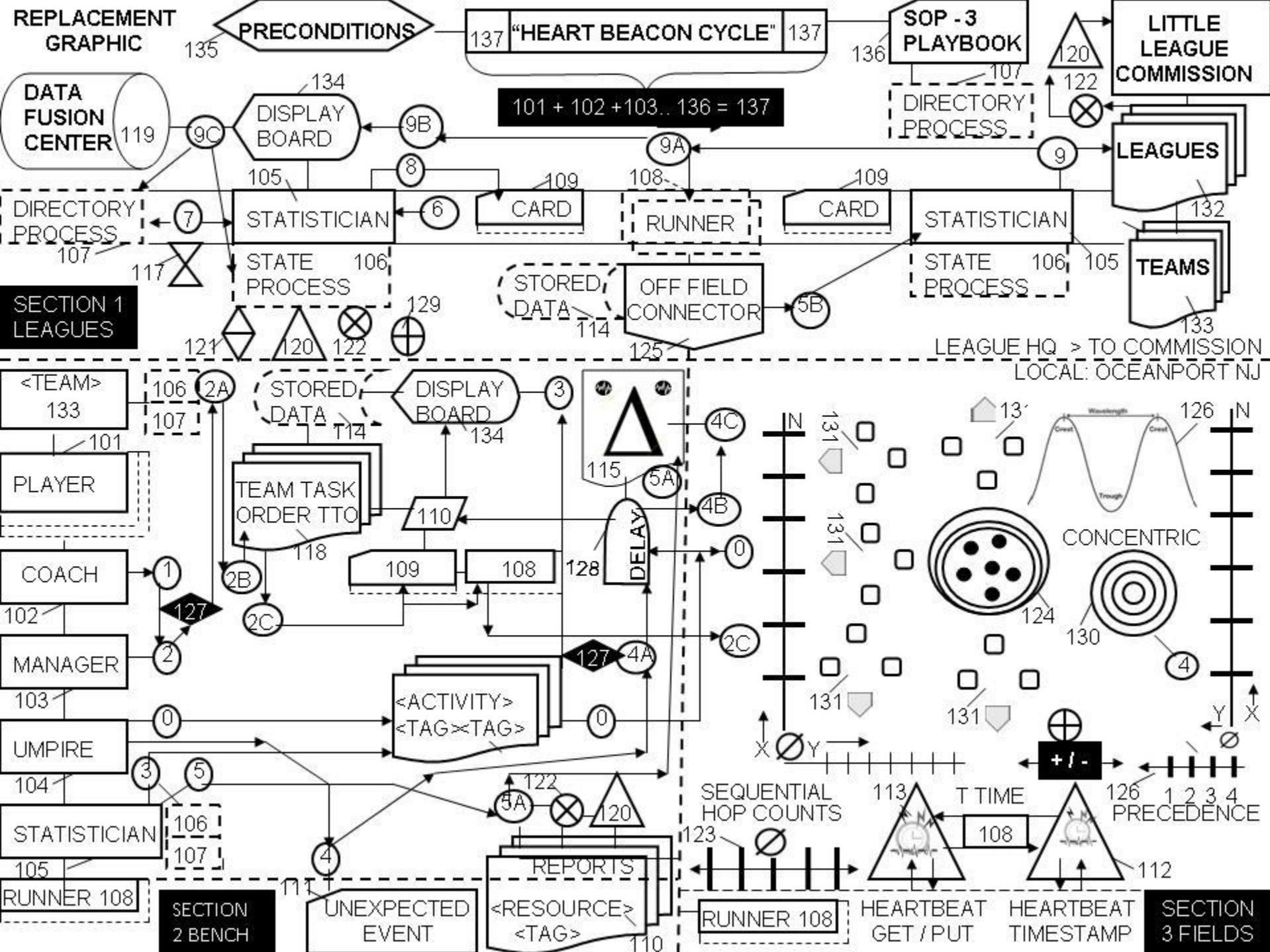
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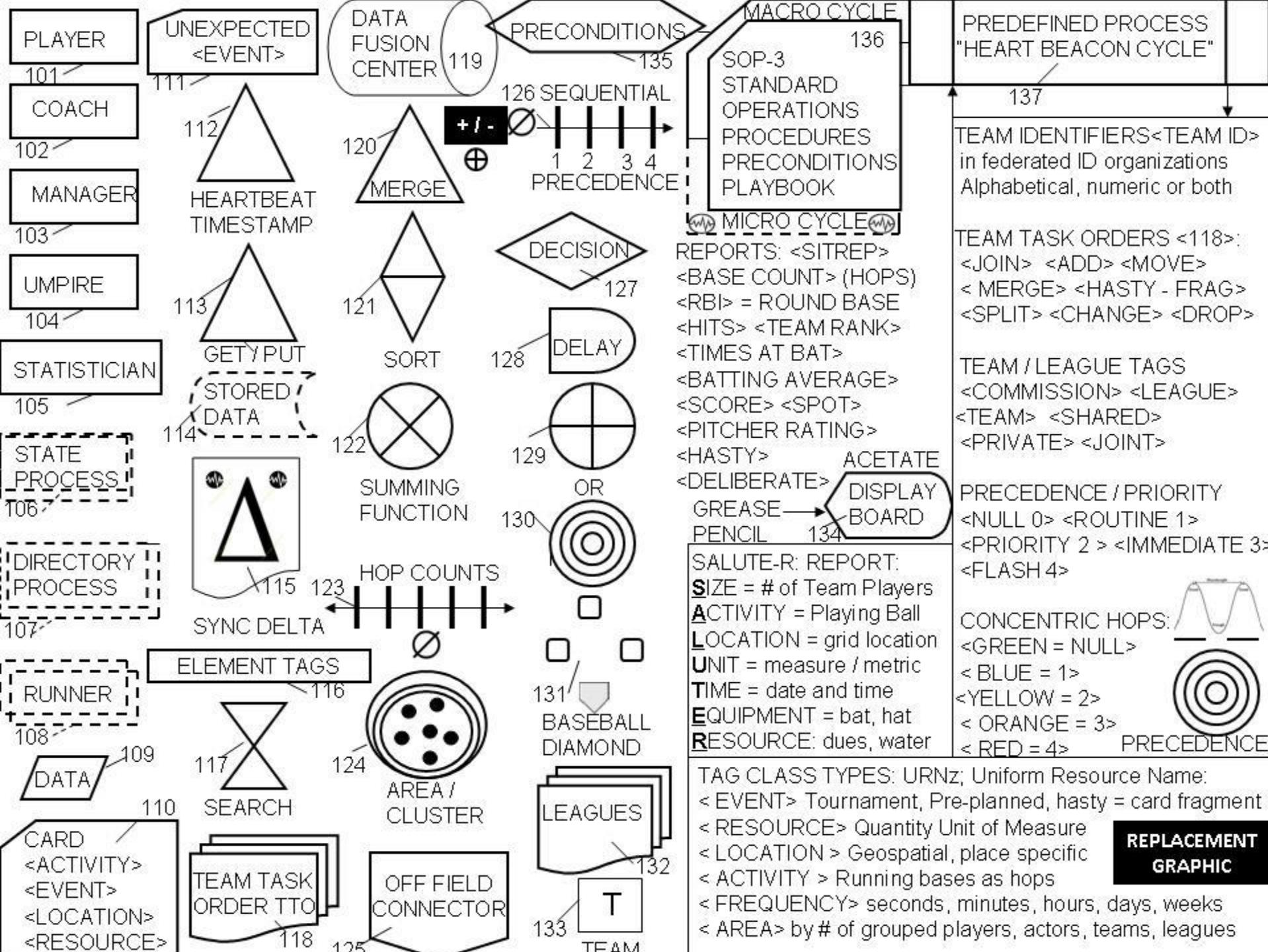
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|                           |  |  |   |
|---------------------------|--|--|---|
| Interface Name            | HEARTBEAT Administration Interface [SCOP]  |  |   |
| Documentation URL         | <a href="http://scop.sourceforge.net/">http://scop.sourceforge.net/</a><br><a href="http://linuxvirtualserver.org/software/index.html">http://linuxvirtualserver.org/software/index.html</a>   |  |   |
| API Information           | <br> <br><br><br><br> |  |   |
| #Big_Data                 | Functionality Areas  | Cloud Interface Management, configuration, start, stop cloud services, edit configuration (heartbeat messages) |   |
|                           | API Operation Count  |  |   |
|                           | Web service access type  | Web application, front end to [network, device, system] heartbeat  |   |
|                           | LANGUAGE / PLATFORM BINDINGS   | PHP  |   |
| Interface Characteristics | <p>SCOP is a web application, PHP based, that is a front-end to heartbeat, IP Virtual Server ipvs and Idirectord [check interval e.g., every 5 seconds] software. With SCOP you can start/stop services, view/ edit configuration files e.g., heartbeat message state management snapshots, make backups, take a server online/offline, add/ remove virtual/real servers, etc.</p>   |  |   |

