

# TIME – SPACE METER



# Humanitarian Assistance Networked Donor System

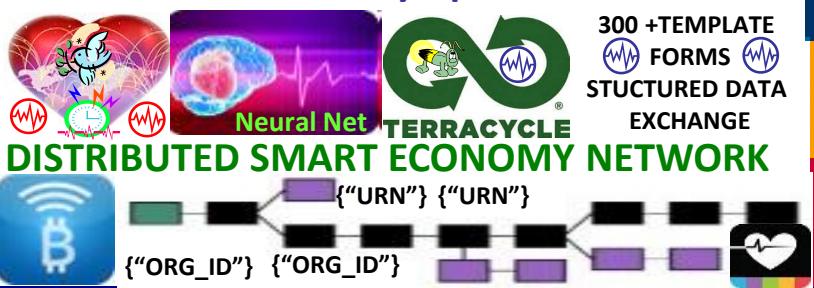
H.A.N.D.S: "Based on the need to speed up the processes of influencing an adversary, new concepts result in the adaptation of military doctrine, organization, training, material, infrastructure, interagency interaction, leadership, personnel and facilities" ... German Bundeswehr : concepts of "Network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



<https://neo.org>



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



## Federation Gateway



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



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

DOD SITUATION AWARENESS PROGRAM  
SWORDS TO PLOWSHARES OOTW IDEA  
BY GERMAN MILITARY CIRCA 2003



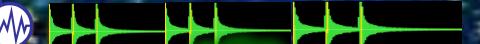
OPERATIONS OTHER THAN WAR



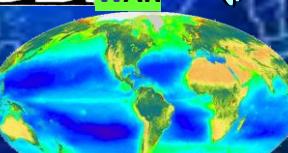
NOW A MAJOR MOTION PICTURE FROM LIONSGATE  
WAY OF THE PEACEFUL WARRIOR  
A BOOK THAT CHANGES LIVES

## Beacon Communities

Vernetzte Operationsführung



Closer < \$\$\$ < FUEL



Proximity Beacons  
JAEGERS



FREELY  
HEARTBEAT  
EVENT / ALERT Flash Heartbeat Message Bus  
ALGORITHM



KAIJU

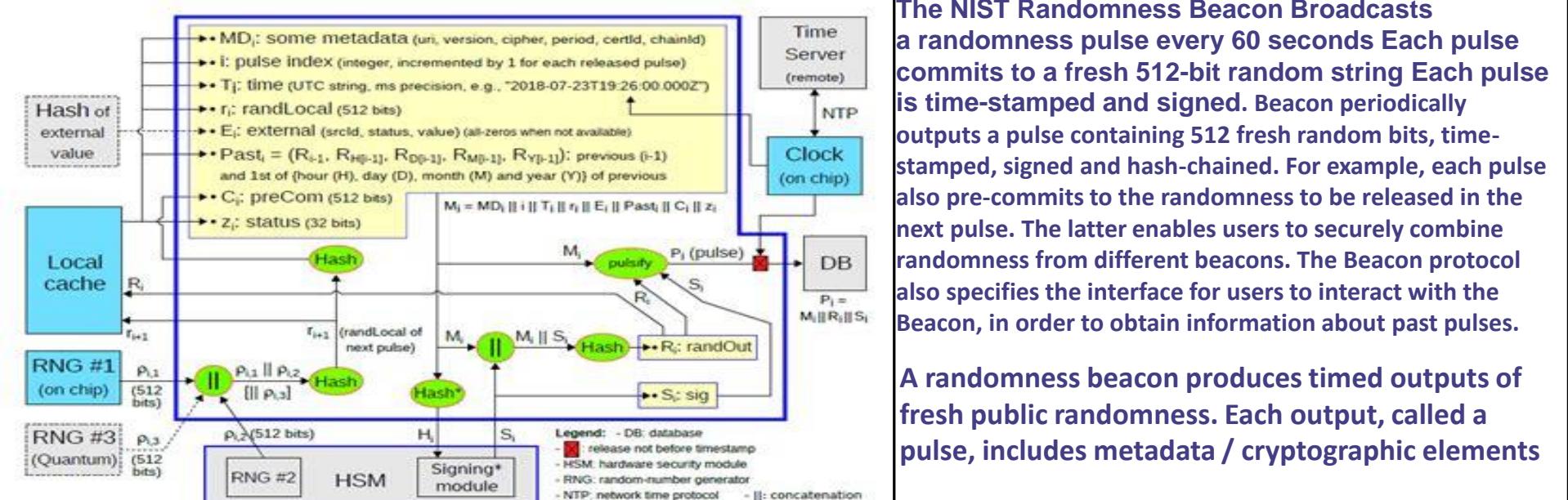
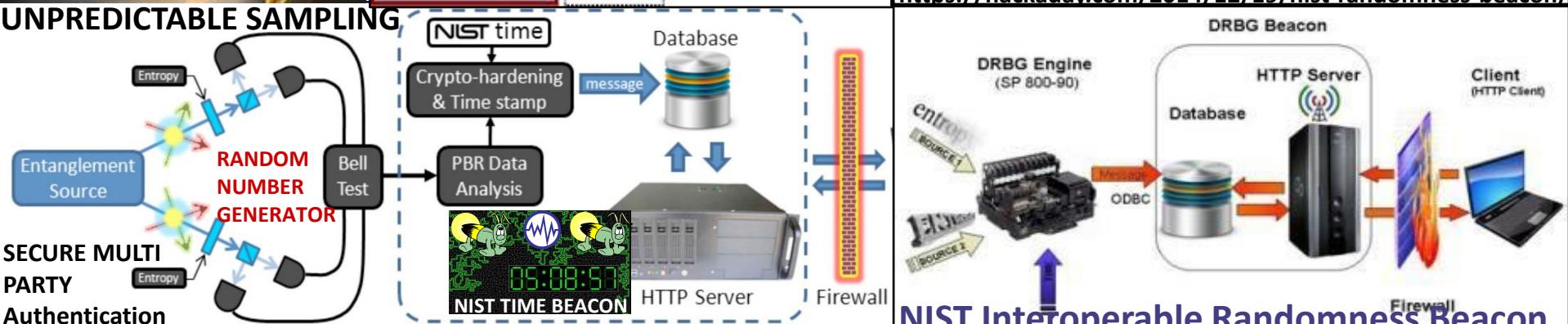
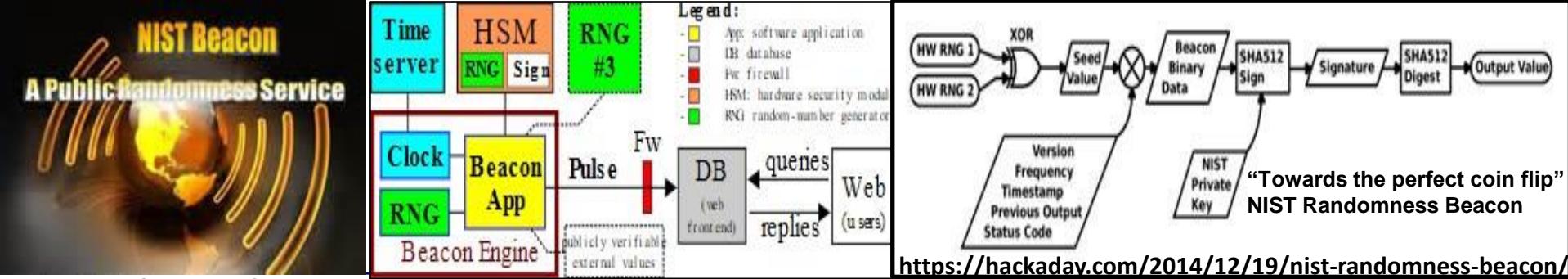
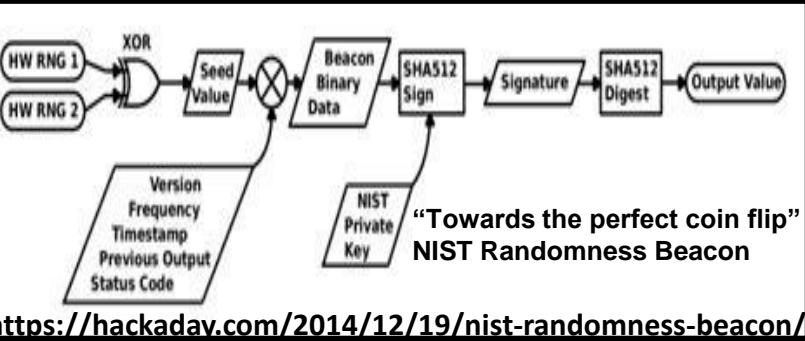


Figure 2. Illustration of the generation of the  $i^{\text{th}}$  pulse by a Beacon App (2.0)



## NIST Interoperable Randomness Beacon

The NIST Randomness Beacon Broadcasts a randomness pulse every 60 seconds. Each pulse commits to a fresh 512-bit random string. Each pulse is time-stamped and signed. Beacon periodically outputs a pulse containing 512 fresh random bits, time-stamped, signed and hash-chained. For example, each pulse also pre-commits to the randomness to be released in the next pulse. The latter enables users to securely combine randomness from different beacons. The Beacon protocol also specifies the interface for users to interact with the Beacon, in order to obtain information about past pulses.

A randomness beacon produces timed outputs of fresh public randomness. Each output, called a pulse, includes metadata / cryptographic elements

The main goal of the NIST Random # Beacon is to serve as a baseline for deployment of many interoperable beacons

**NIST RANDOMNESS BEACON:** broadcast full-entropy bit-strings in blocks of 512 bits every 60 seconds. Each value is time-stamped, signed, & includes hash of previous value to chain sequence of values together. This prevents all, even the source, from retroactively changing an output packet without being detected. The beacon keeps all output packets and makes them available online. 1st, Beacon-generated numbers cannot be predicted before they are published. 2nd, public, Beacon's time-bound, authenticated nature of the Beacon proves true random numbers not known before a certain point in time. 3rd, this proof can be presented offline at any point in the future



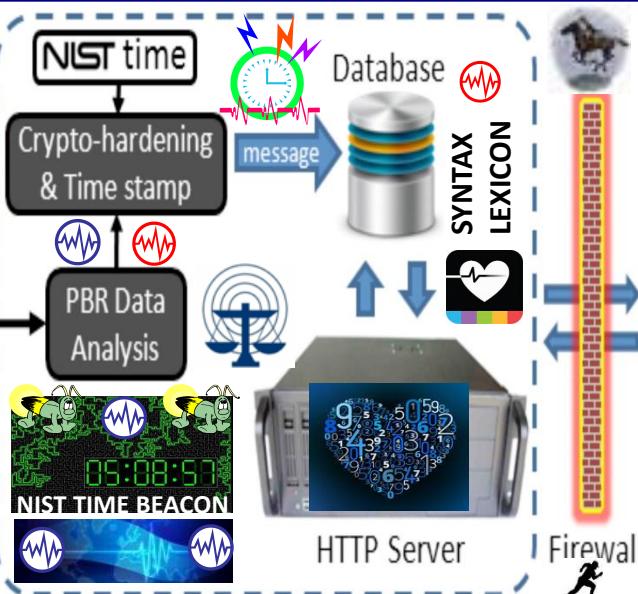
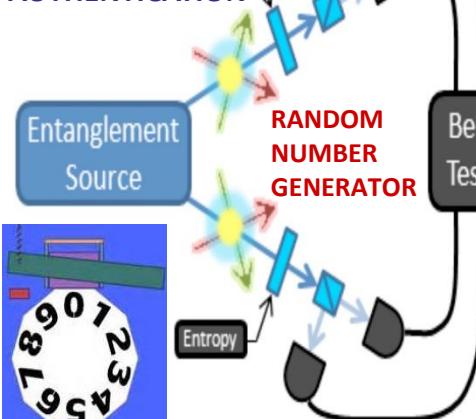
## NIST QUANTUM ENCRYPTION RANDOMIZATION BEACON

UNPREDICTABLE SAMPLING

SECURE AUTHENTICATION

SECURE MULTI

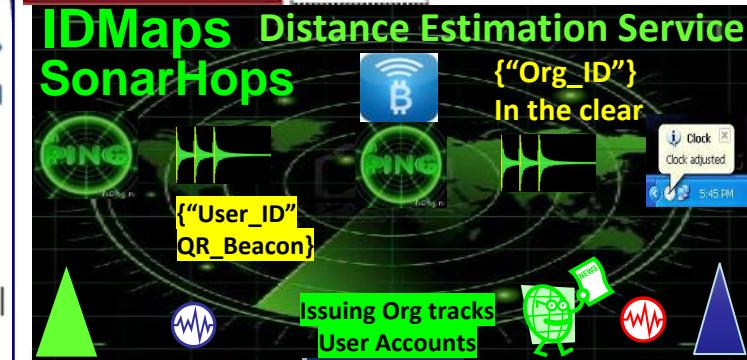
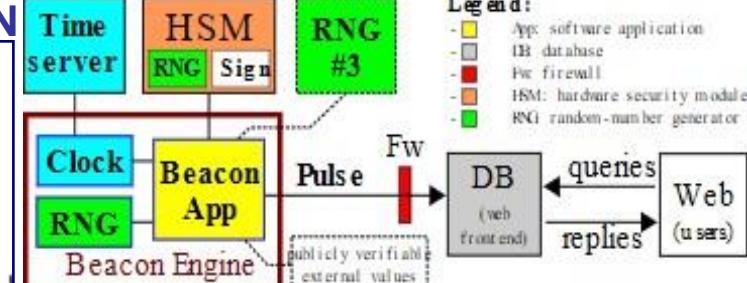
PARTY /  
AUTHENTICATION



**NIST**

**NON  
REPUDIATION**

Legend:  
■ App: software application  
■ DB: database  
■ Fw: firewall  
■ HSM: hardware security module  
■ RNG: random-number generator



USPTO 13,573,002 Heart Beacon Cycle Geo-spatial, temporal Intensity

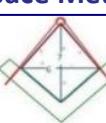
Metrics and Time - Space Meter uses PHYSICAL Memes / Metaphors

**NAMED DATA  
NETWORKING**

Time / Distance Metrics



PROXIMITY



NDN  
</Interest>  
</Distance>

SURVEY METHODS + TRIANGULATION  
Euclidian Geometry

Geodesic System Routing Info Base RIB

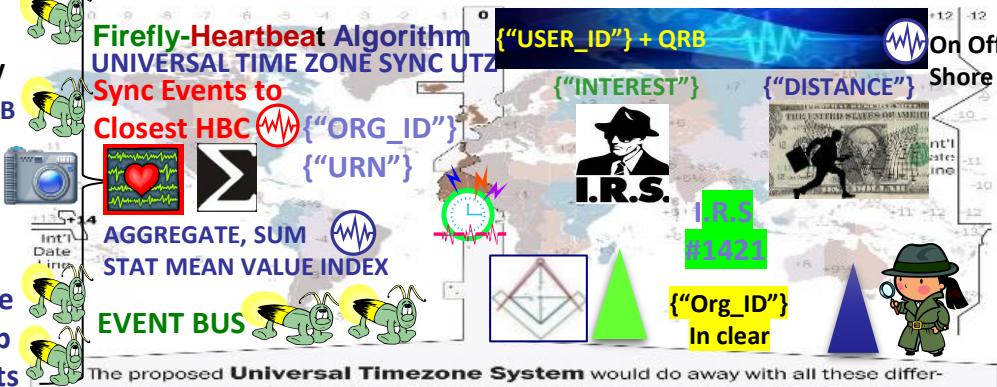
ACCOUNT BELONGS TO </Org\_ID>

RESOURCE TYPE: <URN><URN><URN>

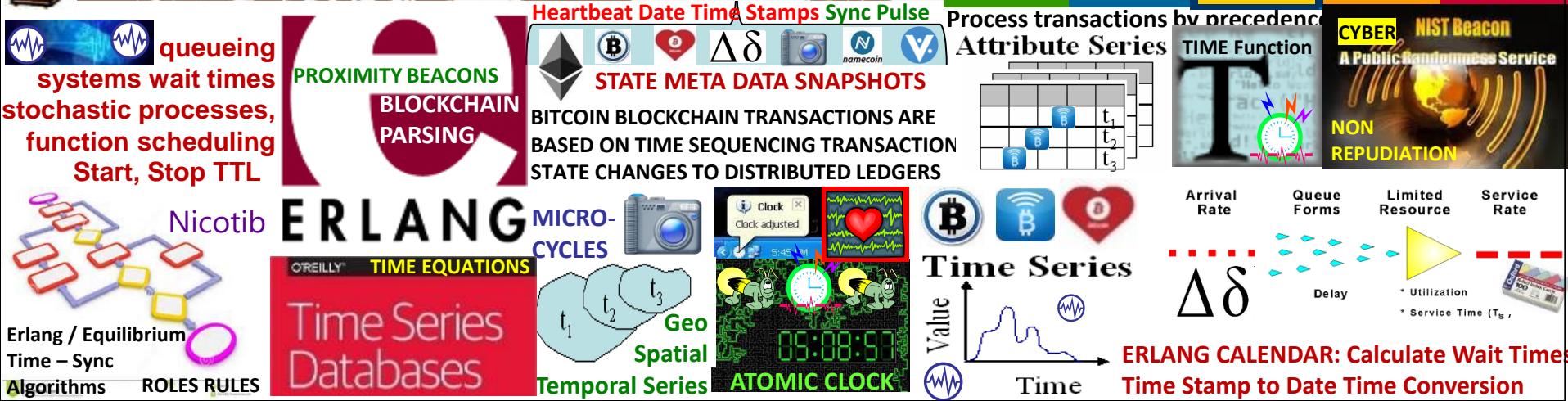
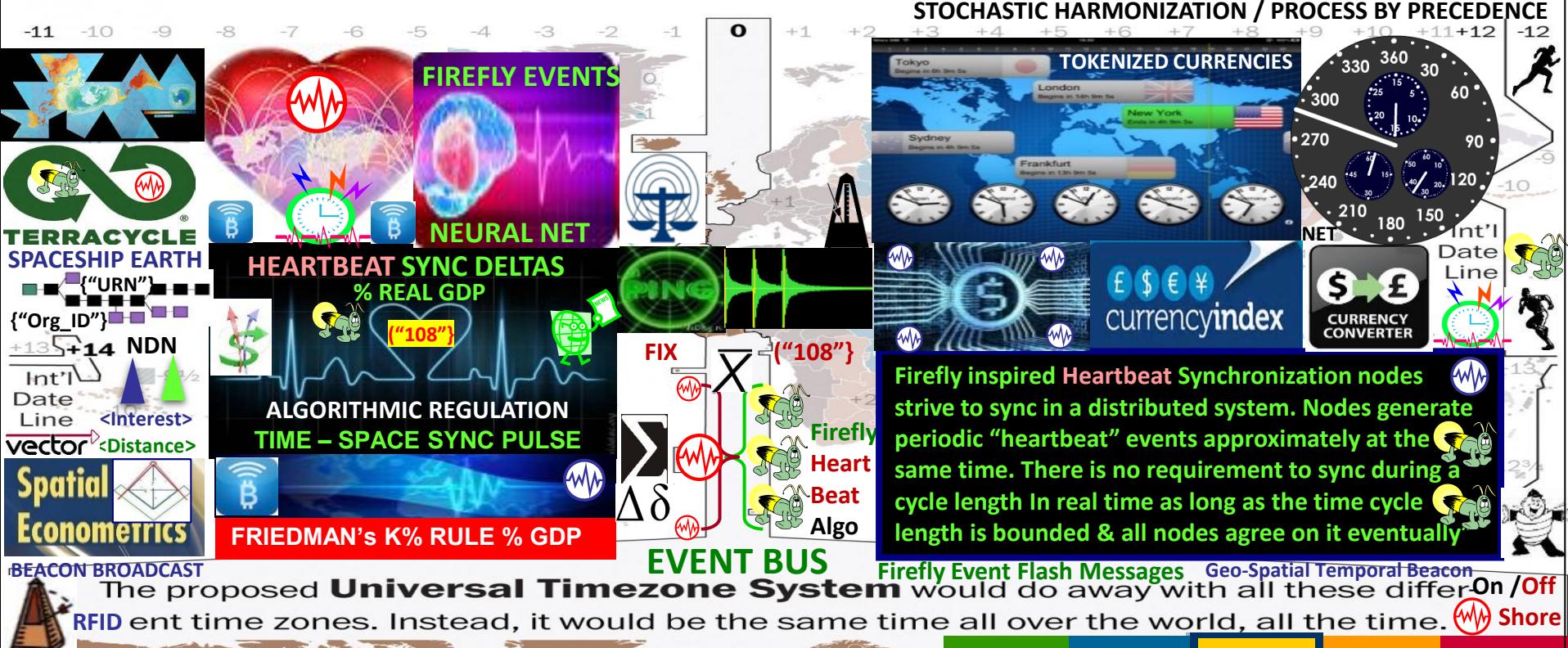
DEVICE / SENSORS <UUID><UUID>

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

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

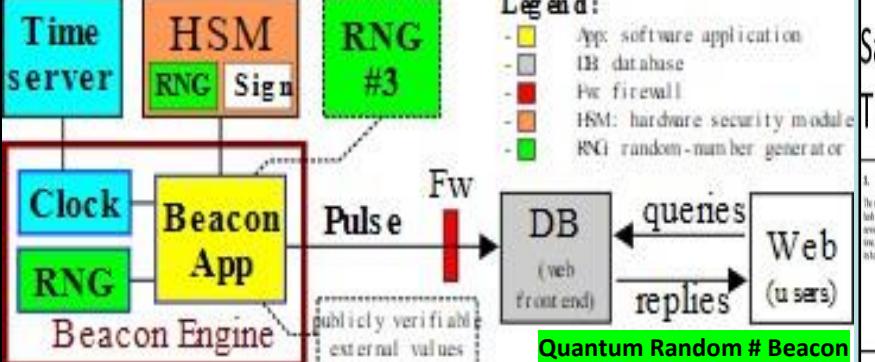


The current standard time common throughout the world is based on a 24-hour clock, with zones that are either 12 hours ahead or behind **Coordinated Universal Time (UTC)**. However, these time zones are decided upon by individual governments, without overall coordination and can even extend fourteen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



ALL THINGS NET FORMED WITH: Building Blocks:  
 1) EPOCH TIME CYCLES  
 2) SYNTAX / Opcode Brevity codes Programmable Economy / \$\$\$

## NIST Quantum Random Number Beacon



"The external environment could update resources at random..."

One solution is a **heartbeat**: defining a default lease duration delaying updates until the next **cycle**"

**Legend:**

- App: software application
- DB: database
- Fw: firewall
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- RNG: random-number generator

### Quantum Random # Beacon



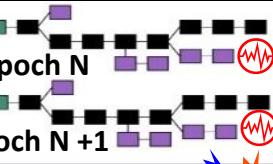
## Satoshi Bitcoin Blockchain Time Stamp Server

### 1. Timestamp Server

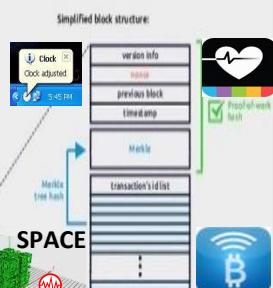
The solution we propose begins with a timestamp server. A timestamp server works by taking a batch of a block of times to be timestamped and widely publishing the hash, such as in a newspaper or Usenet post [3]. The timestamp proves that the data must have existed in the system already, whether it's gotten into the hash. Each timestamp includes the previous timestamp in its hash, forming a chain, with each additional timestamp confirming the ones before it.



THE SOLUTION WE PROPOSE BEGINS WITH A TIME STAMP SERVER



Block chain  
What does a block look like?



PROOF of SPACE-TIME  
Firefly - Heartbeat Sync Algorithm  
Heartbeat Event Message Bus  
UTZ stochastic harmonization

## Epoch Time Cycles

E0 E1 E2 E3...

Genesis



E2  
E...n



ROSETTA

STONE

BREVITY

CODES

Attribute Series

Time Series

Value

Time

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

Geo

Spatial

300 +

Message Sets

Work flow

Filters

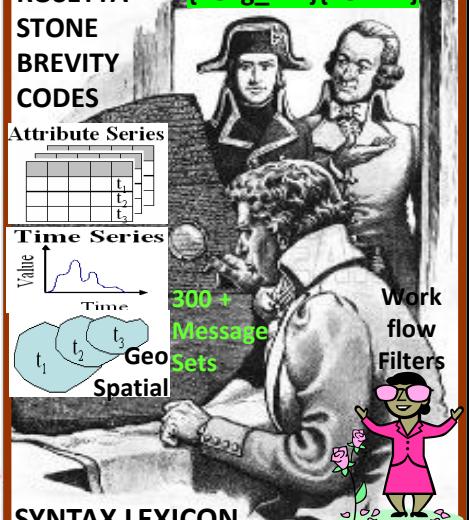
SYNTAX LEXICON

## QubitCoin Interval: Every 30 Seconds

The current standard time common throughout the world is based on a 24-hour clock, with 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. INCENTIVIZE ECO-FRIENDLY TRANSACTIONS



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 Heart Beacon Cycle Time — Space Meter USPTO 13/573,002 : Adaptive Procedural Template



Use Case: Eco Economic Epoch Heartbeats for the programmable economy.





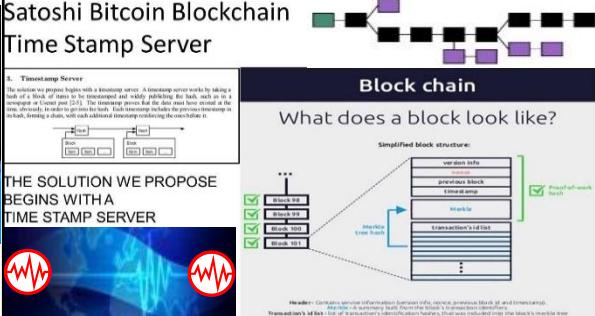
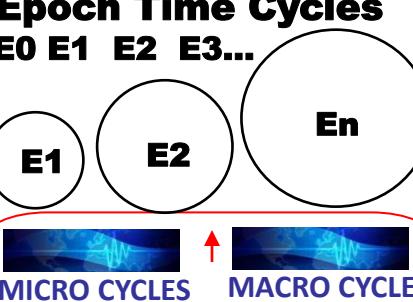
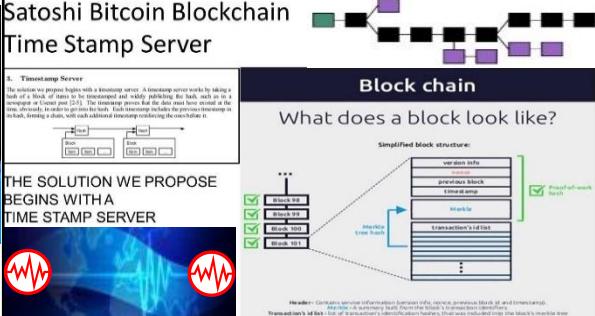
MINIMUM LIST OF COMPONENTS / BUILDING BLOCKS, PROCESSES, PROCEDURES... AGREED ON BY TRADE FEDERATIONS TO ACHIEVE DAO DISTRIBUTED AUTONOMOUS ORGANIZATIONS CONSENSUS

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



|   |  |   |   |
|---|--|---|---|
| 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   | #Big_Data  |  <p>Cloud Interface Management configuration, start, stop cloud services, edit configuration (heartbeat messages)</p>  |  <p>Cloudcenter THE SKY WITHOUT LIMITATIONS</p>              |
| <br><b>#leT</b>   |    | Functionality Areas   | Cloud Interface Management configuration, start, stop cloud services, edit configuration (heartbeat messages)                                   |
| Programmable Money<br>World Computer / Blockchain   | <br>                       | API Operation Count   |    |
| NIST TIME BEACON  |    | Web service access type<br>Network Effects / A.I.   | Web application, front end to [network, device, system, blockchain] heartbeat   |
|   | LANGUAGE / PLATFORM BINDINGS   |    |    |
|    | Interface Characteristics  | SCOP is a web application, PHP based front-end to heartbeat, IP Virtual Server ipvs and Idirectord [e.g., check interval @ 5 seconds]<br>SCOP can start/stop services, view/ edit configuration files e.g., heartbeat message state management snapshots, backups, take a service online/offline, add/ remove virtual/real servers, services etc. |   |
| <p>"The external environment could update <u>resources</u> at random...<br/>One solution is a <b>heartbeat</b>: defining a default lease duration delaying updates until the next <b>cycle</b>"</p> | <br>                   |   | <p><b>Epoch Time Cycles</b><br/><b>E0 E1 E2 E3...</b></p>  |
| <p><b>QubitCoin Interval: Every 30 Seconds</b></p>  |  |   |   |

Q: Which meme describes the myriad #blockchain consensus algorithms the most comprehensively that uses an algorithm (based on nature = “shortest path to the knowledge of truth Luxor Temple) enabling distributed system of systems geo-spatial, UTZ Universal Time Zone temporal, semantic - syntactic sync, OPSCODE brevity code, data element & symbol (for A.I. man – machine interface) consensus?

### Blockchain Consensus Algorithms & Mechanisms

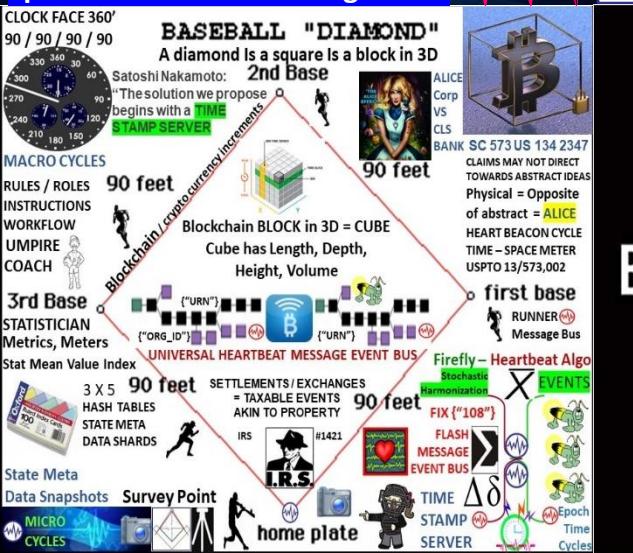


In the world of blockchain consensus algorithms, consensus is the **HEART OF THE BLOCKCHAIN NETWORK**. Its main purpose is to achieve agreement on transactions among a distributed system(s).

**Proof of Formulation:** PoF: generation / propagation of blocks using a previously agreed sequence between participants of the generation of blocks, formed by two groups: a generator group and/or Formulator and a group of synchronization.



