



# The Heart Beacon Time – Space Meter

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





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

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

CHECKLIST: TRADE FEDERATION ECONOMIC FRAMEWORK EX:

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

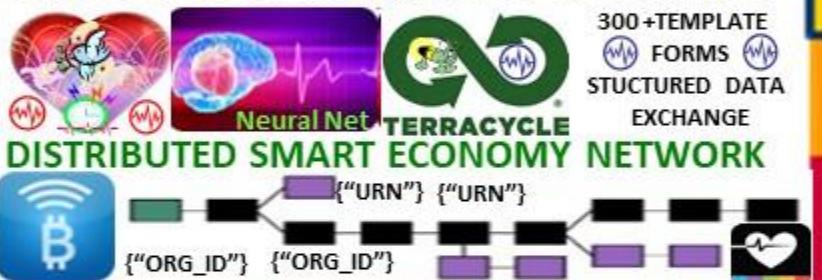


# Humanitarian Assistance Networked Donor System

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



<https://neo.org>



## Federation Gateway

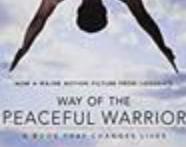


WORLD BEYOND WAR.org  
a global movement to end all wars



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

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

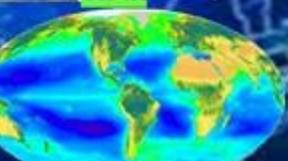


## Beacon Communities

Vernetzte Operationsführung



Closer < \$\$\$ < FUEL

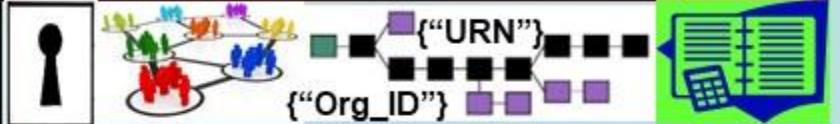


Proximity Beacons  
JAEGERS



# 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**

**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 {"Asset\_Type"}

IoT SENSOR DEVICE {"Asset\_Type"}

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

123e4567-e89b-12d3-a456-426655440001

123e4567-e89b-12d3-a456-426655440002

STOCK EXCHANGE

MIC MARKET IDENTIFIER

CODES / BREVITY CODES



GOVERNANCE 2.0



BITNATION



FEDERATE

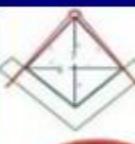
SHARE

WIN



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

{"GROUP ID"}



Office 365 Groups



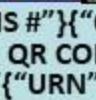
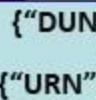
Microsoft Teams



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

QR CODE MICRO-CYCLES

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





# Firefly - Heartbeat Algo

University of Bologna Italy / Hungary



THE HEART BEACON CYCLE  
("108")



K%



ECONOMIC MACRO CYCLES

ECONOMIC HEARTBEAT

K% GDP ECONOMIC PULSE

FEDCOIN WORLDCOIN

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



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

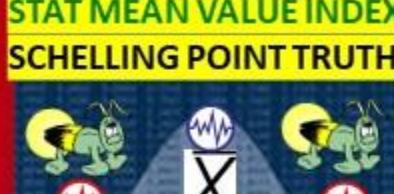


**LUXOR**  
EGYPT

HEARTBEAT FLASH MESSAGE EVENT BUS  
PRECEDENCE ETHEREUM THRESHOLD  
PROCESSING GAS METRICS



Will There Be a Recession?  
TIME  
Economist Milton Friedman



Price Indexes in Time and Space

Methods and Practices

$\Delta\delta$



ALGORITHMIC REGULATION

ASSET TOKENIZATION

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

(-11 10 5 4 3 2 1 0 11 12 13 14 15 16 17 18 19 20 21 22 23 24)

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

11 10 9 8 7 6 5 4 3 2 1 0 11 12 13 14 15 16 17 18 19 20 21 22 23 24

23 24 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72

72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94

94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114

114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133

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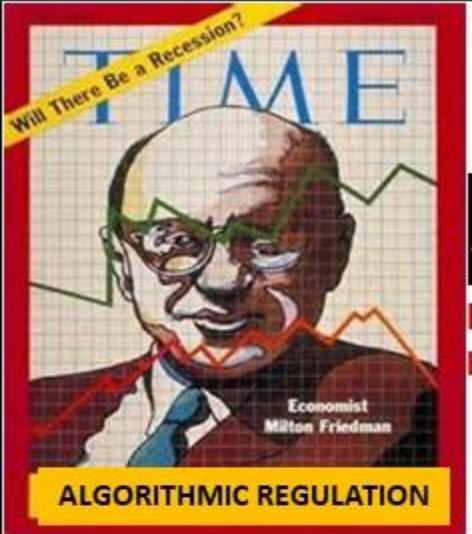
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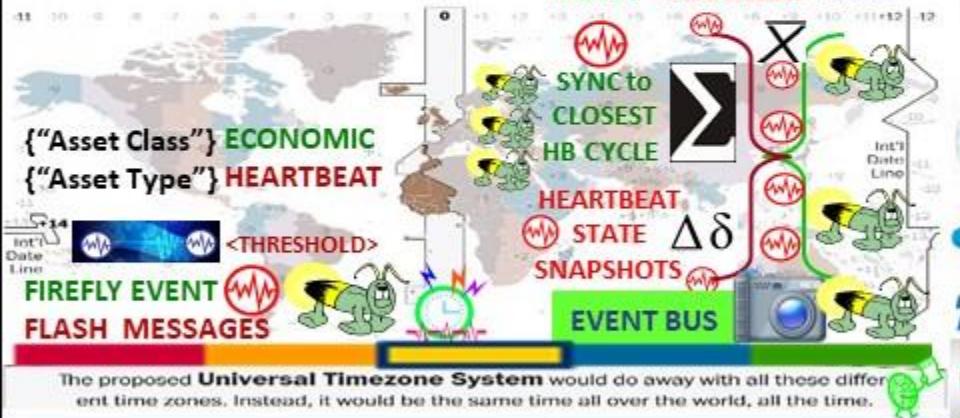




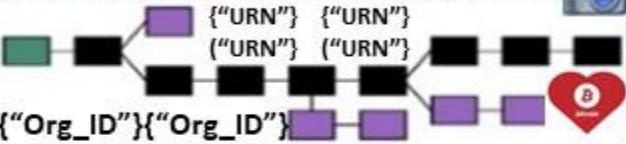
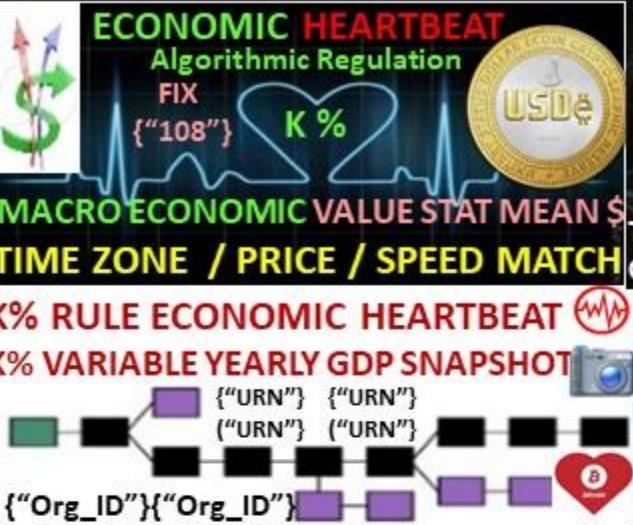
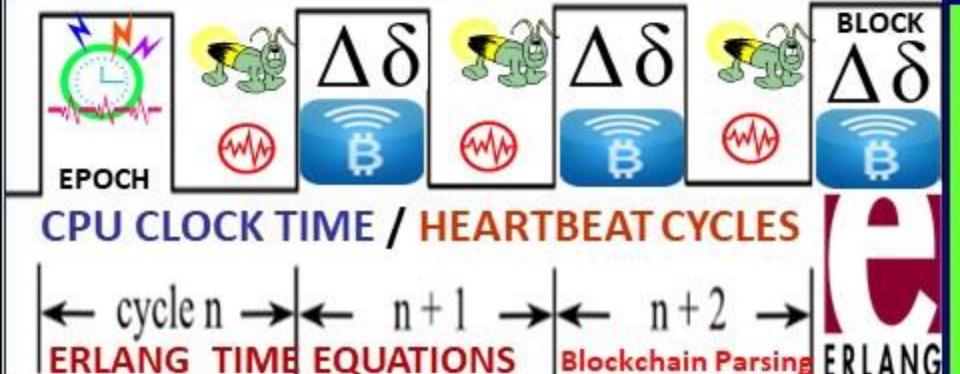
## ALGORITHMIC REGULATION

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

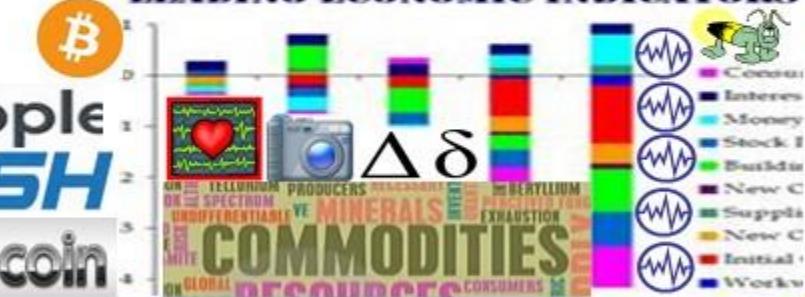
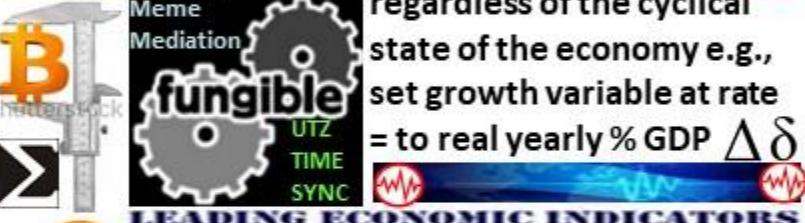
**FIREFLY - HEARTBEAT ALGO**



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



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



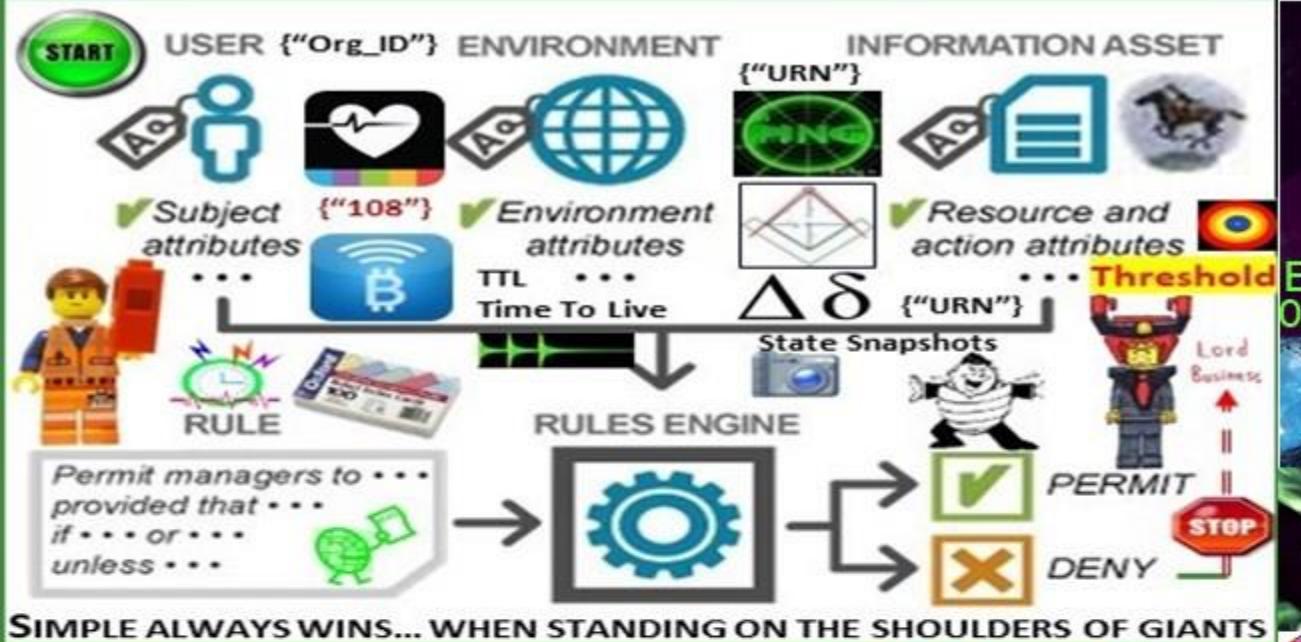
"Heartbeat Synchronization strives to have nodes in a distributed system generate periodic local "heartbeat" events approximately at the same time. It differs from classical clock sync in that Nodes are not interested in counting cycles and agreeing on the ID of the current clock cycle. There is no requirement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



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**



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.



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

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





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





# NAMED DATA NETWORKING

<CONTENT> CENTRIC NETWORKING



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

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

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

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

STRUCTURED MILITARY MESSAGING FORMS: FIELD TYPES, FILTERS, TAGS

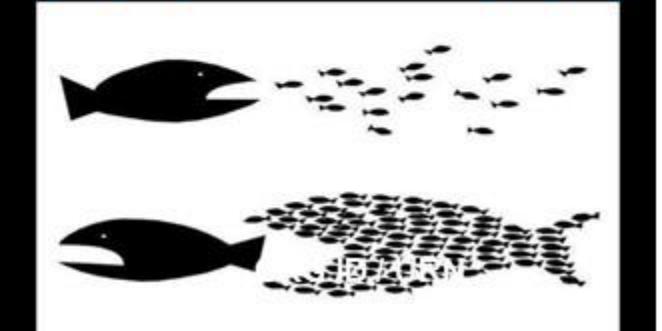
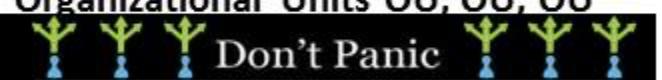
PARSED, PROCESSED, COMPILED TELEMETRY SIGNALING STANDARDIZATION

USMTF / XML MTF FORMATTED MESSAGE CATALOG

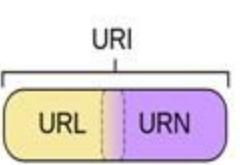
Catalog has over 300 messages to choose from have a wide number of information exchange requirements using common, CONSENSUS Message Text Formats MTFs. MTFs specify <CONTENT> / information agreed by group consensus presenting information in a logical, well specified and unambiguous layout resulting in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

</Organizational\_Identifier\_Org\_ID>

Organizational Units OU, OU, OU



FEDERATE



ARIN  
American Registry for Internet Numbers

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

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



SITUATION AWARENESS

NEWSCAST



DISTANCE ESTIMATE SERVICE

IDMaps  
SonarHOPS

K00.99  
Heartbeat Message

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

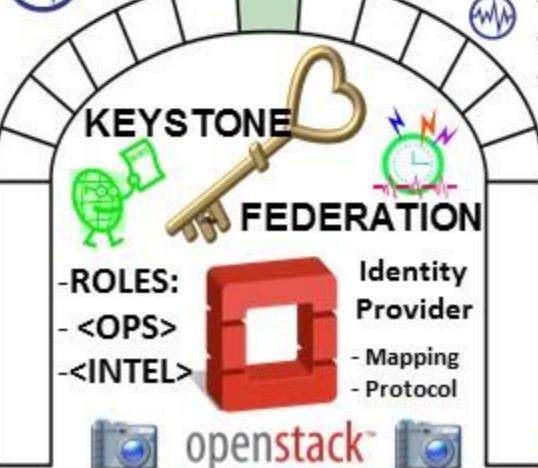
BY <TAG\_TYPES>  
Ledgers  
Contracts  
Trade SLA  
Agreements



TRIANGULATION  
TELCO MESH FABRIC

vector

CROWD SOURCING / FUNDING



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

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

PARTIDO X:  
Distributed  
Democratic  
Participation

ETHEREUM:  
Decentralized  
Autonomous  
Organizations



VOTE ON BLOCKCHAIN



PARTIDOS DEL FUTURO  
FEDERATED ID



# Satoshi Nakamoto Bitcoin Paper

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



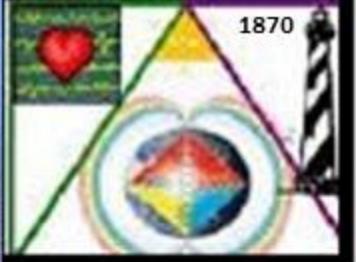
Satoshi  
Nakamoto



Craig WRIGHT a.k.a.  
Satoshi Nakamoto



PHYSICAL =  
OPPOSITE  
OF ABSTRACT



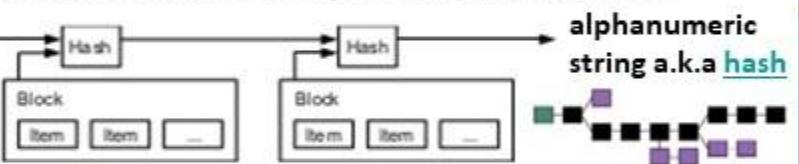
Wright Brother's 1<sup>st</sup> Flight  
Cape Hatteras Outer Banks

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

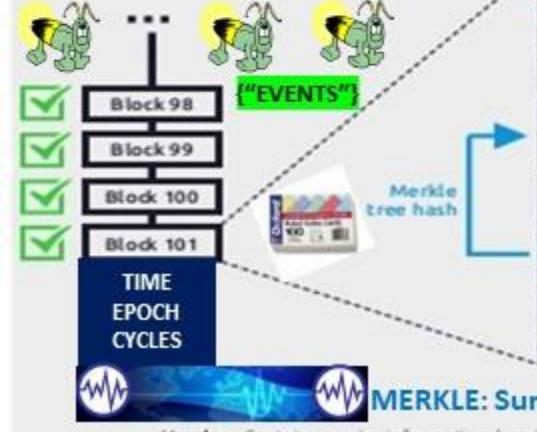
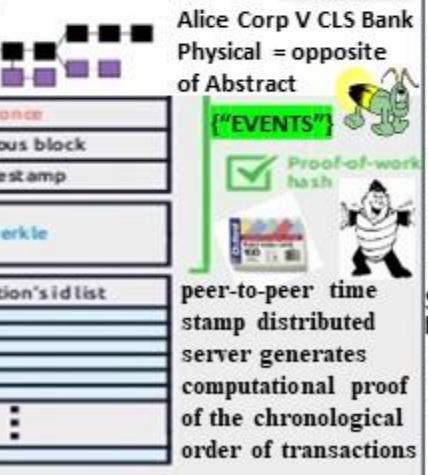
### 3. Timestamp Server