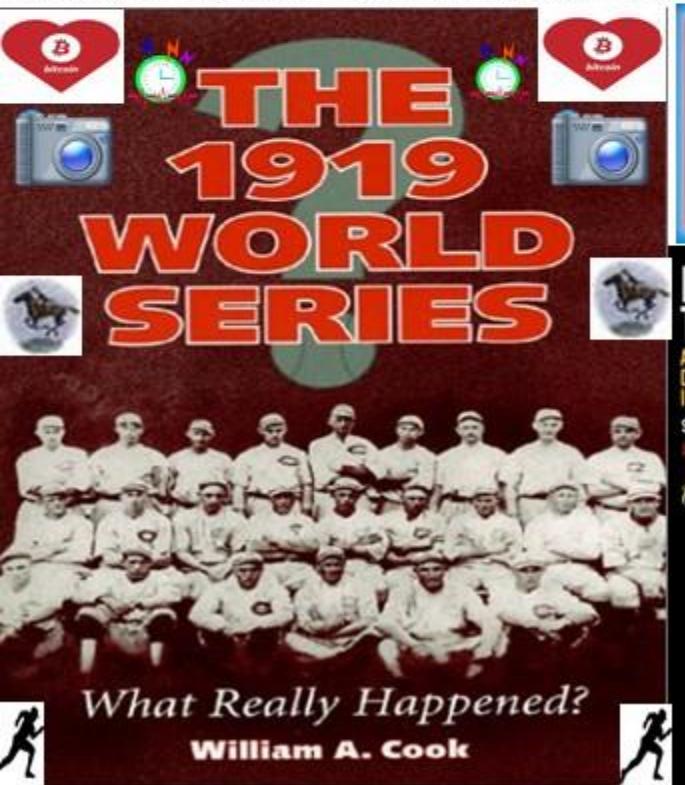








SAW Concepts LLC Owner's Father is from Blackfoot First Nation Native American Indian



## USPTO SCREEN CAPTURES SUSPENDED PAIR RULES

- Moved Examination outside PAIR
- No need for forms, fees, amendments
- No Time Stamps = Temporal Ambiguity
- Screen captures before / after filing





Patent W



/orthy Idea Formed  
CIRCA 2006



## 1. Transco V Performance



citation screen capture  
web images not time stamped

### citation screen capture

web images not time stamped

National Association  
of Baseball Players  
Formed 1870

10/709,358 April 29, 2004

#### **METHOD TO ENABLE HEARTBEAT911**

2002 20

1/601,035 Nov. 17, 2006 METHOD TO ENABLE THE HEARTBEAT BEACON FOR 13/573,002 Heart Beacon Cycle  
HOMELAND SECURITY AND HOMELAND DEFENSE INTEROPERABILITY Aug. 13, 2012

10/605,144 Sep. 11 , 2003  
Method to commercialize  
structured military messaging

USPTO screen capture circa 2006 sent to applicant without date time stamps thus suspending regular patent procedures, formatting etc. for an Indefinite period. Screen capture established that a patent worthy idea was formed. Many use cases i.e., stock, currency, commodities may be theme variants.

Stare decisis et  
non quieta movere

300 + structured military message  
templates form syntax library, lexicon.  
Reuse of parsing, processing  
procedures logic establishes syntax  
consensus among a distributed  
system of systems

10/709,358 continuation further established all things related to the internet are formed using time cycles to parse, process syntax as instructions.