### Space-Time Consensus Algorithm



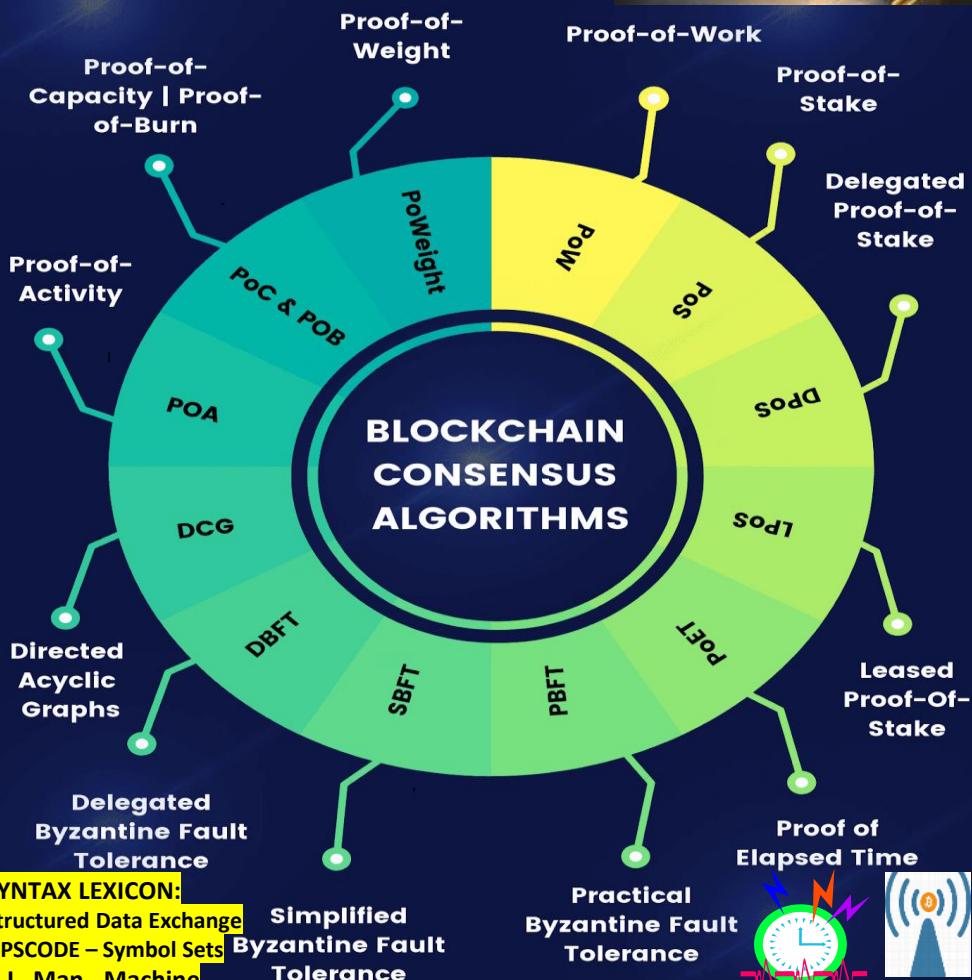
### BLOCKCHAIN BABEL

THE CRYPTO CRAZE AND THE CHALLENGE TO BUSINESS

IGOR PEJIC

# BLOCKCHAIN CONSENSUS ALGORITHMS

## ULTIMATE GUIDE FOR BEGINNERS



SOURCE: <https://developcoins.com/blockchain-consensus-algorithms>

www.developcoins.com

# DAO: Distributed Autonomous Organization

## RAND term circa 2000 / The TAO OF THE DAO

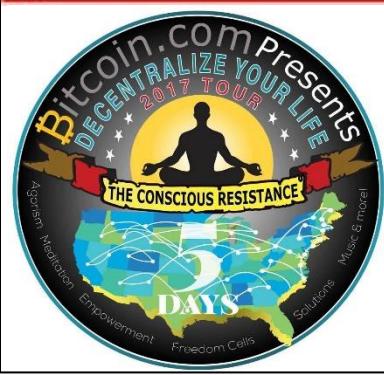
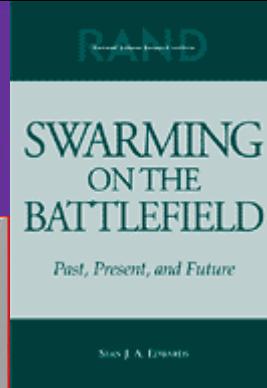
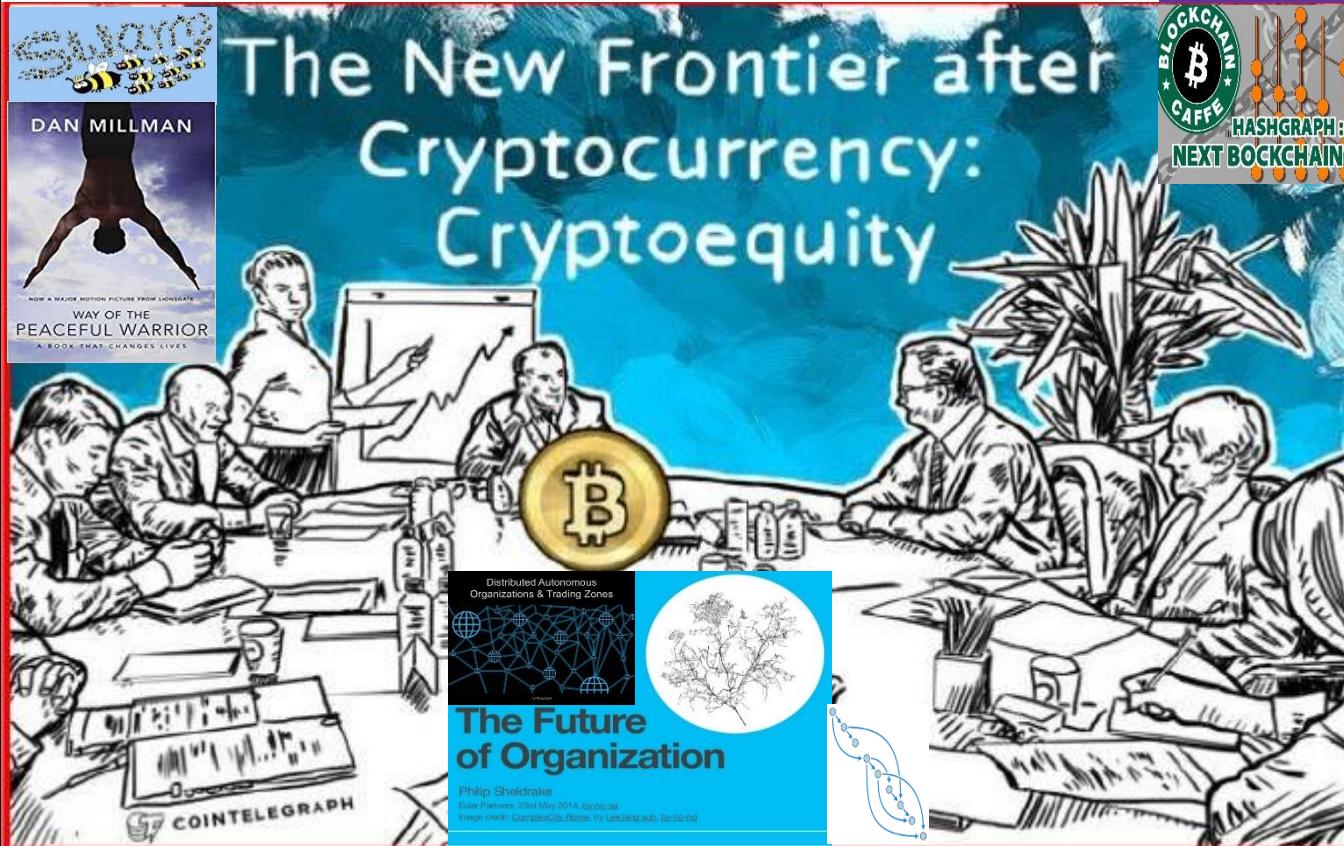
### SWARMING AND THE FUTURE OF CONFLICT



RAND

RAND  
Monograph Report

THE  
ADVENT  
Of NETWAR



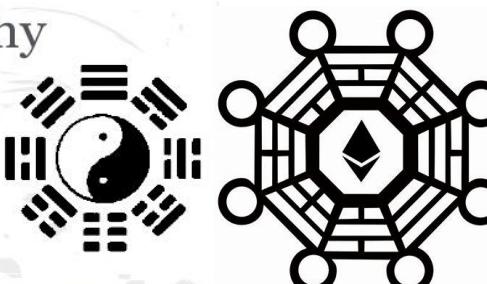
<http://cointelegraph.com/news/112077/the-new-frontier-after-cryptocurrency-cryptoequity>

## Taoism Philosophy

Taoism represents:

- Contraction of the past to the future.
- The transcendence of time and place.
- The balance of the old and the new.
- The balance between opposing forces and desires.

Overall the Taoism Philosophy represents "The Way" in which to live.



(An ancient philosophy tradition. This article involves the yin-yang or principle of harmony and change.)

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

@TheBitcoinArmy



# Net of \$\$\$ formed with: EPOCH TIME CYCLES {"Syntax"} Instructions

"In the beginning"

"The Word"

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

"A blockchain is a consensus-based system. It only works if all nodes reach an identical state"

"A smart contract is a piece of code stored on a blockchain, triggered by blockchain transaction reads / writes data in the blockchain's Dbase"



"Blockchain consortiums are working less on distributed ledgers and more on Contract Description Languages CDL, DAML Digital Asset Modeling Language" Coindesk Article

|       | Q4/2018 | T1/2019 | Q2/2019 | Q3/2019 | Q4/2019 | YTD/2019 |
|-------|---------|---------|---------|---------|---------|----------|
| PRO   | F5014   | E5014   | F5014   | F5014   | F5014   | F5014    |
| ABAC  | X5014   | E5014   | F5014   | F5014   | F5014   | F5014    |
| CDL   |         |         |         |         |         |          |
| DAML  |         |         |         |         |         |          |
| STOCK |         |         |         |         |         |          |
| MICRO |         |         |         |         |         |          |
| CODES |         |         |         |         |         |          |

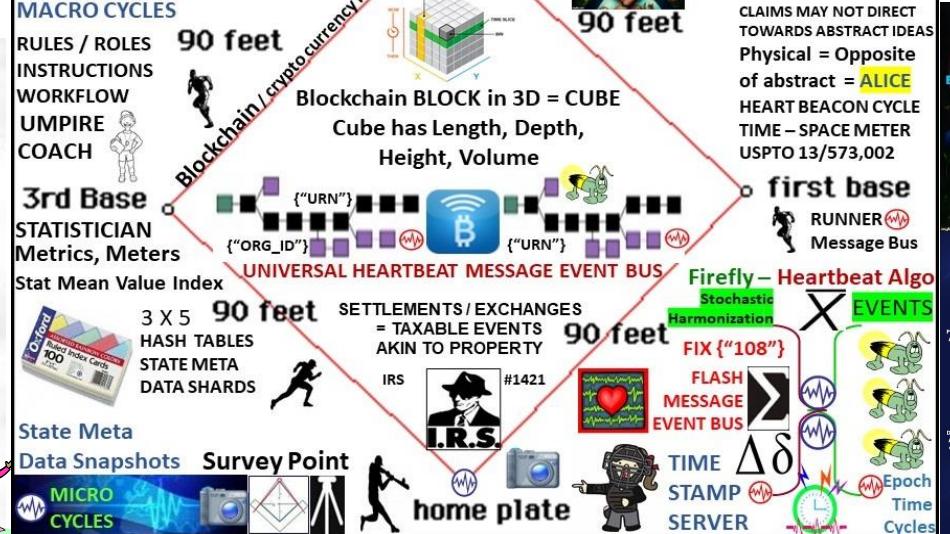
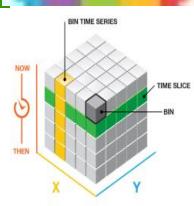


ALICE CORP VS CLS BANK  
"claims may not be directed towards an abstract idea"  
US SC 573 US 134 2347



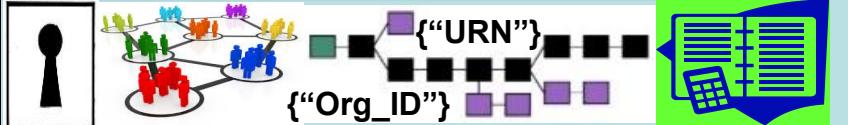
BITCOIN BLOCKCHAIN BLOCKS, AGENTS, MOTES, BOTS, PACKETS, FRAMES, HEARTBEAT, PINGS, HOPS, BEACONS ARE METAPHORS / MEMES

USPTO 13/573,002 BASEBALL MEME PHYSICAL = OPPOSITE OF ABSTRACT



# Heart Beacon Cycle

## FEDERATE / TRADE FEDERATIONS



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

Net joins, drops, splits, merges, moves  
Agile, adhoc NETOPS Vs acquisition preserves the **CHANNEL**

Federation  
Gateway



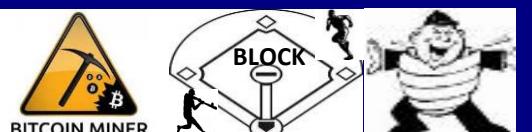
{"GLOBAL"}  
{"SHARED"}  
{"DOMAIN"}  
{"COMMUNITY"}  
{"PRIVATE"}  
{"GROUP ID"}



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



Bitcoin Mining Pools  
MEME / METAPHOR MEDIATION



DISTRIBUTED AUTONOMOUS ORGANIZATION = DAO RAND Corp

term coined circa 1991 now in use by Blockchain tech corporations

Uniform\_Resource\_Name



FIREFLY FLASH HEARTBEAT MESSAGES

</RESOURCE> {"URN"}  
{"Asset\_Class"} </URN>

IeT DEVICE / PLATFORM  
IoT SENSOR DEVICE

{"Asset\_Type"}



STOCK EXCHANGE

MIC MARKET IDENTIFIER  
CODES / BREVITY CODES



UUID 123e4567-e89b-12d3-a456-426655440000  
123e4567-e89b-12d3-a456-426655440001  
123e4567-e89b-12d3-a456-426655440002



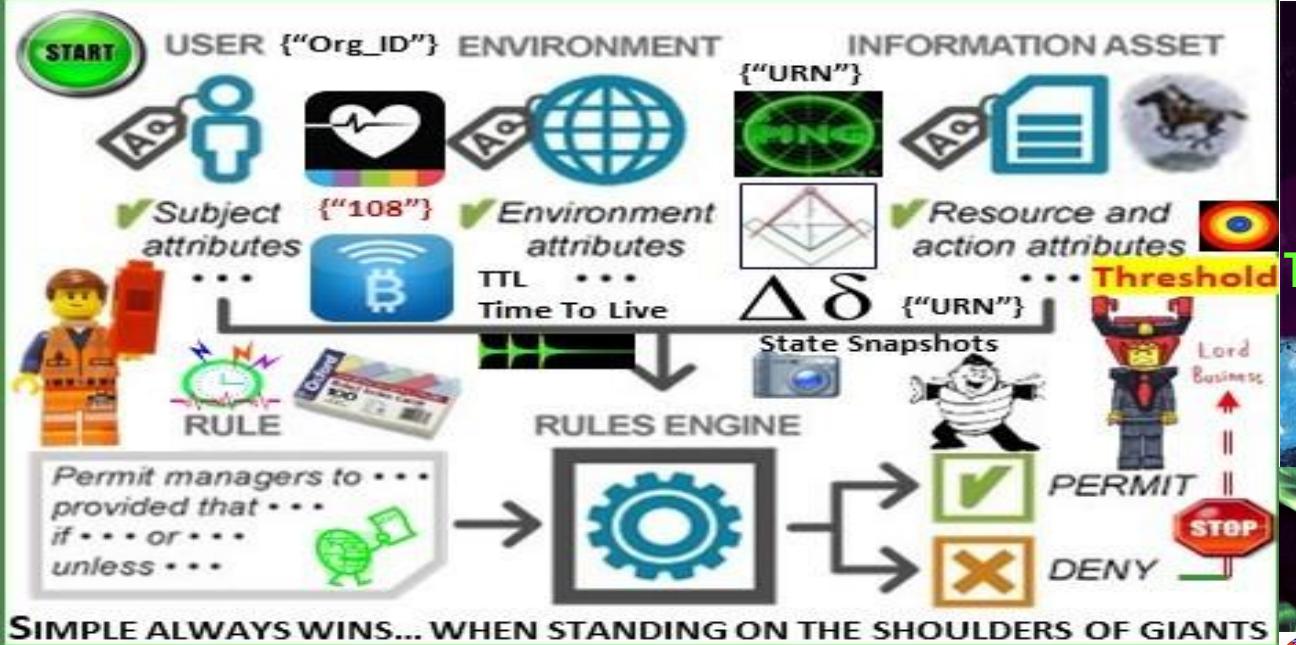
{"DUNS #"} {"Org\_ID"} Heartbeat Snaps  
QR CODE MICRO-CYCLES  
{"URN"} {"URN"} {"URN"}

EVENT BUS  
Signalling, Telemetry

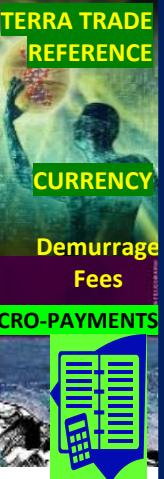
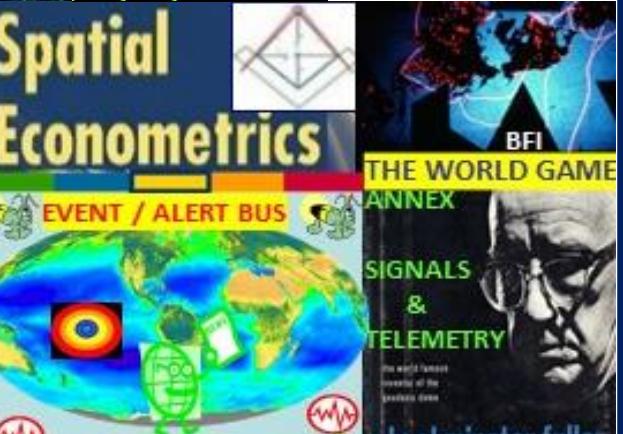
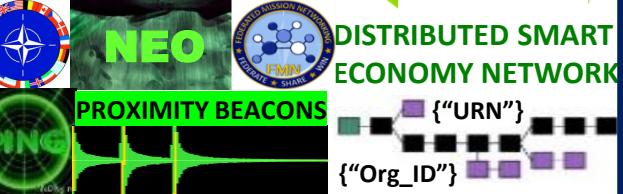


MINIMUM LIST OF COMPONENTS, BUILDING BLOCKS, PROCESSES, PROCEDURES AGREED ON BY TRADE FEDERATIONS TO ACHIEVE DISTRIBUTED AUTONOMOUS ORGANIZATION DAO CONSENSUS





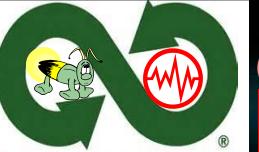
DAO TRADE FEDERATIONS USE COMMON COMPONENTS,  
PROCESSES, METHODS, METRICS, METERS SIGNALING  
TELEMETRY SCHEDULE IN SMART CONTRACTS,  
SERVICE LEVEL AGREEMENTS / OPERATIONS SLA/O





# Firefly - Heartbeat Algo

University of Bologna Italy / Hungary



## ECO ECONOMIC HEARTBEAT

("108")



K%



## ECONOMIC MACRO CYCLES

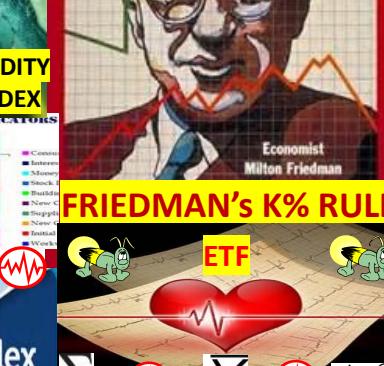
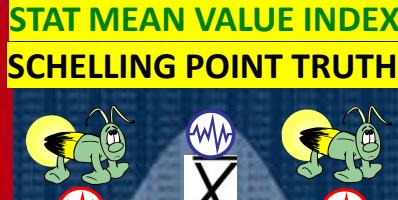
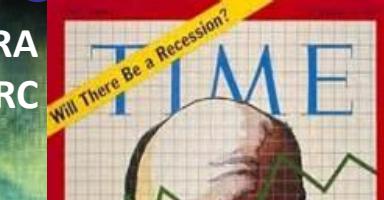
## TIME-SPACE SYNC

K% GDP ECONOMIC PULSE FEDCOIN WORLDCOIN

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

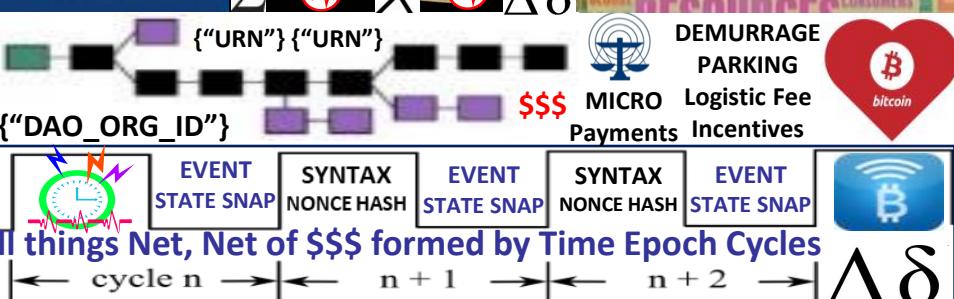
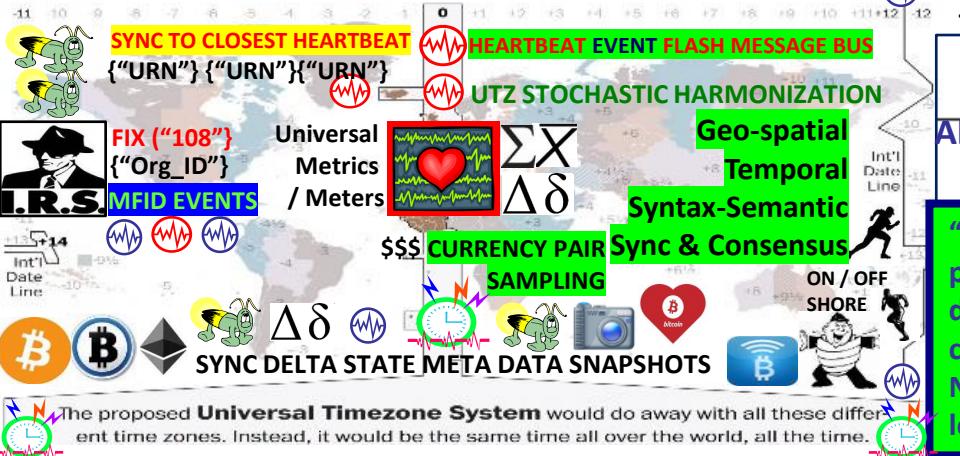


**Luxor Temple Egypt:**  
"The shortest path towards knowledge of truth is nature"



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.

UTC TIME ZONE SYNC



"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"

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.

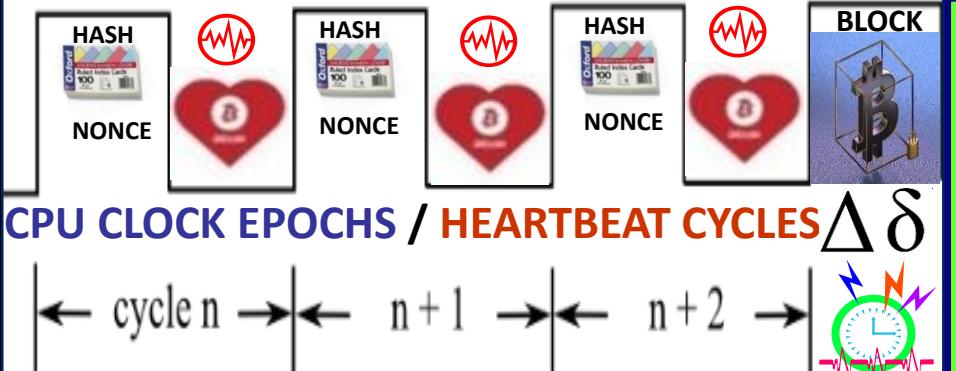




The current standard time common throughout the world is based on a 24-hour clock, with zones that are either 12 hours ahead or behind **Coordinated Universal Time (UTC)**. However, these time zones are decided upon by individual governments, without overall coordination and can even extend fourteen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



"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"





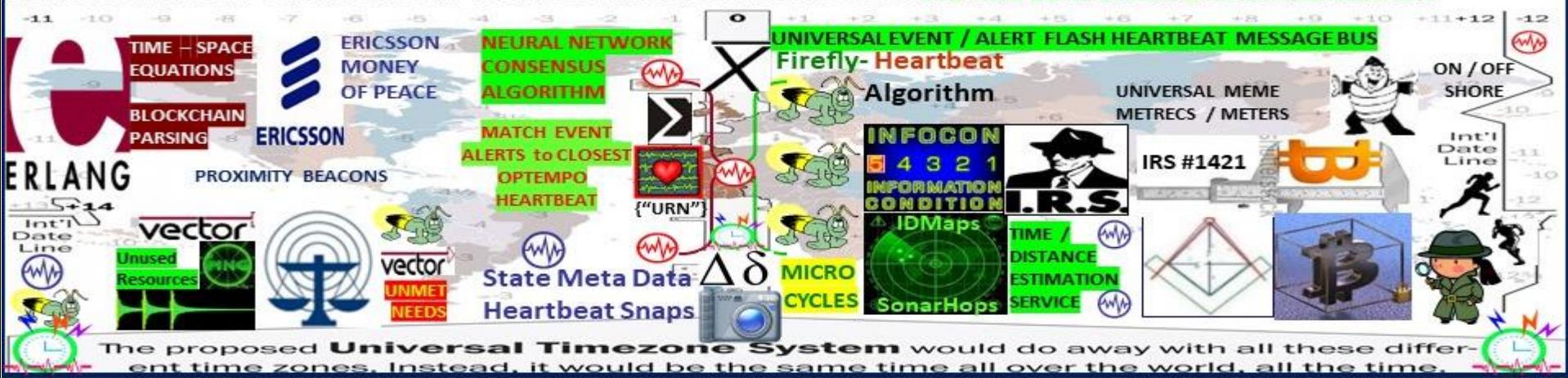
The current standard time common throughout the world is based on a 24-hour clock, with zones that are either 12 hours ahead or behind **Coordinated Universal Time (UTC)**. However, these time zones are decided upon by individual governments, without overall coordination and can even extend fourteen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



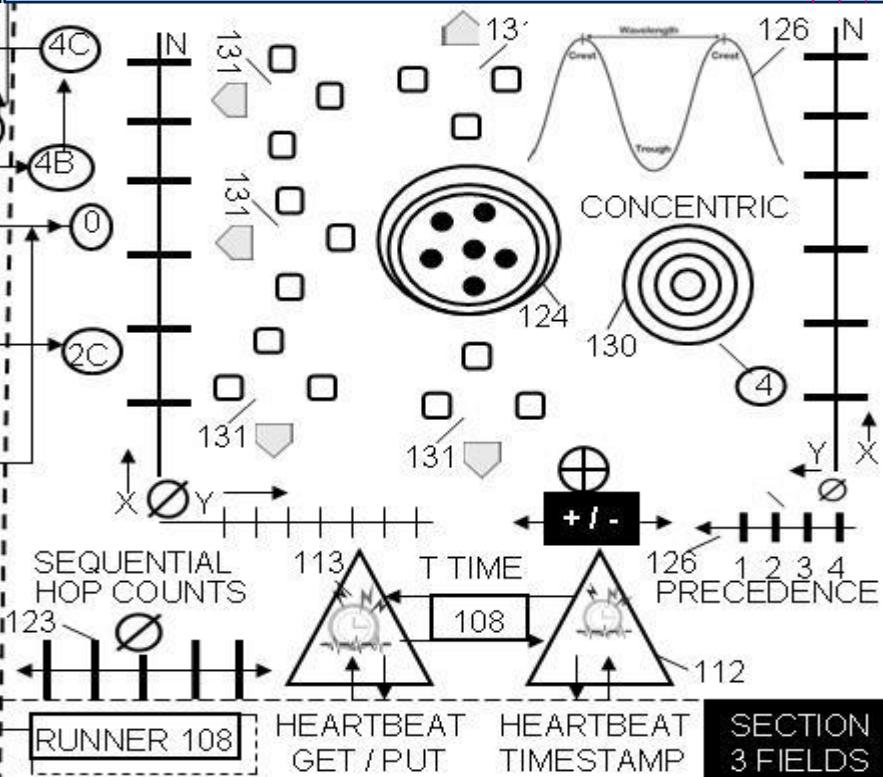
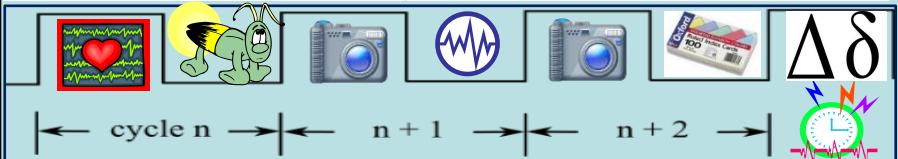
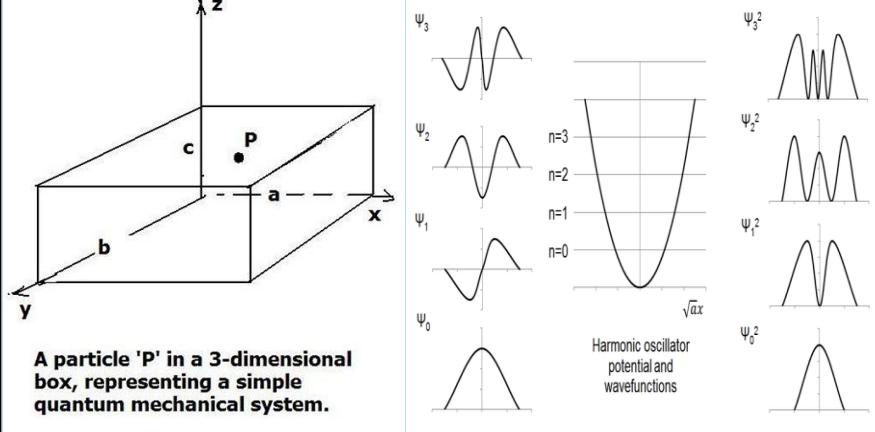
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## QUANTUM COMPUTING / HBC TIME – SPACE METER / METRICS

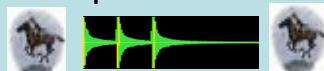


#QuantumComputing USct Alice Corp Vs CLS Bank compliant memes:  
In quantum computing, a qubit (or quantum bit (sometimes qbit)) is a unit of quantum information—the quantum analogue of the classical binary bit. A qubit is a two-state quantum-mechanical system, such as the polarization of a single photon: the two states are vertical polarization and horizontal polarization. In a classical system, a bit has to be in one state or the other. Quantum mechanics allows a qubit to be in a superposition of both states at the same time, a fundamental quantum computing property

US Sct Alice Corp Vs CLS Bank Physical memes

Linear sequential “Paul Revere” meme = horizontal polarization

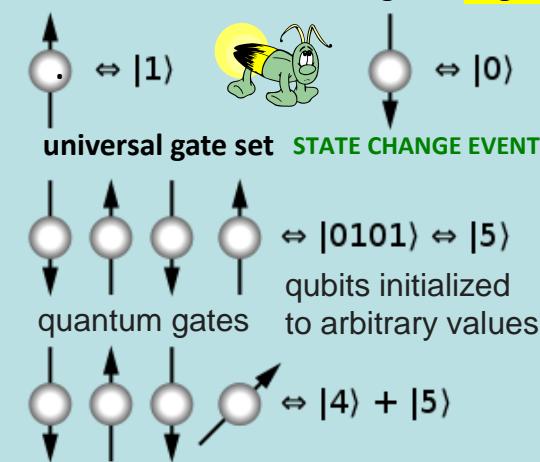
Vertical polarization vectors from a known point 0 null Sonar Hop meme



particle representation / samples



Instead of each bit having two potential states — on or off — a quantum bit or qubit has three. It can be on, off, or both, and you only know which one it is once you look at it. How can you tell if a bit of data is correct if looking at it might change its state?

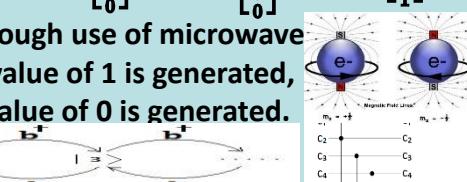


qubits can be in a superposition of all the classically allowed states

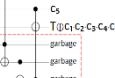
silicon device movement is controlled through use of microwave pulses. As an electron spins up, a binary value of 1 is generated, when the electron spins down, a binary value of 0 is generated.



$$|00\rangle = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix} \quad |01\rangle = \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix} \quad |11\rangle = \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}$$



STATE  
CHANGE  
EVENT



# THE BITCOIN BLOCKCHAIN FOR DUMMIES



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 Bitcoin Paper



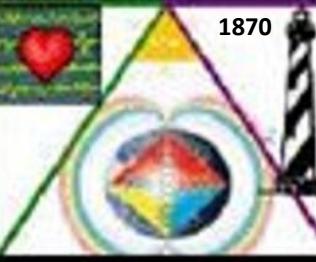
Satoshi Nakamoto



Craig WRIGHT  
a.k.a.  
Satoshi Nakamoto



"Bitcoin is a LANGUAGE"



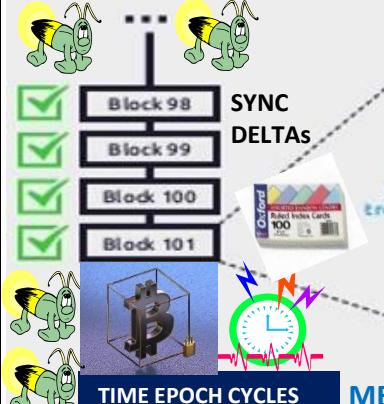
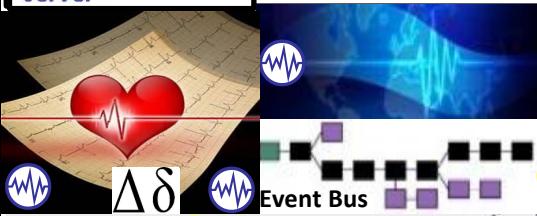
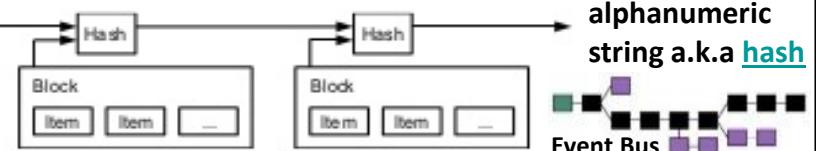
Wright Brother's 1<sup>st</sup> Flight  
Cape Hatteras Outer Banks

## "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



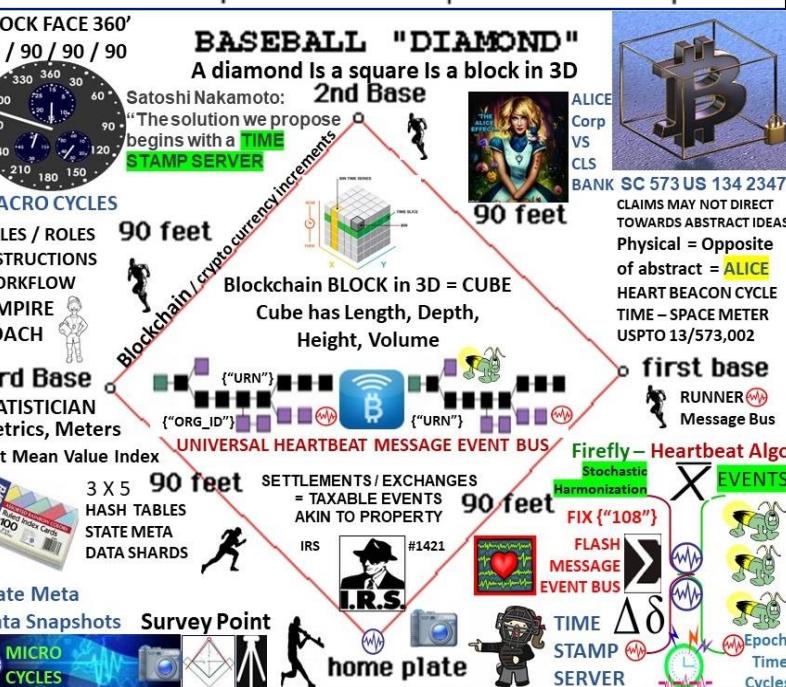
MERKLE: Summary built from block's transaction ID's

Header - Contains service information (version info, nonce, previous block id and timestamp). {"Org\_ID"}  
Merkle - A summary built from the block's transaction identifiers.

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

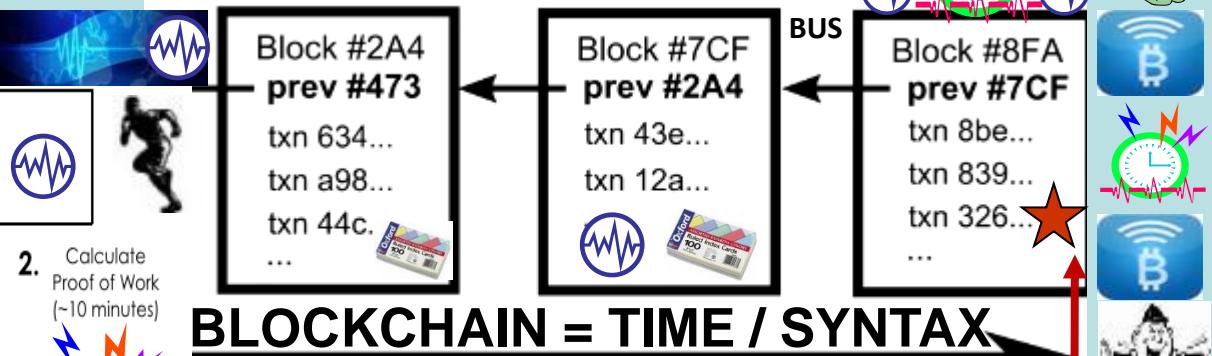
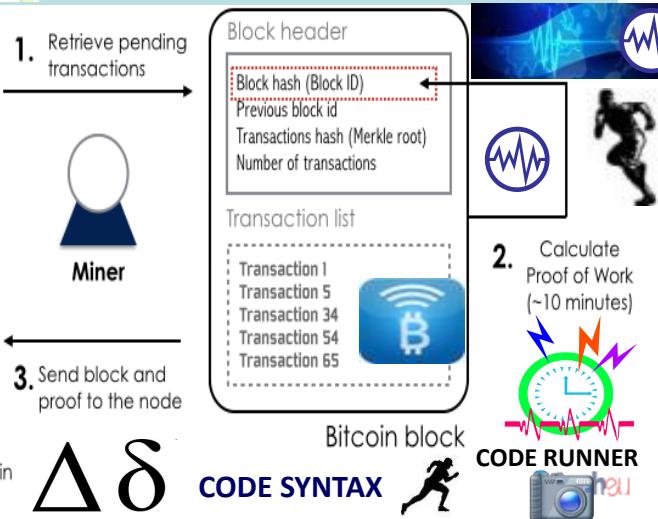
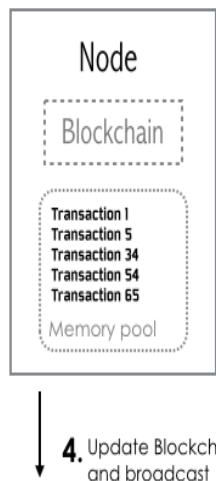
"All things net, net of money are formed with 1) epoch time cycles  
2) Syntax parsed as instructions

"THE VALUE OF BITCOIN IS TIME ITSELF"

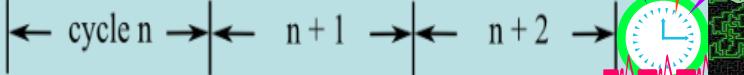




Alice Corp. v. CLS Bank International, 573 U.S. 134 SCt 2347 (2014) is a 2014 decision of the United States Supreme Court about patentable subject matter (patent eligibility).<sup>[2]</sup> The issue in the case was whether certain claims about a computer-implemented, electronic escrow service for facilitating 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.