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



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



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

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

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

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

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

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



# Net / Net of \$\$\$ formed: Time Epoch 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"

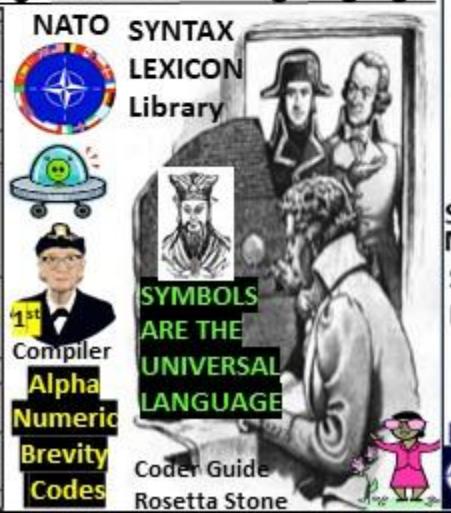
"A smart contract is a piece of code stored on a blockchain, triggered by blockchain transaction reads / writes data in the blockchain's Dbase"

Gideon Greenspan "Beware the impossible smart contract"



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

XBRL / CDL / DAML	
STOCK MIC CODES	
STRUCTURED DATA EXCHANGE TEMPLATE FORMS	
300+ USE CASES	
LOGIC / FILTERS	
SYNTAX / SYMBOL LEXICON LIBRARY	



Time is specified in units of transaction block confirmation times

"BITCOIN MAKES MONEY PROGRAMMABLE. MONEY IS SIMPLY DATA"

ALICE CORP VS CLS BANK

"claims may not be directed towards an abstract idea"

US SC 573 US 134 2347



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

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



CLOCK FACE 360°  
90 / 90 / 90 / 90  
MACRO CYCLES



RULES / ROLES  
INSTRUCTIONS  
UMPIRE  
COACH

STATISTICIAN Metrics, Meters  
State Meta Data Snapshots

90 feet  
Survey Point

MICRO-CYCLES



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

Runner = Messages Signals / Telemetry  
90 feet

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

#1421 Org ID  
Blockchain Blocks / Coins Awarded

90 feet  
Event Bus

90 feet  
Survey Point

UMPIRE



SC 573 US 134 2347  
Physical = Opposite Of abstract Euclidian Geometry TRIANGULATION..

first base

Fix {"108"} Heartbeat Algo

Firefly Sync Deltas

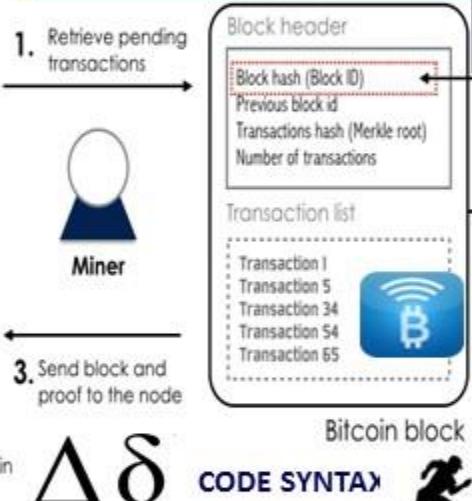
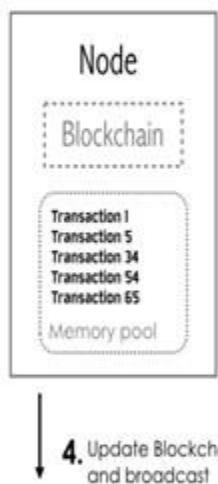
Sync Deltas



"Closest path to Knowledge of Truth is nature" Luxor Temple



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


 $\Delta\delta$ 
**CODE SYNTAX**

**CODE RUNNER**

**BITCOIN IS A LANGUAGE / BITCOIN'S VALUE IS TIME ITSELF"**


← cycle n → ← n + 1 → ← n + 2 →


**ATOMIC CLOCK**

 $\Delta\delta$ 
**TIME EPOCH CYCLES**
**05:08:53**

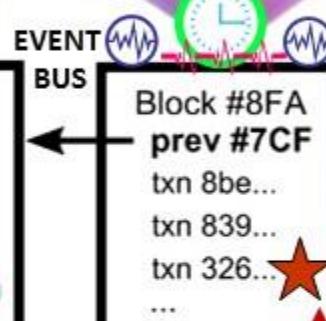
USPTO 13/573,002  
HEART BEACON CYCLE  
TIME - SPACE METER



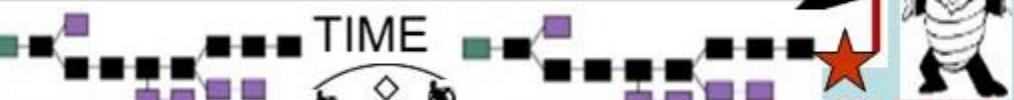
**WIRED**

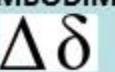
\*BITCOIN MAKES MONEY PROGRAMMABLE.  
MONEY IS SIMPLY DATA"

"BITCOIN'S VALUE IS TIME ITSELF"



**BLOCKCHAIN = TIME / SYNTAX**


**DATA ELEMENTS**
**ID'd by Alpha-Numerics**

**USPTO 13/573,002**
**PHYSICAL MEME**
**MAIN EMBODIMENT**
**RULES**
**Metrics**

**BLOCK**
**Meter**
**Multi-Meme Multi-Meter**

**ROLES**
**Meters**
**XBRL / CDL / DAML STOCK MIC CODES**
**STRUCTURED MILITARY MESSAGE TEMPLATE FORMS LOGIC / FILTERS**

**State Meta Data Snapshots**
**ROLES**
**Meters**

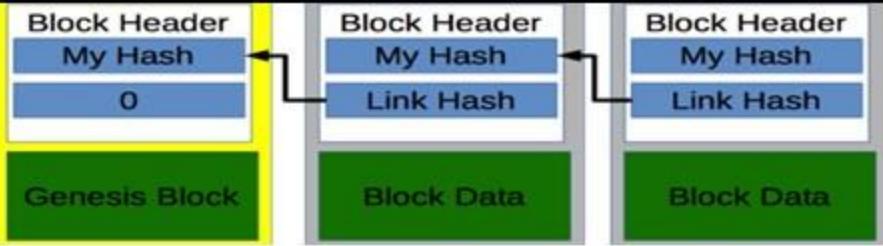
**SYNTAX LEXICON LIBRARY**




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



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



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

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

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

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

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

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

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

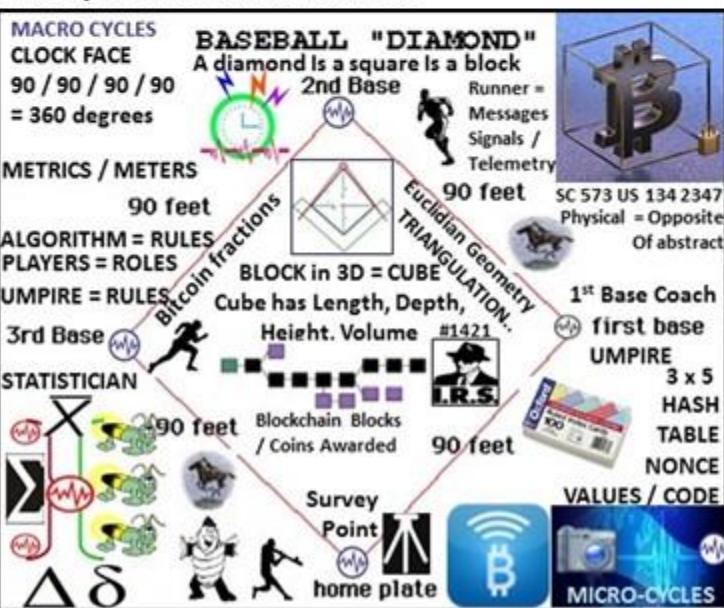
**Consensus: distributed ledger blockchain nodes strategy determines chain's correctness**  
**Consensus strategies: "proof of work," "proof of stake," and "delegated proof of stake"**

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

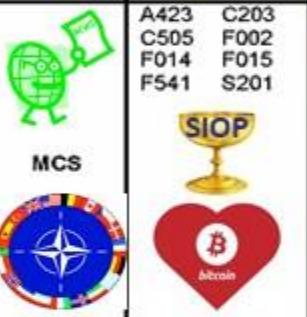
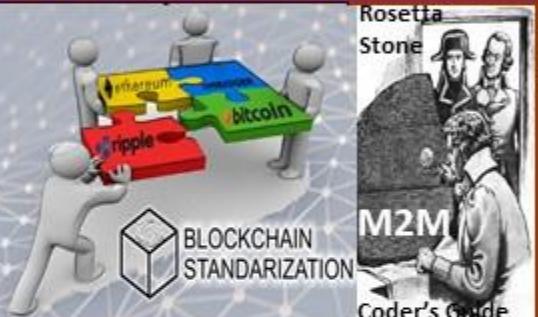
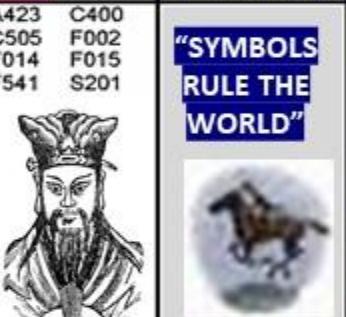
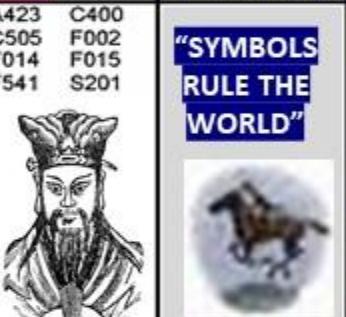
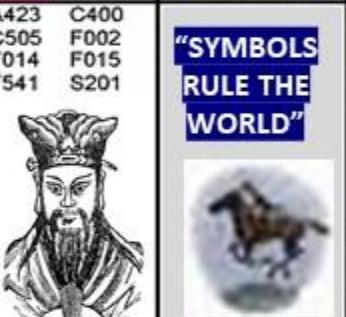
**Proof of stake (PoS)**— A consensus strategy that relies on nodes which hold collateral to participate in contributing blocks to the chain.

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

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





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

## MESSAGE CATALOG 300 + Use Cases

Data Elements: entity, attribute, relationship equivalents

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

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

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



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

## OPERATIONAL NODES / ACTIVITIES

DATA	SYSTEM FUNCTIONS	PERFORMANCE
11.4 - Classification	11.8 - Kinematics	
11.4.1 - Category	11.8.1 - Pos / Vel / Acc (PVA)	
11.4.1.1 - Confidence Level	11.8.1.1 - Acceleration	11.8.1.1.1 - Angular
11.4.1.2 - Estimate Type	11.2 - Linear	1.1.2 - Linear
11.4.1.2.1 - Alternative	2 - Estimate Type	1.2.1 - Estimated
11.4.1.2.2 - Evaluated D	11.2.2 - Observed	1.2.2 - Observed
11.4.1.3 - Value	11.2.3 - Predicted	1.2.3 - Predicted
	CODES	1.2.4 - Smoothed Data
<b>SYMBOL</b>	<b>Friend</b>	<b>Neutral</b>
2525C	Partner	
		
		
		
		<img alt="Red Diamond Symbol" data-bbox="800 10450 850 10





Syntax Lexicon Library

Rosetta Stone

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

**KICK STARTER**

**Upwork™**

**GitHub**

**JIRA**

**OPEN SOURCE SOFTWARE**

**slack**

**ICO**  
Initial Coin Offering

**Dropbox**

**CODER'S GUIDE**

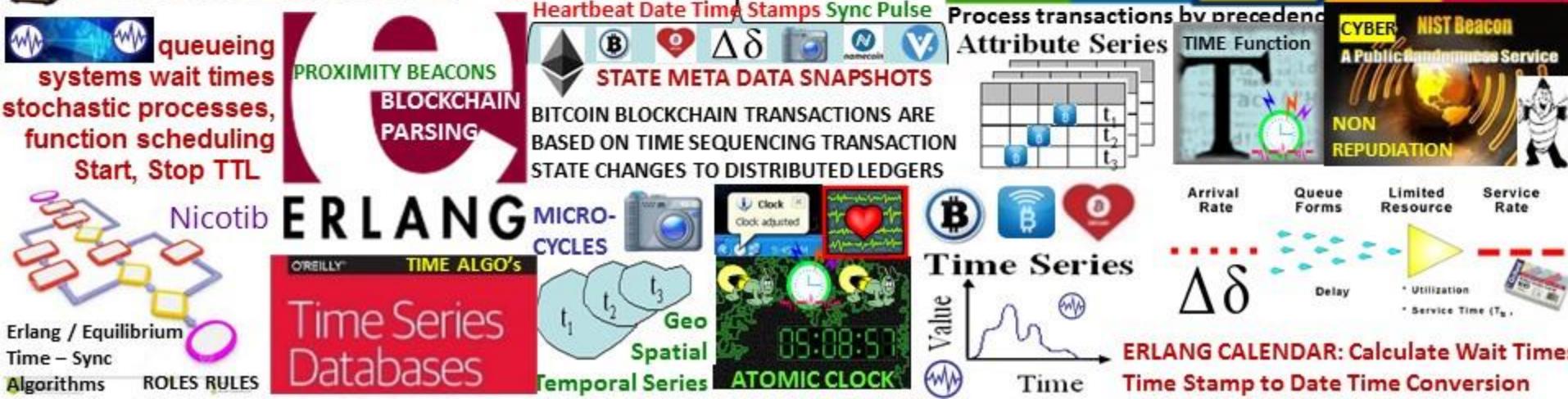
**NATO**

**STRUCTURED DATA EXCHANGE**

**300+ TEMPLATES**

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

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





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SCOTT PATTERSON

Author of the *New York Times* bestsellers, *The Quants*

# B PROOF-OF-WORK



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



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

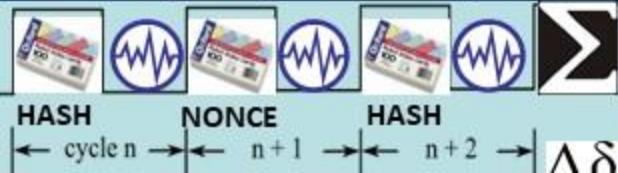


THROTTLE equivalent to difficulty. State •target = maximum value of 8 bytes Snap (2^64) divided by the difficulty. Shots

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.

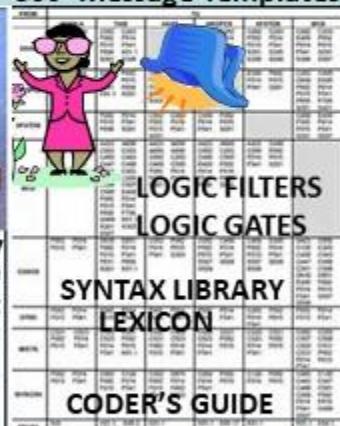


**FIREFLY-HEARTBEAT ALGORITHM**  
**STOCHASTIC HARMONY ACROSS TIME ZONES**

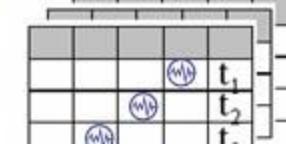
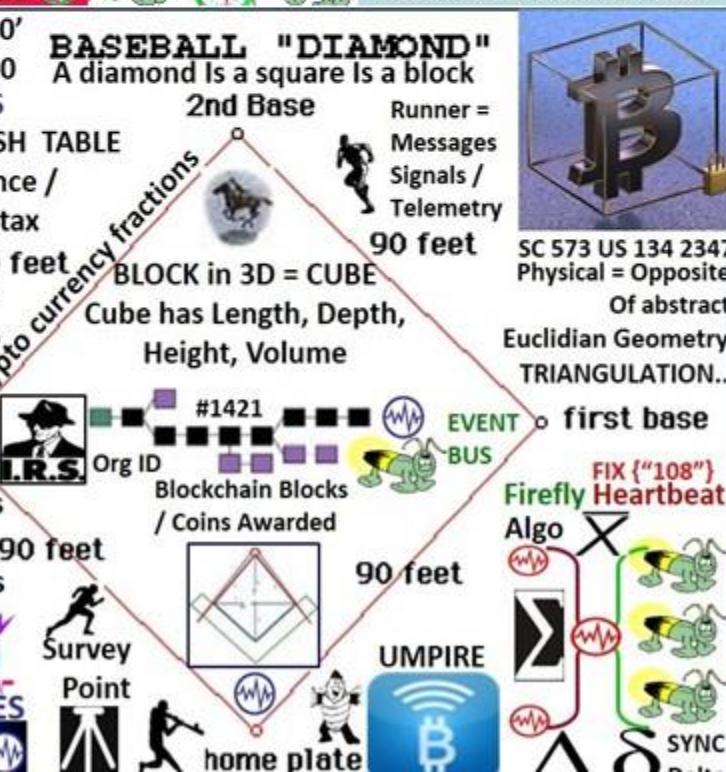


- MESSAGE ex:
  - Hashing string
  - Hash Table

300+Message Templates



POW PAYLOAD :  
COMBINATIONS OF  
ENCRYPTED SYNTAX  
Attribute Series



CLOCK FACE 360°  
90 / 90 / 90 / 90

MACRO CYCLES

HASH TABLE

Nonce /  
Syntax  
90 feet

RULES / ROLES

INSTRUCTIONS

UMPIRE

COACH

3rd Base

STATISTICIAN  
Metrics, Meters

State Meta  
Data Snapshots

MICRO-CYCLES

TRANSACTIONS

PER CYCLE

METRICS

## BASEBALL "DIAMOND"

A diamond Is a square Is a block

2nd Base

Runner =  
Messages  
Signals /  
Telemetry



SC 573 US 134 2347  
Physical = Opposite  
Of abstract  
Euclidian Geometry  
TRIANGULATION..