A court may  
Not reverse itself

10/708,000 Jan. 30, 2004 continuation of 10/605,144  
Method to enable a Homeland Security "Heartbeat"  
Parenthesis around term "heartbeat" describes Internet  
TCP/IP metaphor as an abstraction. "Heartbeat" describ  
Processing Unit. Time intervals are used to parse, process  
the basis of all things, artifacts internet related. This pate  
which all other embodiments and claims are based. All fil  
related to 10/708,000 do not constitute new material or ne

10

**ALICE CORPORATION PTY. LTD. v. CLS BANK INTERNATIONAL ET AL.**  
claims ineligible for patent protection under 35 U. S. C. §101 “claims  
may not be directed to an abstract idea”

2

USA Supreme Court June 19, 2014

**ALICE CORPORATION PTY. LTD. v. CLS BANK INTERNATIONAL ET AL.**  
claims ineligible for patent protection under 35 U. S. C. §101 “claims  
may not be directed to an abstract idea”



# USPTO APPLICATION 13,573,002 The Heart Beacon Cycle Time – Space Meter, Applique' Overlay

GIZMAG: New NASA network poised to bring internet to entire solar system SCt 573 ALICE CORP VS CLS BANK PHYSICAL MEMES

INTERNET TCP/IP "PING", "HOPS",  
"PACKETS", FRAMES = METAPHOR



TIME / DISTANCE SERVICE LEVEL  
AGREEMENT SLA / O Operations

IEEE 802.15.4 OASIS MQTT

IEEE 802.11



TELEMETRY TRANSPORT

HOP BY HOP CONTROL

IEEE 802.1AG HOP BY HOP  
DETECTION

Unused Resources / Unmet Needs

/localhost/nfd/fib/add-nexthop

Geo-Spatial Temporal

Metrics, Meters

DISTANCE  
INFO SERVICE

Time Series

RISK

Value

Time

WATER DROP IN POND MEME IS

SONAR NAVY METAPHOR / MEME

NDN </INTEREST>

NDN {"DISTANCE"}

NAMED DATA

NETWORKING

IEEE C37.118

Harmonization

& Sync heartbeat

update Interval

CLOSER SOURCE

CHEAPER RATE

Energy Attenuates over Distances

TCP/IP HOP BY HOP COUNT

Attribute Series

INTEREST

DISTANCE

Temporal Series

Geo Spatial

Paul Revere

LINEAR, SEQUENTIAL

602

603

NULL

+1

+2

RADIUS

WATER DROP IN POND MEME

Attribute Series

INTEREST

DISTANCE

Temporal Series

Geo Spatial

Paul Revere

LINEAR, SEQUENTIAL

602

603

NULL

+1

+2

RADIUS

WATER DROP IN POND MEME

Attribute Series

INTEREST

DISTANCE

Temporal Series

Geo Spatial

Paul Revere

LINEAR, SEQUENTIAL

602

603

NULL

+1

+2

RADIUS

WATER DROP IN POND MEME

Attribute Series

INTEREST

DISTANCE

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Geo Spatial

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INTEREST



SIGNALS  
Telemetry  
ANNEX

The world famous inventor of the geodesic dome  
**r.buckminster fuller**  
*operating manual  
for  
spaceship earth*