ASIC CHIP CLOCK CYCLES TIME EPOCHS

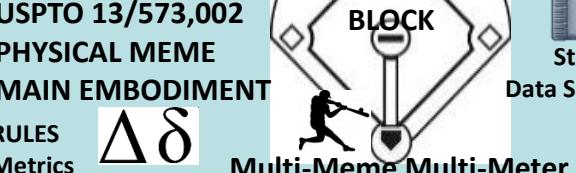


USPTO 13/573,002  
PHYSICAL MEME  
MAIN EMBODIMENT

RULES  
Metrics

$\Delta\delta$

**TIME  
EPOCH  
CYCLES**



State Meta  
Data Snapshots

ROLES  
Meters

XBRL / CDL / DAML  
STOCK MIC CODES

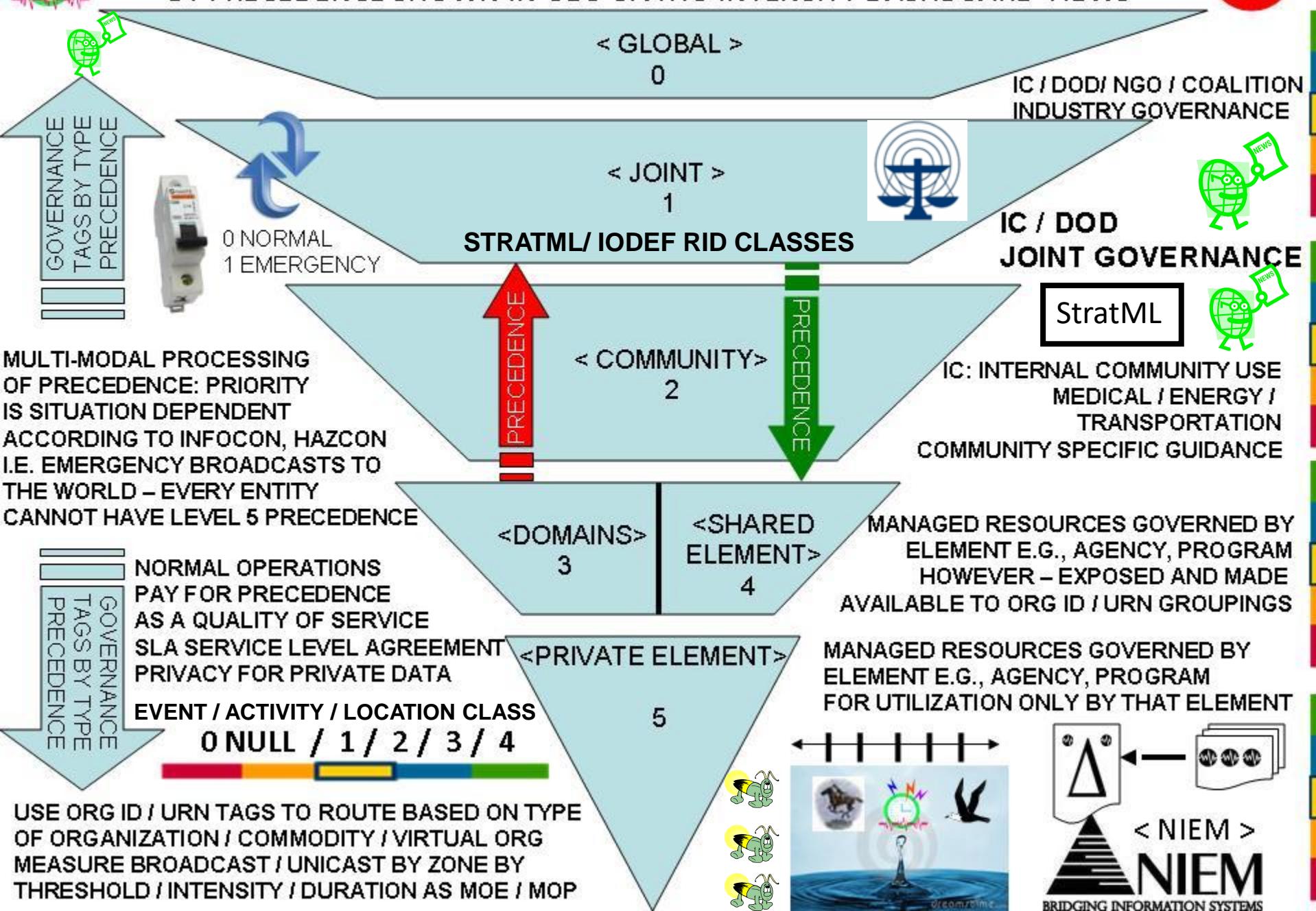
**STRUCTURED  
MILITARY MESSAGE  
TEMPLATE FORMS  
LOGIC / FILTERS**

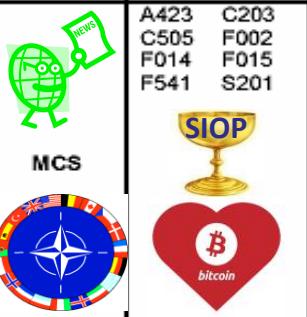
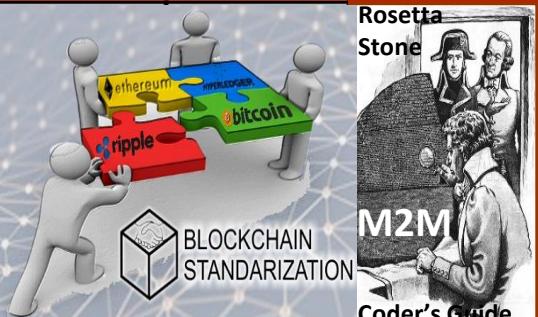


**SYNTAX  
LEXICON LIBRARY**



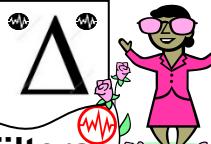
# ENABLE MAPPING OF GOVERNANCE / MANAGEMENT RESOURCES BY PRECEDENCE SHOWN IN GEO-SPATIO INTENSITY DASHBOARD VIEWS



| 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</b> = 300 + messages info exchange sets using common, <b>CONSENSUS</b> Message Text Formats MTFs. MTFs specify </CONTENT> / info agreed by group consensus presenting information in a logical, well specified unambiguous layout resulting in a <b>highly efficient info payload to overhead ratio</b> |   |   | C203<br>F014<br>F541<br>S305<br>S309 | C002 C203<br>E400 F002<br>F014 F015<br>S201 S507                     |
|      |  | A423 C203<br>C505 F002<br>F014 F015<br>F541 S201   |  | Rosetta Stone<br>M2M<br>Coder's Guide   | F002<br>F015<br>S201                 | C203 C400<br>D630 E500<br>F002 F014                                  |
|      |  |  |   |   |                                      | <b>INFOCON</b><br>5 4 3 2 1<br><b>INFORMATION CONDITION</b>          |
|      |  |  |   |  |                                      | "SYMBOLS RULE THE WORLD"   |
|      |  |  |   |  |                                      | <b>HEARTBEAT MESSAGE</b> = K00.99                                    |
|      |  |  |   |   |                                      | PROCESS MESSAGE BY PRECEDENCE<br>UNIVERSAL EVENT / ALERT MESSAGE BUS |

## MESSAGE CATALOG 300 + Use Cases

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

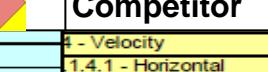
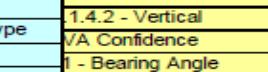
- Information Elements Roles**
- COI Determination Org Interaction
  - Search and Discovery
  - Ontologies STANDARDS
  - Taxonomies REFERENCE
  - Metadata Attributes / Filters  
("Org\_ID") {"URN"}
-  FILTERS

**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**



**NDN:** Network Neutral Name  
**Flash Messages:** 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        |   |
| 11.4.1.2 - Estimate Type    | 11.8.1.1.1 - Angular           |   |
| 11.4.1.2.1 - Alternative    | 1.1.2 - Linear                 |   |
| 11.4.1.2.2 - Evaluated D    | 2 - Estimate Type              |   |
| 11.4.1.3 - Value            | 1.2.1 - Estimated              |   |
|                             | 1.2.2 - Observed               |   |
|                             | 1.2.3 - Predicted              |   |
|                             | 1.2.4 - Smoothed               |   |
|                             | <b>PURCHASE CODES</b>          |   |
| <b>SYMBOL</b>               | <b>Friend</b>                  | <b>Neutral</b>  |
| 2525C                       | Partner                        |                    |
|                             |                                | <b>Hostile</b>     |
|                             |                                | <b>Competitor</b>  |
|                             |                                | 1 - Velocity  |
|                             |                                | 1.4.1 - Horizontal  |
|                             |                                | 1.4.2 - Vertical  |
|                             |                                | VA Confidence   |
|                             |                                | 1 - Bearing Angle   |
|                             |                                | 2 - Bearing Angle Rate  |
|                             |                                | 3 - Covariance Matrix   |

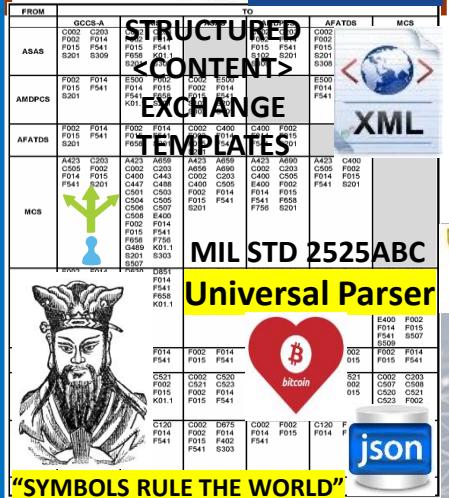
Structured  
Data  
Exchange



ALPHA NUMERIC  
SYMBOL SETS

**lexicon**

Coder's Guide



11.8 - Kinematic

11.8.1 - Pos

11.8.1.1 -

11.8.1 -

11.8.1 -

11.8.1 -

11.8.1 -

11.8.1 -

11.8.1 -

11.8.1 -

11.8.1 -

11.8.1 -

11.8.1 -

11.8.1 -

11.8.1 -

11.8.1 -

11.8.1 -

11.8.1 -

**STRATML**

**XBRL**  
THE BUSINESS REPORTING STANDARD

BINARY XML  
Decision

UBL

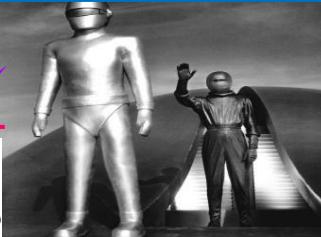
DDL DATA  
DEFINITION  
LANGUAGE

TOSCA

YAML

Covariance Matrix

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.

MESSAGE TEXT FORMAT :

{"URN"} {"URN"}

**vector**

{"TRANSACTION ID"}

SEG RPT OCC CLASSNAME SETID SEQ FIELD OCCURRENCE SET FORMAT NAME  
O 11NUPRES EXER 1 /M /O // (NU) EXERCISE IDENTIFICATION



C 11NUPRES OPER 2 /M /O /O /O // (NU) OPERATION CODEWORD



M MIOPV1 1 MSGID 3 /M /M /O /O /O // (NU) MESSAGE IDENTIFIER



M MIP OUT ORDPLAN 4 /M /O /O /O // (NU) PLAN ORDER REFERENCE



VI // (NU) REFERENCED MESSAGE

DATE-TIME GROUP

VI /M /M /M /C // (NU) ORGANIZATION DESIGNATOR

VI // (NU) 1.A ENEMY FORCES / COMPETITORS

VI // (NU) 1.B FRIENDLY FORCES / TRADE FEDERATION

'M // (NU) 1.C ATTACHMENT / DETACHMENT

M // (NU) 1.D COMMANDERS EVALUATION

O 11NUPRES GENTEXT 12 /M /M // (NU) 1.E ENVIRONMENTAL INFORMATION

M 11NUPRES GENTEXT 13 /M /M // (NU) 2. MISSION

K00.99 / FIX / SWIFT / E-911 Heartbeat Message

M 11NUPRES GENTEXT 14 /M /M // (NU) 3.A CONCEPT OF OPERATION

O 11NUPRES GENTEXT 17 /M /M // (NU) (3) RECONNAISSANCE SURVEILLANCE

O 11NUPRES GENTEXT 21 /M /M // (NU) (5) INFORMATION OPERATIONS

O 11NUPRES GENTEXT 28 /M /M // (NU) (5) COMMS INFORMATION SYSTEMS

O 11NUPRES GENTEXT 35 /M /M // (NU) 3.D COORDINATING INSTRUCTIONS

M 11NUPRES GENTEXT 36 /M /M // (NU) 4.A SUPPORT CONCEPT (Logistics)

M 11NUPRES GENTEXT 37 /M /M // (NU) 4.B MATERIEL AND SERVICES

SYMBOLS Friend Neutral Hostile MEDICAL EVAC & HOSPITALISATION

Partner Competitor M - MILITARY OPERATIONS

NUMBERS ARE THE UNIVERSAL LANGUAGE / Symbols Rule the World"

$\Delta\delta$

INDEX REFERENCE #:

M015 STATUS :

EFFECTIVE: 14-DEC-99



PURCHASE CODES



FEDERATED PEGS

{"ASSET\_CLASS"}

{"ASSET\_TYPES"}

ISO 10383 – MIC

Market Identifier Codes



{"URN"}

{"Org\_ID"}

{"Org\_ID"}

{"Org\_ID"}

{"Org\_ID"}

{"Org\_ID"}

{"Org\_ID"}

{"Org\_ID"}

{"Org\_ID"}

{"Org\_ID"}



INFOCON

5 4 3 2 1

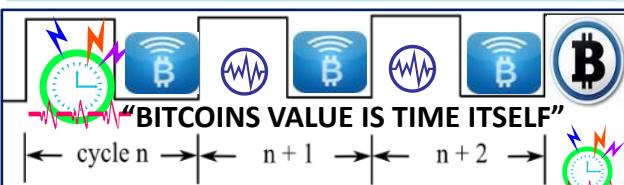
INFORMATION

CONDITION

# 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

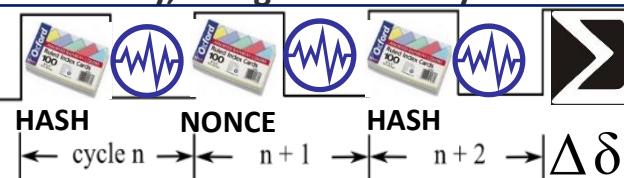


THROTTLE equivalent to difficulty. State  
•target = maximum value of 8 bytes Snap  
Shots

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



GUESS stores the guess  
Effectively, it begins at infinity.

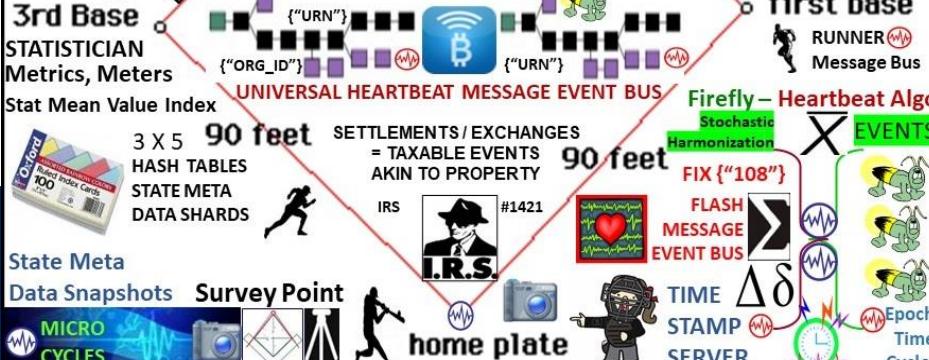
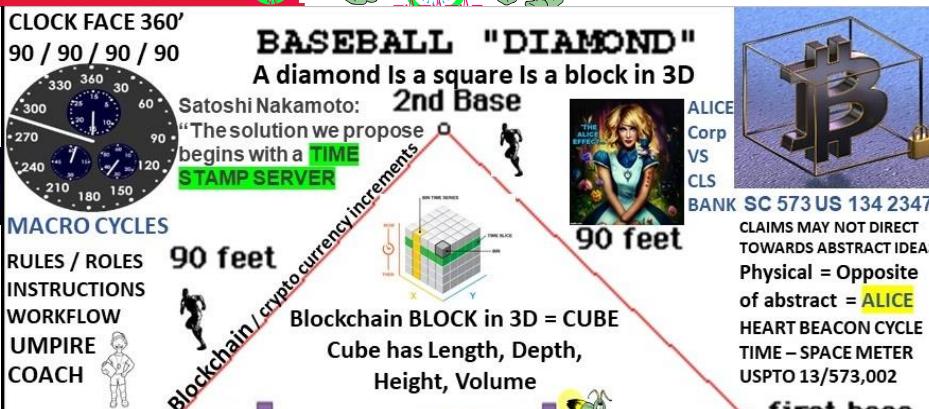
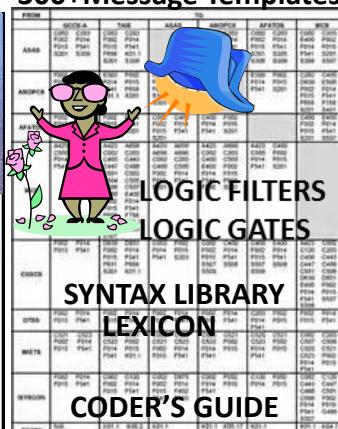


**Proof-of-Work:** users perform some form of work to participate. Work must be difficult for the client but easy for the server/network to verify. POW determines the approximate time between blocks = rate that new bitcoins are created. Work is submitted as a message/timestamp payload with a nonce value.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



- MESSAGE ex:
  - Hashing string
  - Hash Table

300+Message Templates

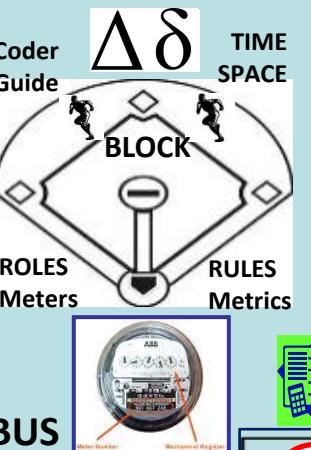
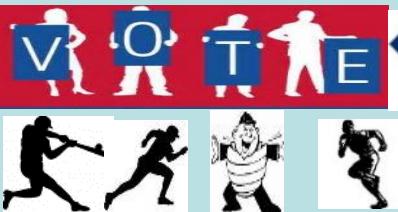




# BTC NG NEX GEN / Heart Beacon Cycle 13/573,002

## KEY BLOCKS:

- NO CONTENT = NULL
- LEADER ELECTION



MVP

EVENT BUS

## MICRO BLOCKS:

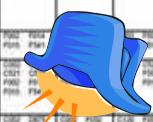
- ONLY CONTENT
- NO CONTENTION



| FROM   | GCDA  | TAB   | ASAS  | AMPCDS | AFATDR | MCR   | TO    |
|--------|-------|-------|-------|--------|--------|-------|-------|
| GCDA   | FC001 | FC002 | FC003 | FC004  | FC005  | FC006 | FC007 |
| TAB    | FC008 | FC009 | FC010 | FC011  | FC012  | FC013 | FC014 |
| ASAS   | FC015 | FC016 | FC017 | FC018  | FC019  | FC020 | FC021 |
| AMPCDS | FC022 | FC023 | FC024 | FC025  | FC026  | FC027 | FC028 |
| AFATDR | FC029 | FC030 | FC031 | FC032  | FC033  | FC034 | FC035 |
| MCR    | FC036 | FC037 | FC038 | FC039  | FC040  | FC041 | FC042 |

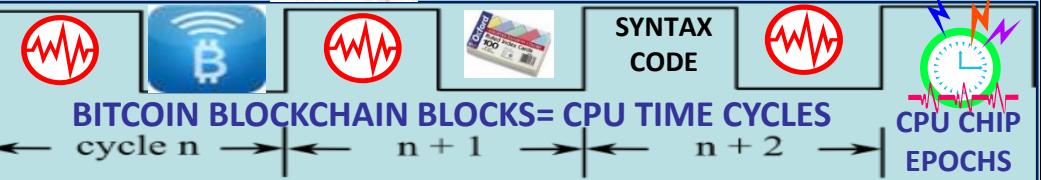
XBRIL / CDL / DAML  
STOCK MIC CODES

STRUCTURED  
MILITARY MESSAGE  
TEMPLATE FORMS  
LOGIC / FILTERS

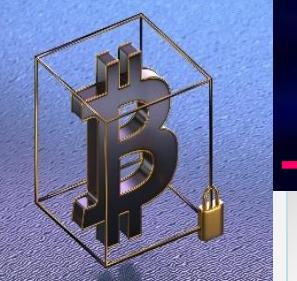


SYNTAX  
LEXICON LIBRARY

CPU CHIP  
EPOCHS

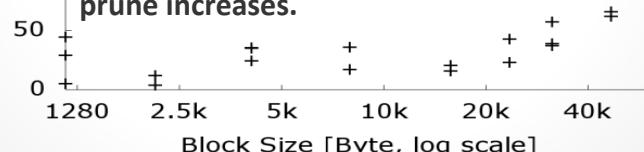


long exponential intervals (10 min)



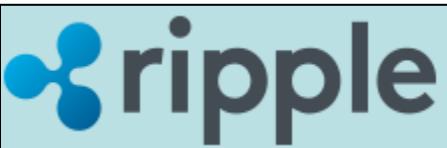
Subjective Time to Prune

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

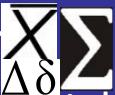


real-time gross settlement system,  
currency exchange, remittance network

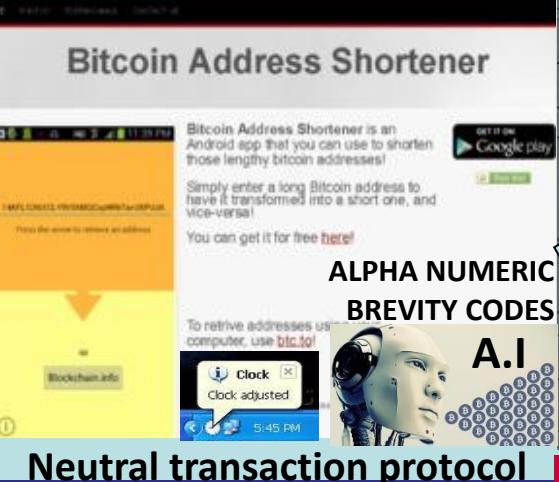
A.K.A Ripple Transaction Protocol or Ripple protocol, built on a distributed open source Internet protocol, consensus ledger and native currency called XRP. Ripple enables "secure, instant and nearly free global financial transactions of any size with no chargebacks." Ripple supports tokens representing 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

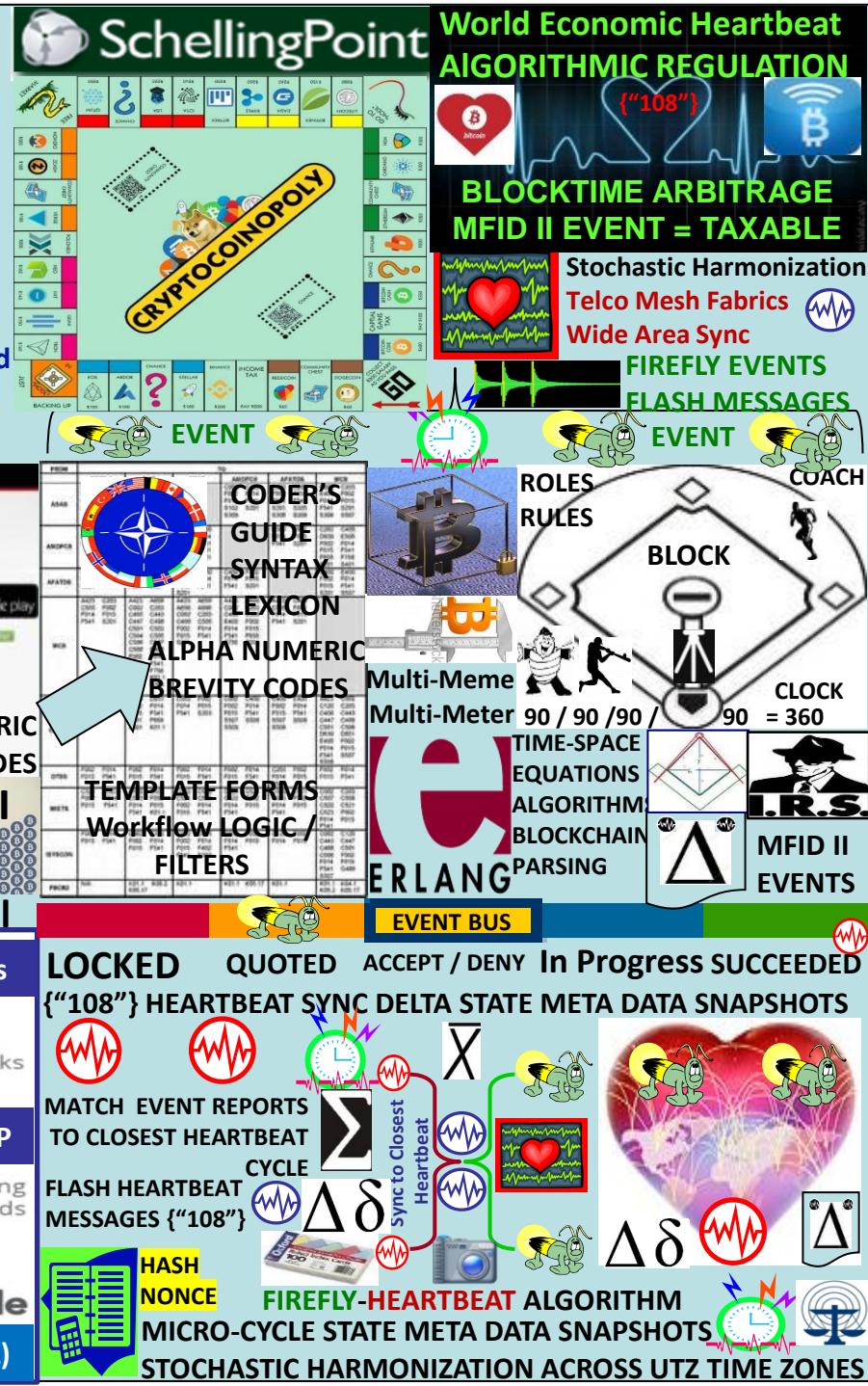
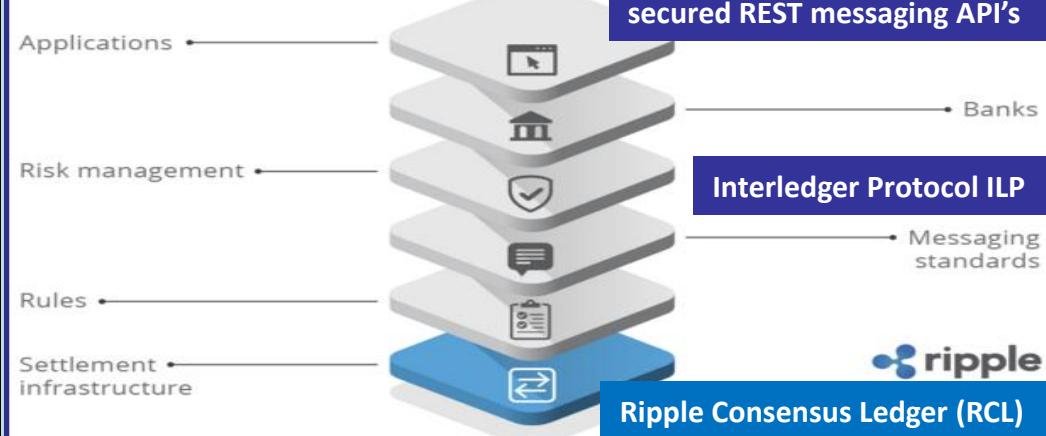
Provides information about total  
costs of the transaction



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



Neutral transaction protocol





# HASHGRAPH

Hashgraph consensus algorithm for replicated state machines

- Consensus Event Time Stamps
- State Meta data consensus order
- **Virtual voting:** each member has a Hashgraph copy
- Famous witnesses

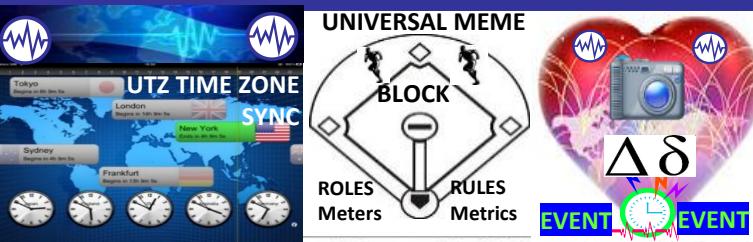
data structure that records who gossiped to whom in what order  $\Delta\delta$

Gossip In Bitcoin: transactions and mined blocks are gossiped.  
Consensus is enhanced via "gossip about gossip"



DAG "Directed Acyclic Graph" large number of blocks arrive at the same time. DAG system reaches consensus leveraging "Gossip"... information spread by a computer calling up other computers at random, sharing everything it knows

The Heart Beacon Cycle Time – Space Meter  
Adaptive Procedural Template Checklist  
Heartbeat Sync Delta state meta data  
structured data exchange snapshots  
300 + Use Case message template sets  
Rosetta Stone Syntax lexicon Coder's guide



Community members reach consensus agreement on events / transactions order inside events, and agree on a timestamp for each event /transaction

DAG finite directed graph  
= no directed cycles



Round created  
Witness

Famous witness  
Election

Vote  
See

Strongly see  
Supermajority

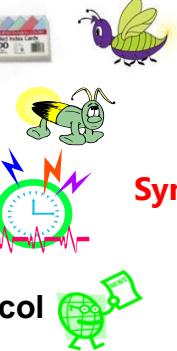
Decide  
0 / 1

Round created  
Round received

Consensus timestamp  
Consensus order

$\Delta\delta$

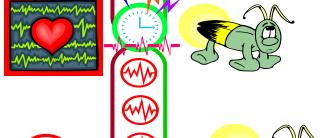
Hashgraph Member Event Transaction Consensus Order Timestamp Gossip protocol Self-parent Other-parent Graph Hash Hashgraph



Synchronous



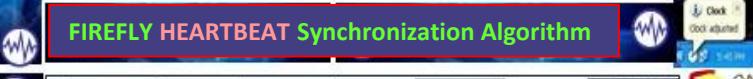
Asynchronous



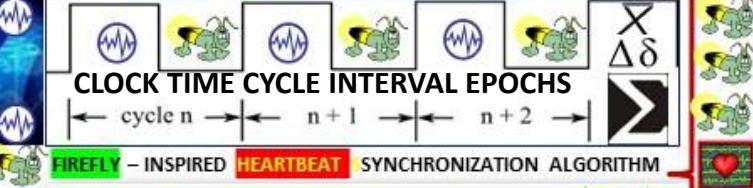
Micro-Cycle  
State Meta  
Data Snapshots