Crypto currency fractions

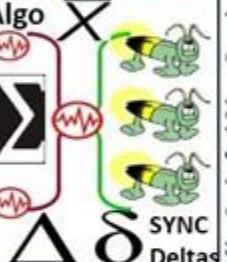
BLOCK in 3D = CUBE  
Cube has Length, Depth,  
Height, Volume



#1421  
Org ID  
Blockchain Blocks  
/ Coins Awarded

EVENT BUS

first base  
Fix {"108"}  
Heartbeat



Sync  
Deltas

UMPIRE



COMPUTER CHIP EPOCHS

cycle n → n + 1 → n + 2

## PROOF-OF-STAKE

UXTO



Mined Bitcoins



Survey Methods

Proximity Beacons

Unmined Bitcoins



MICRO-CYCLES

IRS Memo #1421

Bitcoin purchase

= property

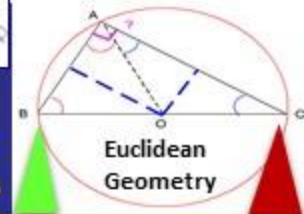
UTXO: unspent transaction output

. bitcoins sent somewhere

but not yet spent. Unspent transaction output set= latest

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

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



## STRUCTURED {"CONTENT"} TEMPLATES

Attribute Series



Digital Asset

Contract Description

DAML Language CDL

(INTEREST)

Distance

IDMaps SonarHops

FBI

NDN

## NAMED DATA NETWORKING

Time Series

Value → Time  
time ↑ FIX {"108"} distance →

1: prove coin ownership <Org\_ID> Coin Issuer  
2: # coins sent where, when Lat / Long, DTG  
3: NIST Random # Beacon Non-Repudiation  
4. Issuing {"Org\_ID"} adjudicates w buyers

FIREFLY-HEARTBEAT ALGORITHM EVENT BUS

O'REILLY

## Time Series Databases

Firefly - Heartbeat Event Bus



Stake-Time algorithm favors both # of coins

held & how often, frequently coins are staked

Velocity based selection PoSV encourages velocity

i.e. coin movement between people Vs hoarding.

Coin Age proof-of-stake system combines randomization with the concept of "coin age," a number derived from the product of the number of coins times the number of days the coins have been held.

Randomized block selection randomization predicts following generator by using a formula that looks for the lowest hash value stake size

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

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





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

$$\Delta \Sigma$$

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



**Bitcoin Address Shortener**

Bitcoin Address Shortener is an Android app that you can use to shorten those lengthy bitcoin addresses!

Simply enter a long Bitcoin address to have it transformed into a short one, and vice-versa!

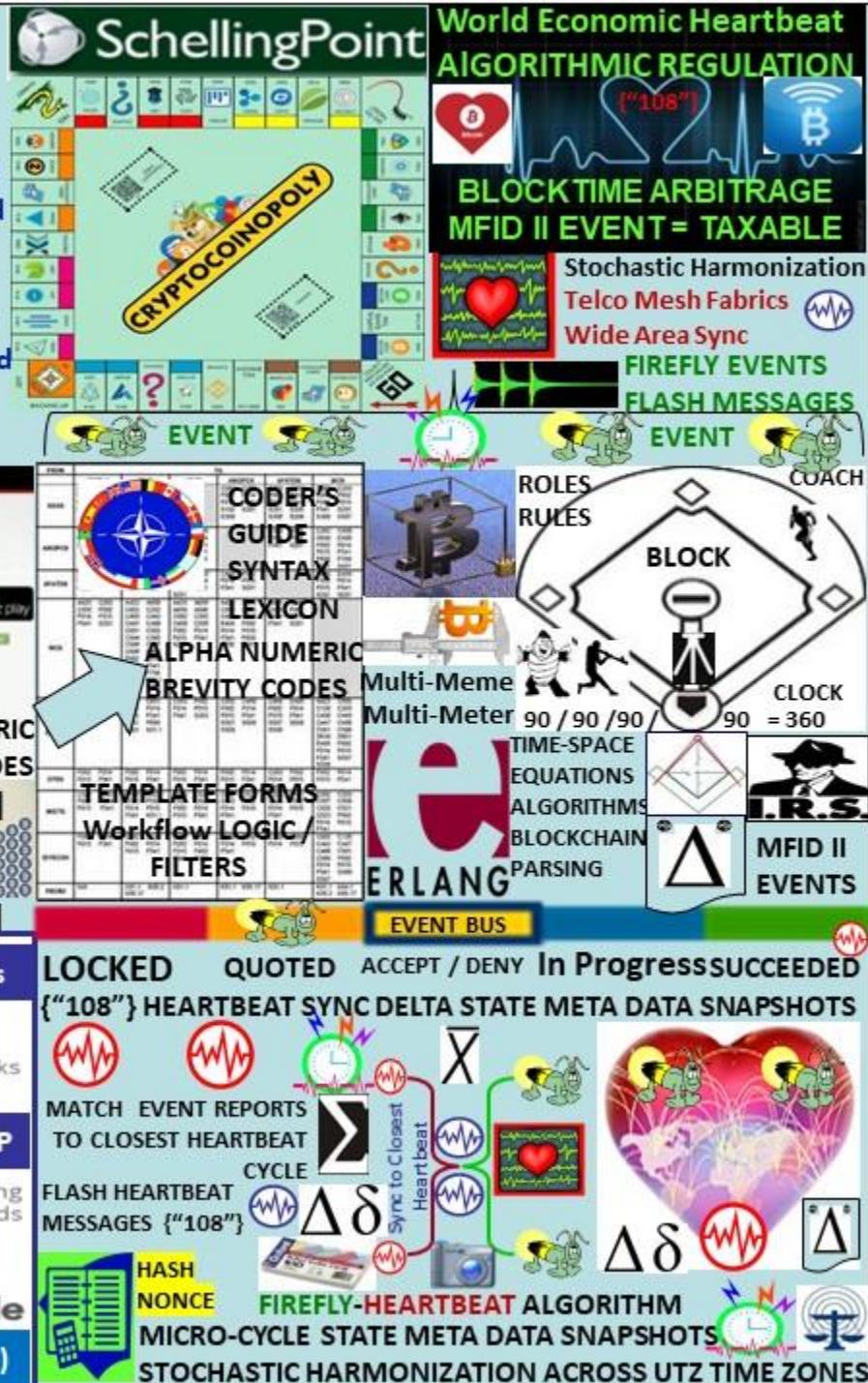
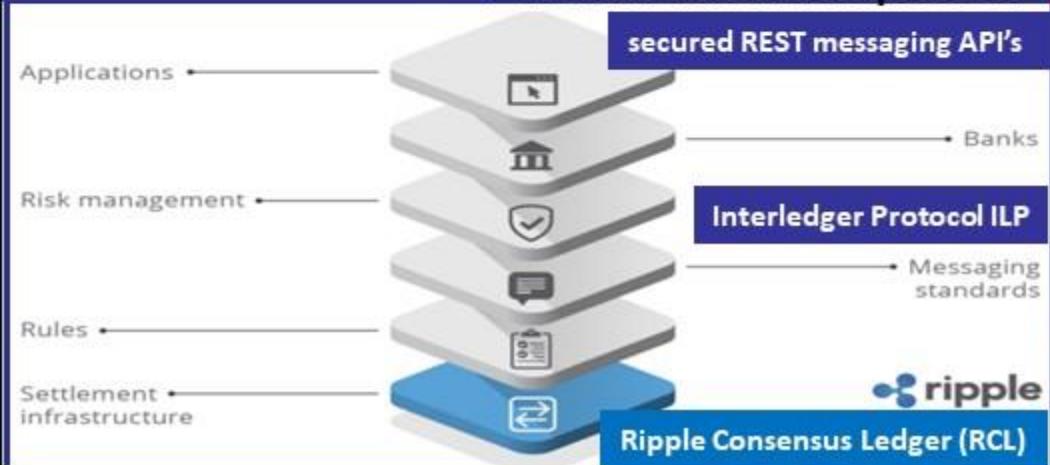
You can get it for free [here!](#)

**ALPHA NUMERIC BREVITY CODES A.I.**

To retrieve addresses use computer, use [bitcoind](#)

Clock Clock adjusted

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

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

Consensus Order  
 $\Sigma \Delta\delta \times$

Round created  
Witness  
0/1

Famous witness  
Election

Vote  
See

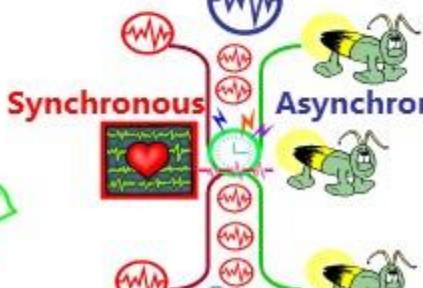
Strongly see  
Supermajority

Decide  
0/1

Round created  
Round received

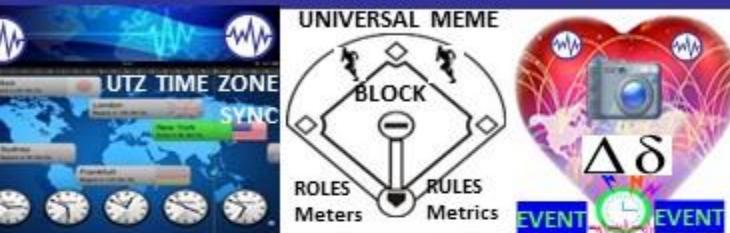
Consensus timestamp  
Consensus order  $\Delta\delta$

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

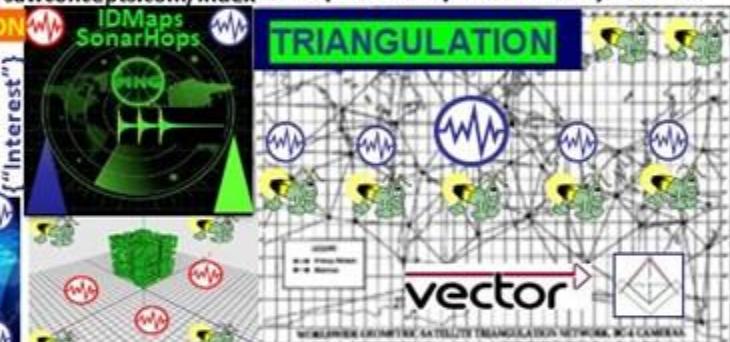


Micro-Cycle  
State Meta  
Data Snapshots

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



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



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

FIREFLY HEARTBEAT Synchronization Algorithm



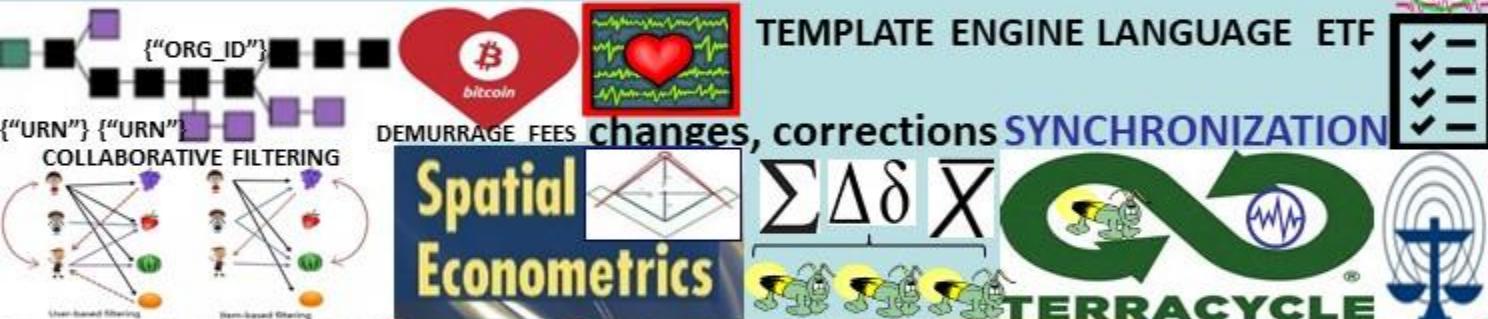
"LENGTH OF REAL TIME CYCLE IS ARBITRARY AS LONG AS NODES EVENTUALLY AGREE"  $\Delta\delta$



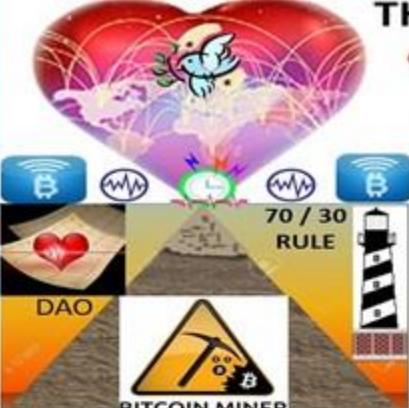
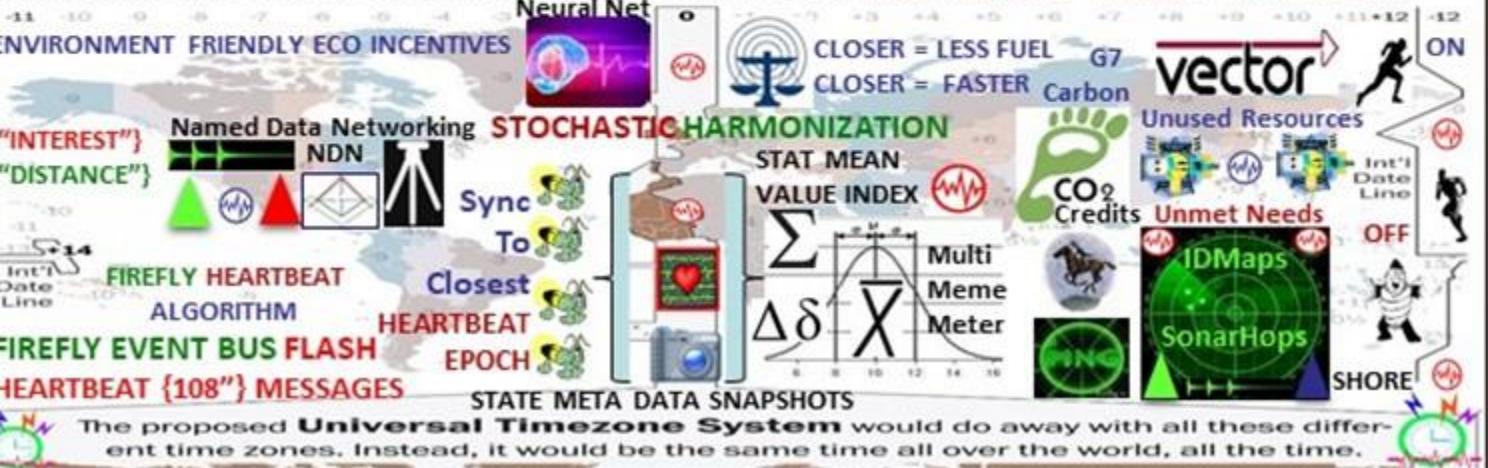
eGaaS: international blockchain platform for organizing economic, state, social activities of citizens, communities on the basis of smart law, smart contract system. eGaaS offers a comprehensive solution needed for state and business management on the blockchain platform.

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

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



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



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







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

**Futarchy PREDICTION MARKETS**  
**GnosisAMA**

Gnosis trading interface alpha  
WIZ token fee payment  
INFORMATION ARBITRAGE ECONOMICS



**TERRACYCLE**

Price Oracle

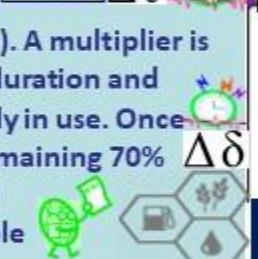
Gnosis Wisdom (WIZ) pay platform fees in Services layer, Wiz subsidize other participants fees, provide initial subsidies for markets, or market trading.



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

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

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



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

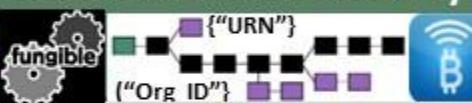


The proposed **Universal Timezone System** would do away with all these different time zones. Instead, it would be the same time all over the world, all the time.



**THE TERRA (TRC)**

Trade Reference Currency



\$0.49 USD  
0.001076 BTC

MICRO PAYMENTS  
Bitcoin



Demurrage Fees



Geo-Spatial Temporal Econometrics meters



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

# ZEPPELIN



## ZEPPELIN OPEN, GLOBAL ECONOMY

OpenZeppelin open framework of reusable, secure smart contracts in the Solidity language

zeppelinOS, operating system for smart contracts

*"the rate of innovation in building decentralized applications is limited by the manual and duplicative efforts developers must make to ensure basic usability and security."*

## WORLD ECONOMIC HEARTBEAT

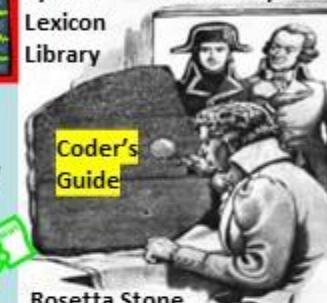


### HEART BEACON CYCLE TIME – SPACE METER

ECO-ECONOMETRICS ON THE BITCOIN BLOCKCHAIN

Syntax  
Lexicon  
Library

300+ Templates



### STRUCTURED DATA EXCHANGE

| DATA |
|------|------|------|------|------|------|------|------|------|------|
| DATA |
| DATA |
| DATA |
| DATA |

LOGIC / FILTERS  
ALPHA-NUMERIC  
BREVITY CODES



Rosetta Stone

### STOCHASTIC HARMONIZATION for TELCO Mesh Fabrics



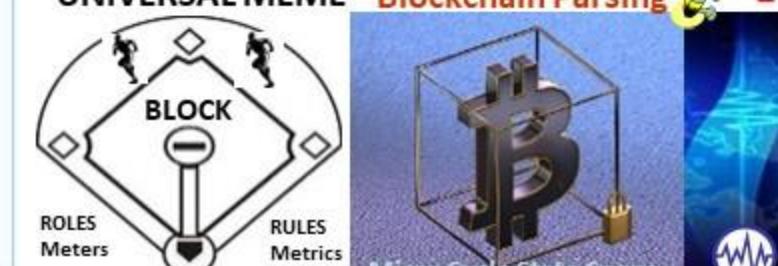
PAUSABLE  
START  
STOP  
TIME TO LIVE  
INSTRUCTIONS



Erlang  
Time Equations  
Function calls  
FLASH HEARTBEAT  
MESSAGE BUS



### 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, nspired by [OpenZeppelin Libraries](#)

Create and customize your own ERC20 Token.