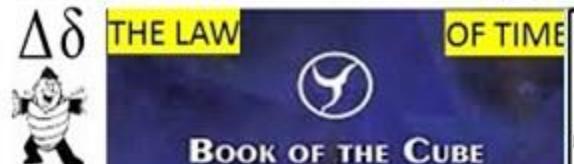
USPTO APPLICATION 13/573 002

The Heart Beacon Cycle Time-Space Meter

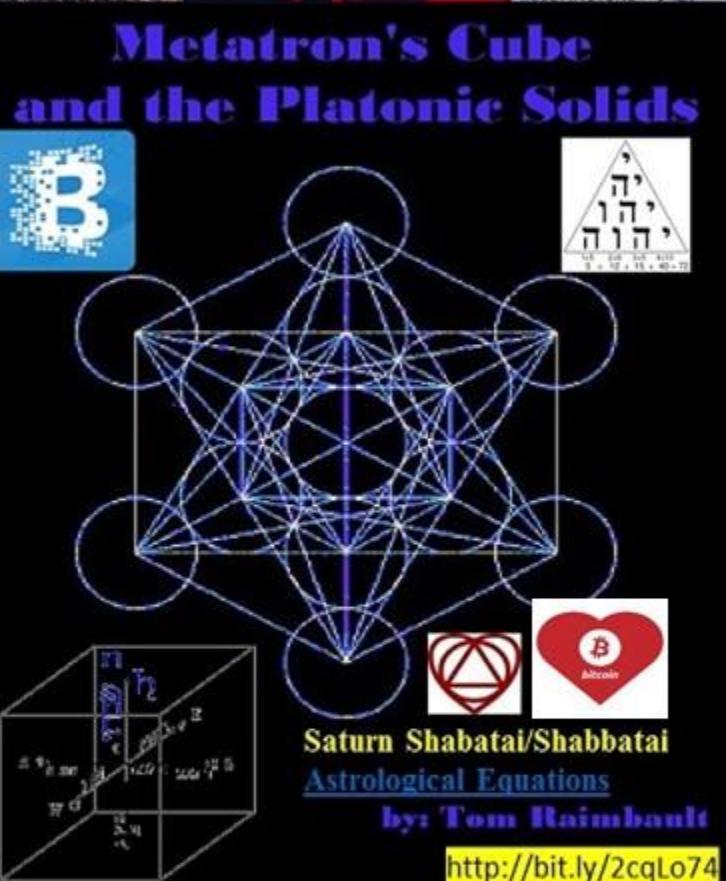
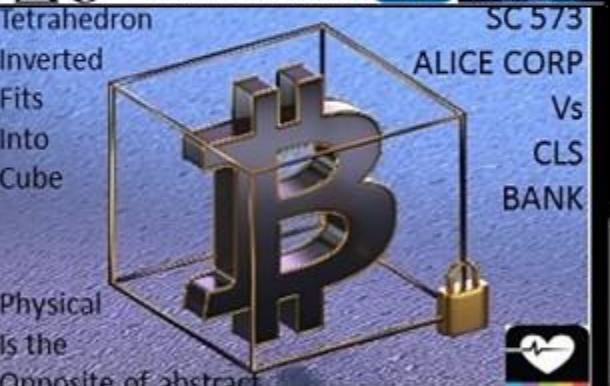
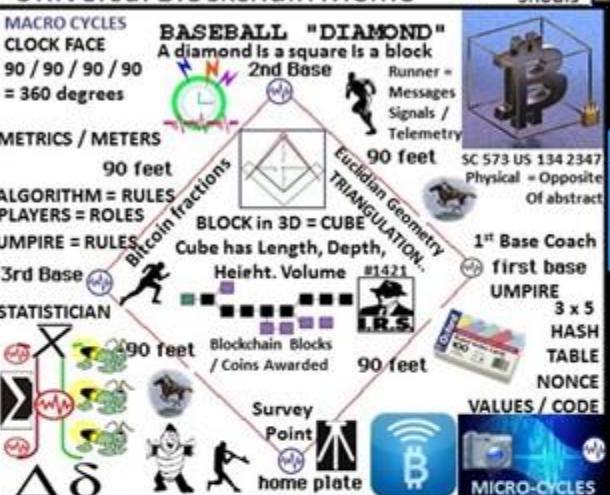
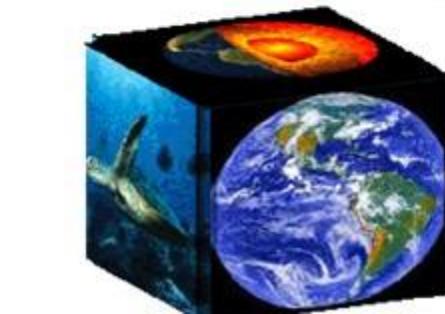
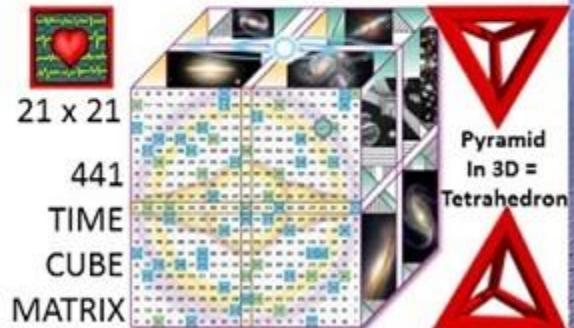
Main Embodiment: Baseball Diamond = block in 3D = cube

$$1 + 3 + 5 + 7 + 3 + 2 = 21 \quad 21 \text{ squared} = 441$$

"We can synchronize ourselves in time for a common purpose" Universal Blockchain Meme



First  
Baseball  
Players  
Union  
Formed  
1870



Saturn Shabatai/Shabbatai  
Astrological Equations

by: Tom Rimbault

<http://bit.ly/2cqLo74>

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