Hash  
Nonce

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



FIREFLY HEARTBEAT Synchronization Algorithm



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



$\Delta\delta$



vector



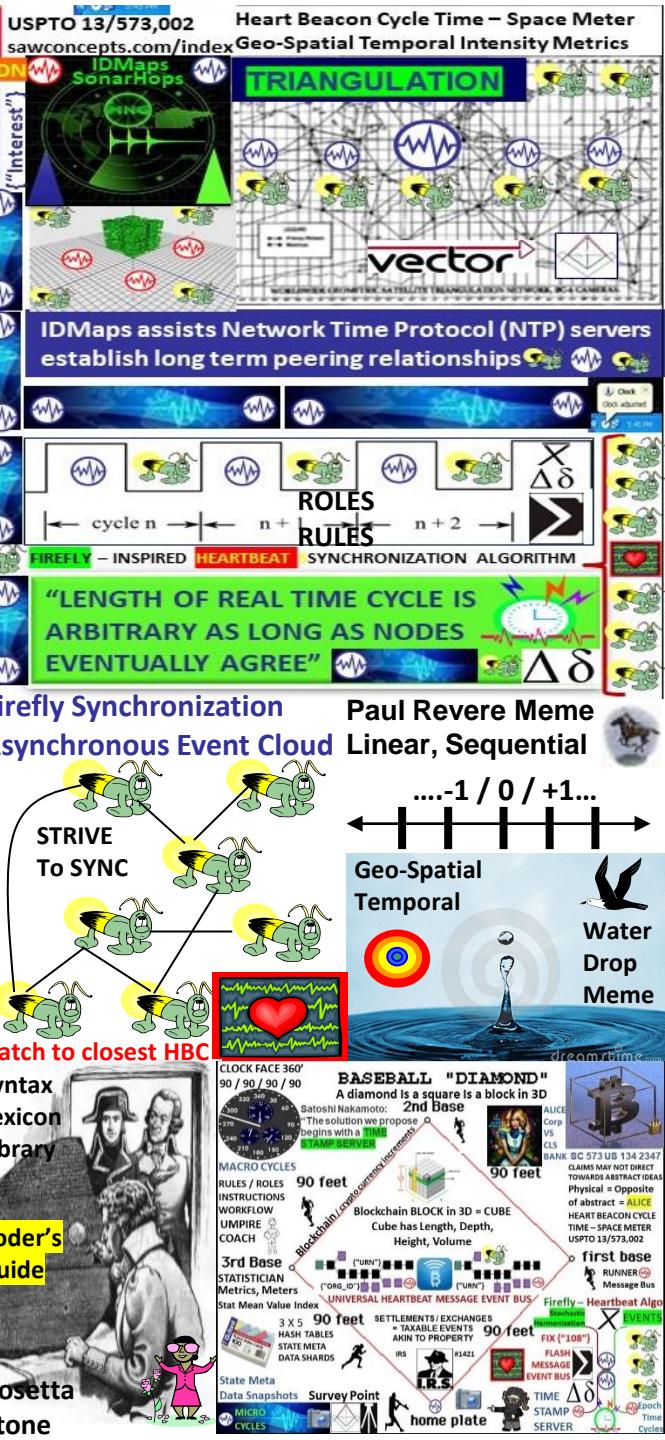
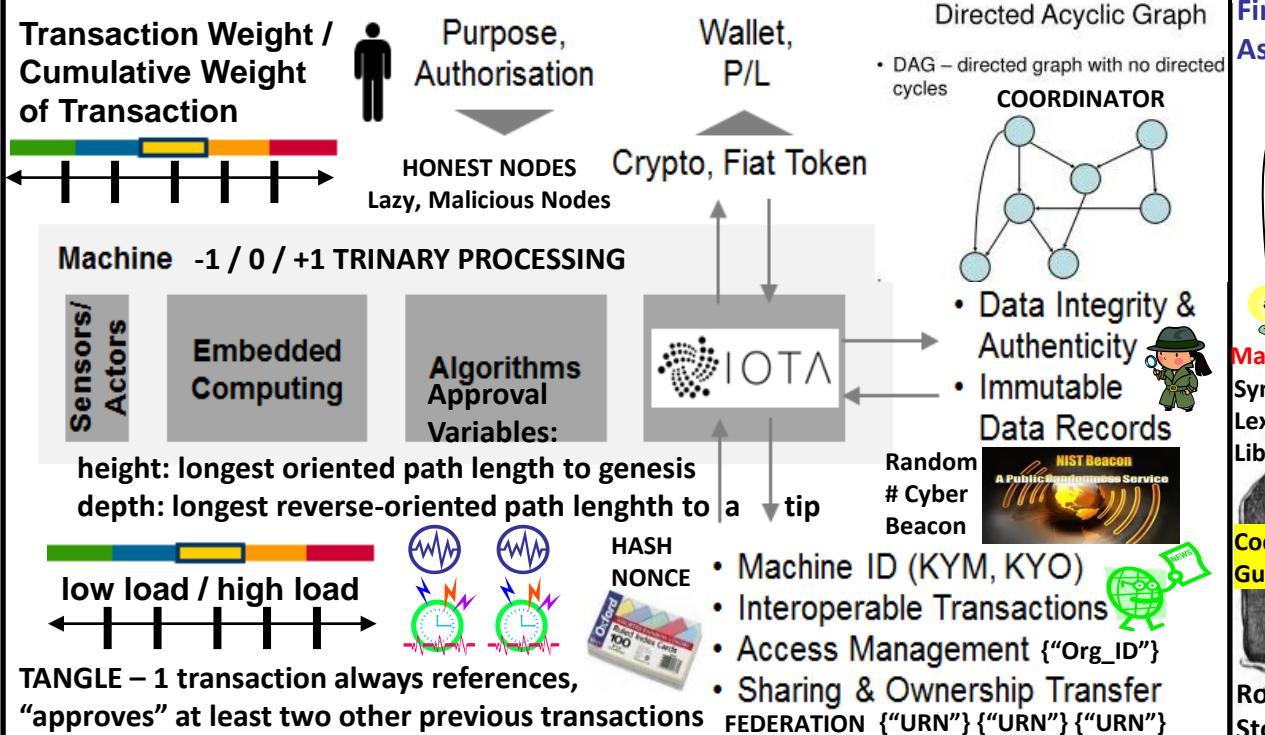


## IOTA: Internet Of Things IOT distributed ledger with microtransactions without fees

Tangle, a directed, ASYNCHRONOUS acyclic graph (DAG) for storing transactions

Contrary to Blockchains, consensus is no longer decoupled. It is an intrinsic part of the system for decentralized, self-regulating peer-to-peer network. Transfer value without fees

The iota network is ASYNCHRONOUS. In general, nodes do not necessarily see the same set of transactions. The tangle may contain conflicting transactions. The nodes do not have to achieve consensus on which valid transactions have the right to be in the ledger, meaning all of them can be in the tangle. However, in the case where there are conflicting transactions, the nodes need to decide which transactions will become orphaned. Nodes use the tip (unapproved transaction) selection algorithm to decide between two conflicting transactions. GHOST protocol main ledger = tree



# ZEPPELIN



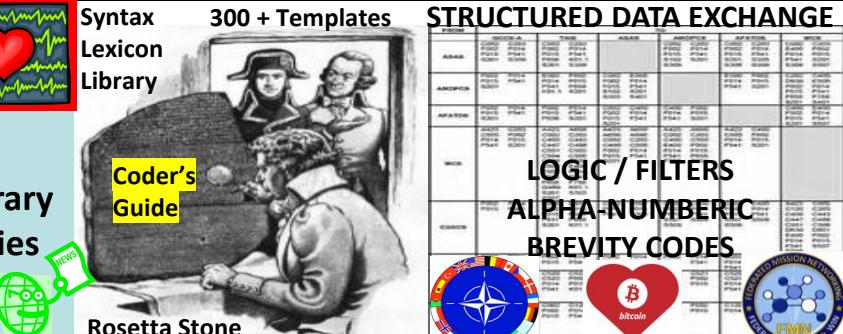
## ZEPPELIN OPEN, GLOBAL ECONOMY

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."*



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



**STRUCTURED DATA EXCHANGE**

**LOGIC / FILTERS ALPHA-NUMERIC BREVITY CODES**

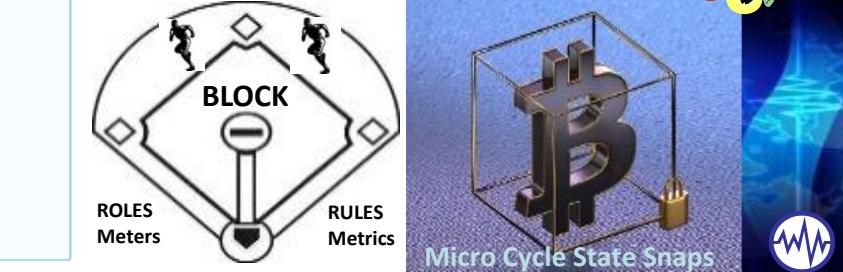
**FLASH MESSAGE BUS TIME CYCLES SYNTAX**



**FLASH MESSAGE BUS TIME CYCLES SYNTAX**

**ERLANG Time Equations Function calls Blockchain Parsing**

**UNIVERSAL MEME**



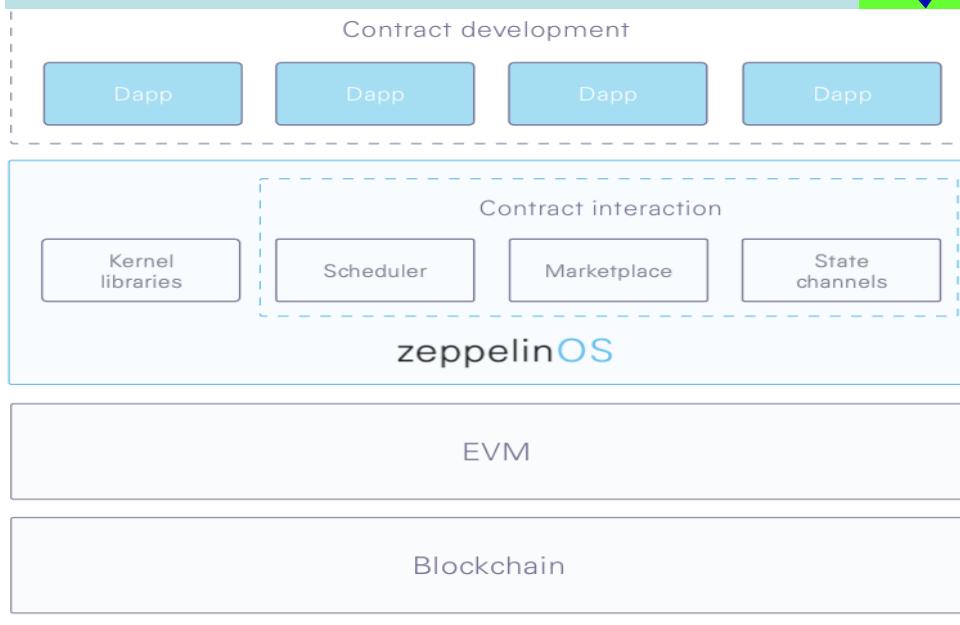
**Micro Cycle State Snaps**

## 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, inspired 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.



**HASH / NONCE**

**STATE META DATA SNAPS**

**FLASH MESSAGE BUS TIME CYCLES SYNTAX**

**ERLANG Time Equations Function calls Blockchain Parsing**

**UNIVERSAL MEME**

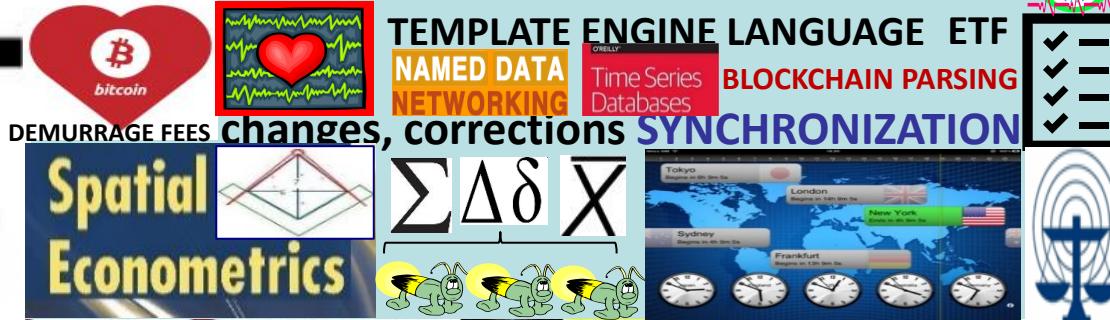
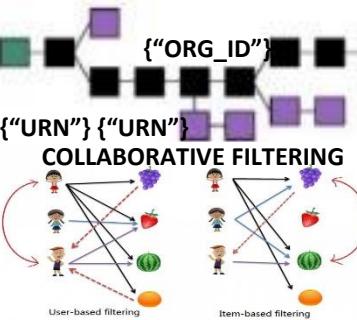
**Micro Cycle State Snaps**



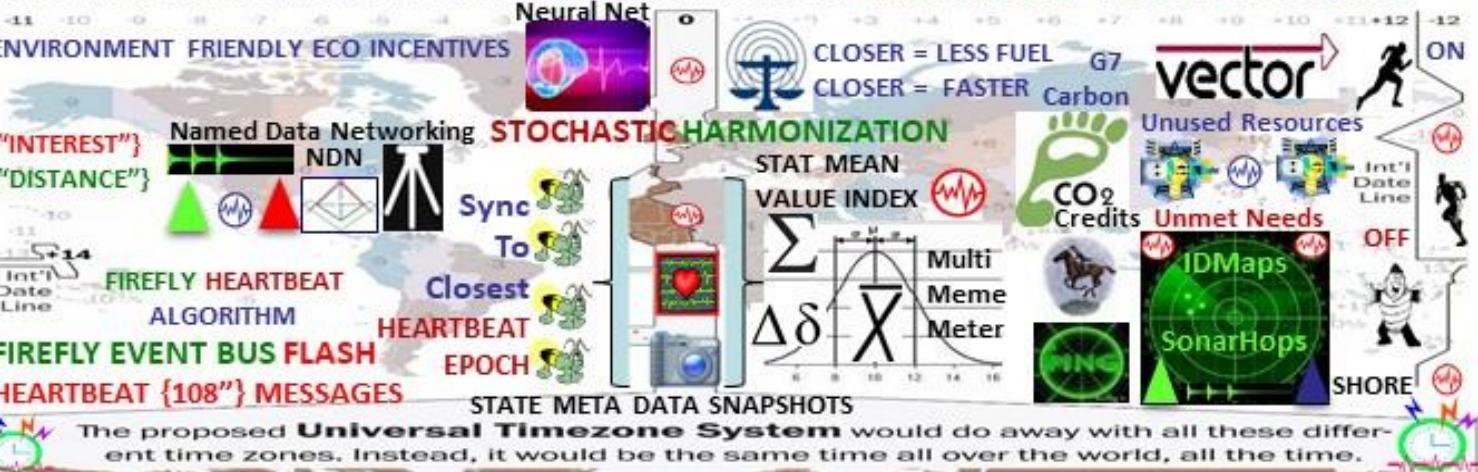
# EGaaS

ELECTRONIC GOVERNMENT AS A SERVICE

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**

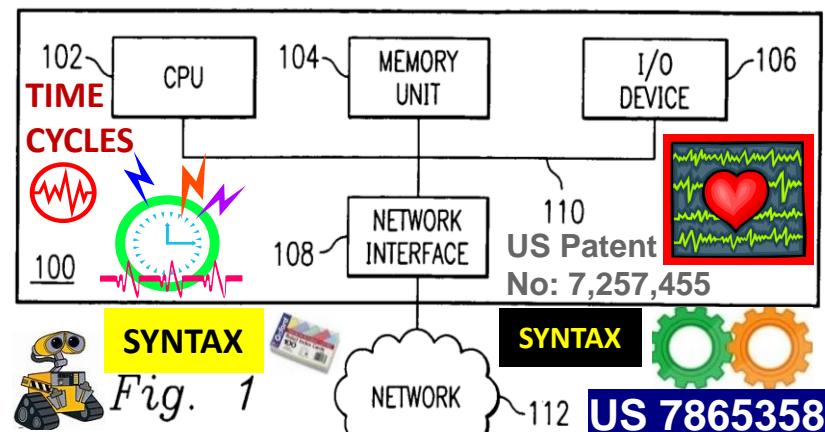


eGaaS: international blockchain platform for organizing economic, state, social activities of citizens , communities on the basis of smart law, smart contract system. eGaaS offers a comprehensive solution needed for state and business management on the blockchain platform.



| FORM    | CODEC-A | TAKE  | ASAS | AMBIOPIC | API-RD | WIND  |
|---------|---------|-------|------|----------|--------|-------|
| ASAB    | PRE1    | POST1 | PRE1 | POST1    | PRE1   | POST1 |
| ANOMHIC | PRE2    | POST2 | PRE2 | POST2    | PRE2   | POST2 |
| AFATOR  | PRE3    | POST3 | PRE3 | POST3    | PRE3   | POST3 |



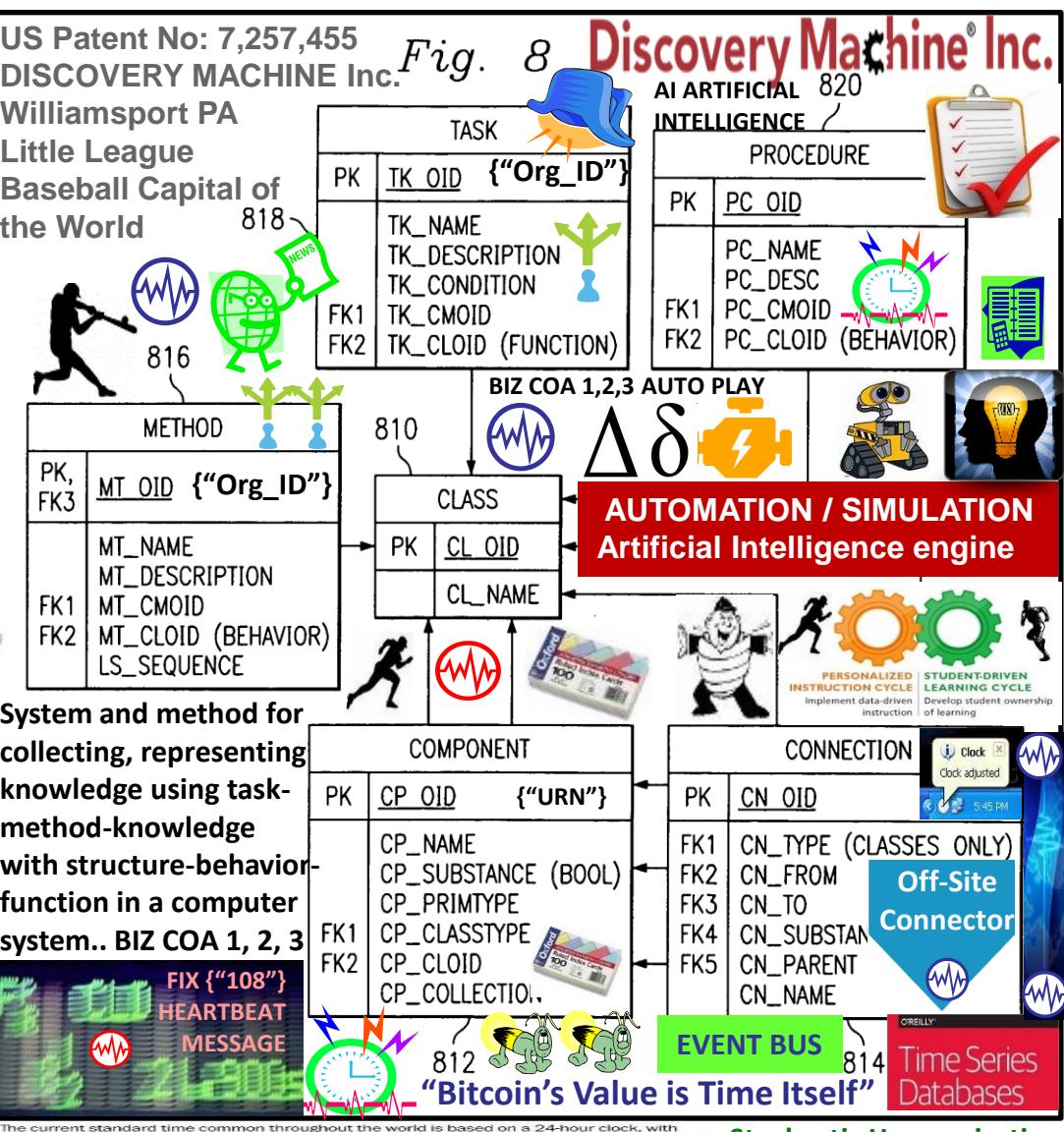
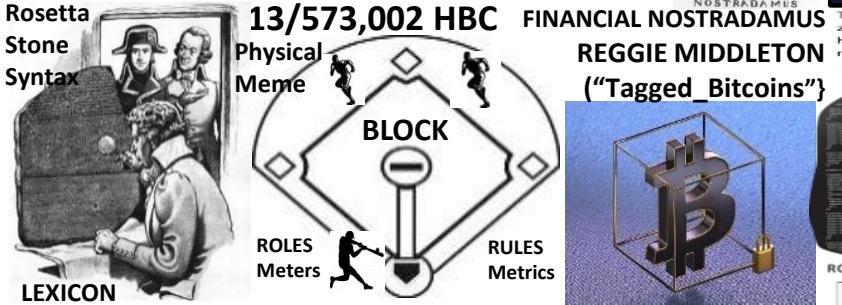


Machine-based system for transforming data from a source form to a target form, a tool is provided for sharing information established in developing a transformation model. The shared information may relate to rules for mapping source collection terms to standardized terms, rules for ordering or **SYNTAX**,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





"EARTHDAY EVERYDAY ON THE BITCOIN BLOCKCHAIN"  
"GIVE A HOOT, DON'T POLLUTE" Woodsy The Owl

# GNOSIS

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.



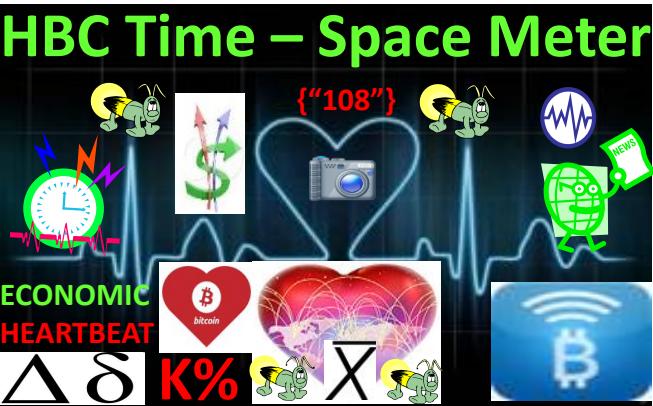
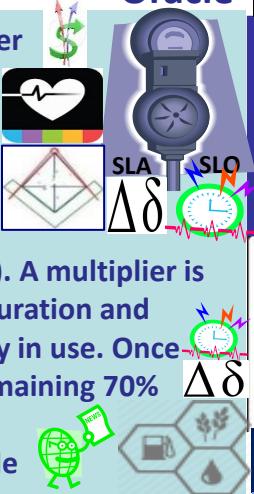
The proposed **Universal Timezone System** would do away with all these different time zones. Instead, it would be the same time all over the world, all the time.

"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

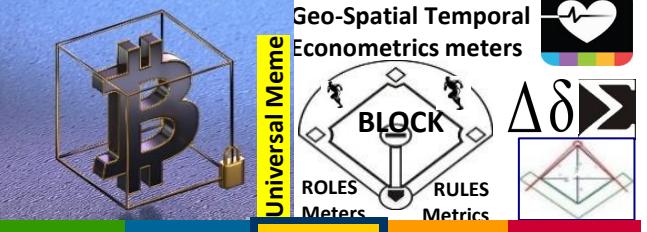


## THE TERRA (TRC)

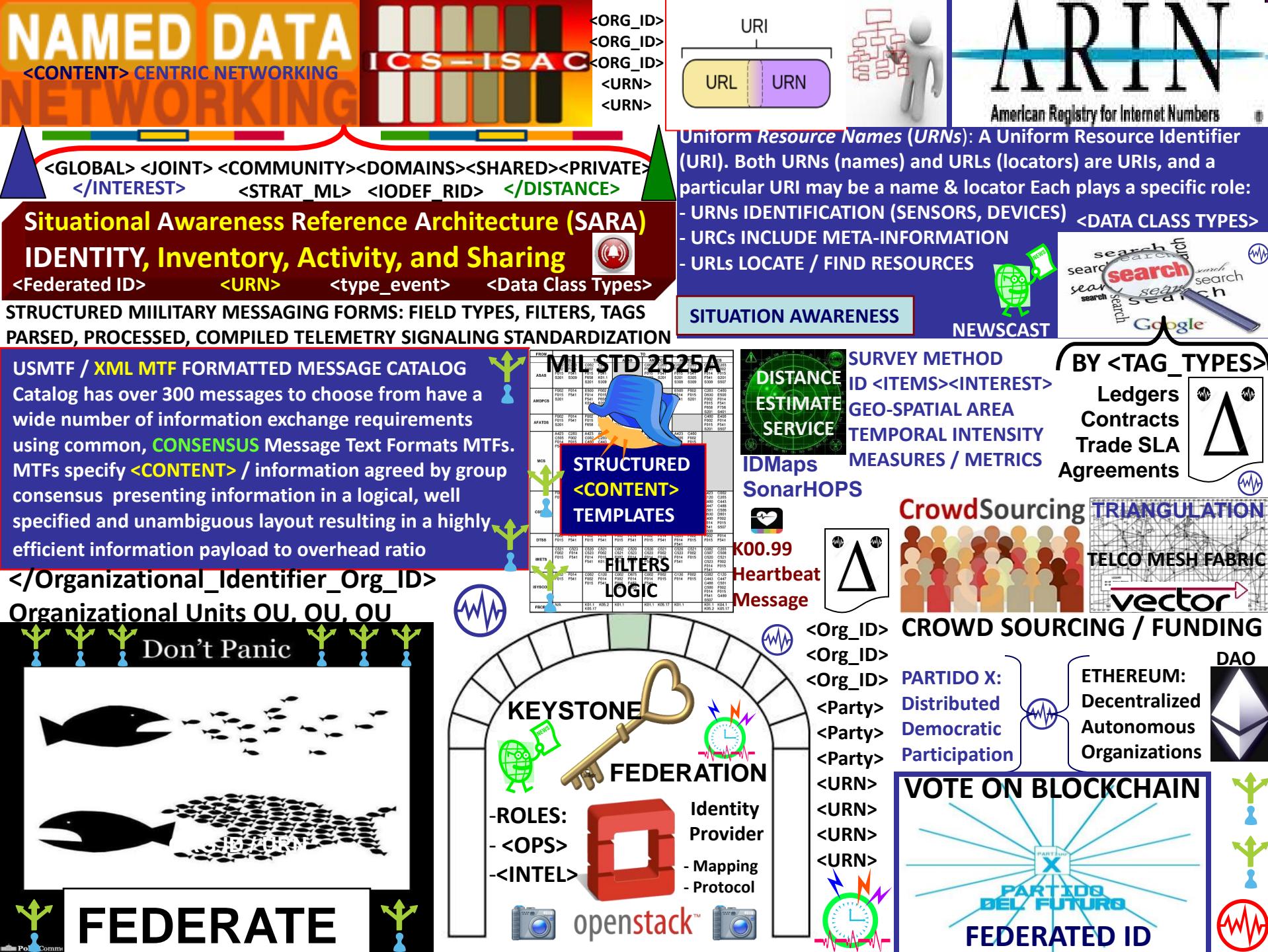
Trade Reference Currency



## Demurrage Fees



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"



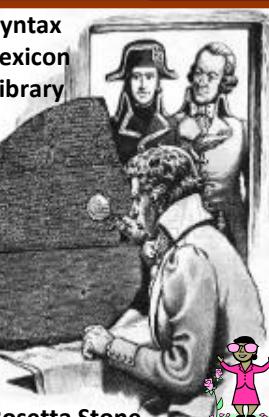






Dogezer software development platform allows team members to become product investors by investing their time, labor. The Dogezer Platform combines the functionality of Kickstarter, UpWork, GitHub, Slack, Jira, Google Docs, Dropbox and ICO analogues with a set of defined processes how these solutions 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.

Syntax Lexicon Library



Rosetta Stone

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



**CODER'S GUIDE**

| Tool                     | NGO    | LEA  | ACA  | MDA  | GOV  | COM  | MIL  | NGO    |
|--------------------------|--------|------|------|------|------|------|------|--------|
| ARAB                     | F001-A | T001 | A001 | M001 | A001 | F001 | F001 | F001-A |
| AMERICAS                 | F002-A | P001 | F002 | P002 | F002 | F002 | F002 | F002-A |
| AFRICA                   | F003-A | P003 | F003 | P003 | F003 | F003 | F003 | F003-A |
| EUROPE                   | F004-A | P004 | F004 | P004 | F004 | F004 | F004 | F004-A |
| ASIA                     | F005-A | P005 | F005 | P005 | F005 | F005 | F005 | F005-A |
| STRUCTURED DATA EXCHANGE |        |      |      |      |      |      |      |        |
| 300+ TEMPLATES           |        |      |      |      |      |      |      |        |

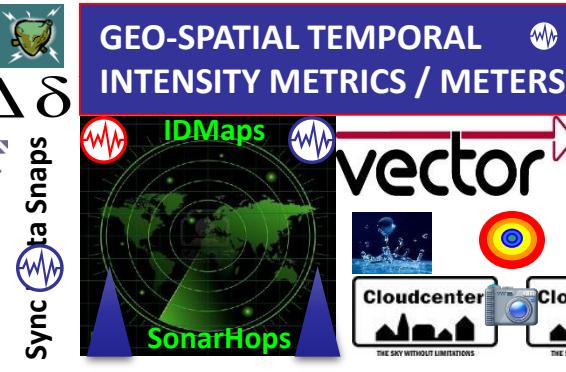
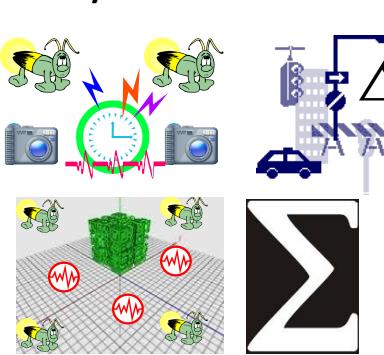
**PROJECT HBCnet:** build artificial intelligence neural network supporting #UNRIG's Earth Intelligence Network EIN with Signals, Telemetry Mesh



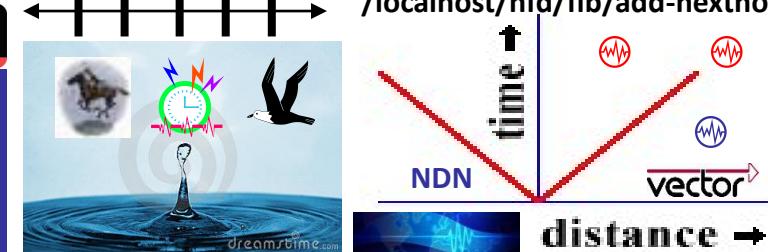
# IDMaps: Global Internet Host Distance Estimation Service



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



IDMaps scalable Internet-wide architecture measures, disseminates distance information



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)



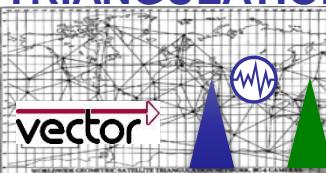
**NDN NAMES**

**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



**TRIANGULATION**



**NDN INTEREST LENGTH = DISTANCE BY HOPS**

**NDN INTEREST**

**IS DATA FRESH ?**



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

Datasets and Event Notification

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 DATASNAPSHOTS**

# 13/573,002 HEART BEACON CYCLE

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

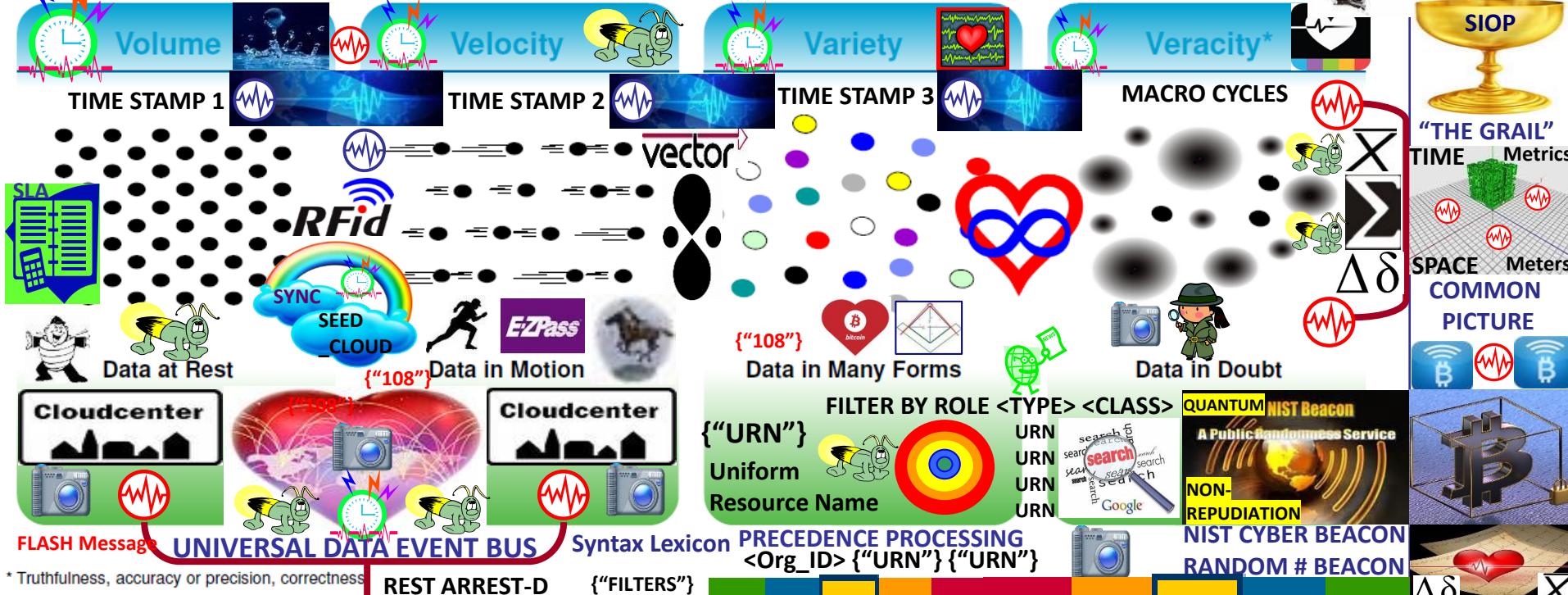
The four dimensions of Big Data

vector

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



TIME STAMP BY Org\_ID, URN Before FUSION CENTER



\* Truthfulness, accuracy or precision, correctness

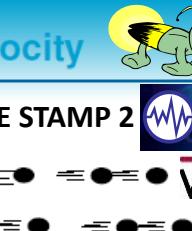
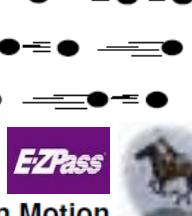
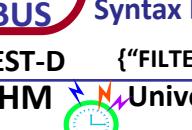
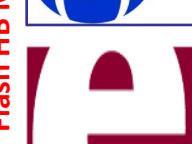
**FIREFLY – HEARTBEAT** {"108"}  
Stochastic Harmonization UTZ SYNC

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

MICRO

CYCLES



SPACE – TIME Equations  
BLOCKCHAIN PARSING  
{"Org\_ID"} {"URN"}

PAUL REVERE MEME  
LINEAR SEQUENTIAL

WATER DROP IN POND MEME

HASHGRAPH  
Consensus Algorithm  
Time Averaged Time Stamping

FIREFLY SYNC CONSENSUS

FOAM spatial protocol

Ethereum Blockchain

HEARTBEAT SYNCRONIZATION

INFOPOLIS

FOAM

FOAM spatial protocol

Ethereum Blockchain

HEARTBEAT SYNCRONIZATION

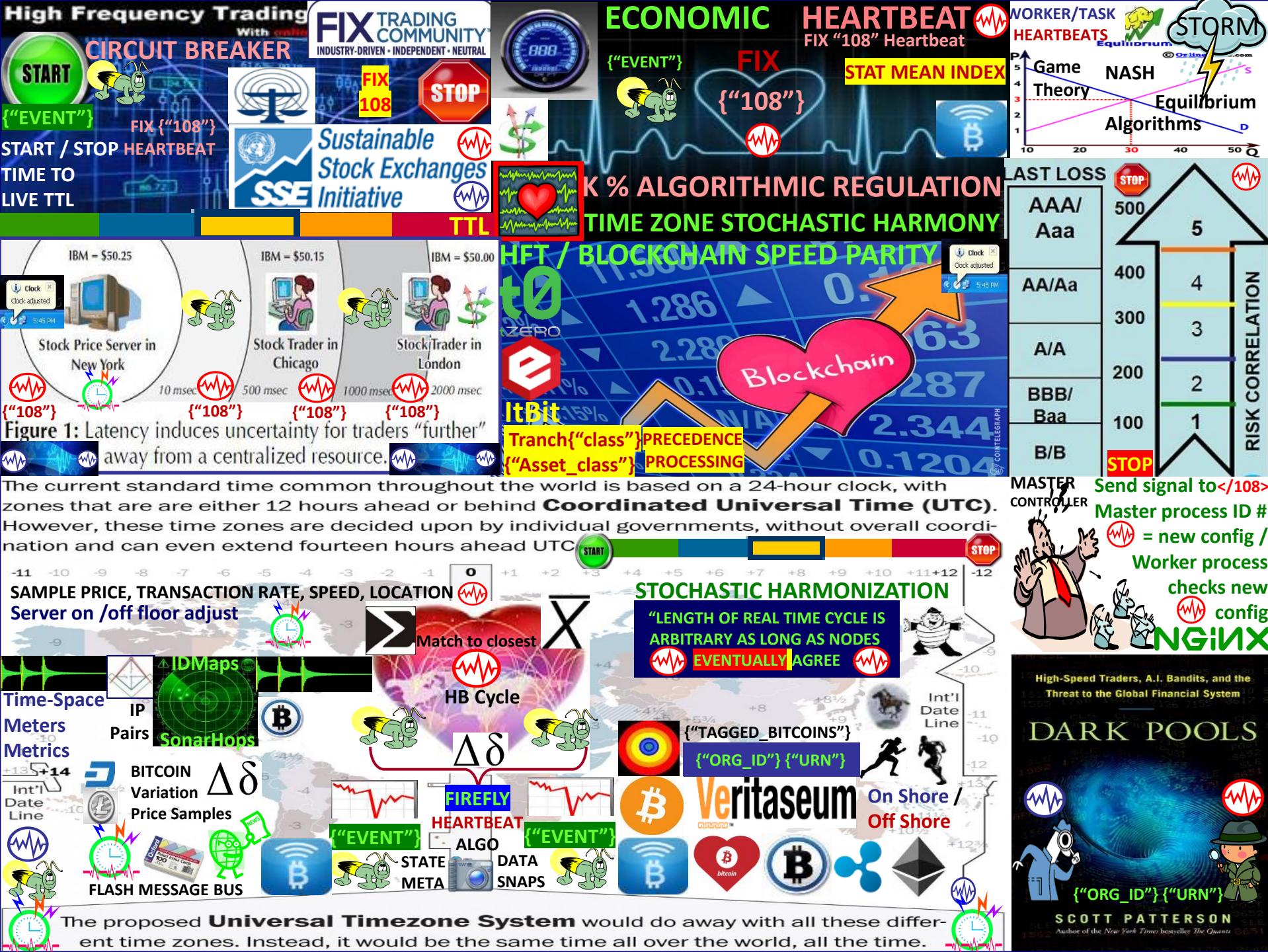
FOAM spatial protocol

Ethereum Blockchain

INFOPOLIS

FOAM







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                       |
| Denominating Asset: | ~BTC:SATOSHIS              |
| 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                 |

NEWS EVENT BUS FIREFLY HEARTBEAT ALGO EVENT BUS

DAO Distributed Autonomous Organization SOFTWARE POOLS

All Market Orders Search

UTZ TIME SYNC Collateral Notional Expiry

Heartbeat Flash Messages Precedence Processing

As 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.