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



#### Contract development



#### Contract interaction



EVM



HASH / NONCE



STATE  
META  
DATA  
SNAPSHOTS



### Blockchain Parsing

FLASH MESSAGE BUS

TIME CYCLES

SYNTAX

ERLANG

Time Equations

Function calls

FLASH HEARTBEAT

MESSAGE BUS

UNIVERSAL MEME

BLOCK

ROLES

Meters

RULES

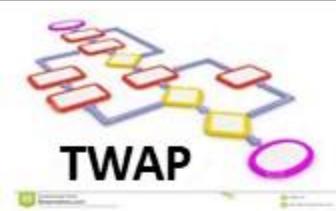
Metrics



# TWAP Algorithm Manages Bitcoin Price Volatility Algorithm

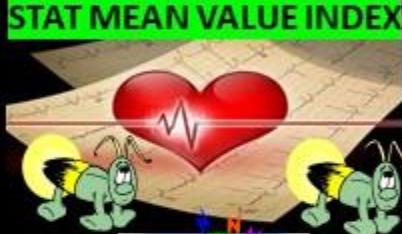


## TWAP GOAL: provide a Time Weighted Average Price Benchmark



FIREFLY HEARTBEAT ALGO  
STAT MEAN VALUE INDEX

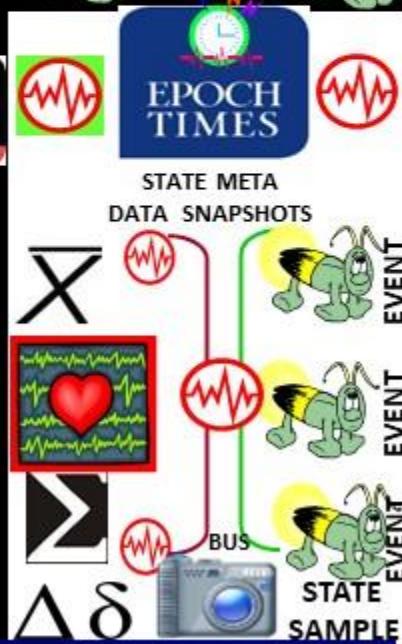
**TWAP** Works To gauge trading performance, many traders in different asset classes (equity, fixed income, currency) often use average price as a benchmark. The two common ways to calculate an average are a time-weighted average price (TWAP) and a volume-weighted average price (VWAP). TWAP is the average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



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



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



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

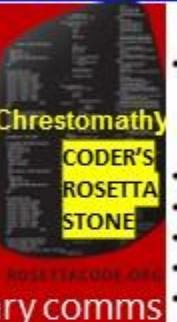




Erlang programming language / mini OS  
massively scalable high availability, real-time Erlang's runtime system built-in concurrency distribution, fault tolerance



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



**Functional Sequential Erlang**

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



Ericsson Open Money  
For Society Patent App



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

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



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

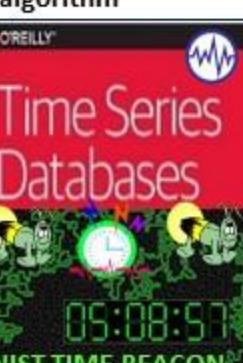


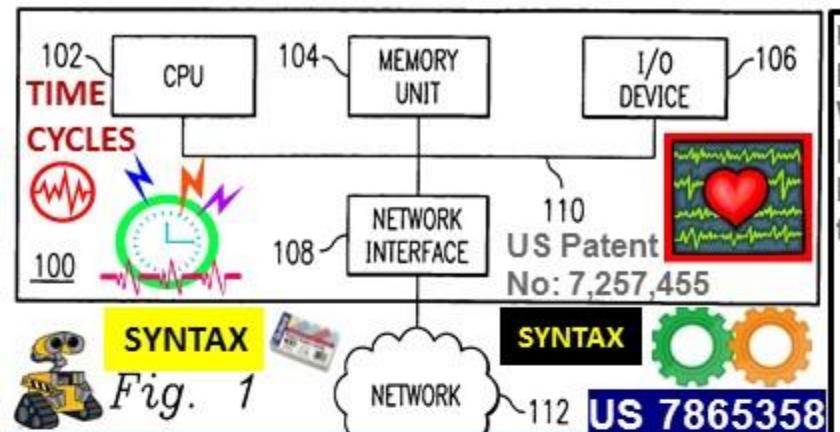
distributed "noSQL" database, embedded right into Erlang,  
supports indexing, replication, transactions, and fail-over  
Fast ETS in-memory, and DETS persistent on-disk database

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

Global name resolution

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



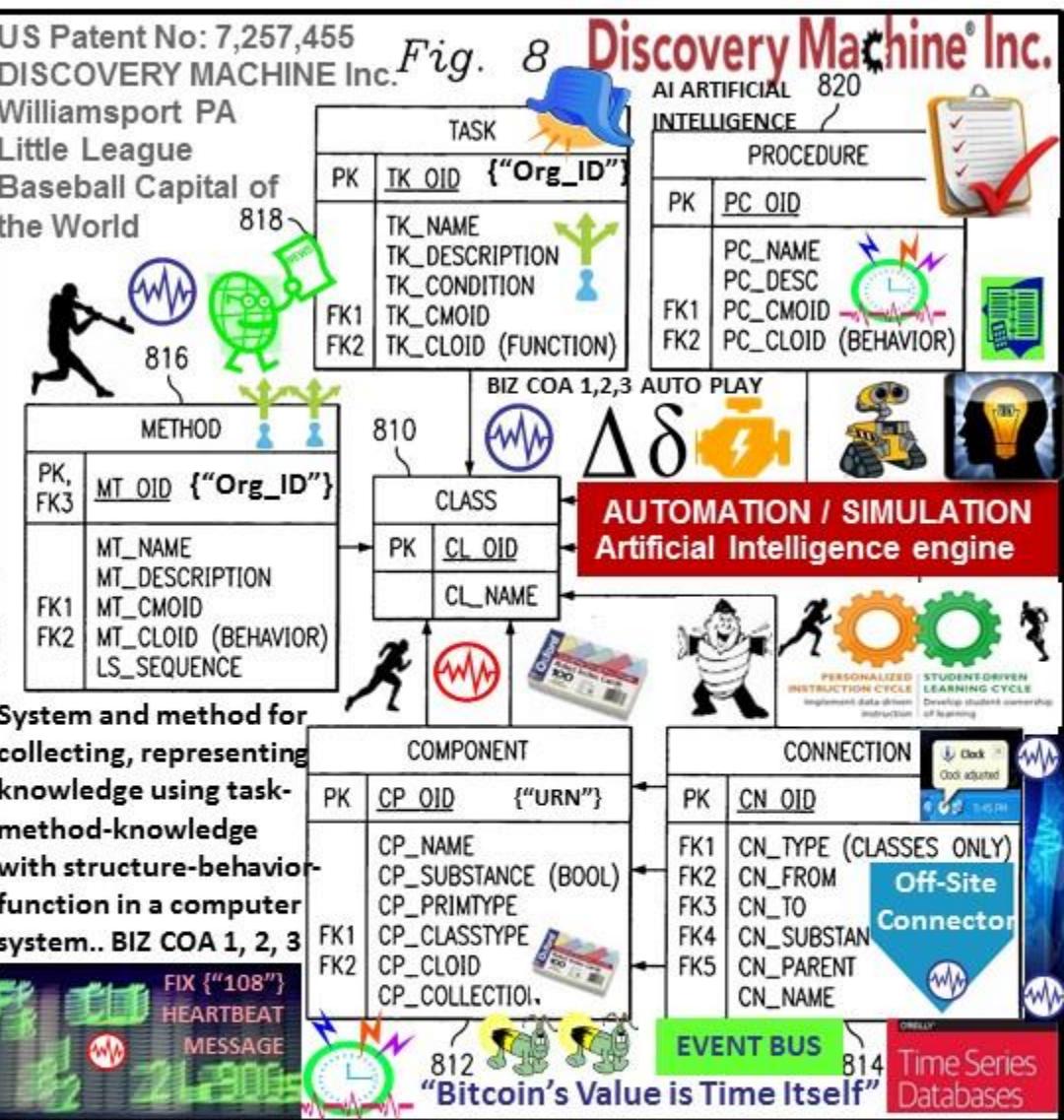
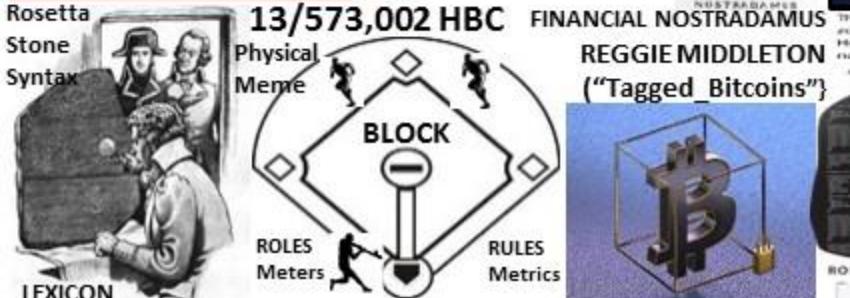


Machine-based system for transforming data from a source form to a target form, a tool is provided for sharing information established in developing a transformation model. The shared information may relate to rules for mapping source collection terms to standardized terms, rules for ordering or **SYNTAX**,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

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

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

ORACLE Veritaseum



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



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

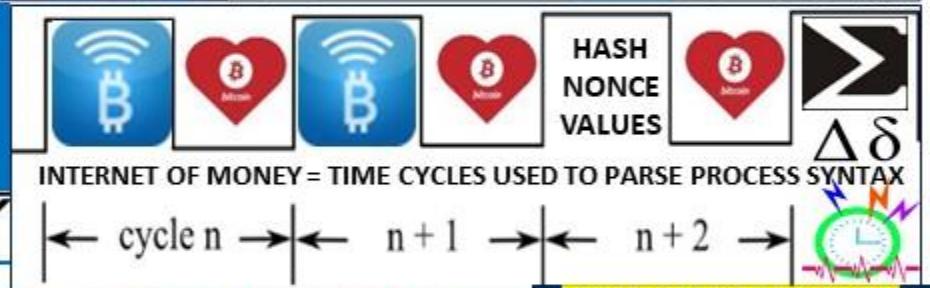
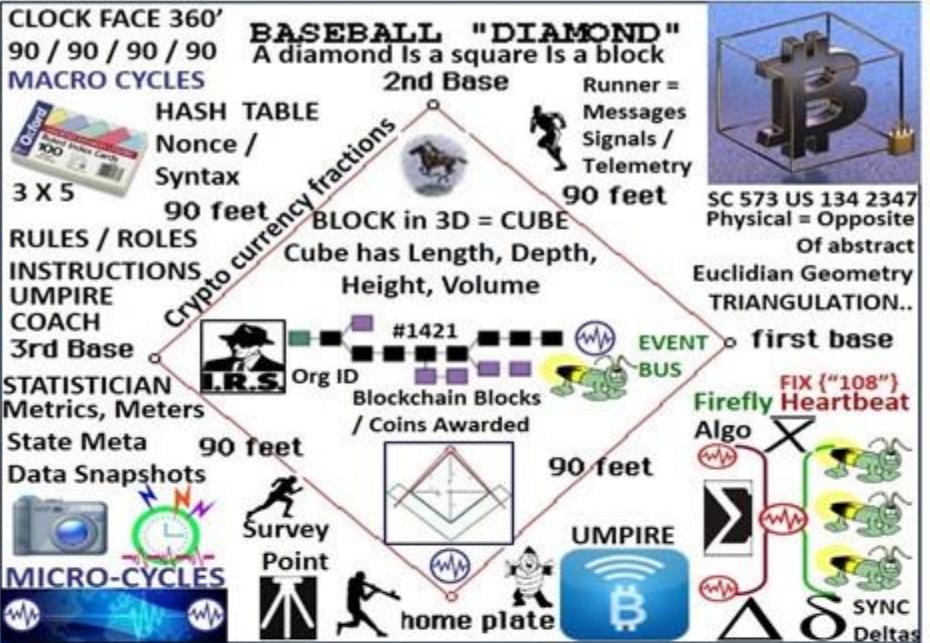


HASH TABLES  
NONCE VALUES

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



**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

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

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

**EVENT BUS**  
  
**FIREFLY HEARTBEAT ALGORITHM**  
  
 $\Delta\delta$   
  
**STATE META DATA SNAPSHOTS**

MULTI-MEME MULTI-METER  
MYRIAD MEMES MEDIATION  
**BLOCKCHAIN**



Microsoft  
AZURE BLETCHLEY

Blockchain Startups

Top Blockchain startups  
disrupting non-financial markets



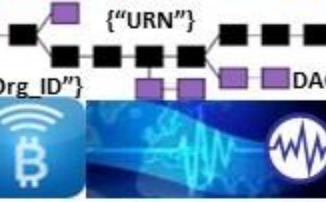
{"URN"}  
{"Org\_ID"}



OFF-SITE  
OFF-PAGE  
CONNECTOR



{"URN"}  
{"Org\_ID"}  
DAO



CLOCK FACE 360'  
90 / 90 / 90 / 90  
MACRO CYCLES



HASH TABLE  
Nonce / Syntax  
90 feet

RULES / ROLES  
INSTRUCTIONS  
UMPIRE  
COACH

3rd Base  
STATISTICIAN  
Metrics, Meters

State Meta  
Data Snapshots

MICRO-CYCLES

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

Runner =  
Messages  
Signals / Telemetry  
90 feet

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

#1421  
Org ID  
Blockchain Blocks  
/ Coins Awarded

EVENT BUS  
Survey Point

home plate



SC 573 US 134 2347  
Physical = Opposite  
Of abstract

Euclidian Geometry  
TRIANGULATION..

first base

FIX {"108"}  
Firefly Heartbeat  
Algo

UMPIRE

SYNC Deltas

IoT  
Microsoft Orleans

TIME-SPACE  
EQUATIONS  
ALGORITHMS  
BLOCKCHAIN  
PARSING  
ERLANG

HEART BEACON  
CYCLE  
STATE  
META  
DATA  
SNAPSHOTS



**DFINITY**

**RANDOM # BEACON**

**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 3x5 and updates to state stored on shards... State transitions passed to Validation Tree