INVESTOR POOL WORLD COMPUTER DFINITY

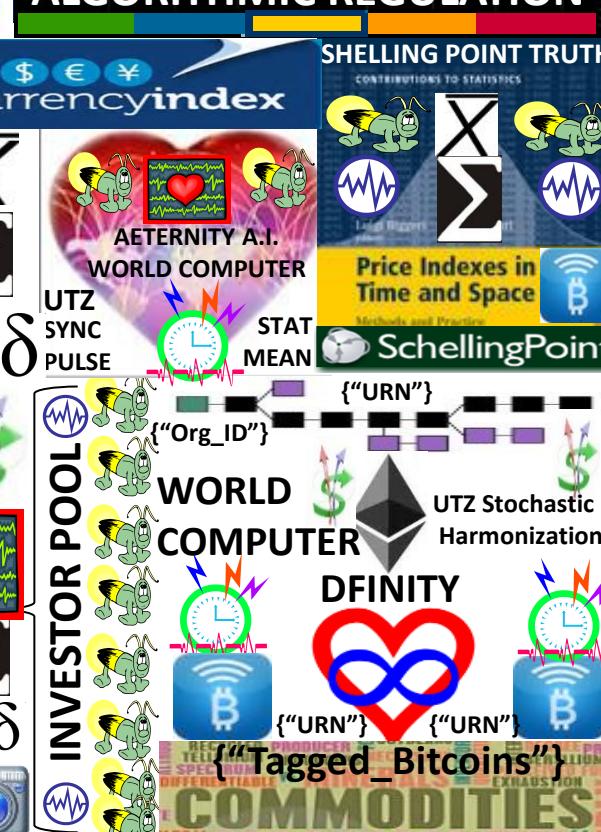
UTZ Stochastic Harmonization

REGGIE MIDDLETON FINANCIAL NOSTRADAMUS

NOSTRADAMUS



**ECONOMIC HEARTBEAT**  
STATISTICAL MEAN VALUE INDEX PULSE







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)

### SORTING ALGO'S

[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  $\Delta\delta$  queueing systems wait times  
Service Rate per unit time stochastic processes, function scheduling Start, Stop TTL



distributed "noSQL" database, embedded right into Erlang, supports indexing, replication, transactions, and fail-over

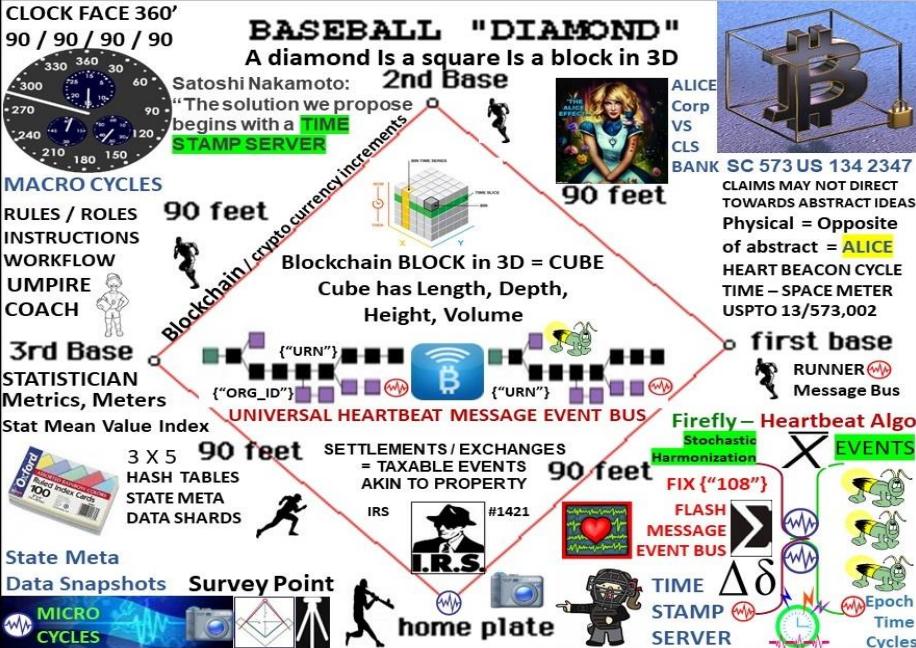
Fast ETS in-memory, and DETS persistent on-disk database

Mnesia database ("Organization\_ID") Global name resolution

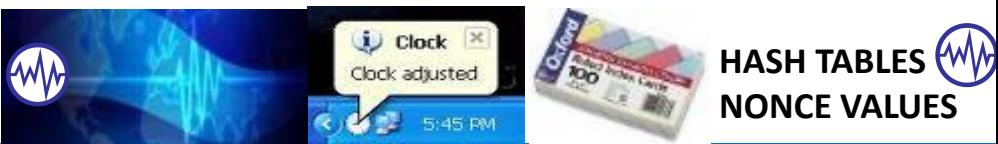
| FROM       | TO/CC-A      | THU | FRI | SAT | SUN | MON | TUE | WED | THU | FRIDAY | SATURDAY | SUNDAY | MONDAY | TUESDAY | WEDNESDAY | THURSDAY | FRIDAY | SATURDAY | SUNDAY |
|------------|--------------|-----|-----|-----|-----|-----|-----|-----|-----|--------|----------|--------|--------|---------|-----------|----------|--------|----------|--------|
| XBRL       | / CDL / DAML |     |     |     |     |     |     |     |     |        |          |        |        |         |           |          |        |          |        |
| ALPHA      | NUMERIC      |     |     |     |     |     |     |     |     |        |          |        |        |         |           |          |        |          |        |
| BREVITY    | CODES        |     |     |     |     |     |     |     |     |        |          |        |        |         |           |          |        |          |        |
| AZURE      | BLETCHLEY    |     |     |     |     |     |     |     |     |        |          |        |        |         |           |          |        |          |        |
| STRUCTURED |              |     |     |     |     |     |     |     |     |        |          |        |        |         |           |          |        |          |        |
| MILITARY   | MESSAGE      |     |     |     |     |     |     |     |     |        |          |        |        |         |           |          |        |          |        |
| TEMPLATE   | FORMS        |     |     |     |     |     |     |     |     |        |          |        |        |         |           |          |        |          |        |
| LOGIC      | / FILTERS    |     |     |     |     |     |     |     |     |        |          |        |        |         |           |          |        |          |        |



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.



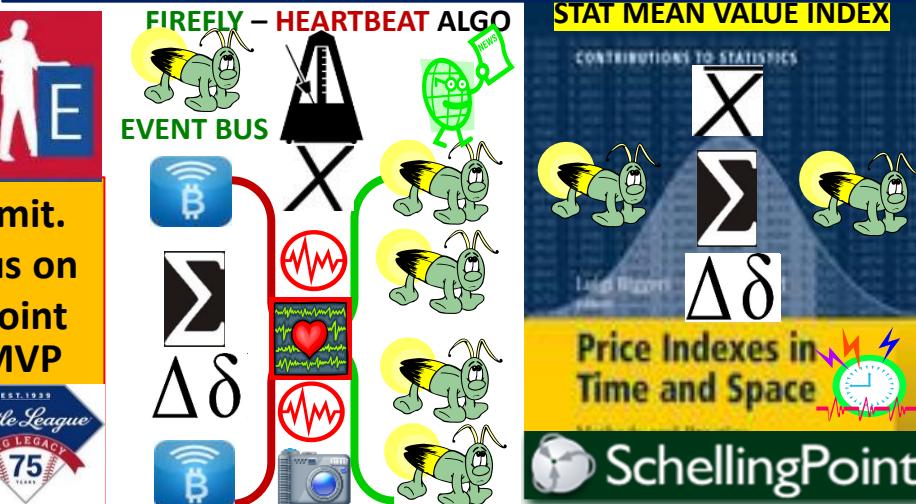
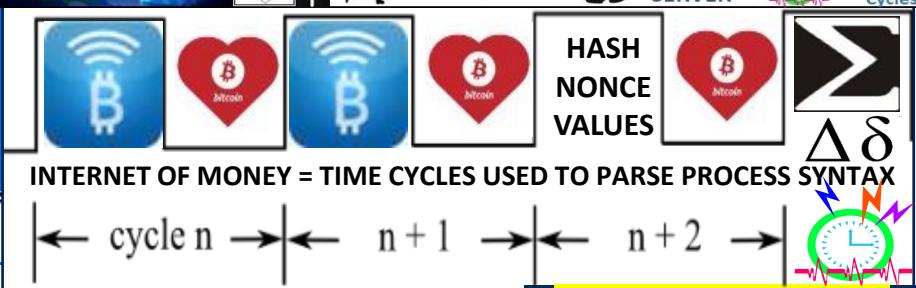
### ALL THINGS INTERNET FORMED W 1) TIME EPOCHS 2) SYNTAX



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.  $\Delta\delta$



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

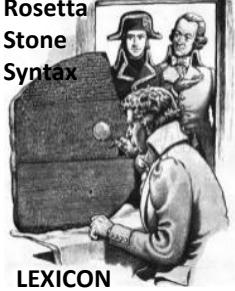
Blockchain middleware: identity and operations management, data, intelligence services like analytics and machine learning. New middleware works with existing Azure services, like Active Directory and Key Vault

Blockchain Fabric: Blockchain Gateway Services Interledger-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



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

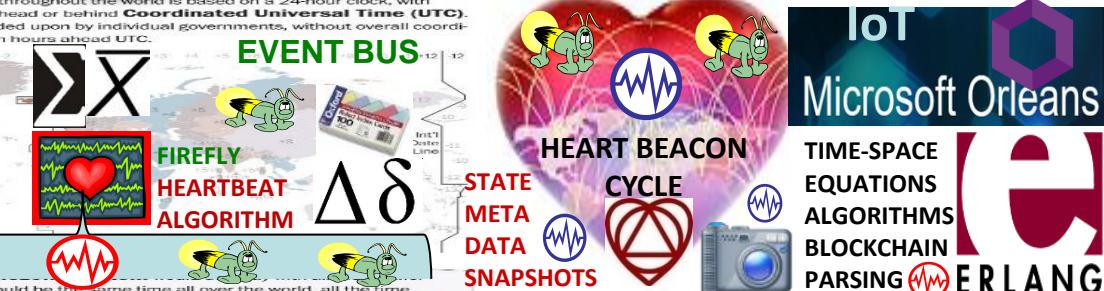
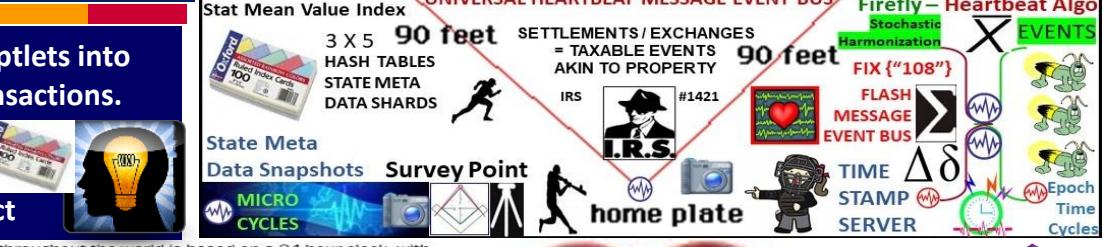
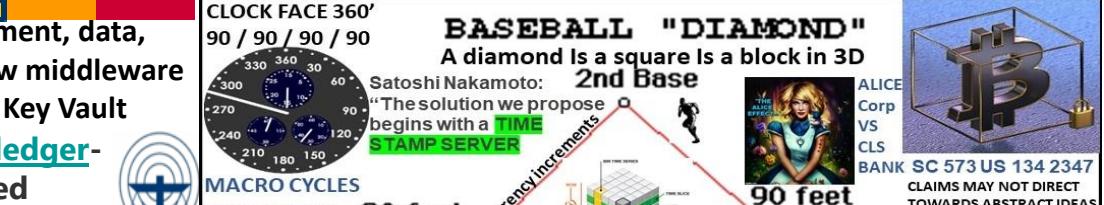
LEXICON

The current standard time common throughout the world is based on a 24-hour clock, with 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.

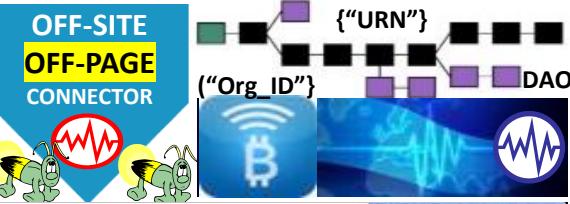
**FIREFLY EVENTS**  
**FLASH MESSAGES**  
**SYNC TO CLOSEST HEARTBEAT EPOCH**

ent time zones. Instead, it would be the same time all over the world, all the time.

MULTI-MEME MULTI-METER



MYRIAD MEMES MEDIA

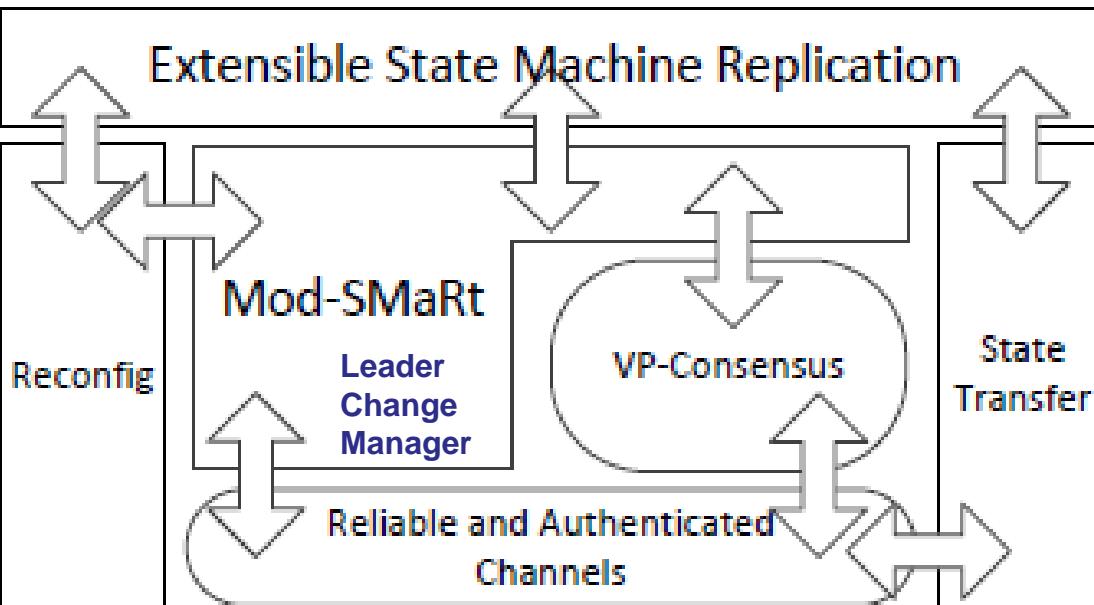


IOT  
Microsoft Orleans

TIME-SPACE EQUATIONS ALGORITHMS BLOCKCHAIN PARSING ERLANG

# 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.

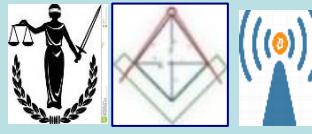
## BFT-SMaRt needs an eventually synchronous system

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 METER

USCt ALICE CORP V CLS BANK

PHYSICAL = OPPOSITE OF ABSTRACT



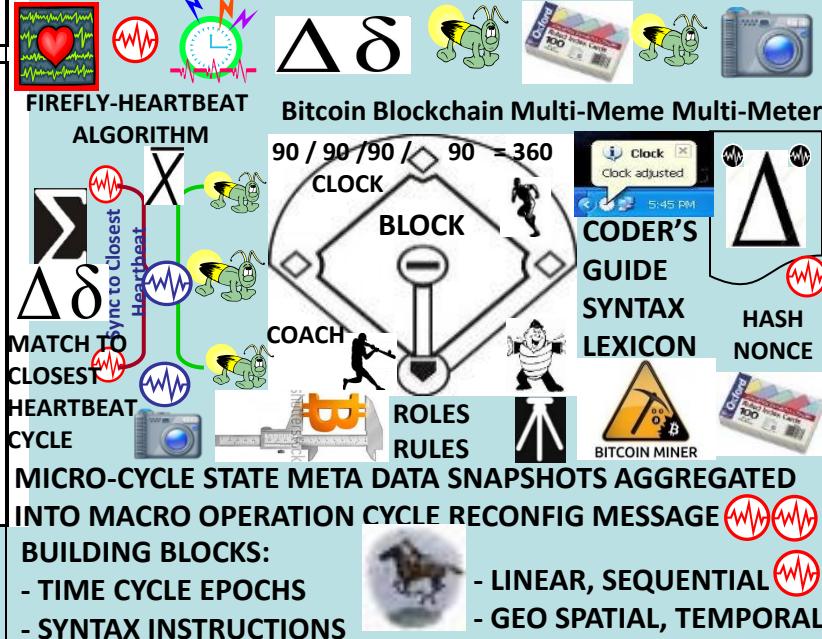
DERIVED FROM BATTLEFIELD DIGITIZATION DISTRIBUTED AUTONOMOUS ORGANIZATION DAO SYSTEM OF SYSTEMS

FEDERATED ID / ORGANIZATIONAL IDENTIFIER {"ORG\_ID"}

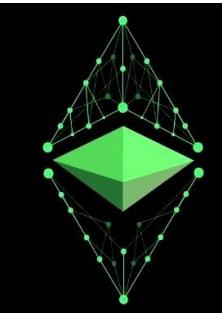
ADDS, JOINS, DROPS, MOVES TO / FROM DAO

CHANGES IN STATE VIEWED IN "APPLIQUE' OVERLAY VIEWS

## 00.99 HEARTBEAT SYNC DELTA STATE META DATA SNAPSHOTS



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".



## ETHER: Compensate Resource Contribution

Gas: price to  
Run contract  
transactions

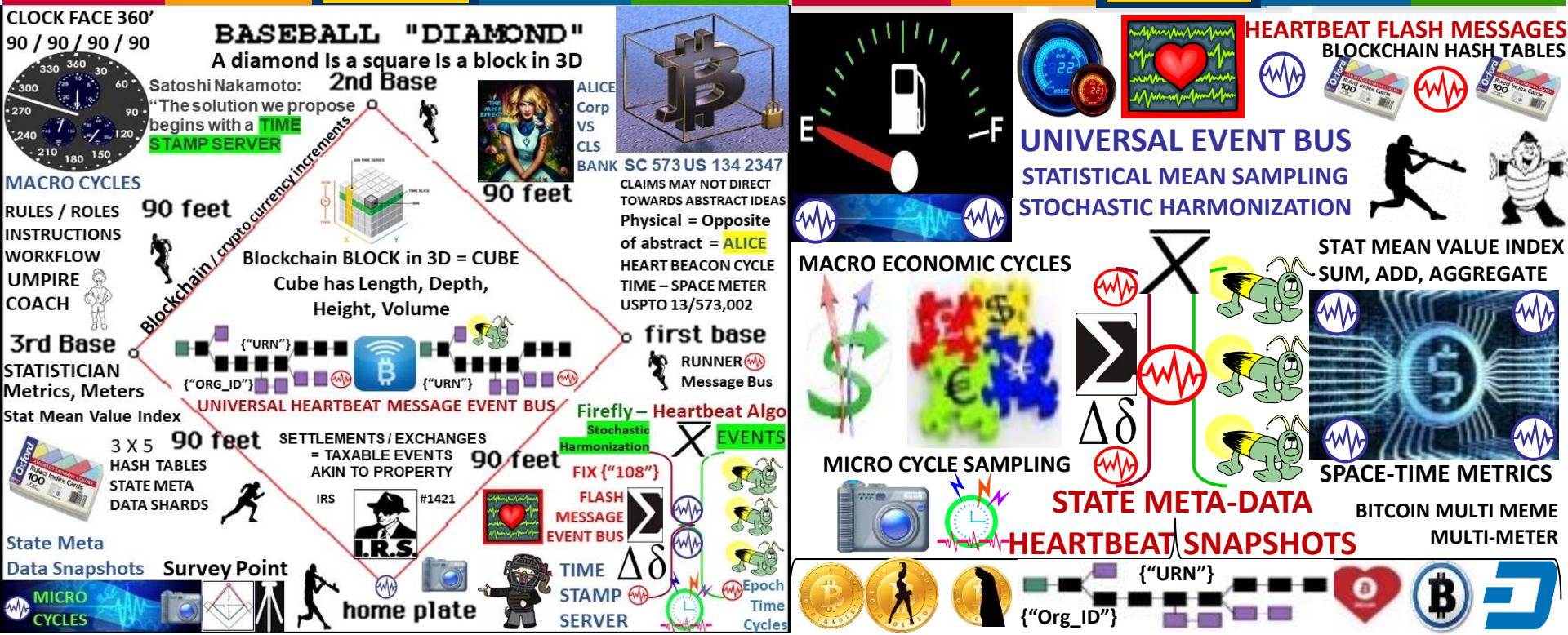
ethereum

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**





**D F I N I T Y**

**RANDOM # BEACON**

**NIST Beacon**  
A Public Randomness Service

**QUANTUM RANDOM #**

**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

**3 x 5 HASH TABLES STATE META DATA SHARDS**

**INDEX CARD="SHARD"**

**DEVICE TYPE**

**HEBC "ORG\_ID" {"URN"} CLASS ASSET TYPE {"UUID"} DEVICE TYPE**

## 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 and updates to state stored on shards... State transitions passed to Validation Tree

**NIST Beacon**  
A Public Randomness Service

**QUANTUM RANDOM #**

**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**

**CLOCK FACE 360°**  
90 / 90 / 90 / 90  
330 360 30 60 90  
300 270 240 210 180 150

**BASEBALL "DIAMOND"**  
A diamond Is a square Is a block in 3D  
2nd Base

Satoshi Nakamoto:  
"The solution we propose begins with a TIME STAMP SERVER"

**90 feet**  
Blockchain BLOCK in 3D = CUBE  
Cube has Length, Depth, Height, Volume

**3rd Base**  
STATISTICIAN Metrics, Meters

**Universal Heartbeat Message Event Bus**

**90 feet**  
SETTLEMENTS / EXCHANGES = TAXABLE EVENTS AKIN TO PROPERTY  
IRS #1421

**90 feet**  
State Meta Data Snapshots Survey Point

**90 feet**  
MICRO CYCLES

**90 feet**  
Firefly – Heartbeat Algo Stochastic Harmonization FIX {"108"} FLASH MESSAGE EVENT BUS TIME STAMP SERVER TIME CYCLES Epoch Time Cycles

**ALICE Corp VS CLS BANK SC 573 US 134 2347 CLAIMS MAY NOT DIRECT TOWARDS ABSTRACT IDEAS Physical = Opposite of abstract = ALICE HEART BEACON CYCLE TIME – SPACE METER USPTO 13/573,002**

**first base**  
RUNNER Message Bus



core blockchain code written in Erlang, for distributed, fault-tolerant, soft real-time and highly available non-stop applications.

**ERLANG API FOR BLOCKCHAIN**



**ORACLES:** crucial feature for most contracts, whether encoded as text or as code, is the ability to refer to values from the environment. æternity Oracle Machine provides real-world data to the blockchain. Each user can ask questions about the environment. Anyone can answer. Consensus mechanism invoked in case of disagreement.

MIT-licensed modules for easy implementation in blockchain consortiums. Free and open access for developers build on the æternity platform.

**CROSS – CHAIN ATOMIC SWAPS**

AE Tokens AE are access tokens to the æternity network and act as a unit of account for the resources spent on æternity.



Aeons: energy for applications implemented on the platform.

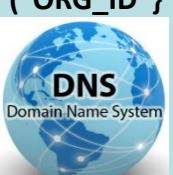
**ACCOUNTS & IDENTITY:** æternity's accounts are permission-less, but allow customization via schema.org's semantic web scheme. Create & own (**federated group**) / individual identities on the æternity network



(“ORG\_ID”)

(“ORG\_ID”)

NAMES (DNS) In the vein of Aaron Swartz' work and Namecoin, æternity features an easy to use name system, that is both decentralized and secure, while still supporting human-friendly, memorable names. The blockchain's state includes a mapping from unique human-friendly strings to fixed-size byte arrays, that are individually customizable.



Firefly Heartbeat Sync nodes strive to sync in a distributed system. Nodes emit periodic "heartbeat" events at approximately the same time. No need to sync during a cycle as long as the cycle length is bounded & nodes eventually agree.

AETERNITY CROSS-CHAIN ATOMIC SWAPS CORRESPOND TO HEART BEACON CYCLE'S USE OF BATTLEFIELD DIGITIZATION DERIVED HEARTBEAT SYNC DELTAS



Terra Trade Reference Currency TRC "world currency" Bernard A. Lietaer Belgian economist proposed 1991 Basket of 9-12 most important commodities. Public issued demurrage fees for storage, shipping, handling

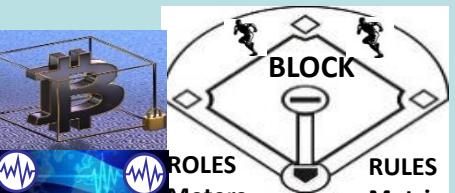
**TOKENS REPRESENT REAL WORLD VALUE URN RESOURCES**

ETHEREUM BASED USES GAS GAUGE MEME INDICATING THRESHOLD MET / NOT MET TO PROCESS



HBC's PRIMARY USE CASE IS TO ORGANIZE INDIVIDUALS IN TRADE FEDERATION GROUPS RE-USING BATTLEFIELD DIGITIZATION / ARIN Organizational Identifier Org\_ID for Ecosphere friendly trade

**Federation Gateway**  
("ORG\_ID")

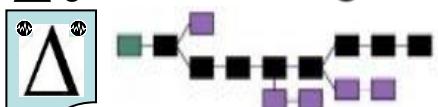


**ARIN**  
American Registry for Internet Numbers

# HYPER LEDGER OPEN SOURCE BLOCKCHAIN

Core APIs, & SDKs

$\Delta\delta$  Shared Ledger



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

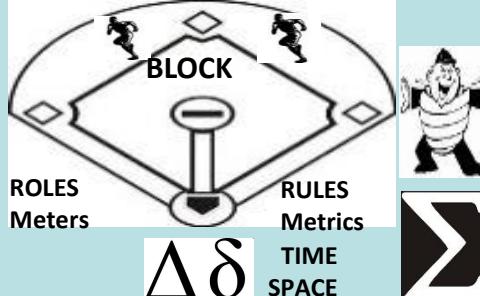
FEDERATION  
**Federation Gateway**

METRICS ("Organization ID")  
METERS

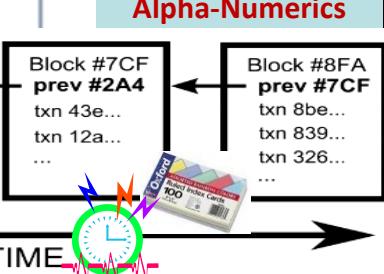
RESTFUL SYNC DELTA  
CHANGE MANAGEMENT  
MICRO-MACRO CYCLE



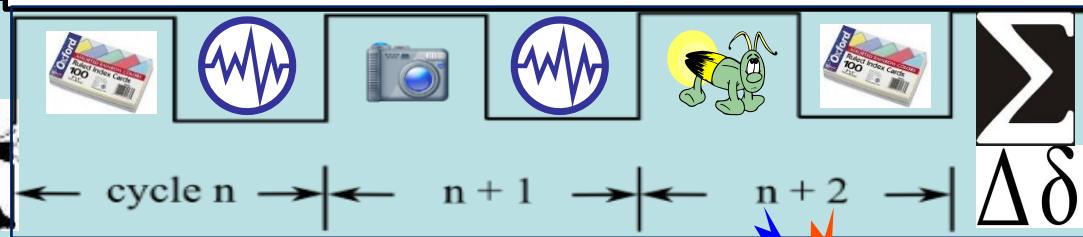
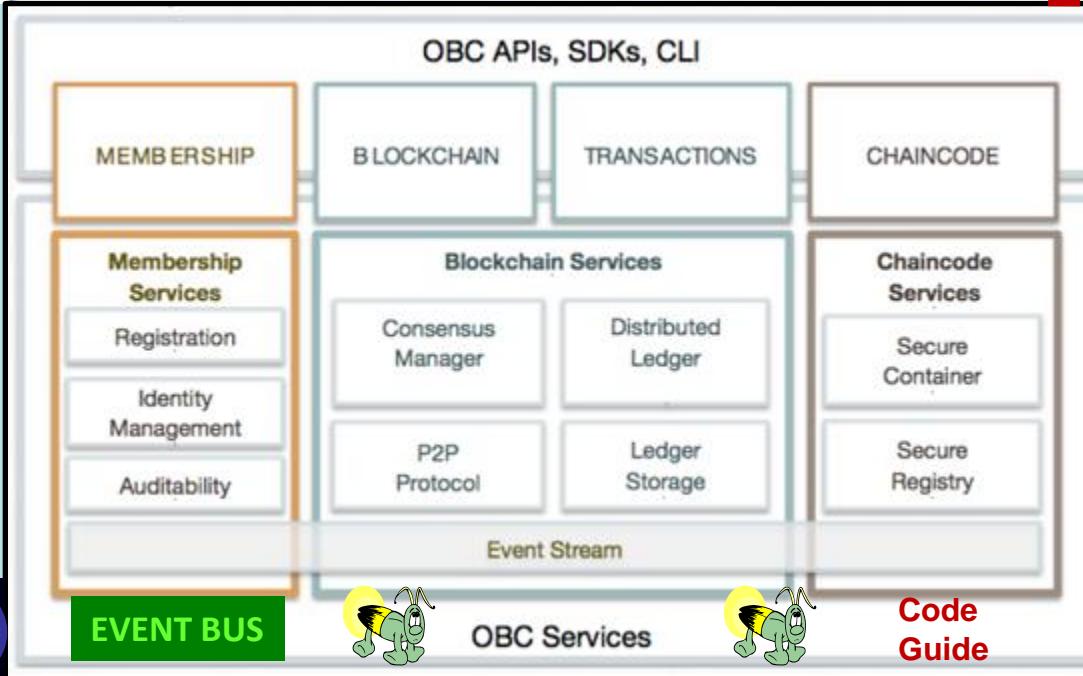
BLOCKTIME ARBITRAGE



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



Alpha-Numerics



MICRO-MACRO CYCLE SCHEDULE



FFIRNS  
FFUDNS

ROSETTA STONE

| FORM   | SOCIAL | TIME | MAS  | MOBILE | API  | DATA | BLOCK | FILE | IMAGE |
|--------|--------|------|------|--------|------|------|-------|------|-------|
| ABAB   | FSH1   | FSH2 | FSH3 | FSH4   | FSH5 | FSH6 | FSH7  | FSH8 | FSH9  |
| AMPERE | FSH1   | FSH2 | FSH3 | FSH4   | FSH5 | FSH6 | FSH7  | FSH8 | FSH9  |
| AFATOS | FSH1   | FSH2 | FSH3 | FSH4   | FSH5 | FSH6 | FSH7  | FSH8 | FSH9  |
| CISCO  | FSH1   | FSH2 | FSH3 | FSH4   | FSH5 | FSH6 | FSH7  | FSH8 | FSH9  |
| OPEN   | FSH1   | FSH2 | FSH3 | FSH4   | FSH5 | FSH6 | FSH7  | FSH8 | FSH9  |
| MEITS  | FSH1   | FSH2 | FSH3 | FSH4   | FSH5 | FSH6 | FSH7  | FSH8 | FSH9  |
| HYPER  | FSH1   | FSH2 | FSH3 | FSH4   | FSH5 | FSH6 | FSH7  | FSH8 | FSH9  |
| PRIMO  | FSH1   | FSH2 | FSH3 | FSH4   | FSH5 | FSH6 | FSH7  | FSH8 | FSH9  |

XBRL / CDL / DAML  
STOCK MIC CODES

STRUCTURED  
MILITARY MESSAGE  
TEMPLATE FORMS  
LOGIC / FILTERS

SYNTAX  
SYMBOL LIBRARY

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

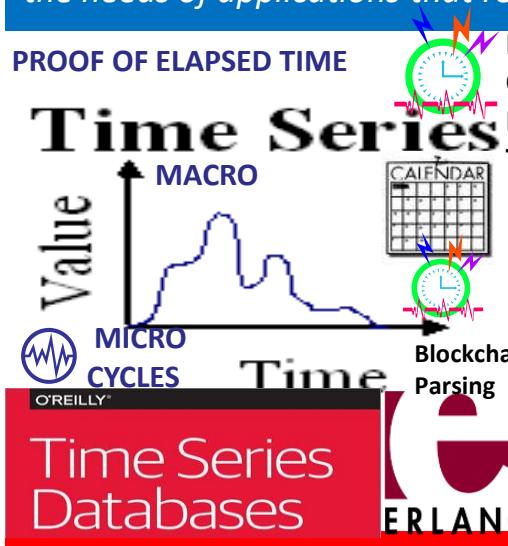
# SAWTOOTH LAKE POETIC CONSENSUS PROOF OF ELAPSED TIME: POET

"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."



"BITCOIN IS A LANGUAGE"

## PROOF OF ELAPSED TIME



## Time Series Databases

### QUORUM VOTING PROTOCOL

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

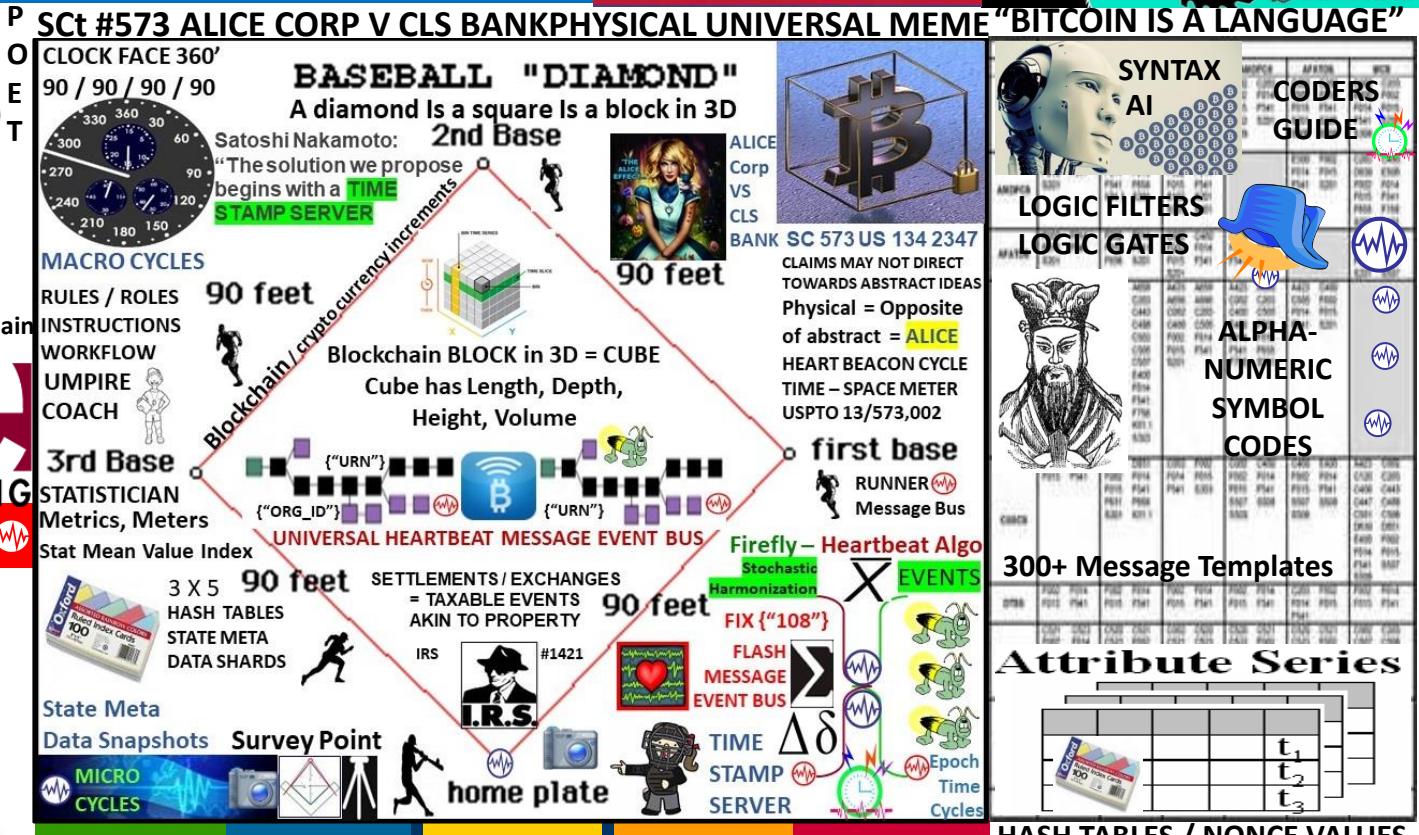
Voting based selection Instead of only using the stake size, the block generators can be selected by votes  
ex: League MVP

MVP



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

## TOURNAMENT LEAGUE BOARD



Capture ledger's state  $\Delta\delta$   
Transaction language changes ledger state  
Consensus, transaction acceptance protocol



# 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"

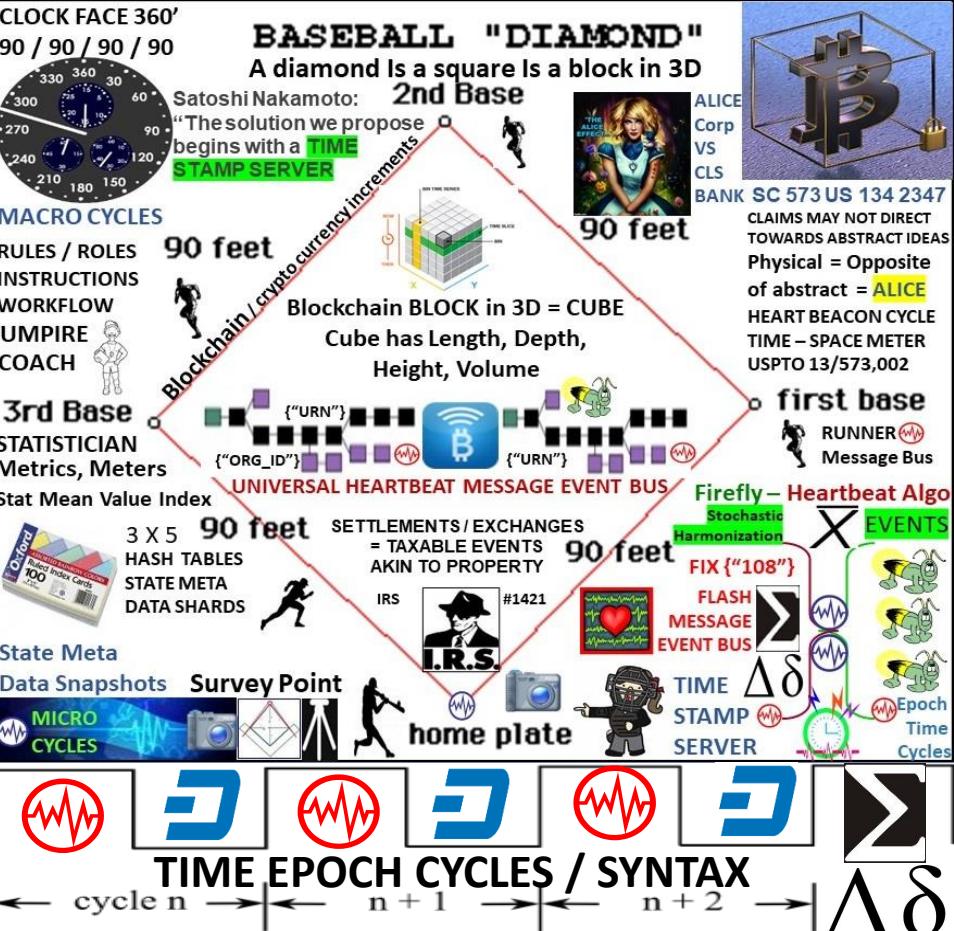
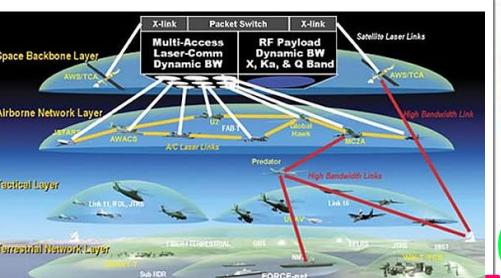
**InstantX:** To solve the problem of lag time in transactions, Masternodes are able to instantly lock transactions.

Masternodes receive payments for their service to the network.

**DAO: RAND THINK TANK TERM COINED + / - 2001**

NETWORK CENTRIC WARFARE  
Developing and Leveraging Information Superiority

ALICE CORP Vs CLS BANK



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



**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.



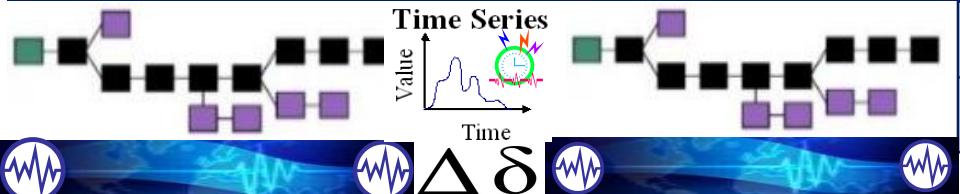
1. Part of the blockchain state is locked via multisignature or smart contract convention, so that a specific set of participants must completely agree with each other to update it.



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.

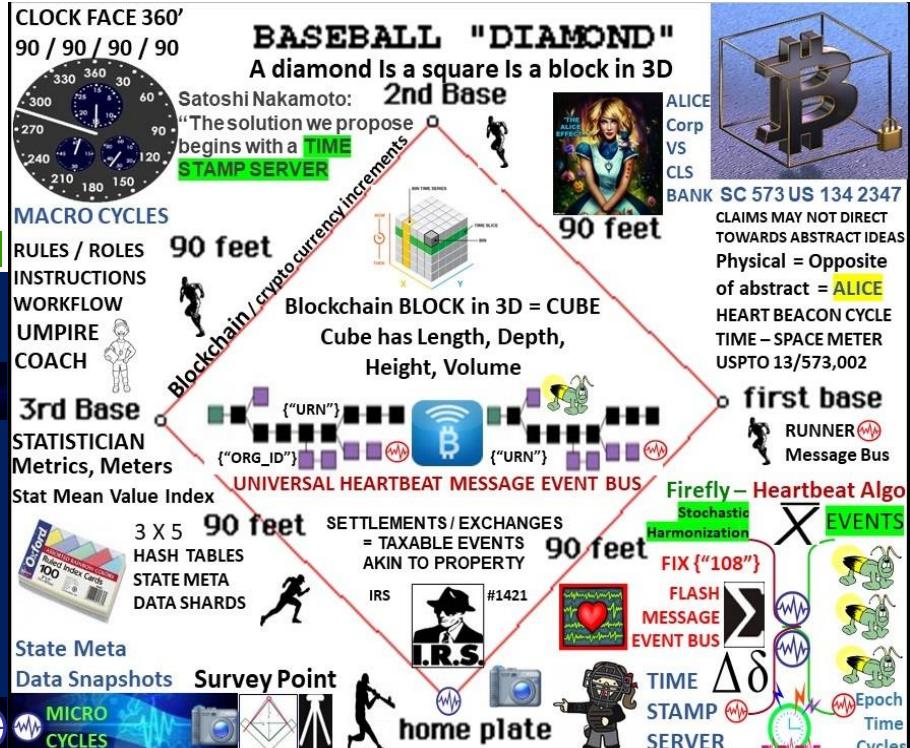


3. Finally, participants submit the state back to the blockchain, which closes the state channel and unlocks the state again (usually in a different configuration than it started with).



$\Delta \delta$

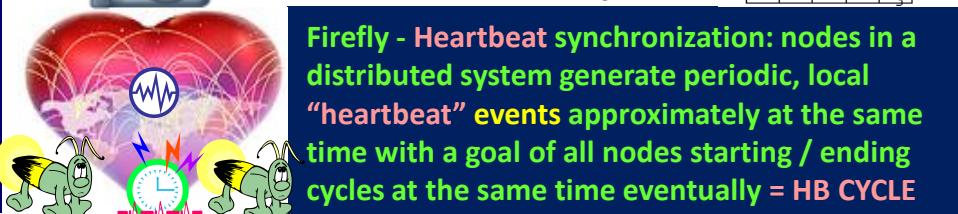
**NEW UPDATES OVERWRITE THE PREVIOUS:** simplest way is to have any unlocking attempt start a timer, during which any newer update can replace the old update (restarting the timer). When the timer completes, the channel is closed and the state adjusted to reflect the last update received. The length 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.



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

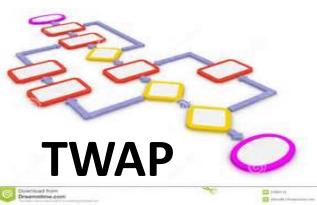
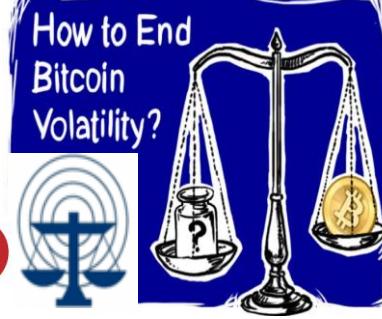
TIME SERIES  
Value  
Time  
HASH  
SYNTAX

**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



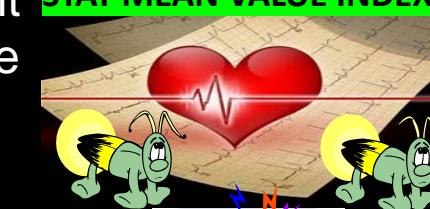
# TWAP Algorithm Manages Bitcoin Price Volatility Algorithm

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

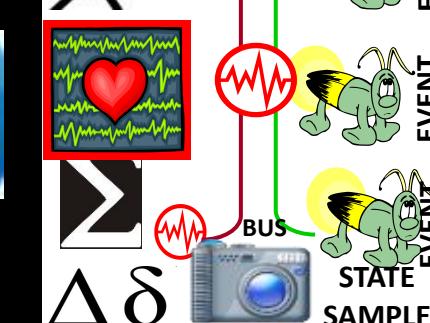


FIREFLY HEARTBEAT ALGO  
STAT MEAN VALUE INDEX

**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**



EPOCH TIMES  
STATE META DATA SNAPSHOTS



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..

**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

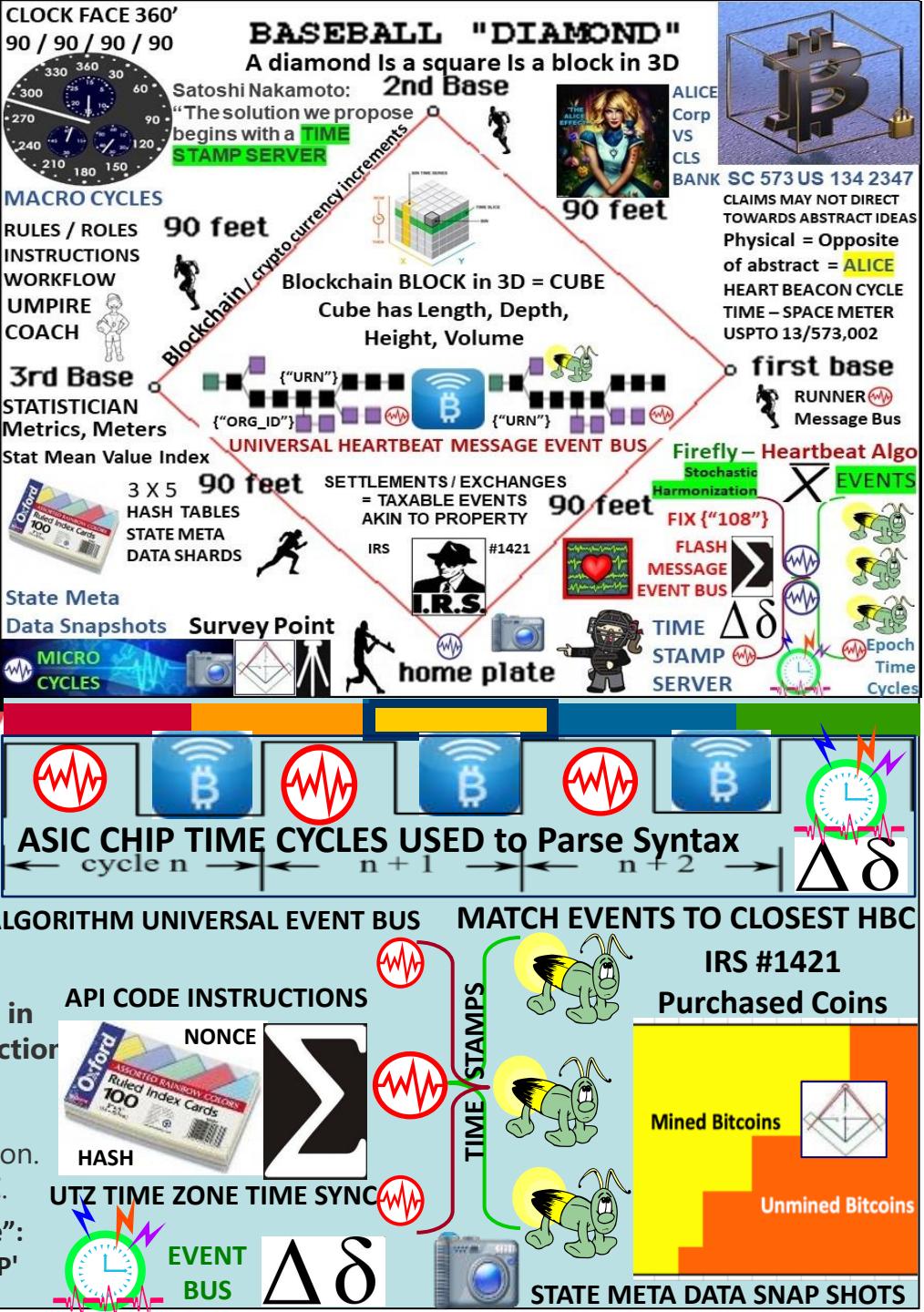
Transaction ID, Block ID, time-stamp, BWAP per block, Value in USD. BTC per transaction, bitcoin transaction fees per transaction

- 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'





# OpenBazaar open source decentralized peer to peer network online commerce —using Bitcoin —no fees and no restrictions

- Creates an online store for users to sell goods for Bitcoin
- Connects these stores directly to each other on a global network
- Users browse individual stores, search for products across whole network
- A buyer directly connects, purchases good from the merchant using Bitcoin
- Bitcoin payments via escrow protect merchants & buyers during trade



OPENBAZAAR.ORG  
BLOCKCHAIN ARBITRAGE



OpenBazaar is a different approach to online commerce. OpenBazaar connects buyers and sellers directly. Because there is no one in the middle of your transactions there are no fees, no restrictions, no accounts to create, and you only reveal personal information you choose.

## PROJECT PHILOSOPHY: *MAKE TRADE FREE*

**Mission:** *shift trade to a decentralized platform*



Demurrage TERRATRC TRADE  
Fees REFERENCE CURRENCY  
"Money of Peace"  
Commodity / Currency Index



**Free and open markets:**

Creating open, competitive markets for services that cannot be perfectly solved with technology

## • Privacy

- Users should fully control their data. **Users** have freedom to reveal as much personal identifiable information as they want, when they want

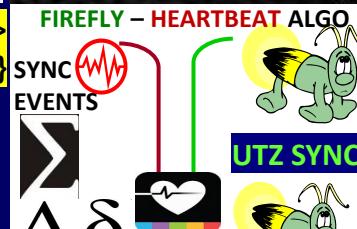
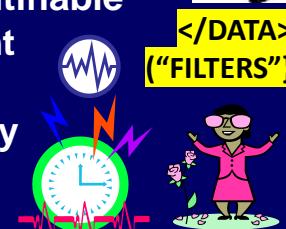


HASH Values  
Nonce Values

SCT Alice V Cls Bank



**Bitcoin:** OpenBazaar transactional currency



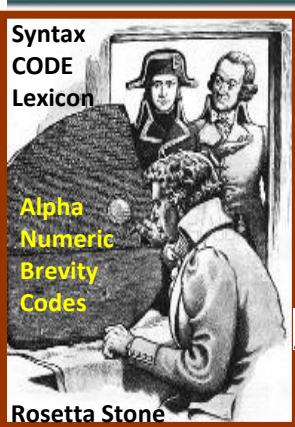
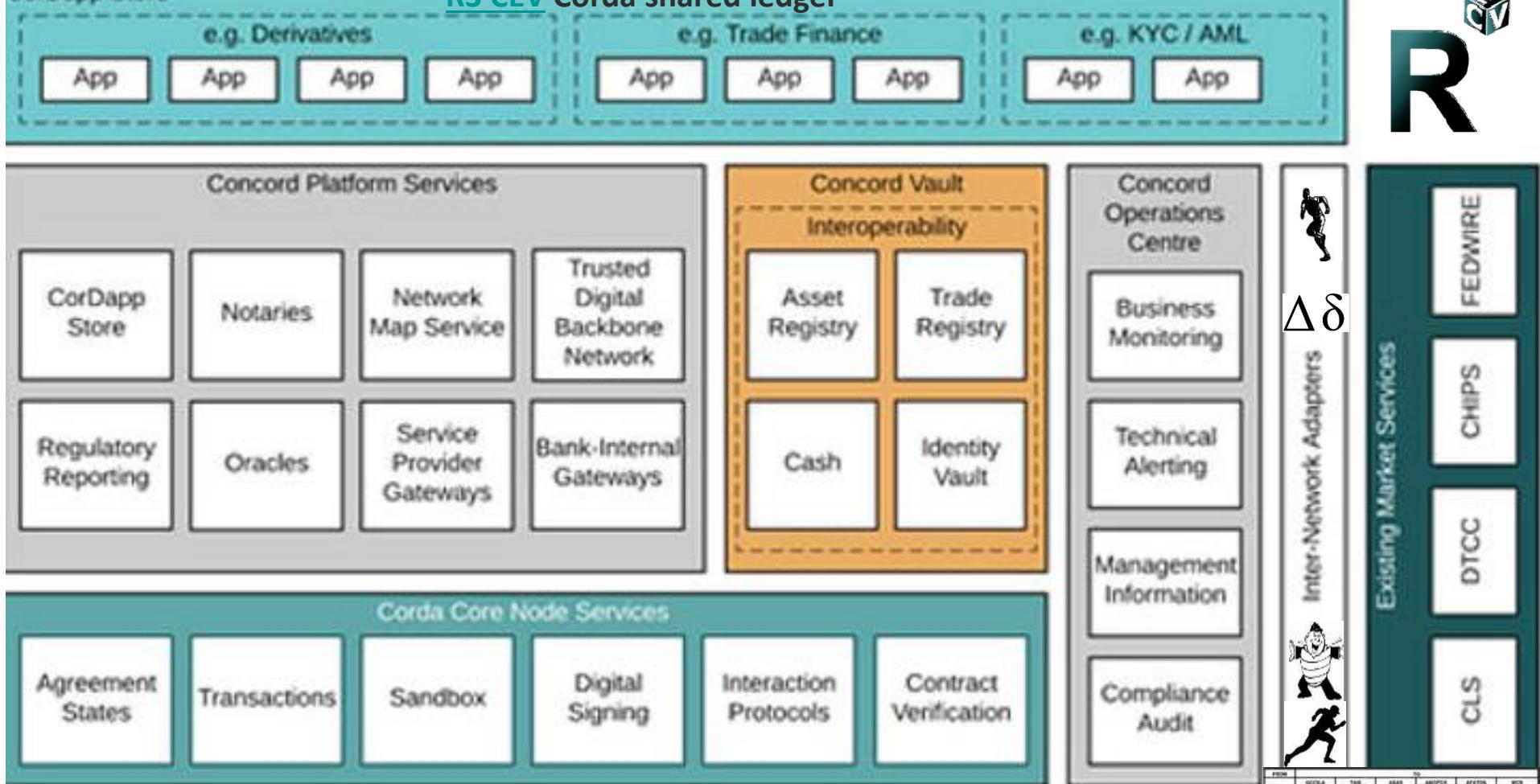
## Cryptographic Security

- tamper-proof agreements
- 1) minimize potential disputes
- 2) fast-track dispute resolution



Non-  
Repudiation

SchellingPoint



### UNIVERSAL EVENT BUS



- Choreographing workflow between firms without a central controller
- Supports inclusion of regulatory & supervisory observer nodes
- Validating transactions solely between parties to the transaction
- Supporting a variety of consensus mechanisms
- Recording explicit links between human-language legal prose documents and smart contract code

| NAME  | QCC0A | TAB1 | ASAB | AMPCB | AFATB | WCB  |
|-------|-------|------|------|-------|-------|------|
| ABAB  | F002  | F003 | F004 | F005  | F006  | F007 |
| AMPCB | F008  | F009 | F010 | F011  | F012  | F013 |
| AFATB | F014  | F015 | F016 | F017  | F018  | F019 |
| WCB   | F020  | F021 | F022 | F023  | F024  | F025 |

- PROOF OF WORK
- PROOF OF STAKE
- STATE CHANNELS
- BITCOIN NEXGEN
- LIGHTNING / DASH..



XBRIL / CDE / DAML  
STOCK MIC CODES



STRUCTURED  
MILITARY MESSAGE  
TEMPLATE FORMS

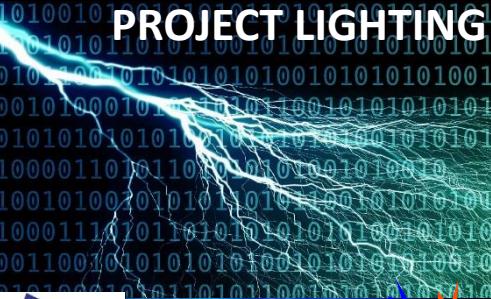
LOGIC / FILTERS



300+  
Use Case Templates

Federation  
Gateway





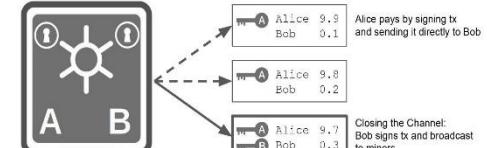
# PROJECT LIGHTING



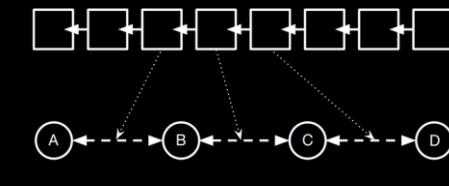
transactions sent over / off chain  
micropayment channels

Micropayment Channels

Setup: Alice creates transaction with 10 bitcoin to a 2-of-2 multisig with Bob

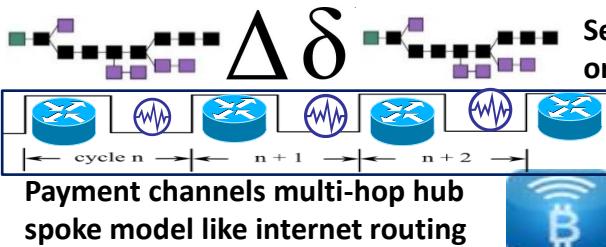


## LIGHTNING



Hashed TIME LOCK contracts component for global consensus

OP\_CHECKLOCKTIMEVERIFY During Macro Cycle w/Random # BEACON



## FIREFLY – HEARTBEAT ALGORITHM



FIREFLY – HEARTBEAT



CLOCK FACE 360°  
90 / 90 / 90 / 90



RULES / ROLES  
INSTRUCTIONS  
WORKFLOW  
UMPIRE COACH

3rd Base

STATISTICIAN Metrics, Meters  
Stat Mean Value Index

3 X 5 HASH TABLES STATE META DATA SHARDS

State Meta Data Snapshots

Survey Point

MICRO CYCLES

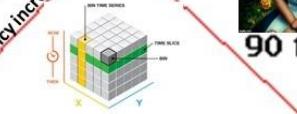
BASEBALL "DIAMOND"  
A diamond Is a square Is a block in 3D  
2nd Base

Satoshi Nakamoto:  
"The solution we propose  
begins with a TIME STAMP SERVER"

90 feet

Blockchain / cryptocurrency increments

Blockchain BLOCK in 3D = CUBE  
Cube has Length, Depth, Height, Volume



90 feet

UNIVERSAL HEARTBEAT MESSAGE EVENT BUS

SETTLEMENTS / EXCHANGES = TAXABLE EVENTS AKIN TO PROPERTY IRS #1421

State Meta Data Snapshots Survey Point home plate

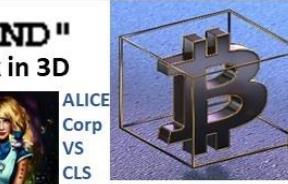
MICRO CYCLES

FLASH MESSAGE EVENT BUS

TIME STAMP SERVER

$\Delta\delta$

Epoch Time Cycles



ALICE Corp VS CLS BANK SC 573 US 134 2347

CLAIMS MAY NOT DIRECT TOWARDS ABSTRACT IDEAS

Physical = Opposite of abstract = ALICE  
HEART BEACON CYCLE  
TIME – SPACE METER  
USPTO 13/573,002

first base RUNNER Message Bus

EVENTS

Fix ("108")

FLASH MESSAGE EVENT BUS

TIME STAMP SERVER

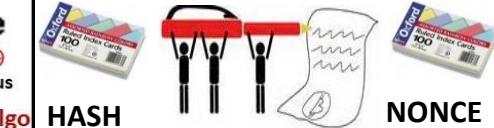
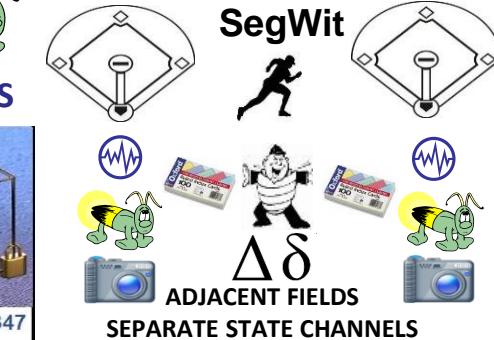
$\Delta\delta$

Epoch Time Cycles



## SEGREGATED WITNESS

SegWit



HASH TABLES



MESSAGES



Segregated witness = Separated signatures

- signatures are cryptographic proofs also known as witnesses
  - moving signatures out of transactions
  - keeping a separate repository of the signatures
  - making them optional in propagation and storage
  - signature are the biggest part of transactions
  - can be implemented as a soft-fork vs a hard-fork

# 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

TELEMETRY TRANSPORT

IEEE 802.1AG HOP BY HOP  
DETECTION

IEEE 802.11  
HOP BY HOP CONTROL



Unused Resources / Unmet Needs

/localhost/nfd/fib/add-nexthop  
Geo-Spatial Temporal  
Metrics, Meters

DISTANCE  
INFO SERVICE

Time Series

RISK

Value

Time

5

4

3

2

1

$\Delta\delta$

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



TIME / DISTANCE SERVICE LEVEL  
AGREEMENT SLA / O Operations

HOP BY HOP CONTROL



Unused Resources / Unmet Needs



TIME-SPACE BEACON

INFOCON

Spatial  
Econometrics

METRICS / METERS  
TRADE WITH EARTH

INFORMATION  
CONDITION

Spaceship  
Earth  
Signals &  
Telemetry  
Annex

???  
SIRIUS DISCLOSURE

ASTEROID BELTS =  
RARE MINERALS

MOON =  
HELIUM 3  
"Numbers are the  
Universal Language  
offered by deity to humans as  
confirmation of the truth"

MAIN  
ASTEROID  
BELT

MARS  
MERCURY  
VENUS  
EARTH  
STOCHASTIC  
HARMONIZATION

Farther = More Cost  
➤ Fuel, Resources  
Service Level Agreements

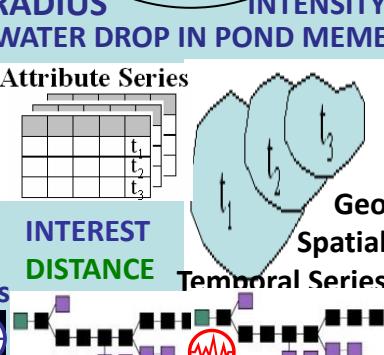
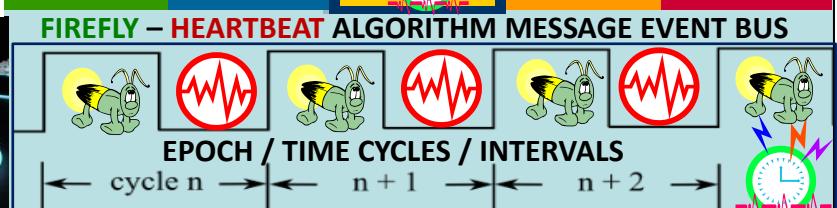
SYNTAX  
LEXICON  
CODE  
KOO.99

TROJAN  
ASTEROIDS  
FIREFLY-HEARTBEAT  
ALGORITHM  
UNIVERSAL  
EVENT MESSAGE BUS

ERLANG  
TIME- SPACE METRICS  
JUPITER

43  
22  
13  
0  
1.5  
2.7  
5.2  
Light minutes  
Astronomical units

ANDERSON  
INSTITUTE



# 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.



Memo #1421: Purchased Bitcoins are treated akin to property

Plots A, B, C represent 3 unspent transaction outputs controlling N Bitcoins



BLOCKS / COINS PENDING ISSUE



Mined Bitcoins



$\Delta\delta$

Unmined Bitcoins



IDMaps-SONARHOPS distance estimation query-reply service



- End-state Bitcoin quantity will be fixed like land

"Bitcoin as protocol of ownership, not transfer"

Coin never travel, but simply switch owners"



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

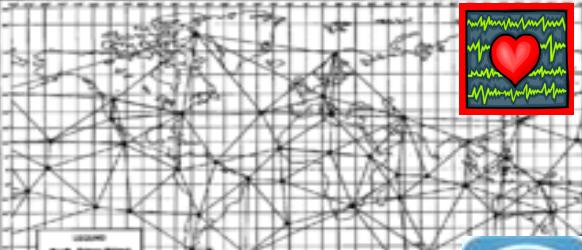
Step 2: coins sent where, when Lat-Long, Time Stamp