**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**

**HBC "ORG\_ID" {"URN"} CLASS ASSET TYPE {"UUID"} DEVICE TYPE INDEX CARD="SHARD"**

**Threshold Relay Chain techniques**

Probabilistic Slot Protocol (PSP) When Gh is selected, members start stopwatches

Choosing Leaders Randomness selects priority list block forgers at height h

Short Term Convergence Correct processes build on highest scoring chain

Threshold Timestamping group signs blocks at h until next group appends another

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

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

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

**CLOCK FACE 360'**  
90 / 90 / 90 / 90

**BASEBALL "DIAMOND"**  
A diamond Is a square Is a block

**2nd Base** Runner = Messages Signals / Telemetry

**UTZ TIME ZONE SYNC**

**MACRO CYCLES**

**HASH TABLE**  
Nonce / Syntax

**3 X 5**

**RULES / ROLES**

**INSTRUCTIONS**

**UMPIRE COACH**

**3rd Base**

**STATISTICIAN**  
Metrics, Meters

**90 feet**

**Crypto currency fractions**

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

**EVENT BUS**

**SC 573 US 134 2347 Physical = Opposite Of abstract Euclidian Geometry TRIANGULATION..**

**#1421**

**Org ID**

**Blockchain Blocks / Coins Awarded**

**Survey Point**

**home plate**

**UMPIRE**

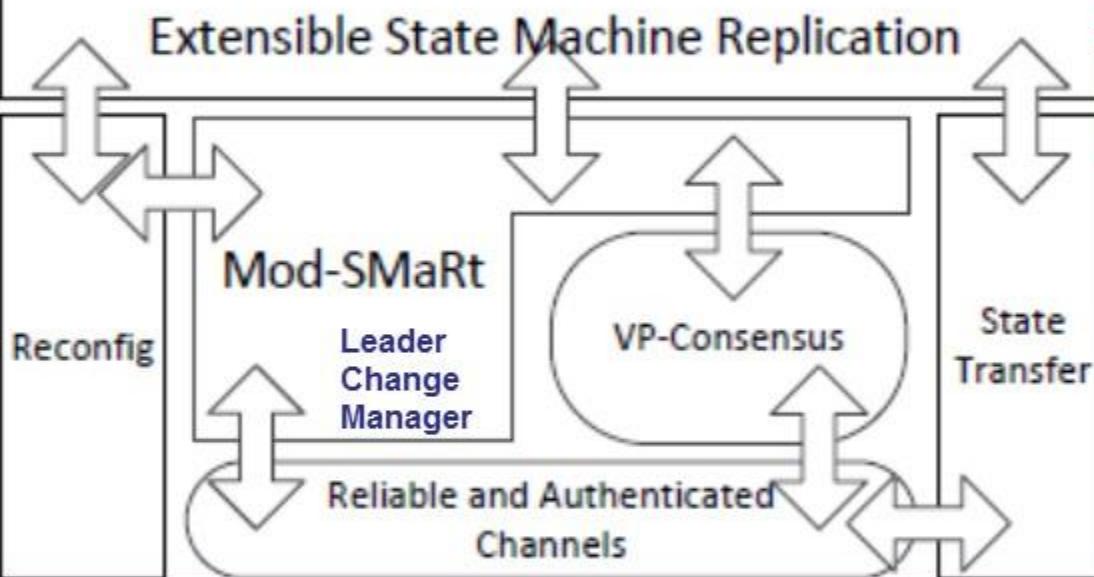
**FIX {"108"} Firefly Heartbeat Algo**

**SYNC Deltas**

**MICRO-CYCLES**

## Byzantine Fault-Tolerant State Machine Replication

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



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

### BFT-SMaRt needs an eventually synchronous system

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

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

USCt ALICE CORP V CLS BANK

PHYSICAL = OPPOSITE OF ABSTRACT

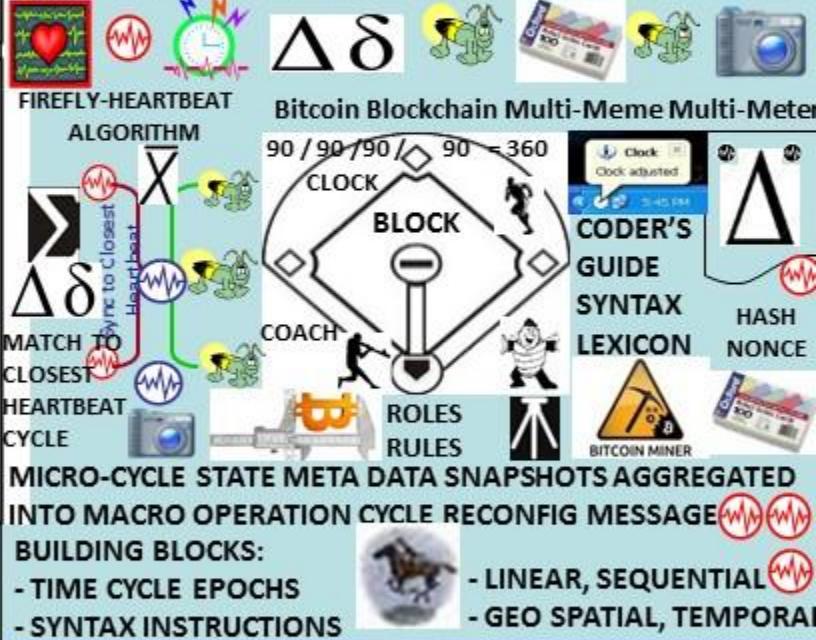


DERIVED FROM BATTLEFIELD DIGITIZATION DISTRIBUTED AUTONOMOUS ORGANIZATION DAO SYSTEM OF SYSTEMS

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

CHANGES IN STATE VIEWED IN "APPLIQUE' OVERLAY VIEWS

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



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

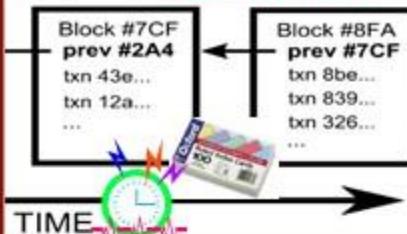
# HYPER LEDGER OPEN SOURCE BLOCKCHAIN

Core APIs, & SDKs

$\Delta\delta$  Shared Ledger



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



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

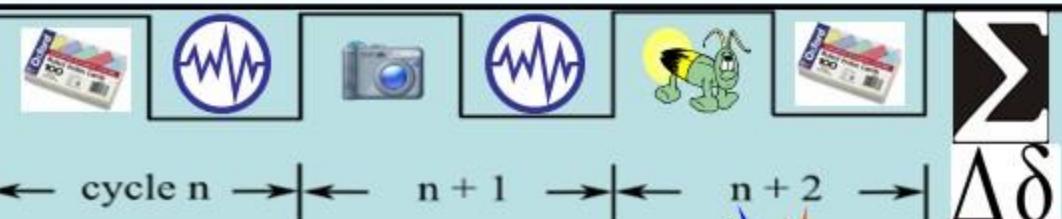
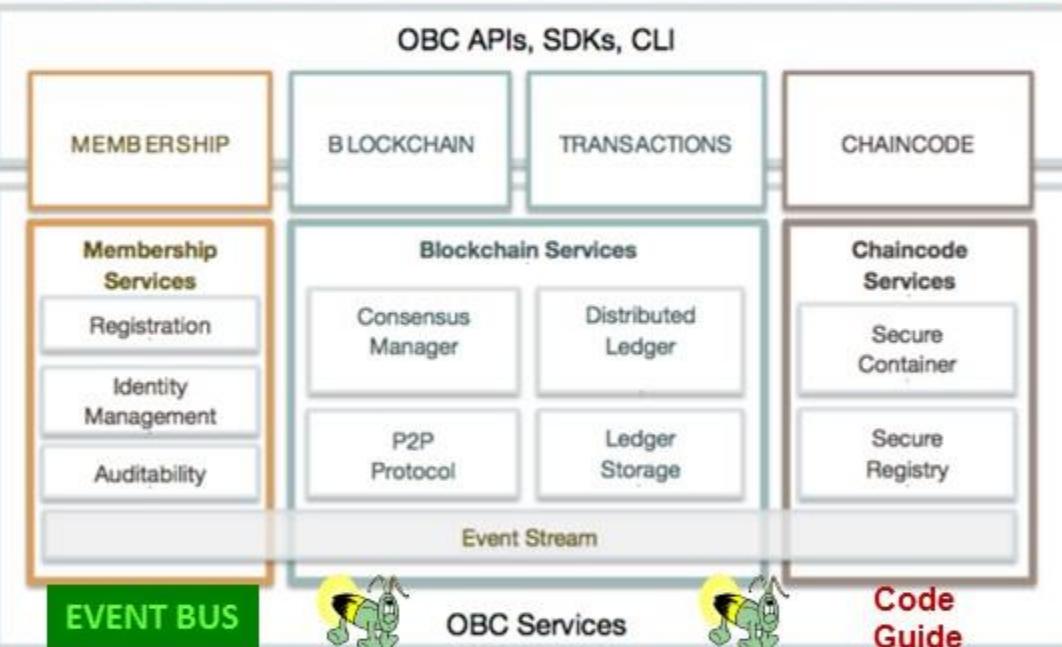
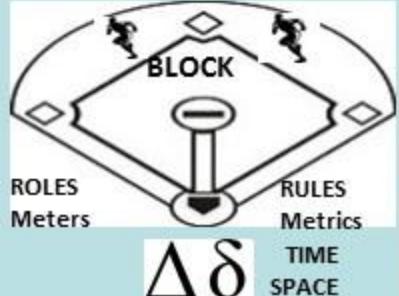
FEDERATION  
**Federation Gateway**

METRICS ("Organization ID")  
METERS

RESTFUL SYNC DELTA  
CHANGE MANAGEMENT  
MICRO-MACRO CYCLE



BLOCK TIME ARBITRAGE



**MICRO-MACRO CYCLE SCHEDULE**

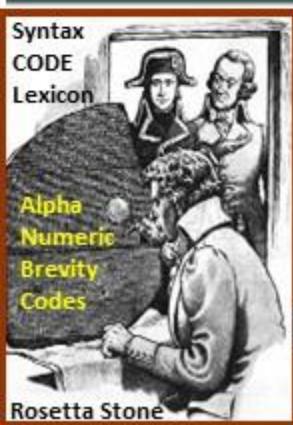
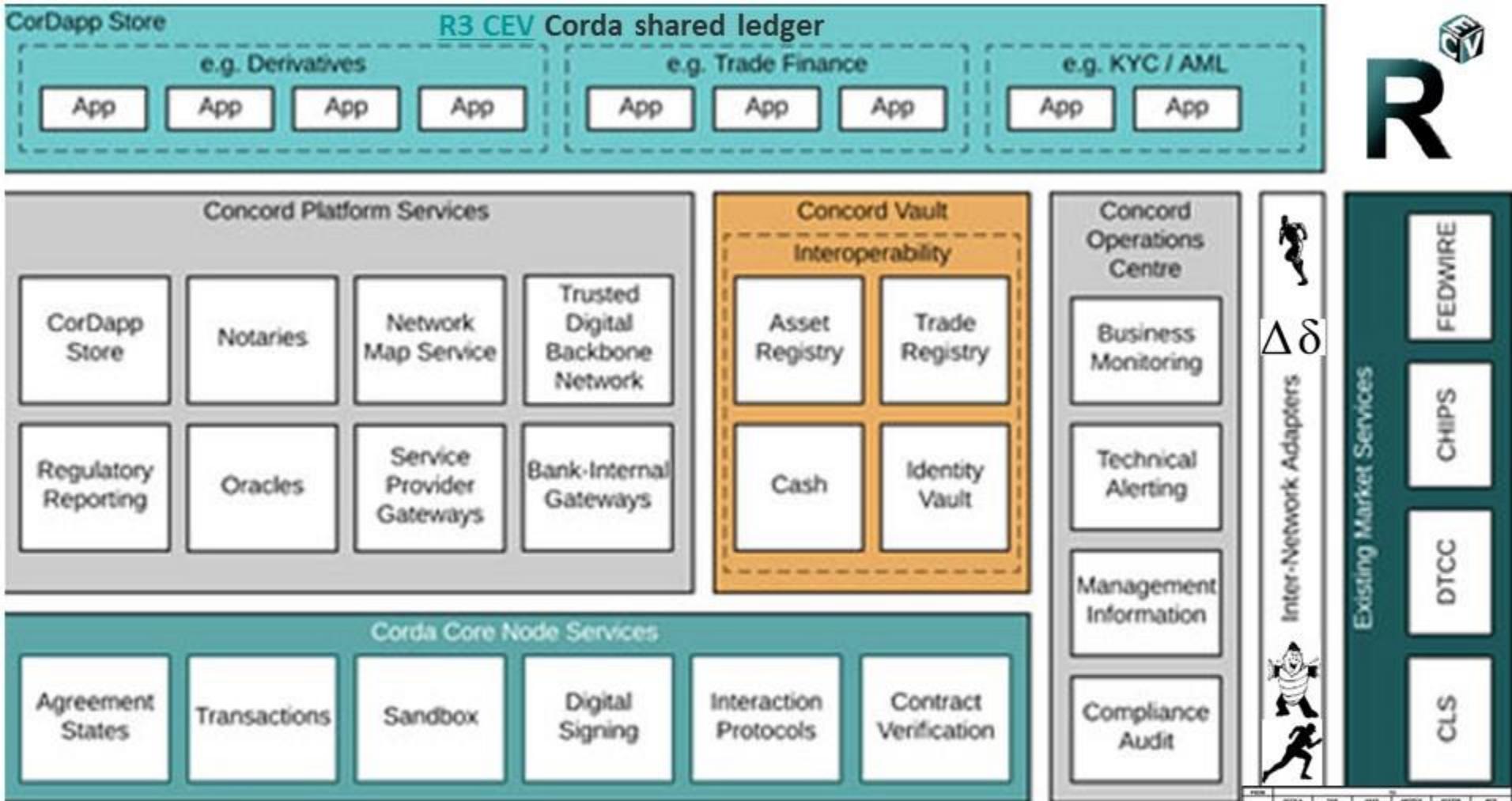
ROSETTA STONE



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

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

FFIRNS  
FFUDNS



## UNIVERSAL EVENT BUS

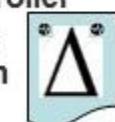
- Choreographing workflow between firms without a central controller
  - Supports inclusion of regulatory & supervisory observer nodes
  - Validating transactions solely between parties to the transaction
  - Supporting a variety of consensus mechanisms
  - Recording explicit links between human-language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



Federation  
Gateway



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



**XBRL / CDL / DAML  
STOCK MIC CODES**

• Generating codes

## **STRUCTURED MILITARY MESSAGE**

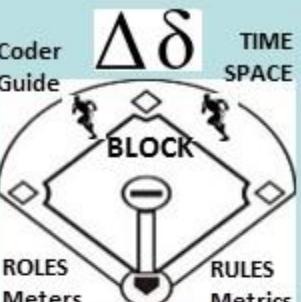
## TEMPLATE FORMS LOGIC / FILTERS

300+  
LOGIC, Puzzles

## Use Case Templates

## KEY BLOCKS:

- NO CONTENT = NULL
- LEADER ELECTION



MVP



EVENT BUS

## MICRO BLOCKS:

- ONLY CONTENT
- NO CONTENTION



XBRML / CDL / DAML  
STOCK MIC CODES

STRUCTURED  
MILITARY MESSAGE  
TEMPLATE FORMS  
LOGIC / FILTERS

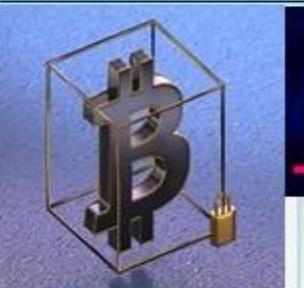
NDN  
WITH SYNTAX  
LEXICON LIBRARY



long exponential intervals (10 min)

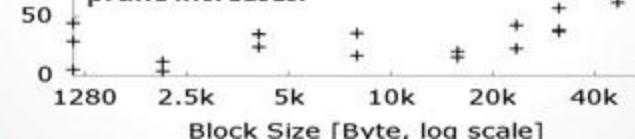


COMMAND SYNTAX  
RESTFUL State Transfer



Subjective Time to Prune

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



short deterministic intervals (10 sec)

MACRO - CYCLES



MICRO-CYCLES



## ETHER: Compensate Resource Contribution

Gas: price to  
Run contract  
transactions

ethereum

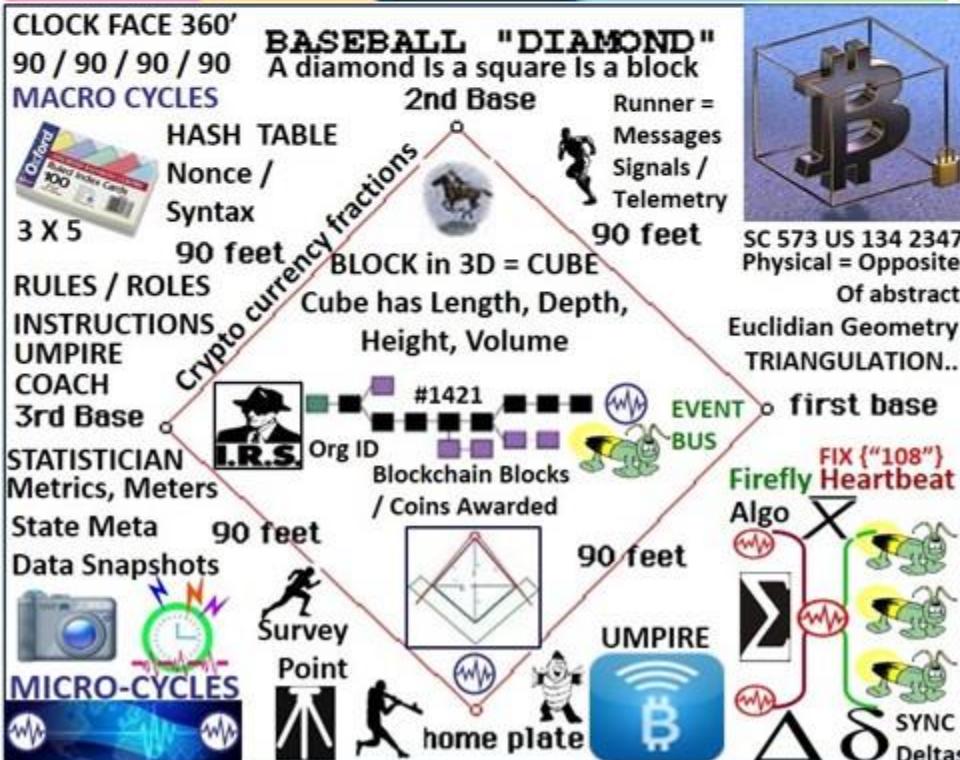
Casper is a security-deposit based economic consensus protocol. Nodes = "bonded validators" place security deposit (an action called "bonding") If a validator generates an invalid action, account deposits are forfeited along with consensus privilege. Use of security deposits address "nothing at stake"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



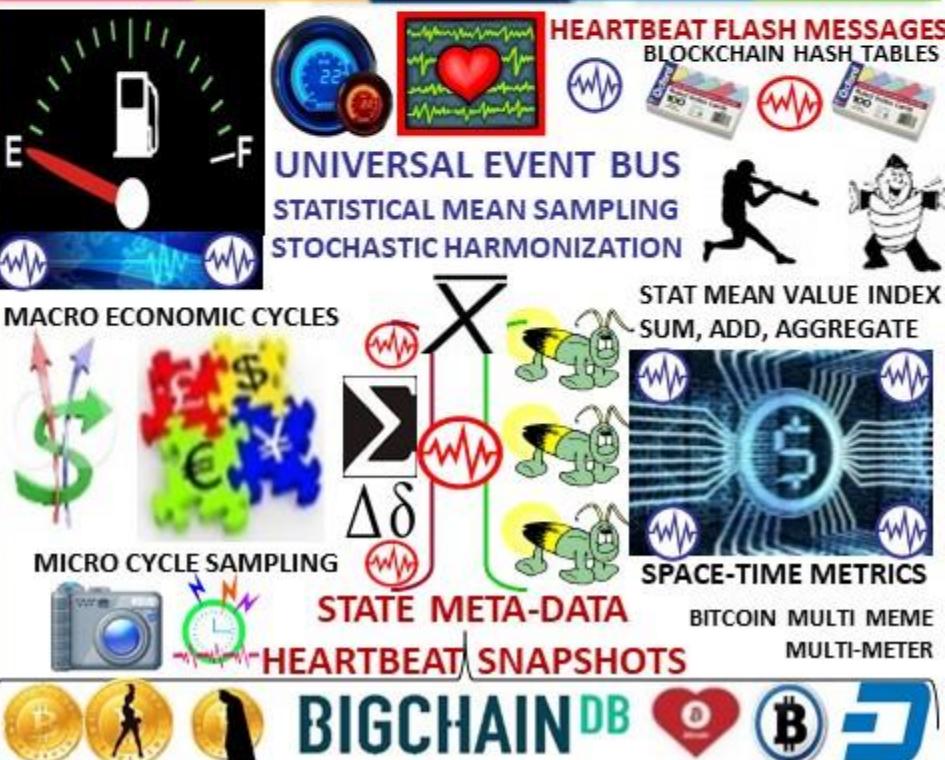
Ether hedged against other  
crypto / FIAT currencies  
price changes

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

**EVENTUALLY**



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



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

**STATE CHANNELS:** blockchain interactions

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

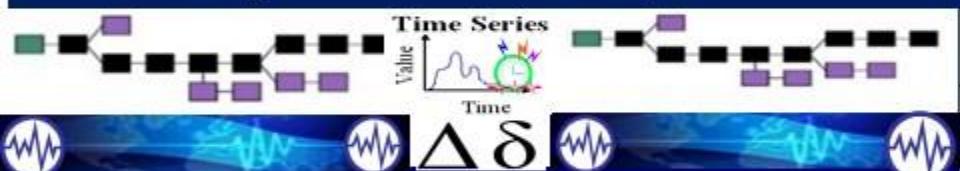


**1. Part of the blockchain state is locked** via multisignature or some sort of smart contract, so that a specific set of participants must completely agree with each other to update it.

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



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



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

LINK: <http://jeffcoleman.ca/state-channels/>

**MACRO CYCLES**

**CLOCK FACE**

**90 / 90 / 90 / 90**

**= 360 degrees**

**METRICS / METERS**

**90 feet**

**ALGORITHM = RULES**

**PLAYERS = ROLES**

**UMPIRE = RULES**

**3rd Base**

**STATISTICIAN**

**X**



**90 feet**

**Blockchain Blocks / Coins Awarded**



**90 feet**

**Survey Point**

**home plate**

**Δδ**

**ASIC CHIP TIME / EPOCH INTERVALS / CYCLES**

**cycle n**

**n + 1**

**n + 2**

**Δδ**

**FLASH HEARTBEAT MESSAGES**

**HEARTBEAT STATE META-DATA**

**SNAPSHOTS EVERY**

**10, N MIN MICRO TO**

**MACRO ECON CYCLE**

**HASH TABLES**

**STATE SNAPS**

**SYNTAX**

**TIME SERIES**

**Value**

**Time**

**Geo Spatial Temporal Series Attribute Series**

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

**META-DATA**

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

**HB CYCLE**

**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**

**BASEBALL "DIAMOND"**

**A diamond Is a square Is a block**

**2nd Base**

**Runner = Messages Signals / Telemetry**

**90 feet**

**1st Base Coach first base UMPIRE**

**3 x 5 HASH TABLE NONCE VALUES / CODE MICRO-CYCLES**



**SC 573 US 134 2347**

**Physical = Opposite Of abstract**

**1st Base Coach first base UMPIRE**

**3 x 5 HASH TABLE NONCE VALUES / CODE MICRO-CYCLES**

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## ETHER: Compensate Resource Contribution

Gas: price to  
Run contract  
transactions

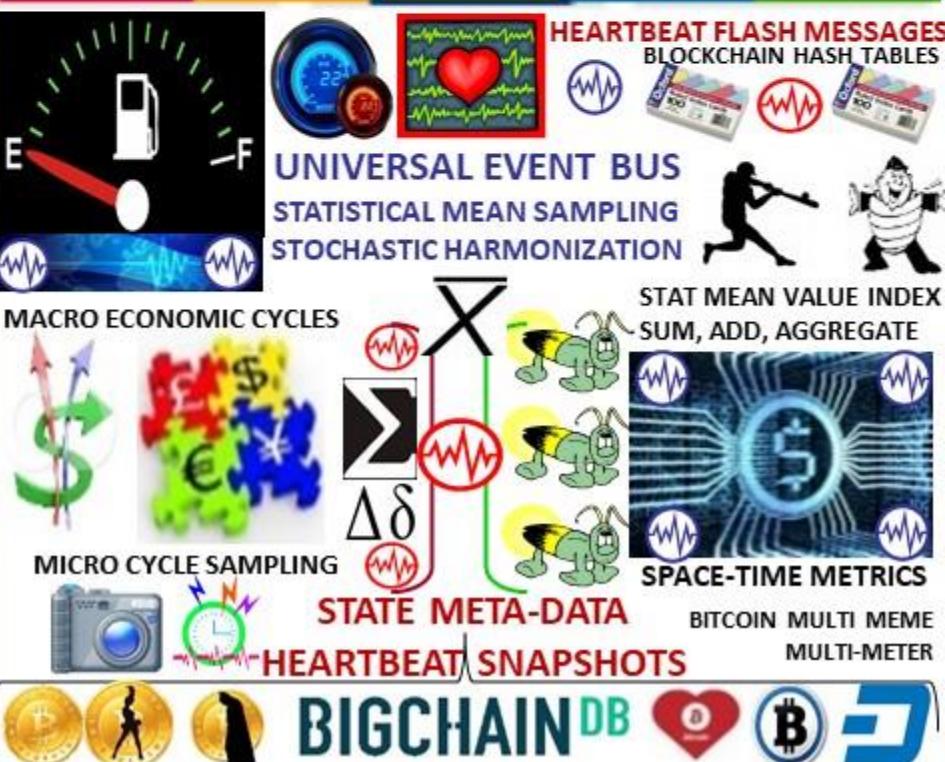
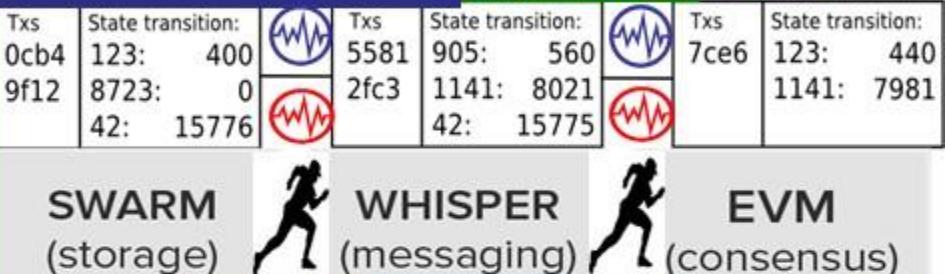
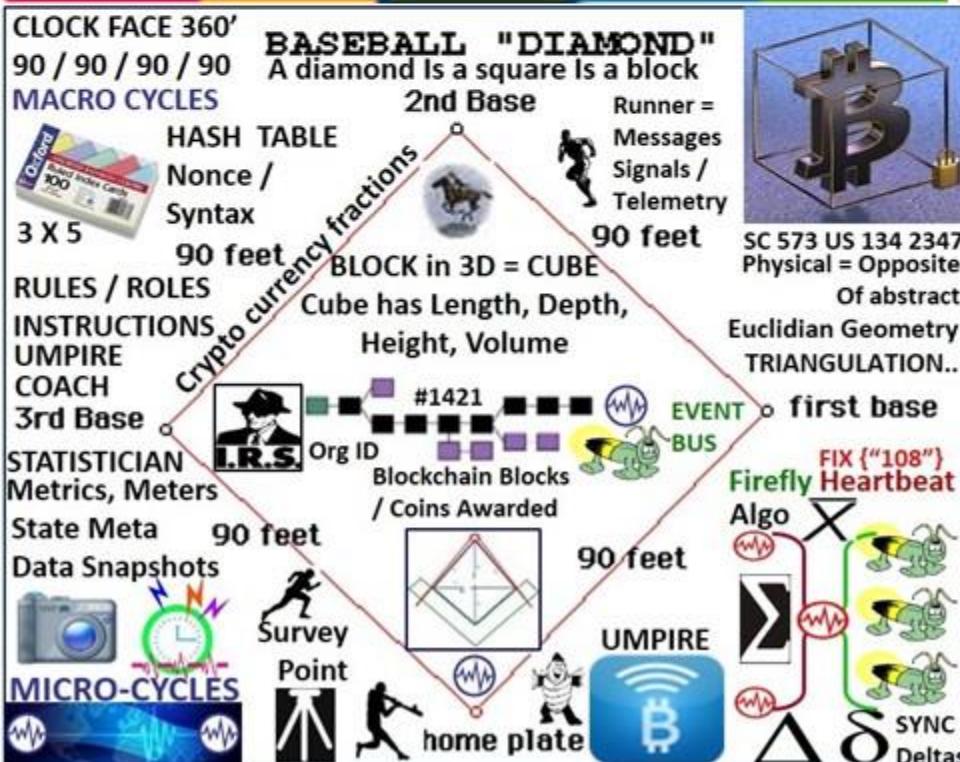
ethereum

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).



**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**





**PROJECT LIGHTING**

**FIREFLY - HEARTBEAT ALGORITHM**

**FIREFLY - HEARTBEAT**

**ERLANG**

**Time Series Databases**

**UTZ UNIVERSAL TIME ZONE SYNC**

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

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

**CLOCK FACE 360'**  
90 / 90 / 90 / 90  
**MACRO CYCLES**

**HASH TABLE**  
Nonce / Syntax  
3 X 5

**RULES / ROLES**  
**INSTRUCTIONS**  
**UMPIRE**  
**COACH**  
**3rd Base**

**STATISTICIAN**  
Metrics, Meters

**State Meta**  
Data Snapshots

**MICRO-CYCLES**

**Time Series**

**Value**  
**Time**

**Sync Delta**  
**State Meta**  
**Data Snaps**

**Server nodes, miners only keep recent blocks**

**Time**

**Event Reporting Across Time-Space**

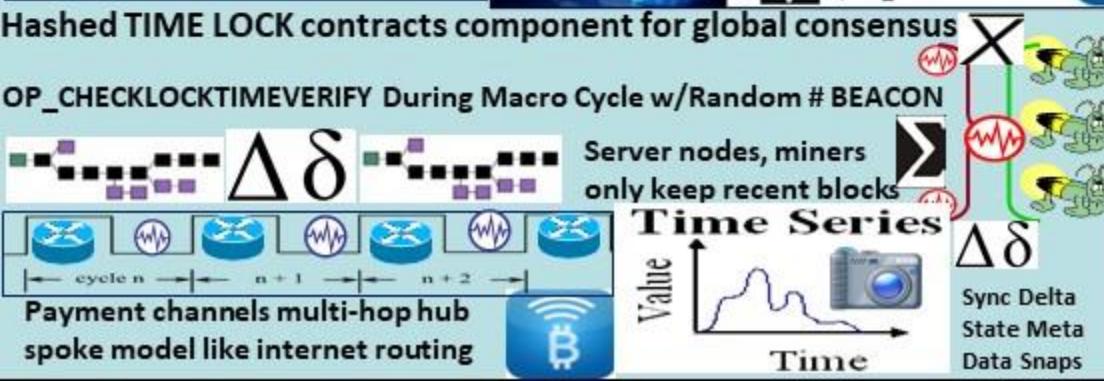
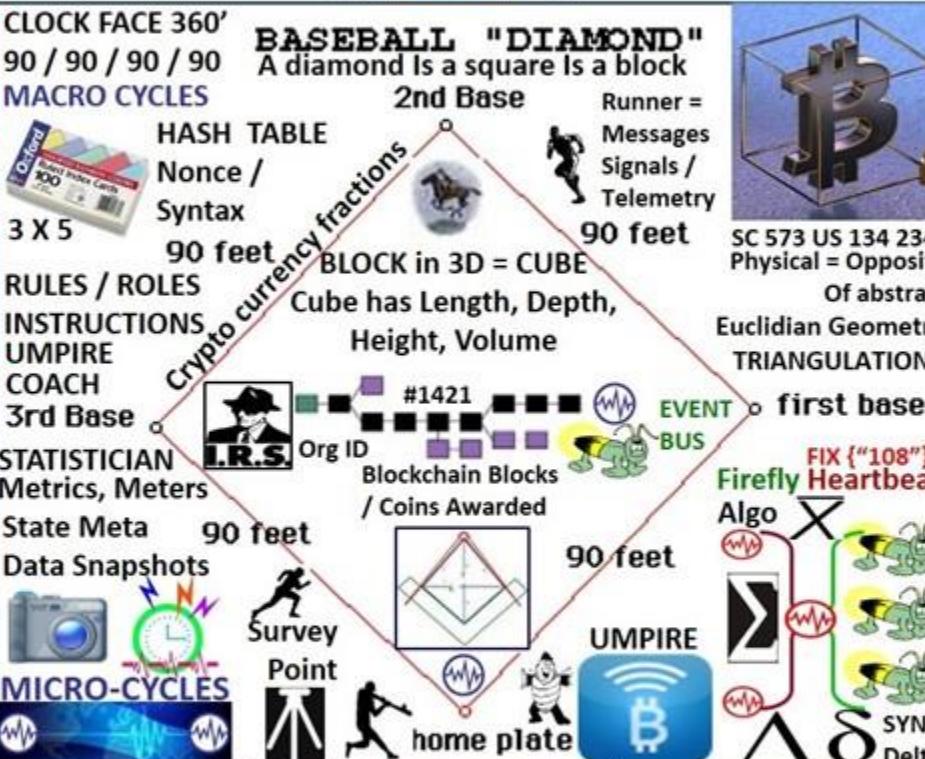
**MESSAGE EVENT BUS**

**SEGREGATED WITNESS SegWit**

**NONCE SYNTAX / SYMBOL TAGS**

**OUT OF BAND / CHANNEL**

**Sync Delta**  
**Sync Delta**  
**Sync Delta**



**Segregated witness = Separated signatures**

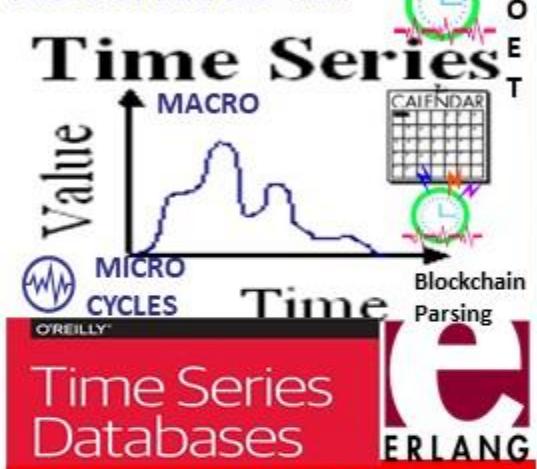
- signatures are cryptographic proofs also known as witnesses
  - moving signatures out of transactions
  - keeping a separate repository of the signatures
  - making them optional in propagation and storage
  - signature are the biggest part of transactions
  - can be implemented as a **soft-fork**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

# SAWTOOTH LAKE POETIC CONSENSUS PROOF OF ELAPSED TIME: POET

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



## PROOF OF ELAPSED TIME



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

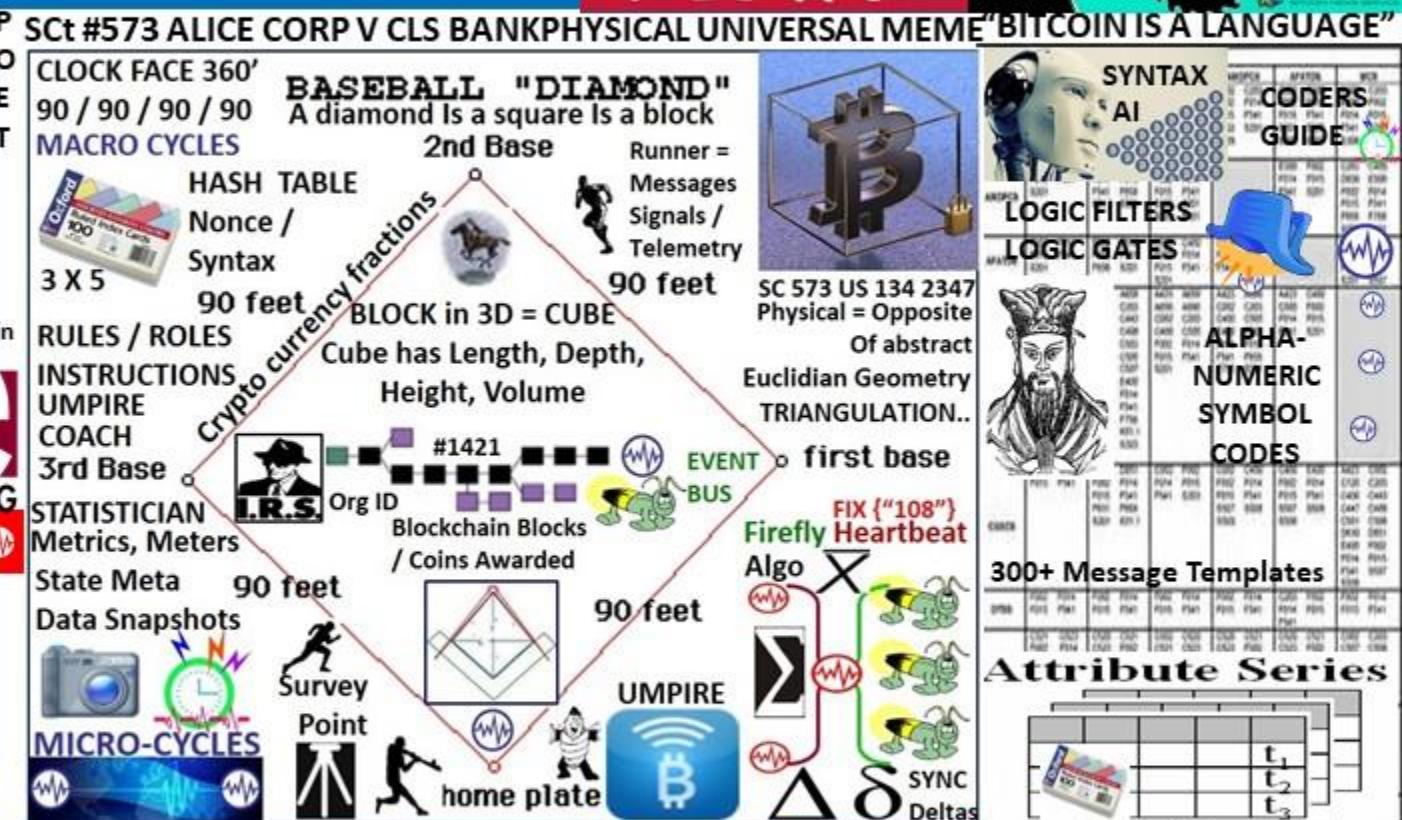
Voting based selection Instead of only using the stake size, the block generators can be selected by votes  
ex: League MVP

MVP



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

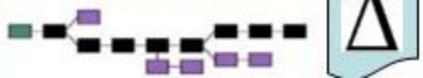
## TOURNAMENT LEAGUE BOARD



## FIREFLY-HEARTBEAT FLASH MESSAGES UNIVERSAL EVENT BUS



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



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

#### Key Features:

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



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

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

All rates time-stamped in UTC.