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

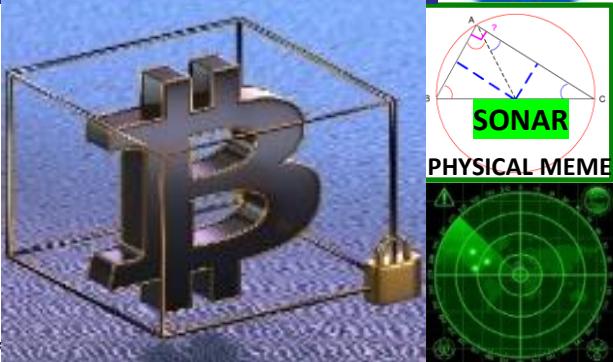
Step 4: Issuing Org of Record adjudicates w buyer



## TRIANGULATION



## EUCLIDIAN GEOMETRY



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



IDMaps  
"PING"  
SONARHOPS



NDN  
"Interest"  
ONSHORE  
OFFSHORE  
"Distance"

SonarHops

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

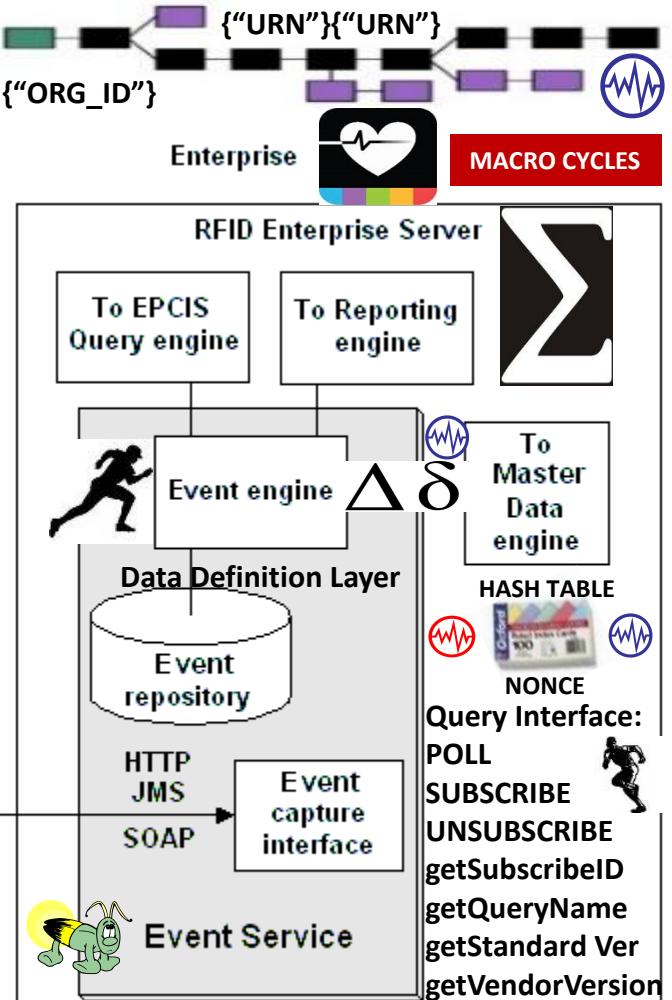
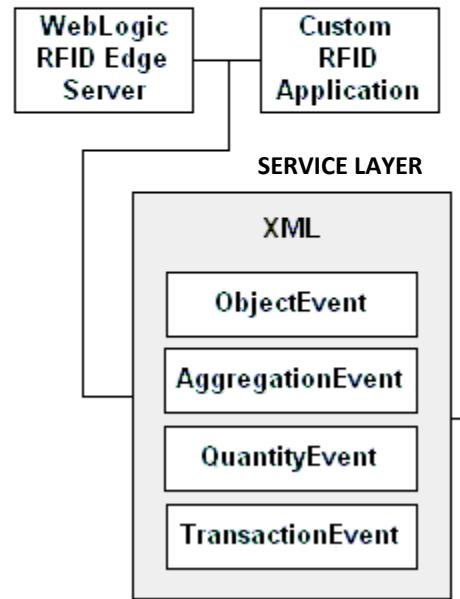


# Electronic Product Code Information Services (EPCIS)

## GS1 Standard for creating, sharing visibility event data



## EPCIS DATA MODEL



## Core Business Vocabulary (CBV)

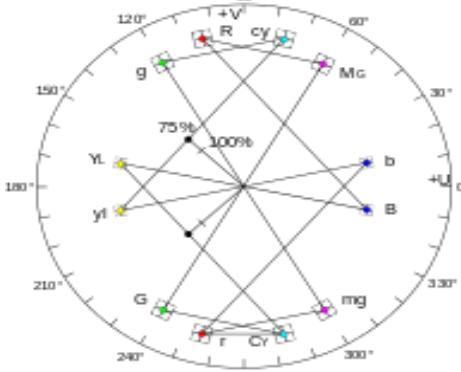
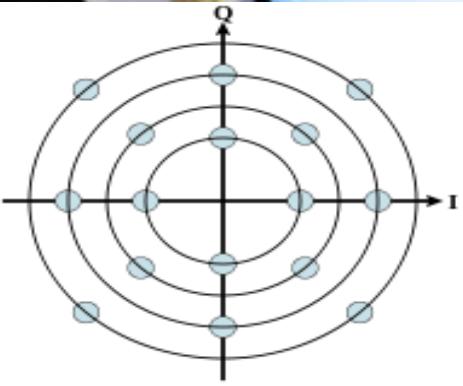
What identifiers of object(s) or entities / subject of the event  
 When date time when event took place, local time zone in effect  
 Where location identifier where event occurred, identifier of location where object(s) are expected to be following the event  
 Why Information about the business context, including:  
 a Identifier that indicates the business step taking place



**Richard Lighthouse** Tonight on LNM Radio  
Time Travel & The Blinking Universe



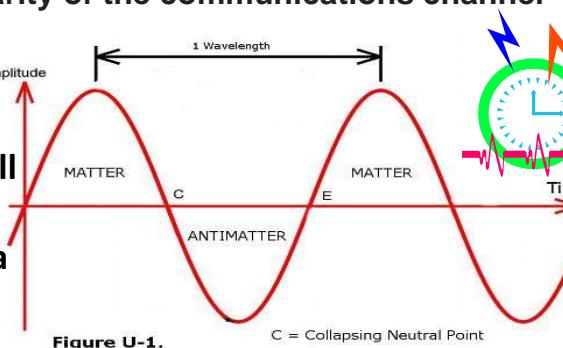
[www.RLighthouse.com](http://www.RLighthouse.com)



### Quadrature amplitude modulation

QAM by setting a suitable constellation size, limited only by the noise level and linearity of the communications channel

“Similarly, the electromagnetic force will also be found to vary continuously and retain a TIME-AVERAGED value”

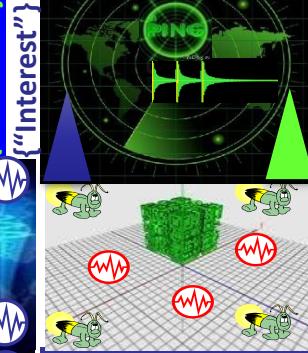


Sine wave of our blinking universe. The 4 fundamental forces will all be found to vary continuously when sampled at 2x the blinking frequency, per Nyquist-Shannon theory



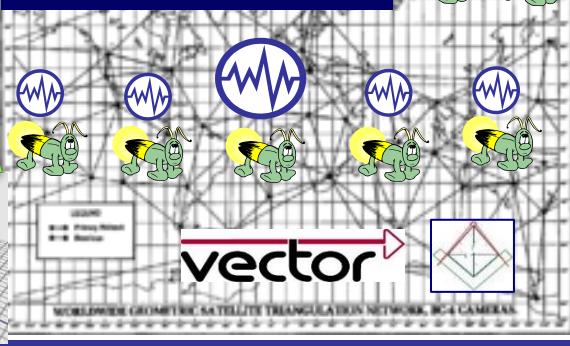
USPTO 13/573,002  
[sawconcepts.com/index](http://sawconcepts.com/index)

NDN {“Distance”} {“Interest”}  
IDMaps SonarHops

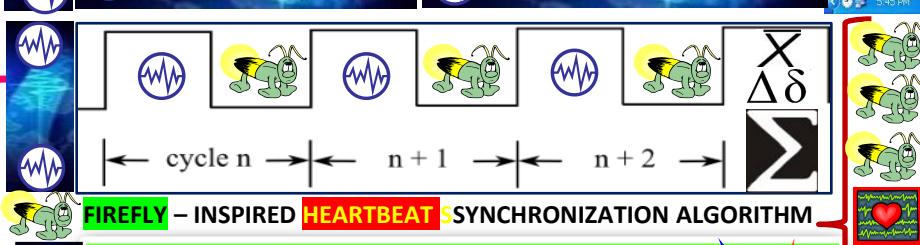


Heart Beacon Cycle Time – Space Meter  
Geo-Spatial Temporal Intensity Metrics

TRIANGULATION

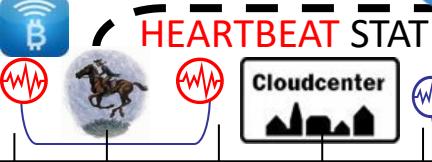
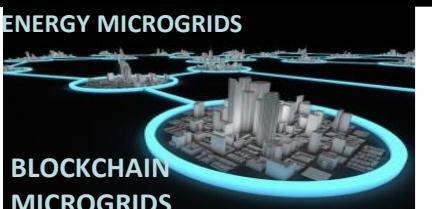


IDMaps assists Network Time Protocol (NTP) servers establish long term peering relationships



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





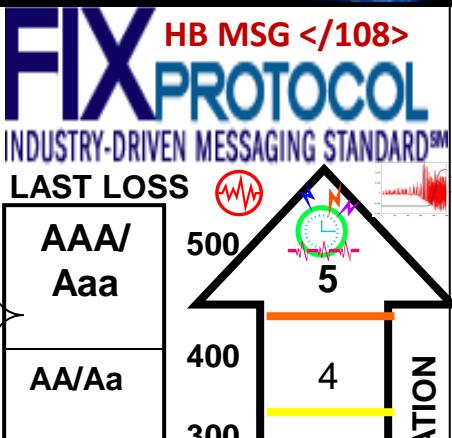
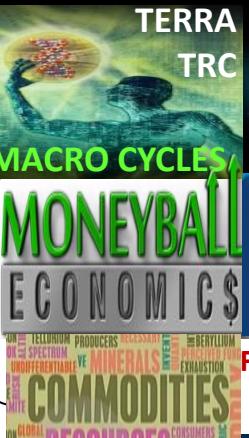
IEEE 802.15.4 OASIS MQTT  
TELEMETRY TRANSPORT  
IEEE 802.1AG HOP BY HOP  
DETECTION

Bitcoin = Property

IRS Memo #1421

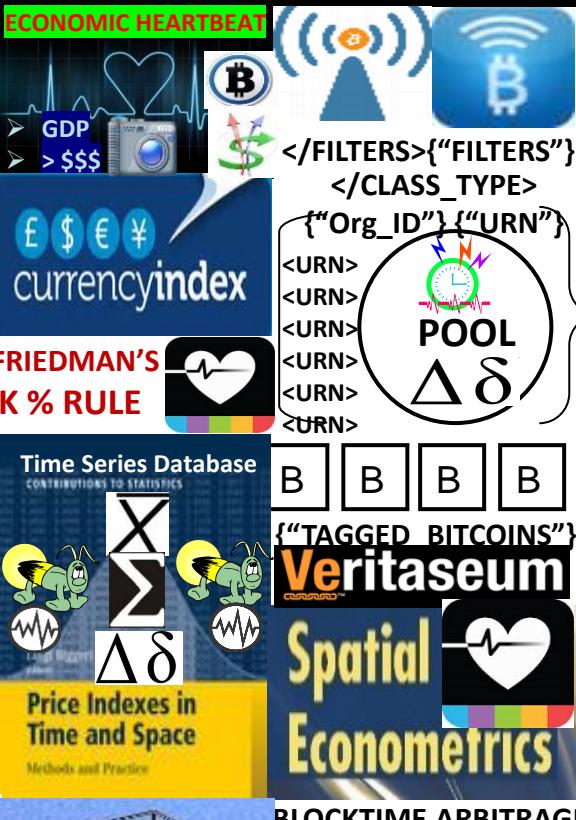


Demurrage Charges



IEEE 802.11 Harmonization & Sync heartbeat update Interval  
IEEE 802.11 HOP BY HOP CONTROL  
Paul Revere Linear, Sequential

IEEE C37.118 Harmonization & Sync heartbeat update Interval  
IEEE 802.11 HOP BY HOP CONTROL  
Paul Revere Linear, Sequential



PROCESS BY </PRECEDENCE>  
SonarMaps ID\_Hops  
BLOCKTIME ARBITRAGE  
Blockchain Timestamps  
NDN  
ON / OFF SHORE  
PROXIMITY BEACONS  
HOPS / RADIUS = REACHABILITY

Triangulation  
Euclidian Geo  
GPS GEO LOC  
DATE TIME STAMP  
NDN </INTEREST>  
NDN {“DISTANCE”}

Multi-Meme Metrics  
EVENT BUS  
Match to Closest  
Heartbeat Cycle  
FIREFLY-HEARTBEAT ALGORITHM  
 $\Delta\delta$   
Heartbeat Snapshots

BLOCKCHAIN PARSING  
Clock adjusted  
Firefly Events  
Strive to Sync To Closest  
ERLANG

WATER DROP IN POND MEME  
AREA RADIUS  
</FILTERS>  
BY ORG ID / URN  
NDN </INTEREST>  
</DISTANCE>  
Closer = Cheaper  
Closer = < Fuel

vector

# SOFTWARE DEFINED NETWORKING

NETOPS

Command Syntax

REST State Transfer

COMMAND SYNTAX  
STATE TRANSFER  
Unicast / Multicast  
Flow Tables / Workflow

Dynamic Network

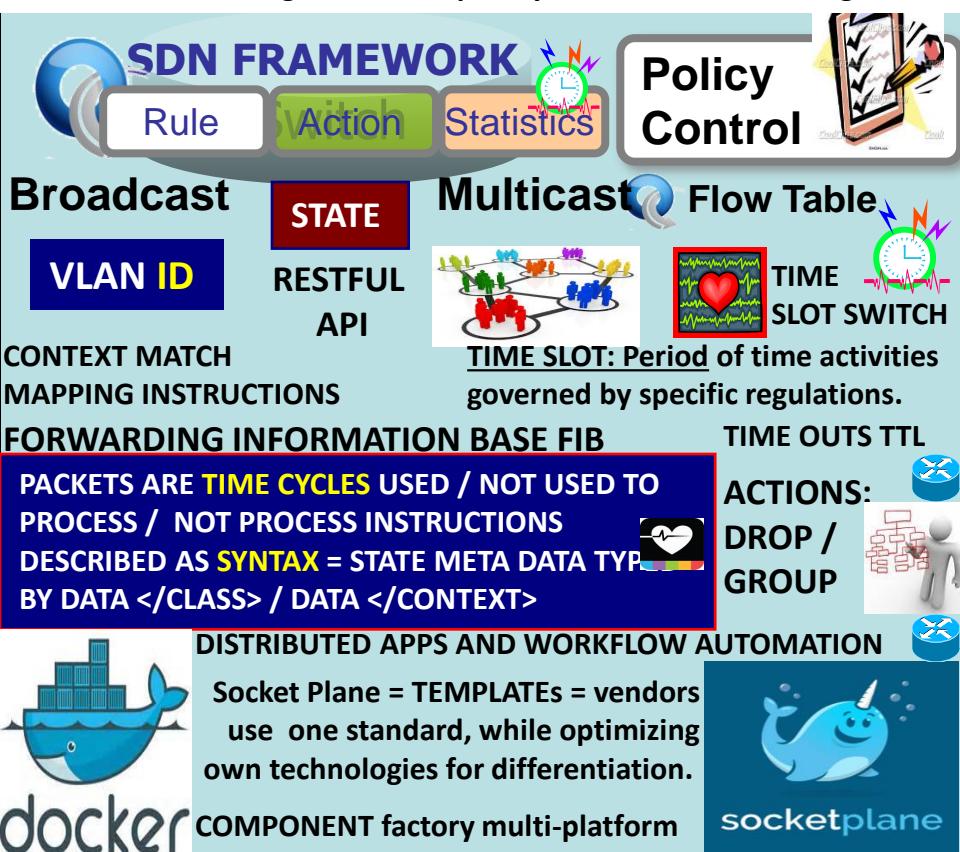
Configuration Management

NET CENTRIC WARFARE  
SYSTEM OF SYSTEMS TELEMETRY

COMMON COMPONENTS, BUILDING BLOCKS USED WITHIN FEDERATION PROMOTING COMMON GOALS, PROCESSES

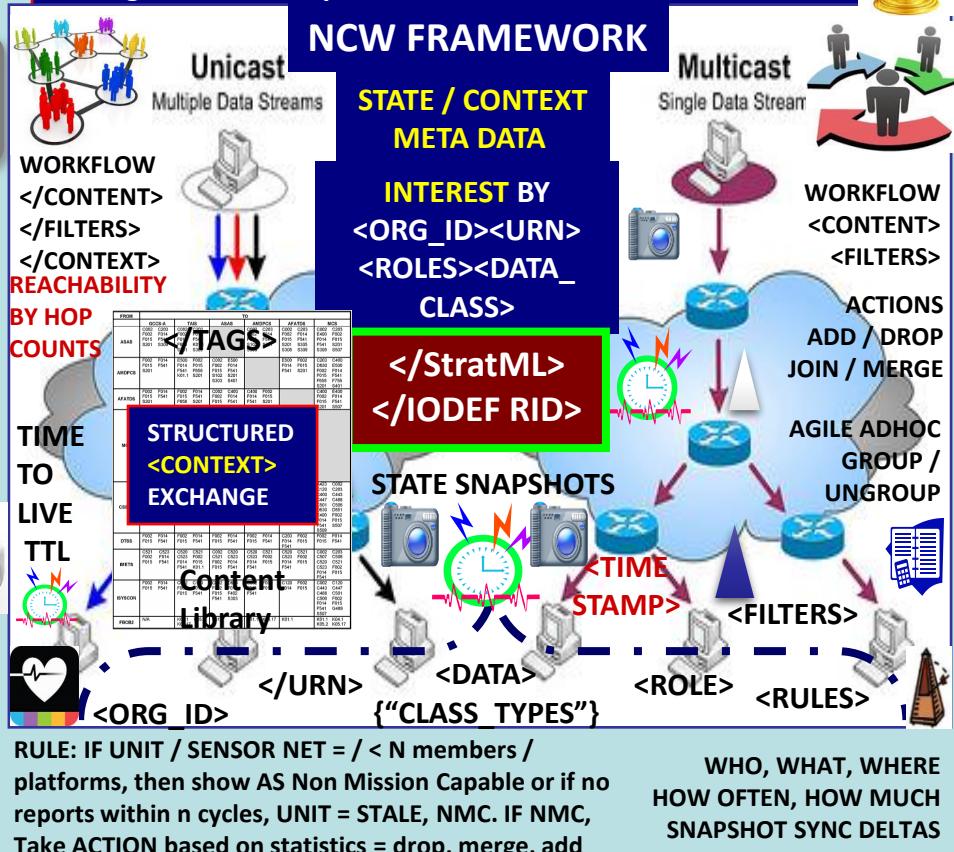
- SDN is a *framework* to allow network administrators to *automatically* and dynamically manage and control a *large number* of network devices, *services*, topology, traffic paths, and packet handling (quality of

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



Netcentric / "network-centric" participating in a continuously evolving, complex community of people, devices, information and services interconnected by a network to optimize resource management and provide information on events and conditions.

Net-centric Enterprise Architecture : "massively distributed architecture with components, services available across and throughout an enterprise's entire lines-of-business."



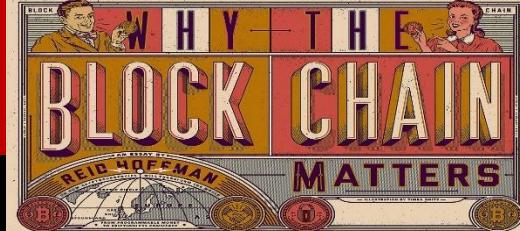
HEART BEACON CYCLE: ALL THINGS INTERNET ARE PROGRAMMED USING TIME CYCLES USED / NOT USED TO PROCESS / NOT PROCESS SYNTAX



# TradeNet



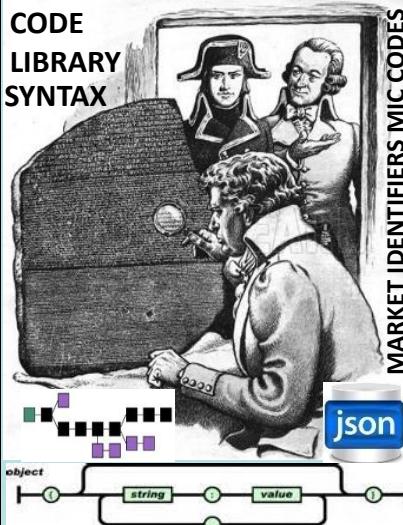
## Programmable Money \$\$\$



RIED HOFFMAN 15 May 2015 [LINK](#)

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

CODE  
LIBRARY  
SYNTAX



MARKET IDENTIFIERS MIC CODES

300 + MESSAGE  
TEMPLATES  
SYNTAX LIBRARY  
PROGRAMMING  
  
STRUCTURED  
<CONTENT>  
EXCHANGE

BREVITY CODES  
MARKET ID CODES  
  
USE CASE TEMPLATES  
SIGNALLING, TELEMETRY

NATO

ORGANIZATIONS



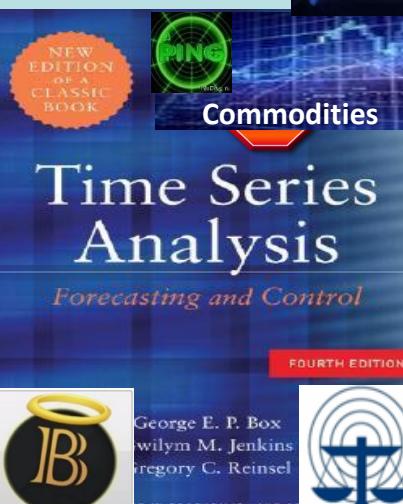
Organizational Units OU, OU

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**



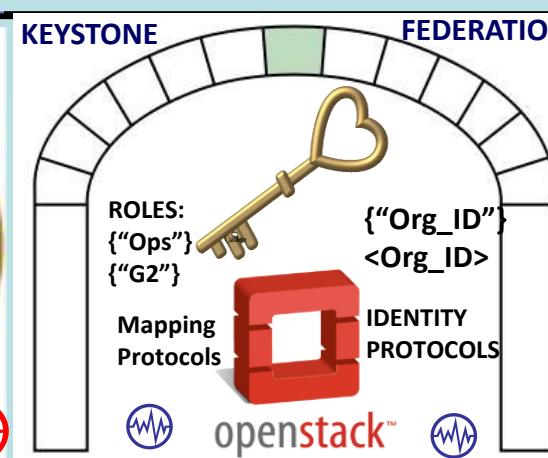
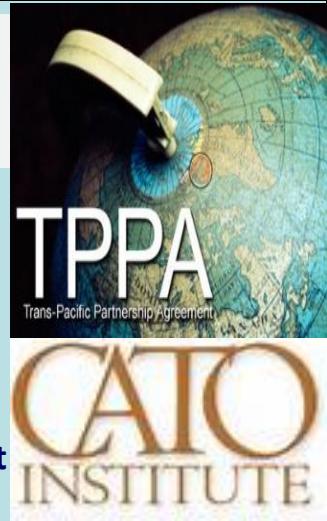
George E. P. Box  
Gwilym M. Jenkins  
Gregory C. Reinsel





## 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





# Blockchain

BLUEPRINT FOR A NEW ECONOMY



Blocktime Arbitrage MTL (machine trust language) time primitives might be assigned to a micropayment channel DAPP as a time arbiter. In blocktime, the time interval at which things are done is by block. This is the time that it takes blocks to confirm, so blockchain system processes like those involving smart contracts are ordered around the conception of blocktime quanta or units. Since blocktime is an inherent blockchain feature, one of the easiest ways to programmatically specify future time intervals for event conditions and state changes in blockchain-based events is via BLOCKTIME. Universal blocktime source example: a procedure call to NIST or other time oracle.



**BLOCKTIME: A General Temporality of Blockchains** Blocktime as blockchains' temporality allows the possibility of rejigging time and making it a malleable property of blockchains. The in-built time clock in blockchains is blocktime, the chain of time by which a certain number of blocks will have been confirmed. Time is specified in units of transaction block confirmation times, not minutes or hours like in a human time system. Block confirmation times are convertible to minutes. Conversion metrics might change over time. Network Economies: Economic System as Configurable Parameters

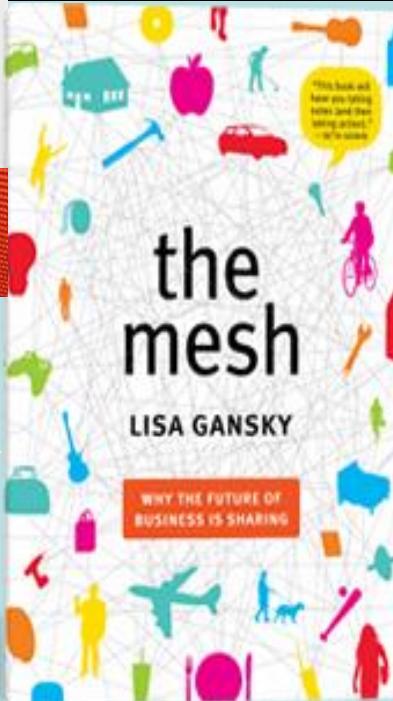
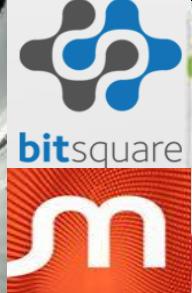
The current standard time common throughout the world is based on a 24-hour clock, with zones that are either 12 hours ahead or behind **Coordinated Universal Time (UTC)**. However, these time zones are decided upon by individual governments, without overall coordination and can even extend fourteen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



## Decentralized Exchange Meets Decentralized Crowdfunding



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.



## Autonomous Device Coordination Framework



- Registration
- Authentication
- Proximity based rules
- Consensus based rules
- Contracts
- Checklists

FEDERATION  
AGREEMENTS  
PROCEDURAL  
TEMPLATE

## FEDERATION

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

## LDAP DIRECTORY

Physical proximity

Social proximity

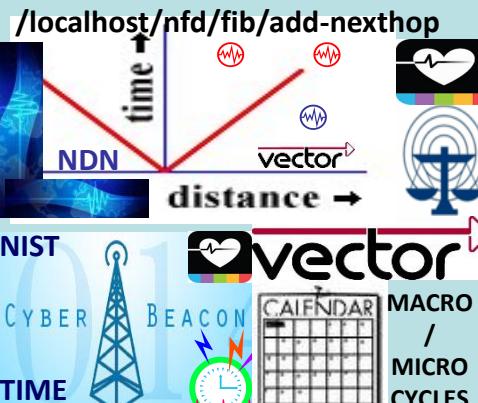
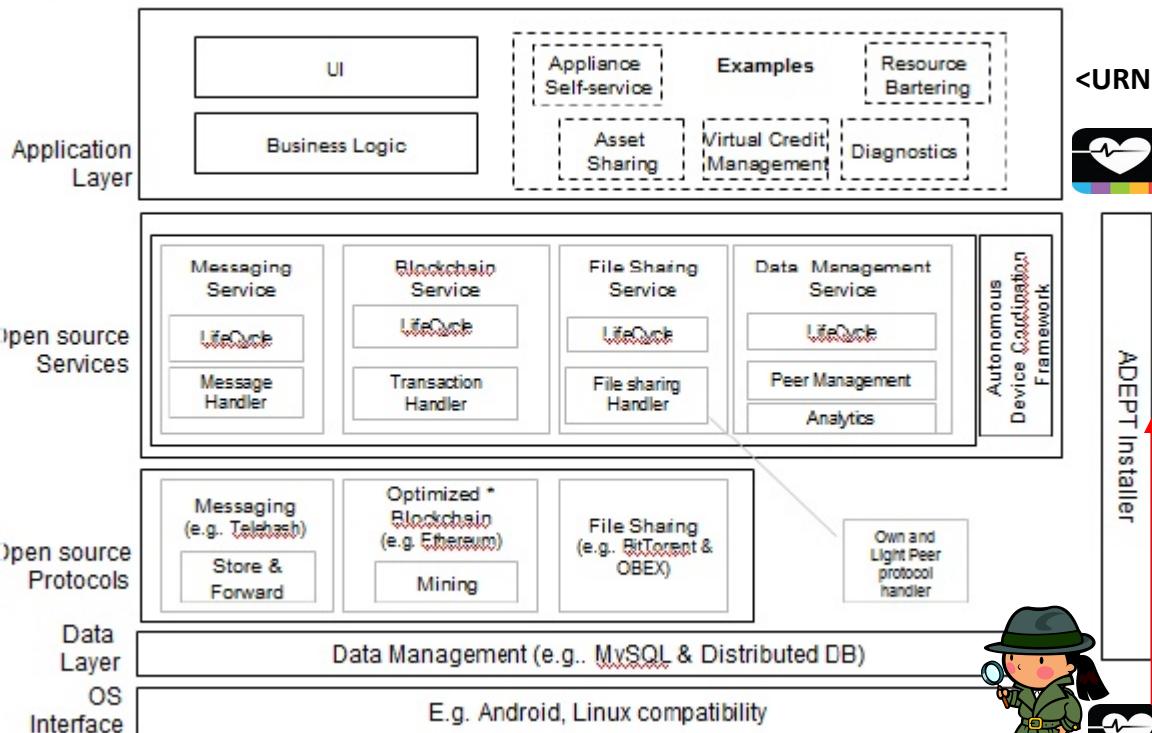
Temporal proximity

Agreements

Payments

Barter

## ADEPT Standard Peer Architecture – Logical View

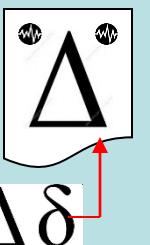


PAYMENTS BASED ON GEO-SPATIAL TEMPORAL METRICS / METERS  
<URN> DESCRIBES COMMODITIES ETC BY UNIFORM RESOURCE NAME BY </INTEREST>>



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 WRANGLLED PRIOR TO FUSION CENTER ENHANCED ANALYTICS / PROTECTS BANDWIDTH

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



# Situational Awareness Reference Architecture (SARA)

Identity, Inventory, Activity, and Sharing

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



Industrial Control System  
Information Sharing and  
Analysis Center

**IDENTITY:** <UUID> = Devices, sensors

<ORG\_ID> Organizations

Federation  
Gateway

## <ELEMENTS>

STRATML / IODEF RID CLASSES:

<GLOBAL><JOINT><SHARED>

<DOMAIN><FEDERATION>

<CITY><STATE><PRIVATE>

STRATEGIC  
MARKUP

StratML

LANGUAGE

**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>

CONTENT LEXICON  
ROSETTA STONE



<TIME\_STAMP><ORG\_ID><URN>  
<GEO\_LOC\_GPS><STATUS>  
<Halt><Moving><Stale><Ready>

A V A L A N C H E

**SHARING:**

COMMON <TAGS>

<Organizational\_ID>

Resource Names <URN>

<Time\_Stamps>

<State-Meta\_Data>

<DATA\_CLASS\_TYPE>

<Heartbeat\_snapshots>

NDN

<INTEREST>

Cybox

NDN

<INTEREST>

STIX

WELCOME TO THE FS-ISAC SECURITY AUTOMATION GROUP. OUR VISION IS  
A FEDERATED NETWORK OF STIX-BASED REPOSITORIES SHARING INTELLIGENCE IN  
REAL-TIME. AVALANCHE: STRENGTH IN NUMBERS, SECURELY SHARE INTELLIGENCE

NIST CYBER SECURITY FRAMEWORK

MIL-STD-2525A

| FROM    | Q0C8-A | TAB  | AA8  | AM0PC8 | AF0AT08 | M0B  |
|---------|--------|------|------|--------|---------|------|
| ASAD    | P002   | P012 | P024 | P002   | P012    | P002 |
| AM0PC8  | P001   | P011 | P023 | P001   | P011    | P001 |
| AF0AT08 | P003   | P013 | P025 | P003   | P013    | P003 |
| M0B     | P004   | P014 | P026 | P004   | P014    | P004 |

| STRUCTURED <CONTENT> TEMPLATES |
|--------------------------------|
|--------------------------------|

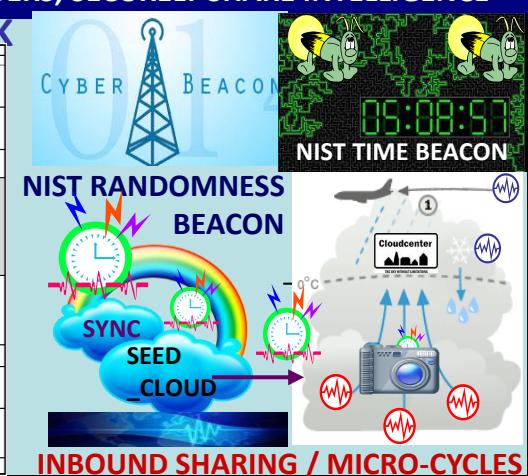
CYBER SECURITY CONTENT  
LEXICON ROSETTA STONE

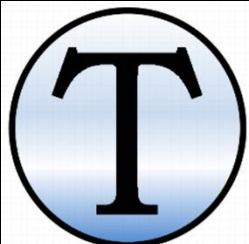
NIEM  
NAMED DATA  
NETWORKING

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 specify <CONTENT> / information agreed by group consensus presenting information in a logical well specified and unambiguous layout i.e., templates

<TAG>  
LIBRARY





## Three ideas combined

### HOW TRUTHCOIN WORKS:

#### 1) Tradable Reputation

- Abstract Corp exists to prove consistency within / across TIME
- Collects \$ to power the mechanism.

#### 2) SVD Cross-Validation

- Statistical technique: seeks importance.
- Gleans truth, measures conformity.



#### 3) Strategic Use of TIME

- Funds can be ‘locked’ across time.
- Yet info-search-costs constantly fall.
- Net effect: time penalizes attackers only.