Ability to look up by time-stamp.

Ability to look up by block-height.

Asset Classes: Digital Currencies

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

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

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

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

**BRAVE NEW COIN.**  
Digital Currency Insights

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



# 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/>

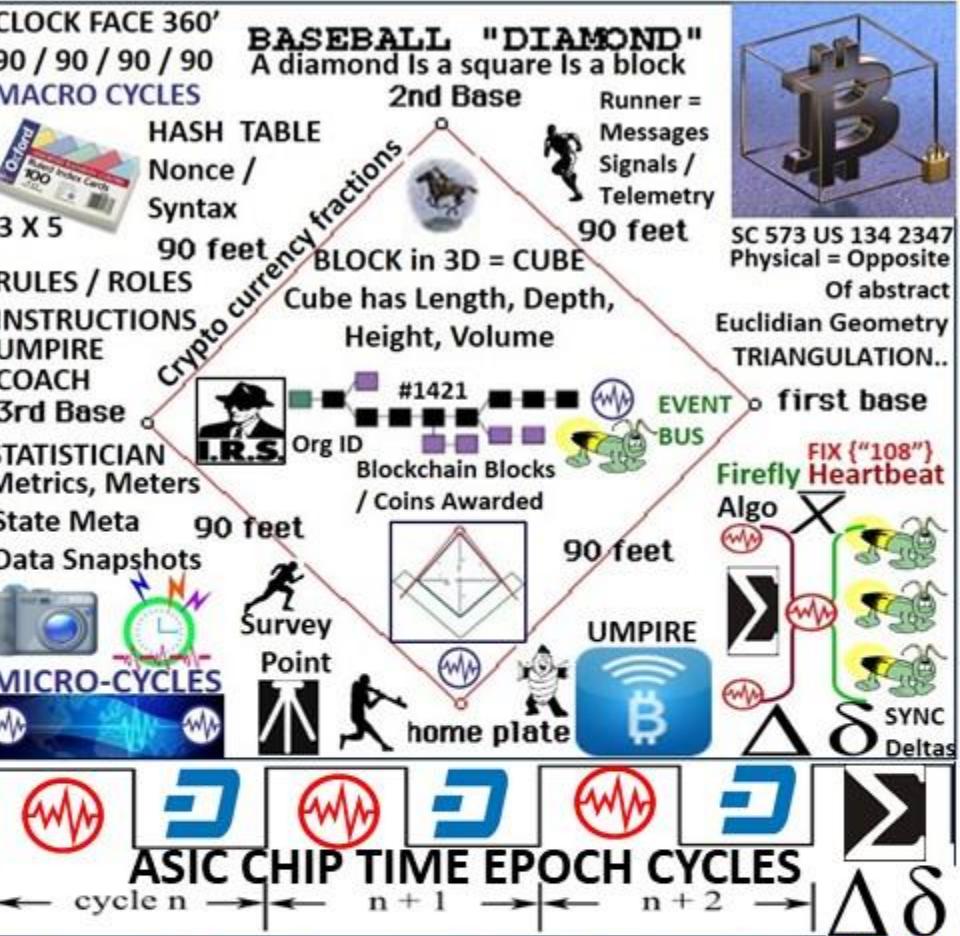
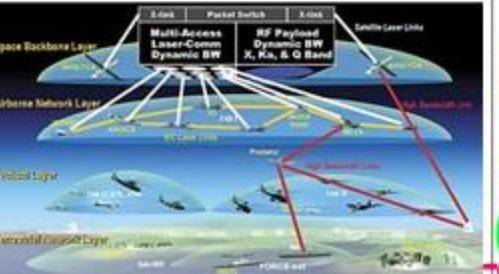
"all digital currency networks, the base layer of people generating the blockchain — "miners," "stakers," "witnesses," "validators," or "forgers" — all get paid to do so" "consensus," or an agreement upon what the rules should be; and second, the execution of said rules.

"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**



STOCHASTIC HARMONIZATION FIREFLY-HEARTBEAT EVENT BUS

HEART BEACON CYCLE = IMPROVEMENT TO NETWORK CENTRIC WARFARE



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



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

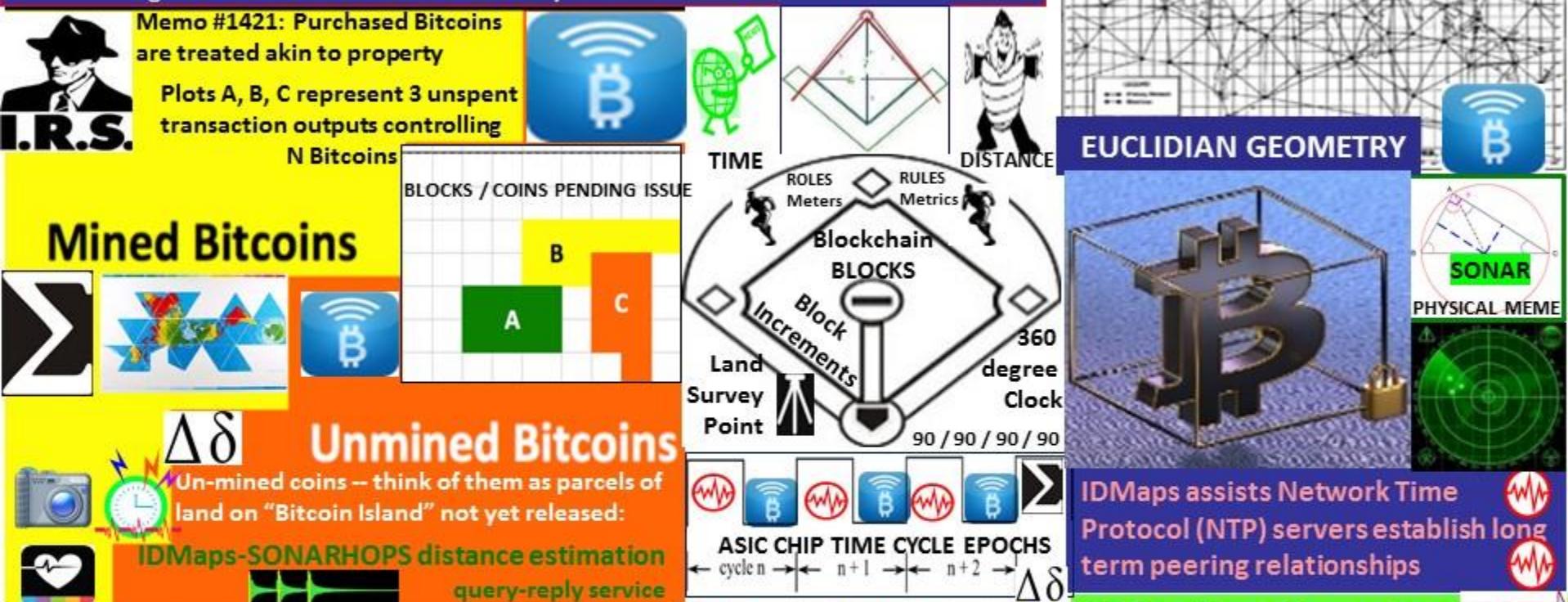
HEART BEACON CYCLE

USPTO 13/573,002

SURVEY METHODS

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

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



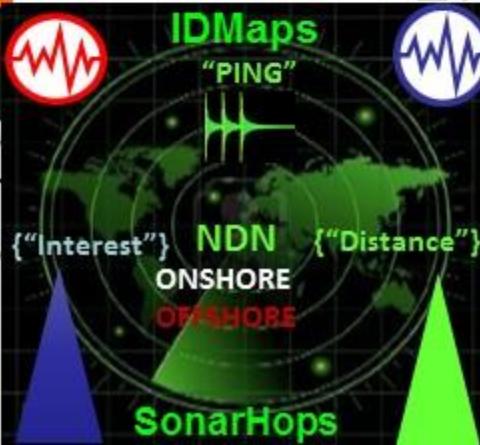
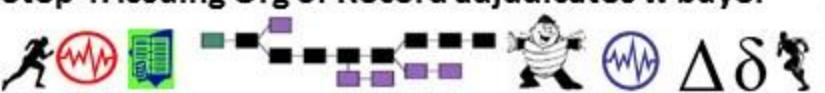
- End-state Bitcoin quantity will be fixed like land  
"Bitcoin as protocol of ownership, not transfer"  
Coins never travel, but simply switch owners"

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

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

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

Step 4: Issuing Org of Record adjudicates w buyer



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



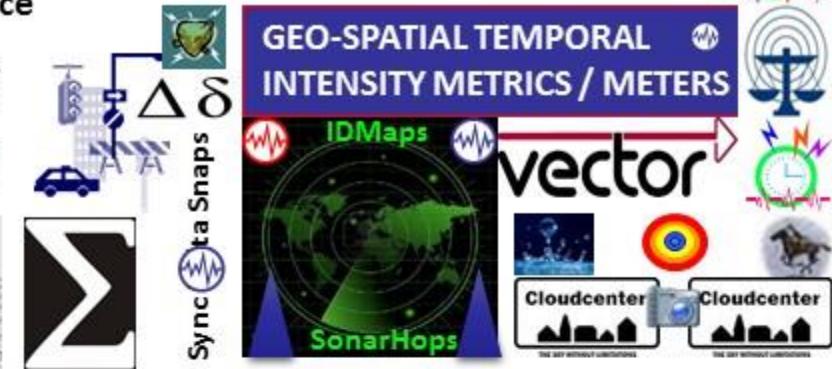
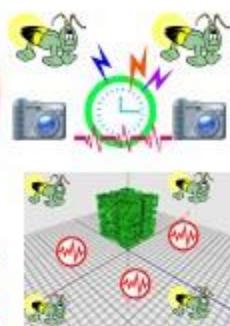
IDMaps Distance Metrics: latency (round-trip delay) available bandwidth estimation



# IDMaps: Global Internet Host Distance Estimation Service



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



IDMaps scalable Internet-wide architecture measures, disseminates distance information



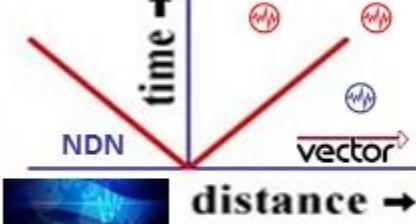
HOP COUNTS



REACHABILITY



/localhost/nfd/fib/add-nexthop



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

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

Name Prefix  
<Org\_ID> Trie (NPT)



**NDN NAMES**

NDN NAMED DATA NETWORK RIB /  
FIB Datasets event notification

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

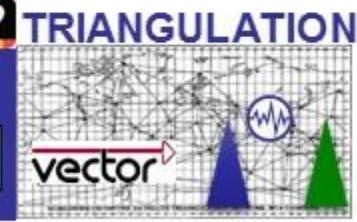


**NDN RIB**

NDN INTEREST LENGTH = DISTANCE BY HOPS

NDN  
INTEREST

IS DATA  
FRESH ?



Datasets and Event Notification

INTEREST in <URNs>

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

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



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



MICRO-CYCLES

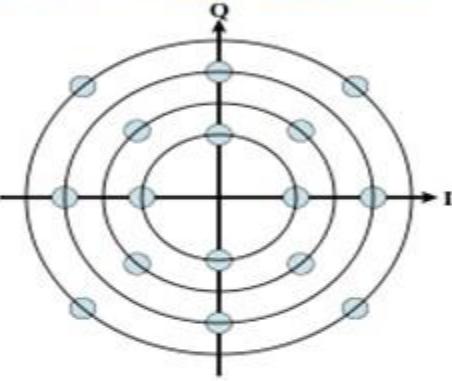


NDN INTEREST LIFETIME = TTL Time To Live

HEARTBEAT STATE META DATASNAP SHOTS



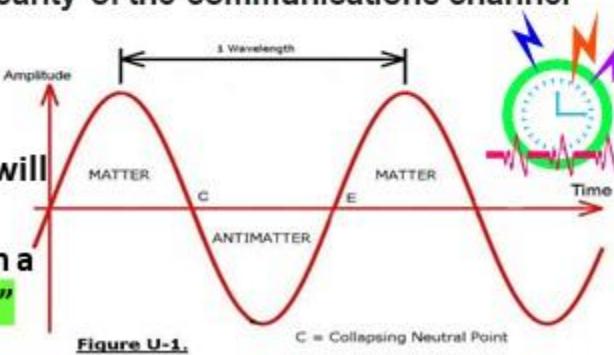
[www.RLighthouse.com](http://www.RLighthouse.com)



## 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"**



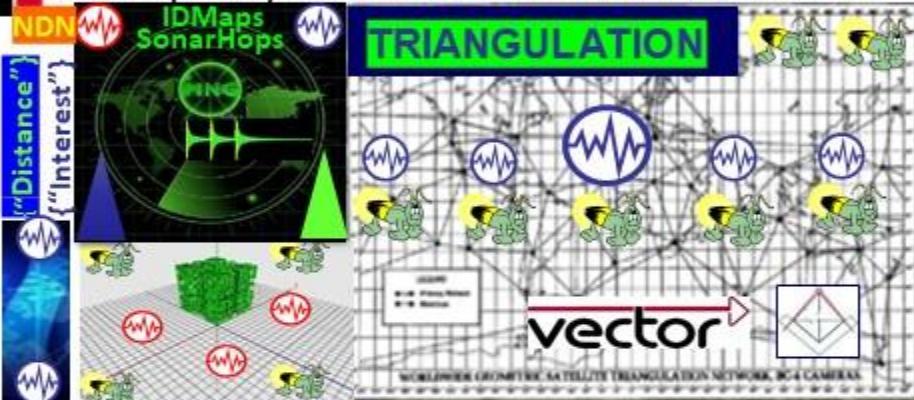
**Figure U-1.**

**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**

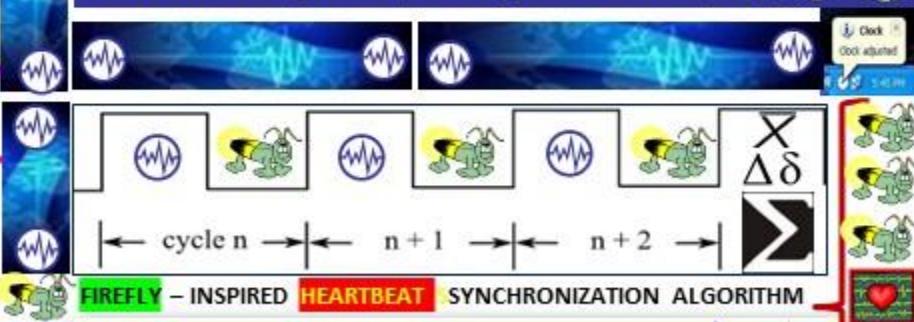


USPTO 13/573,002  
sawconcepts.com/index

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



**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"**

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



INFOCON  
4 3 2 1

INFORMATION  
CONDITION

SIOP

"THE GRAIL"  
TIME Metrics

SPACE Meters  
COMMON PICTURE

Meters  
B



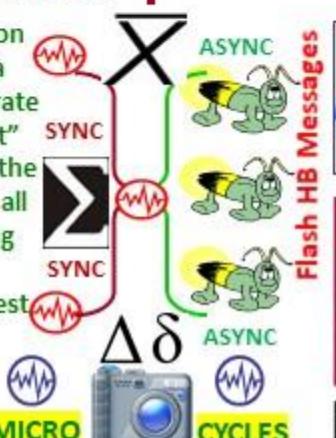
\* Truthfulness, accuracy or precision, correctness

**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



ERLANG

Functional Sequential Erlang

SPACE - TIME Equations

BLOCKCHAIN PARSING

{"URN"} {"Org\_ID"}

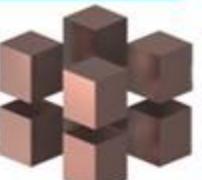
PAUL REVERE MEME  
LINEAR SEQUENTIAL

< / = / >

HEARTBEAT SYNCRONIZATION

FIREFLY SYNC CONSENSUS

FOAM



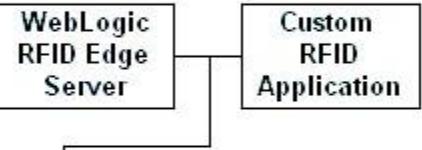
# Electronic Product Code Information Services (EPCIS)

GS1 Standard for creating, sharing visibility event data

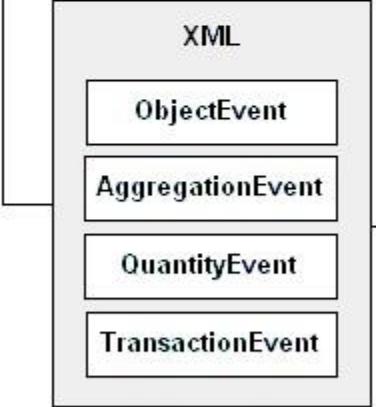


**Epcis**

**EPCIS DATA MODEL**



SERVICE LAYER



Core Business Vocabulary (CBV)