## 2. A kind of ‘Future Wikipedia’

|       | Wikipedia  | Truthcoin  |
|-------|--|--|
| Focus | Outcomes of <i>past</i> events.<br>Consensus on known facts. | Outcomes of <i>future</i> events.<br><i>Future</i> consensus on <i>knowable</i> facts. |

| Finance Thing      | Interpretation   | EVENT DERIVATIVE<br>CORP = <Org_ID_1,2,3> |
|--------------------|--|---|
| Bond (Debt)        | “I, Paul Sztorc, owe \$20 to whoever is holding this bond certificate on 03/02/2015.”  |   |
| Stock (Equity)     | “I, the CEO of SztorcCorp, owe 1/100 <sup>th</sup> of SztorcCorp’s profits to whoever is holding this stock certificate on 03/02/2015.”                              |   |
| Binary Call Option | “I, Paul Sztorc, owe \$20 to whoever is holding this Option on 03/02/2015, <u>only if</u> the stock price of SztorcCorp is above 40 \$/share on that date.”          |   |
| ...(others)...     | ...(others)...   | ...(others)...                            |
| Event Derivative   | “I, Paul Sztorc, owe \$20 to whoever is holding this derivative on 12/01/2016, <u>only if</u> Hillary Clinton is elected US President in 2016. Otherwise I owe \$0.” | ...(others)...                            |
| ...(others)...     | ...(others)...   | ...(others)...                            |

## 3. A software protocol

A protocol is a set of rules that determine how something is performed or accomplished

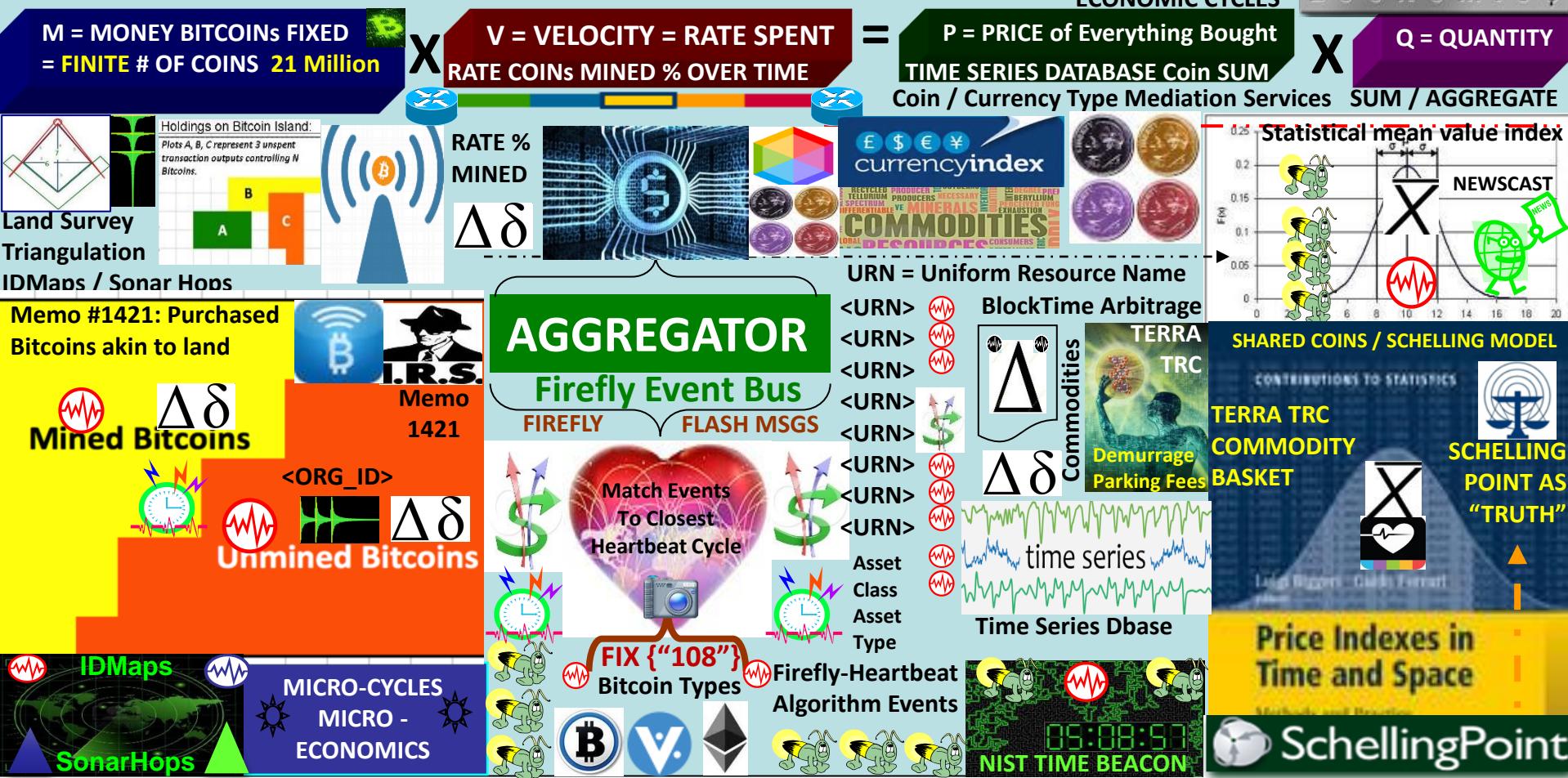


| Protocol (Decentralized)   | Centralized Non-Protocol   |
|----------------------------|--|
| Spoken English             | Shakespeare’s Globe Theatre, The Library of Alexandria, MLA Citation Format, Walt Whitman, J.K. Rowling. |
| Rules to American Football | The NFL, ESPN, The Buffalo Bills.  |
| Bluetooth                  | A Set of Stereo Speakers, The iPhone 6, A Car Radio Equipped with Bluetooth                              |
| Bitcoin                    | VISA, PayPal, SWIFT, Western Union, Airline Miles, Amazon Coins, e-Gold, Liberty Reserve.                |

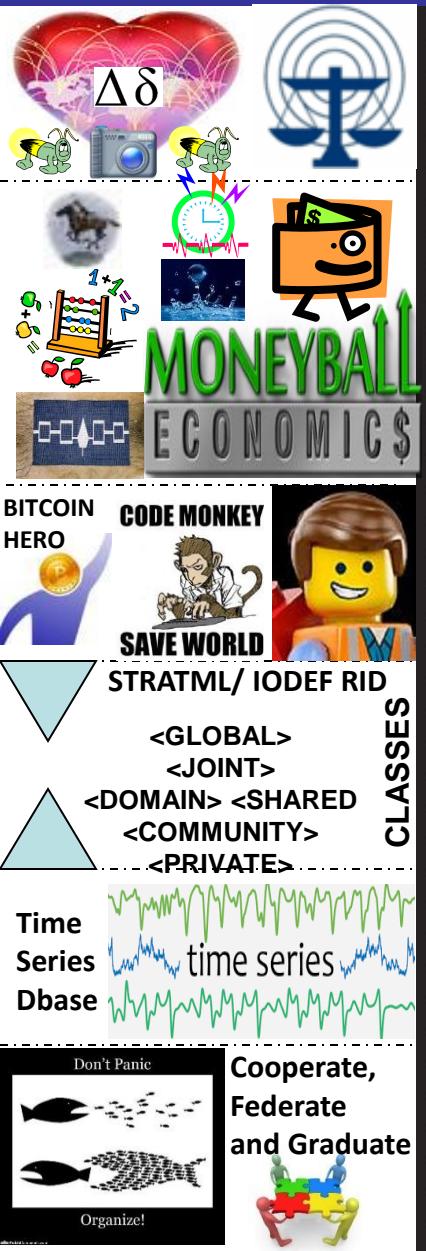
# How 'Bitbanks' Could Solve Bitcoin's Volatility Problem

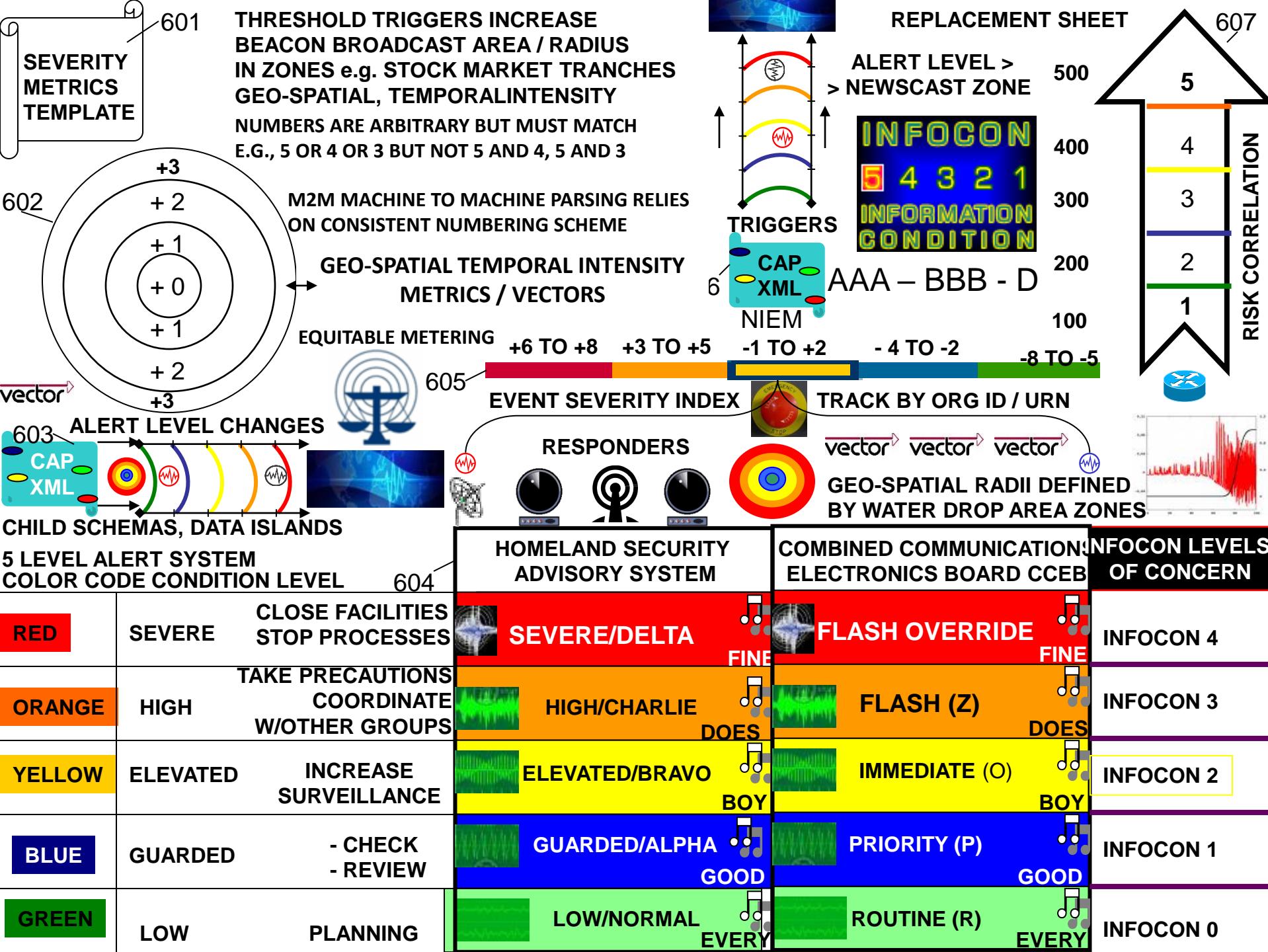
$$MV=PQ \text{ Money} \times \text{Velocity} = \text{Price} \times \text{Quantity}$$

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.





# 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



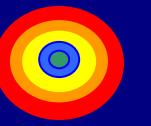
## Geo-Spatial Temporal Intensity NOVEL METRICS / METERS:



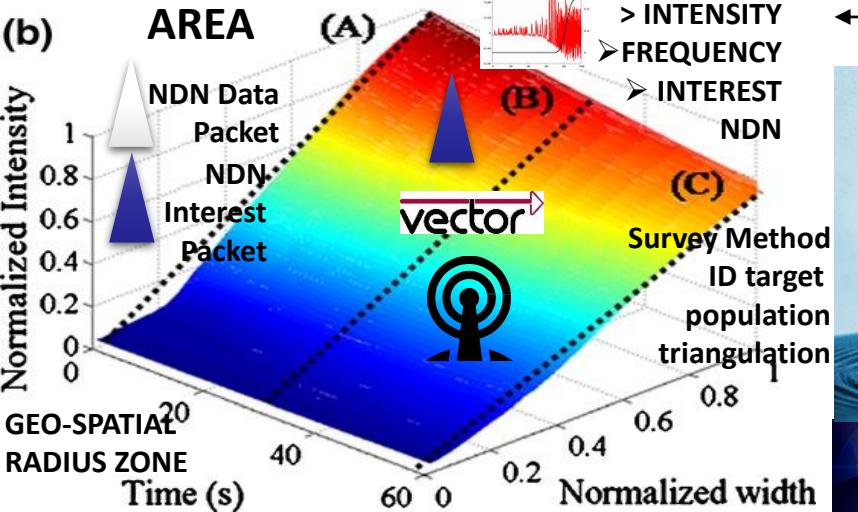
Paul Revere = linear, sequential



TCP/IP hop by hop counts, by hop controls



Water Drop = AREA / INTENSITY Cyclic Frequency



# NAMED DATA NETWORKING

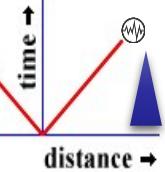
</IoT>  
MQTT



NIST TIME BEACON

05:08:50

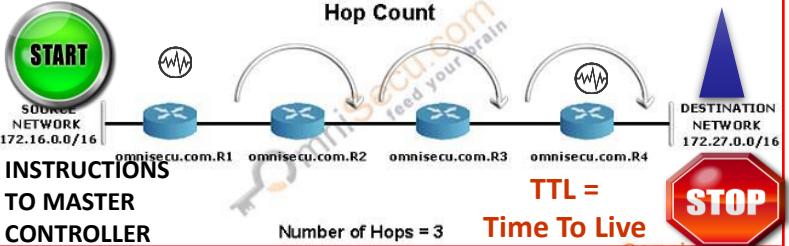
<INTEREST>



ARRESTED-D

TELEMETRY TRANSPORT

Hop Count



CLOSER = FASTER, CHEAPER > CYCLE => INTEREST NAMED-DATA NETWORKING

IDMAPS  
SONARHOPS  
INTERNET  
TRIANGULATION



4 / 3 / 2 / 1 / NULL / 1 / 2 / 3 / 4

.0001 .05 .01 .1 0 5 15 30 99

vector WirelessHART

ALERT LEVEL >  
> NEWSCAST ZONE

time synchronized,  
self-organizing,  
mesh Net



SINE-WAVE

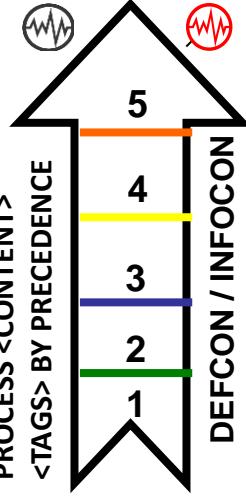
TRIGGERS

CAP XML

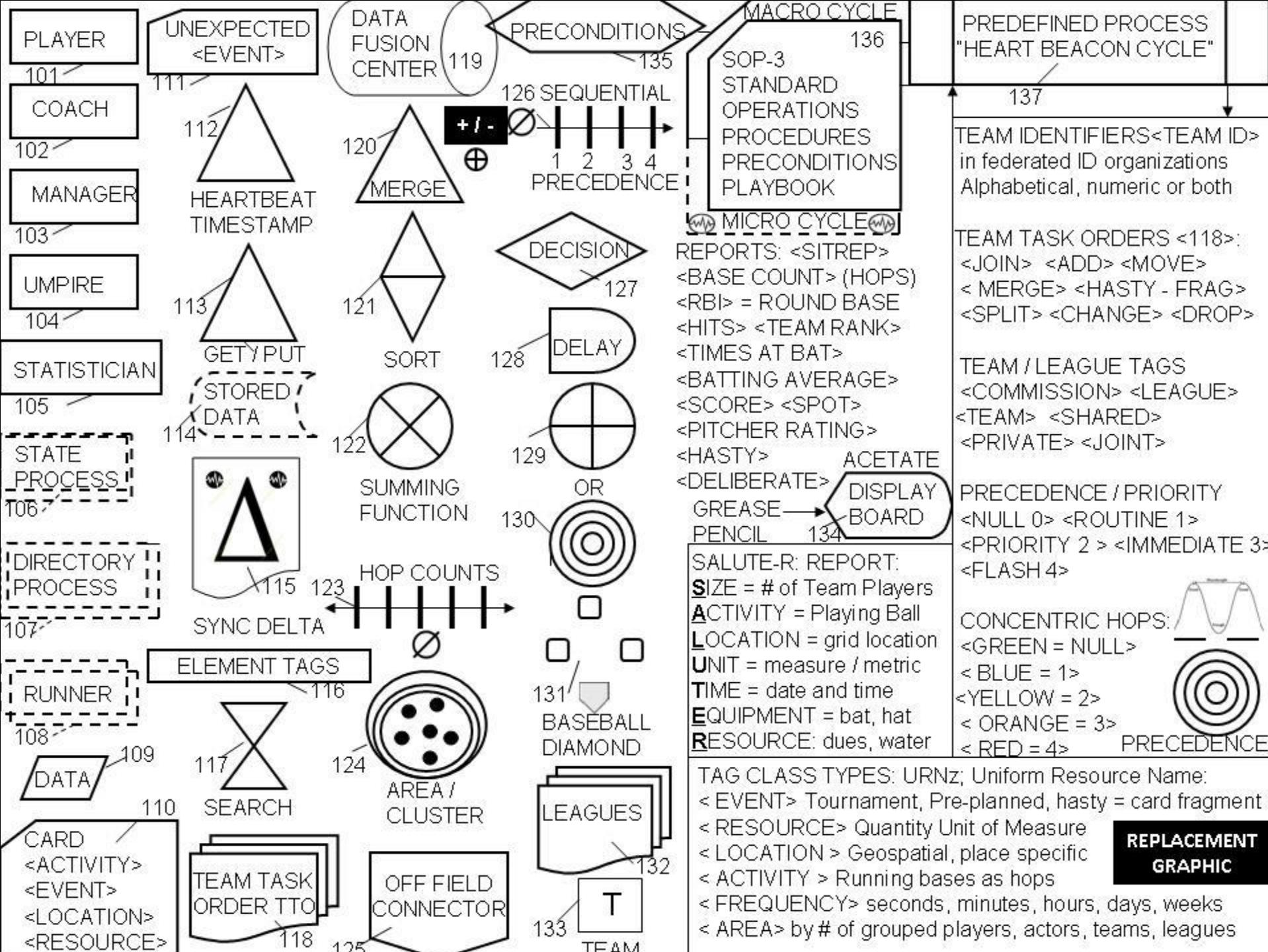
<INTEREST> BY INTENSITY / FREQUENCY

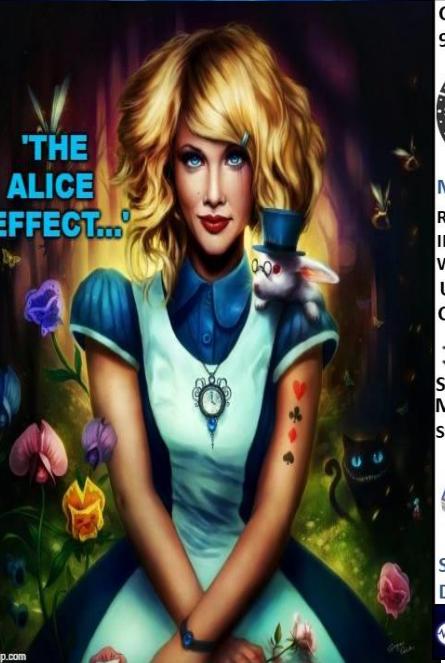
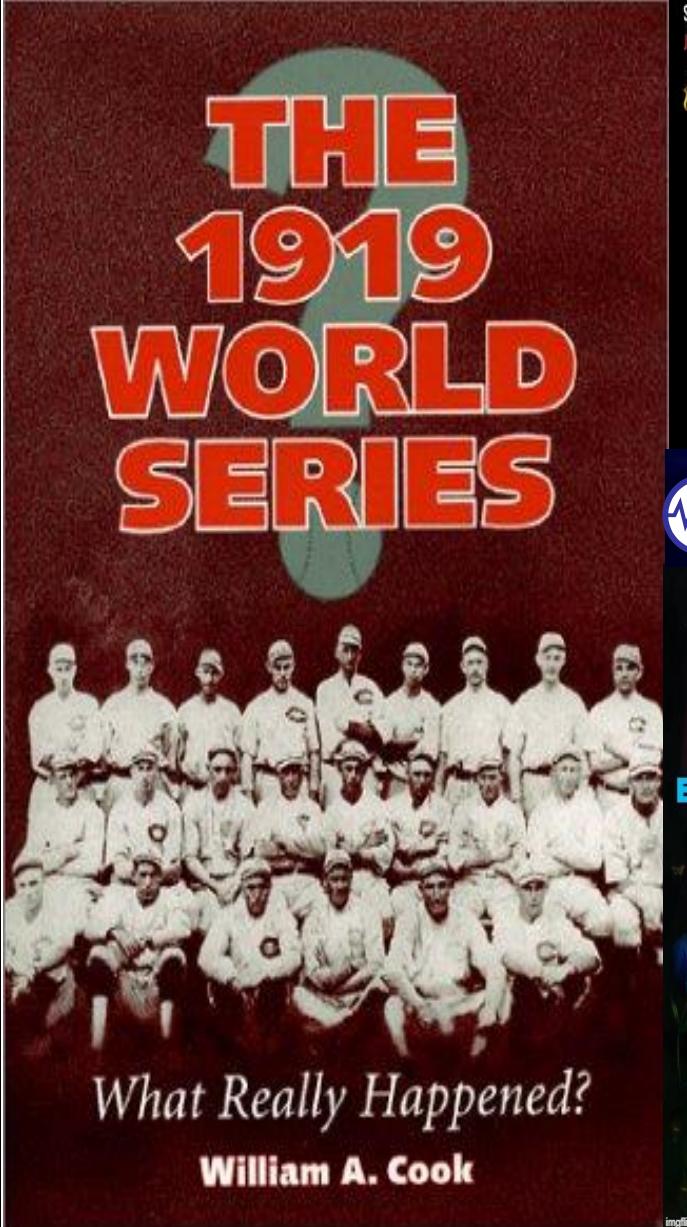
INFOCON  
XML  
MTF  
300 +  
MSG

5 4 3 2 1  
INFORMATION CONDITION







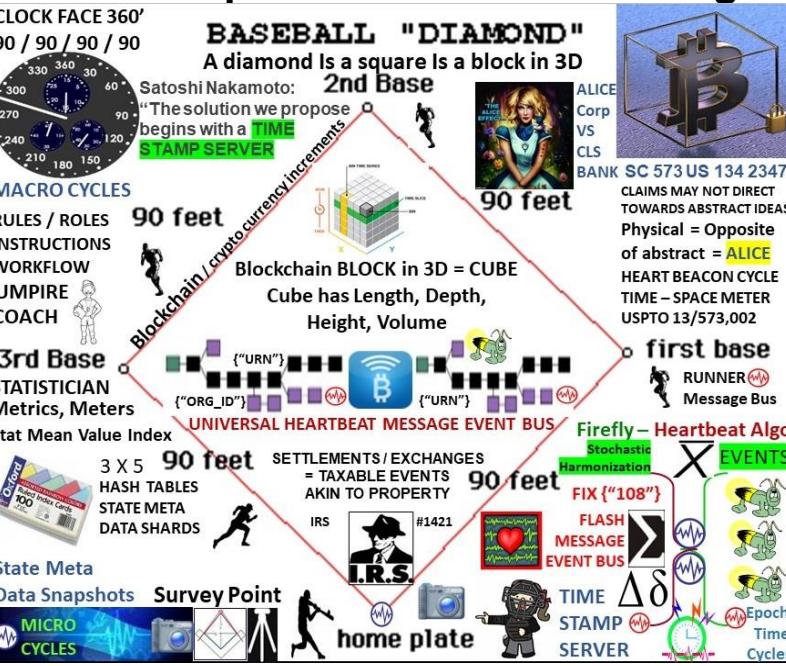


**Alice Corp. v. CLS Bank International, 573 U.S. 134 S. Ct. 2347 (2014)**  
RULING: "claims may not direct towards abstract ideas"



## USPTO SCREEN CAPTURES SUSPENDED PAIR RULES

- Moved Examination outside PAIR
- Admin forms, fees, amendments.. MUTED
- NO Time Stamps = TEMPORAL AMBIGUITY
- Screen captures before / after filing









# district0x

decentralized markets communities network. Create, operate, govern. Powered by Ethereum, Aragon, IPFS.

Districts are marketplaces and communities that exist as decentralized autonomous organizations on the district0x Network. All internet citizens will be able to deploy districts to the network free of charge, forever. All districts possess the following core functionalities...

- |   |   |
|---|---|
| <b>Signaling via CarbonVote</b>             | <b>Graphene executables:</b>                  |
| <b>Status = browser, messenger, gateway</b> | <b>witness_node, cli_wallet, genesis_util</b> |
- Posting and listings
  - Search and filtering
  - Ranking and reputation
  - Payments and invoicing

d0xINFRA provides districts with core functionalities required to operate an online market or community. e.g., ability for users to post listings, filter and search listings, rank peers, amass reputation, send invoices, collect payments

**district0x Network Token:** means of facilitating open participation and coordination on the network. Voting rights are utilized to come to a consensus on everything ranging from a district's branding and design decisions, to what functionality is added to the district via auxiliary modules, to the appropriate settings for any adjustable parameters of these modules, to the means in which revenue collected by a district is distributed

**NAME BAZAAR:** peer-to-peer marketplace for the exchange of names registered via the Ethereum Name Service trading of subdomains, enabling the exchange of usernames in decentralized applications such as **STATUS** and **ORGANIZATION NAMES** in the Aragon Network **COMPANY REGISTRY**

**Meme Factory** users mint their own tokenized memes for sale i.e., rare digital assets on the Ethereum blockchain posted to a bulletin board-style marketplace exchange.

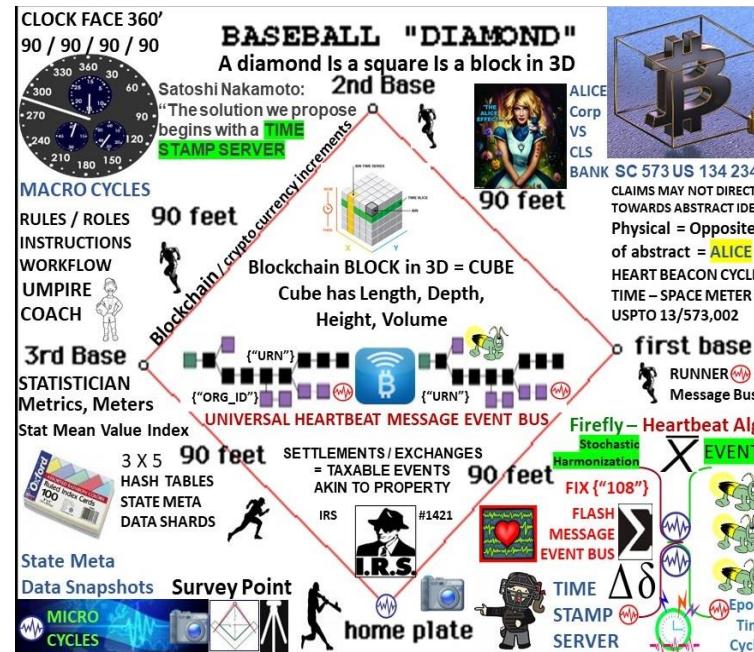
**Dharma Credit** is a suite of tools that make it easy to plug a line of credit into any decentralized application. In lieu of forcing your first-time users to purchase crypto at a brokerage or exchange, a Dharma Credit integration will give your users a button that they can click and get a small cryptocurrency loan within your app in under 5 minutes.

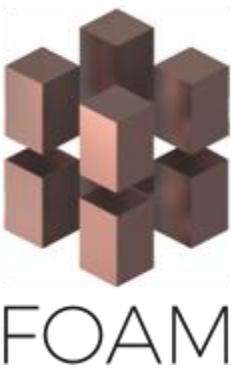


# Connecting Banks, Payment Systems, People with Affordable Financial Services Via Blockchain

## CUSTOMIZABLE PAYMENTS INFRASTRUCTURE

middleware between financial products and institutions





FOAM, an open source spatial protocol built on the Ethereum blockchain. The protocol ties every latitude-longitude coordinate pair on Earth (down to one square meter) to a specific smart contract address, allowing developers and applications to tie business logic to specific spaces to crowdsourced data the blockchain.

**The fundamental tenet of the FOAM Proof of Location protocol is time synchronization. Fixed radio beacons called Zone Anchors can discover each other in a permissionless and decentralized fashion. Together the anchors synchronize their clocks and establish a Zone, and in doing so maintain a quorum over space and time.**

**The goal of this post is to explain the importance of time synchronization in a Proof of Location system by way of a historical examination. As we will see clock coordination and time synchronization has been a key factor in cartography and will continue to be for the FOAM protocol.**

**<https://archinect.com/features/article/142920059/towards-a-decentralized-architecture-with-foam-the-blockchain>**



### Blocknet internet of blockchains

Bitcoin, Ethereum, XCurrency, BitNation, StealthCoin, BitSwift

The Blocknet is founded on the Xbridge inter-node communication open source peer-to-peer protocol enabling communication between nodes on different blockchains. It connects an open-ended centralized or decentralized array of services

Any coin that supports OP\_CHECKLOCKTIMEVERIFY and has a stock JSON RPC interface cloned from Bitcoin Core

P2P atomic swap exchange using BIP65 capable chains

BlocknetDX Specs:

- 1 Minute Block Time
- 5k for servicenodes
- Diff. adjustment per block
- Supports Fast Transactions w/ SwiftTX
- Supports Decentralized voting/funding

• core components are:

- A blockchain router, xbridgep2p™
- A coin exchange protocol
- An inter-chain data transport



# ARAGON

Unstoppable organizations

Create value without borders or intermediaries

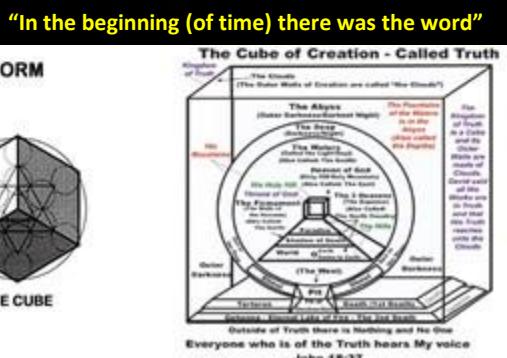
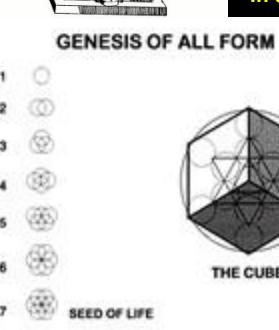
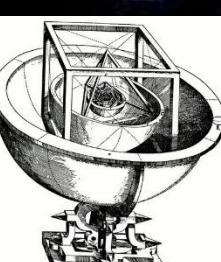
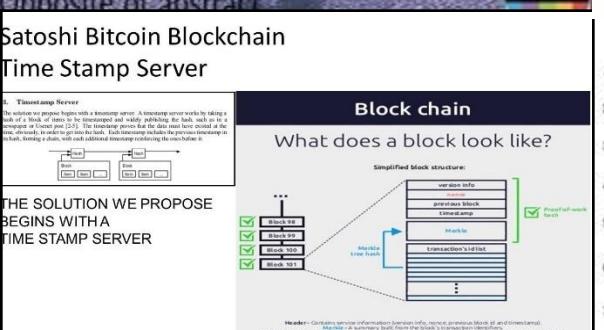
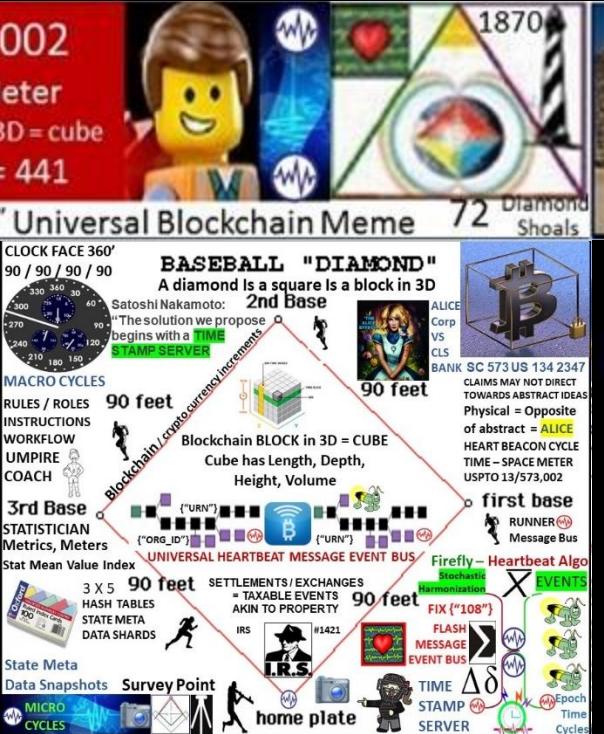
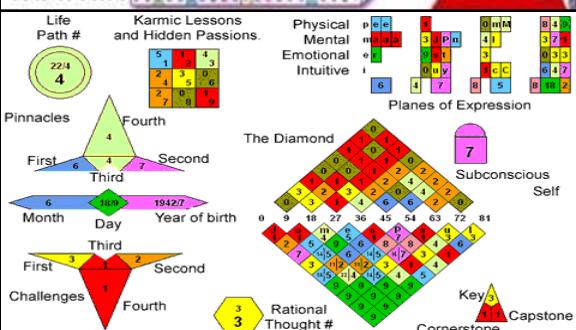
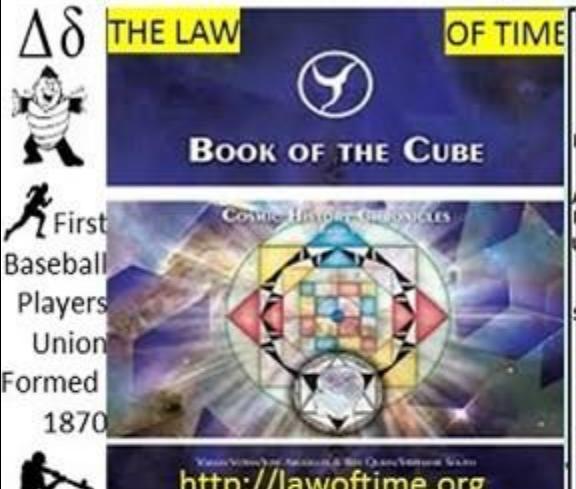
USPTO APPLICATION 13/573 002

## 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





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