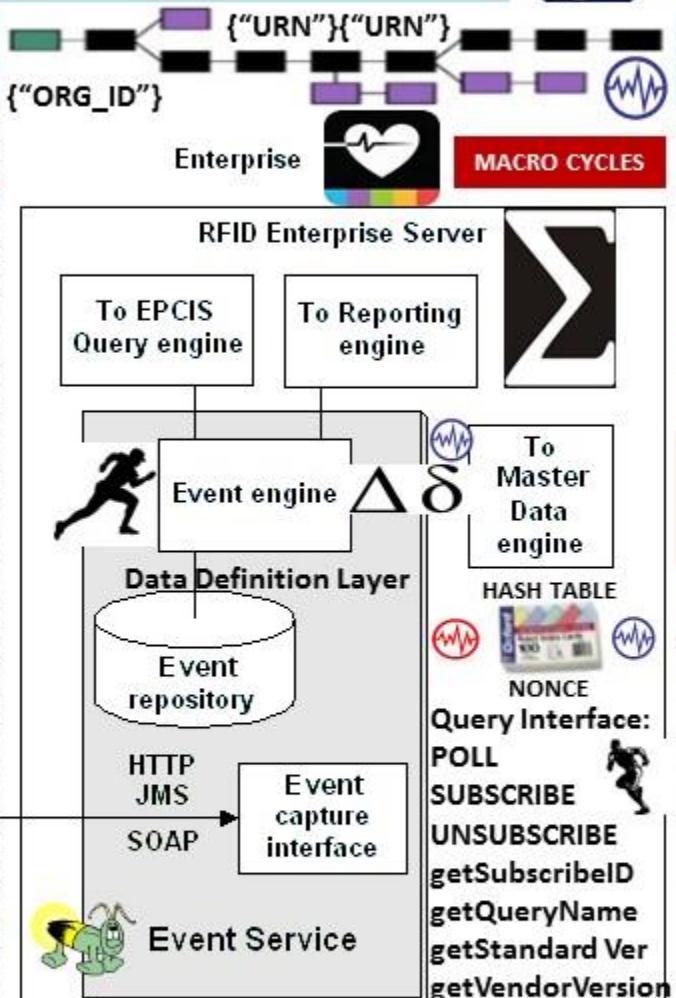
What identifiers of object(s) or entities / subject of the event

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

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

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

MICRO CYCLES



CLOSER IS CHEAPER  
CLOSER IS FASTER

$\Delta\delta$



BIZ USE CASES  
ALPHA NUMERIC BREVITY CODES

SYNTAX LEXICON CODE GUIDE



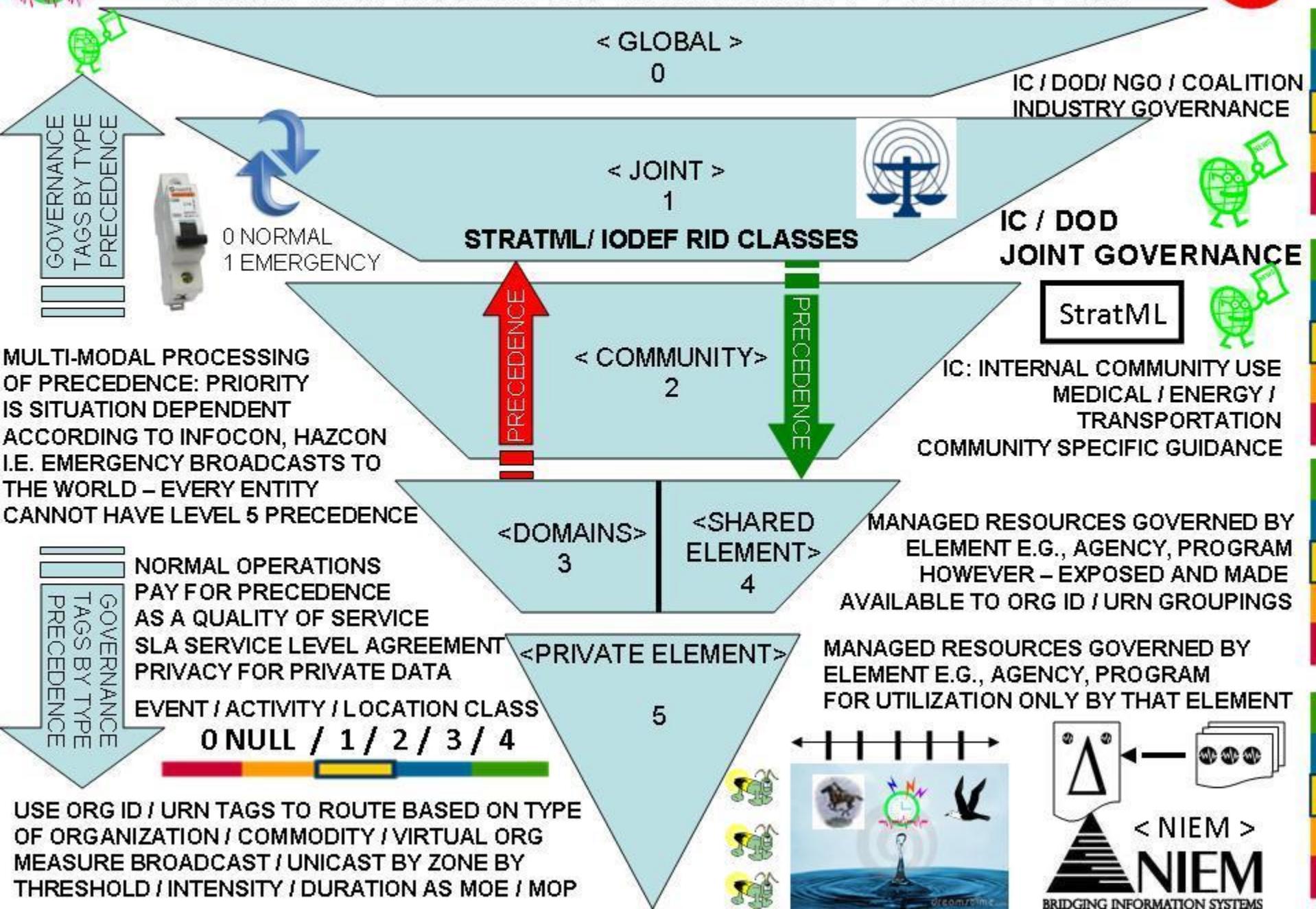
!st Compiler DESIGN Still the BEST



ROSETTA STONE



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



# Situational Awareness Reference Architecture (SARA)

Identity, Inventory, Activity, and Sharing

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



ICS-ISAC



Industrial Control System  
Information Sharing and  
Analysis Center

STRATEGIC  
MARKUP  
StratML  
LANGUAGE

IODEF



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

<ELEMENTS>

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

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

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



vector

<COMMODITY><WATER><ENERGY><AVAILABLE UNITS>  
GEO-SPATIAL TEMPORAL INTENSITY METRICS  
UNIFIED EVENT / ALERT TRIGGER / THRESHOLDS

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

CONTENT LEXICON  
ROSETTA STONE

NDN

<INTEREST>



<GEO\_LOC\_GPS><STATUS>  
<Halt><Moving><Stale><Ready>

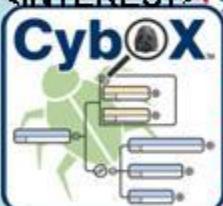
AVALANCHE

**SHARING:**

COMMON <TAGS>  
<Organizational\_ID>  
Resource Names <URN>  
<Time\_Stamps>  
<State-Meta\_Data  
<DATA\_CLASS\_TYPE>  
<Heartbeat\_snapshots>

NDN

<INTEREST>



<INTEREST>

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

CYBER SECURITY CONTENT  
LEXICON ROSETTA STONE

MIL-STD  
2525A

STRUCTURED  
<CONTENT>  
TEMPLATES

<TAG>  
LIBRARY



NAMED DATA  
NETWORKING  
<Content> Centric

USMTF / XML MTF FORMATTED MESSAGE CATALOG  
Catalog has over 300 messages to choose from have a  
wide number of information exchange requirements  
using common, CONSENSUS Message Text Formats  
MTFs. MTFs specify <CONTENT> / information agreed  
by group consensus presenting information in a logically  
well specified and unambiguous layout i.e., templates



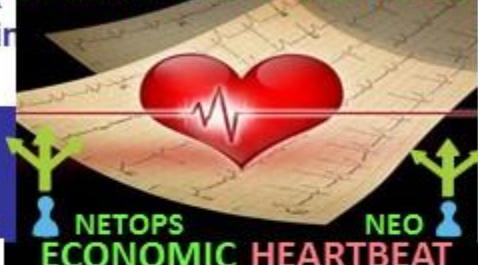


# OpenBazaar open source decentralized peer to peer network online commerce —using Bitcoin —no fees and no restrictions



- 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

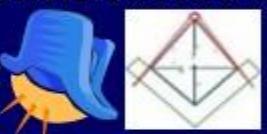
OPENBAZAAR.ORG  
BLOCKCHAIN ARBITRAGE



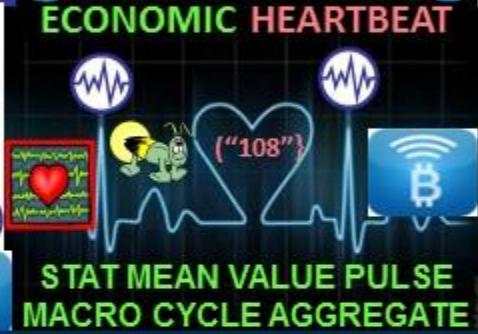
OpenBazaar is a different approach to online commerce. OpenBazaar connects buyers and sellers directly. Because there is no one in the middle of your transactions there are no fees, no restrictions, no accounts to create, and you only reveal personal information you choose.

## PROJECT PHILOSOPHY: *MAKE TRADE FREE*

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



Demurrage Fees TERRATRC TRADE  
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

STAT MEAN VALUE PULSE  
MACRO CYCLE AGGREGATE

STAT MEAN VALUE INDEX

**• Privacy**



HASH Values  
Nonce Values

SCT Alice V Cls Bank



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

**Bitcoin: OpenBazaar transactional currency**



**Cryptographic Security**

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



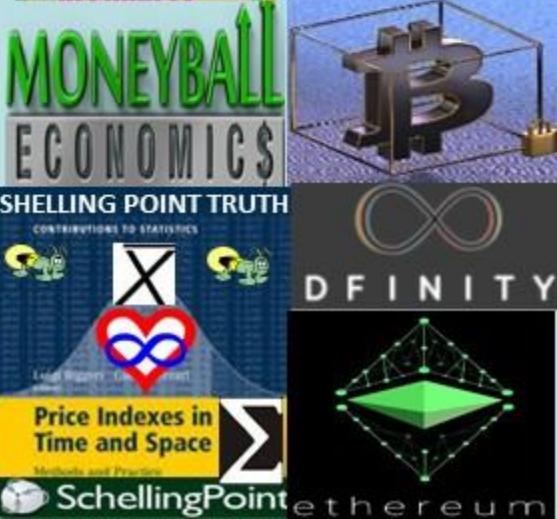
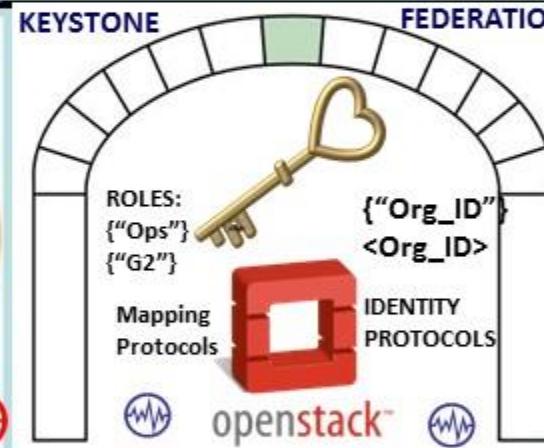
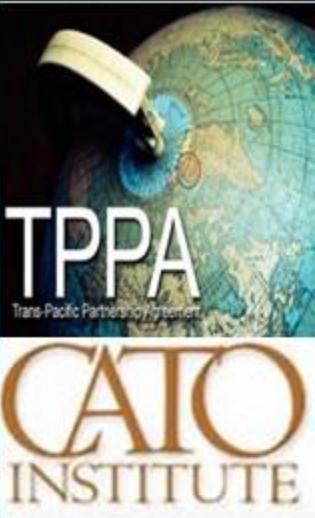
Non-  
Repudiation

SchellingPoint



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

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



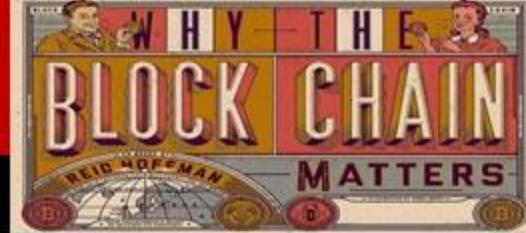
HEART BEACON CYCLE: ALL THINGS INTERNET ARE PROGRAMMED USING TIME CYCLES USED / NOT USED TO PROCESS / NOT PROCESS SYNTAX



# TradeNet

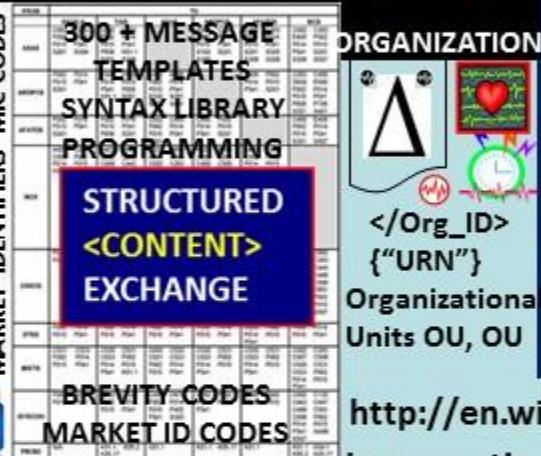
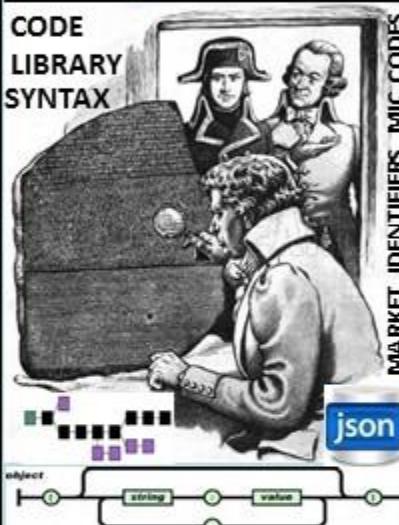


Programmable Money \$\$\$



RIED HOFFMAN 15 May 2015 [LINK](#)

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

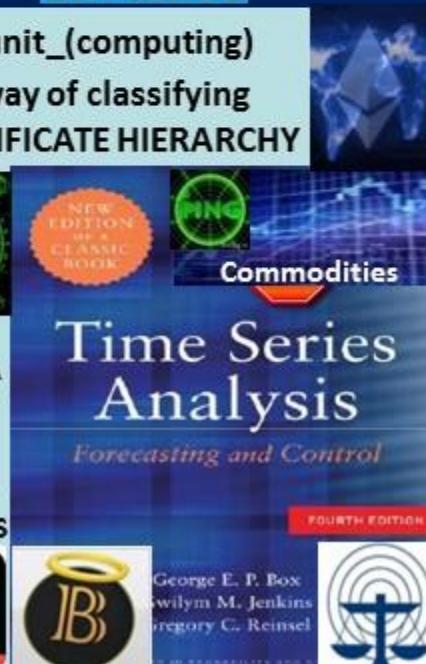


Bitcoin and the blockchain function as a medium of exchange, a store of value, a unit of account. Bitcoin adds digital, cryptographic, distributed server functions to currencies. Because it functions simultaneously as a currency, an asset and a platform, Bitcoin is better described as a global cryptoCAP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

WIRE

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

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





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

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

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

**VERITAS TOKENS = KEYS TO P2P Capital Market!** Proprietary P2P smart contracts combined with the transformational power of blockchain, allow the entire world to participate in the reimaging 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

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.

FINANCIAL  
NOSTRADAMUS  
REGGIE MIDDLETON



ECONOMIC HEARTBEAT  
STATISTICAL MEAN VALUE INDEX PULSE

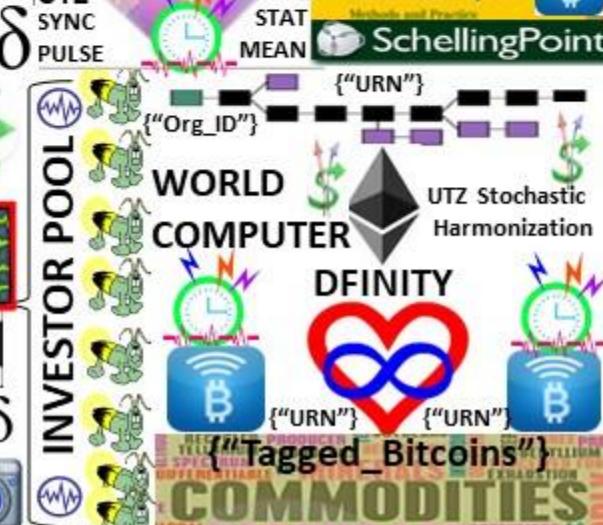


AETERNITY / DFINITY NEURAL NET

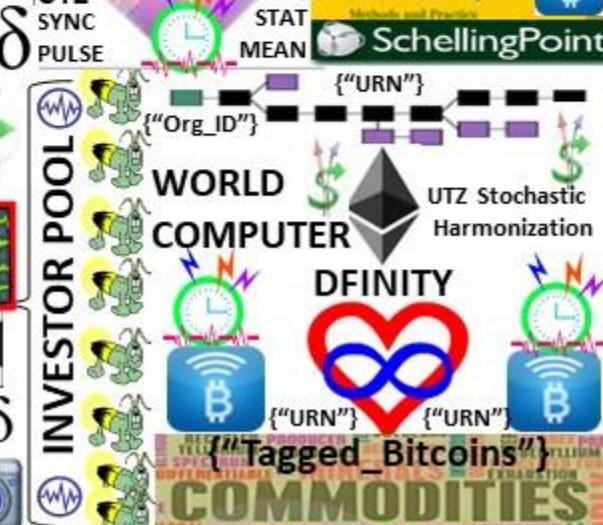
ALGORITHMIC REGULATION



SHELLING POINT TRUTH



Price Indexes in Time and Space



SchellingPoint



UTZ Stochastic Harmonization



INVESTOR POOL



WORLD COMPUTER



DFINITY



COMMODITIES

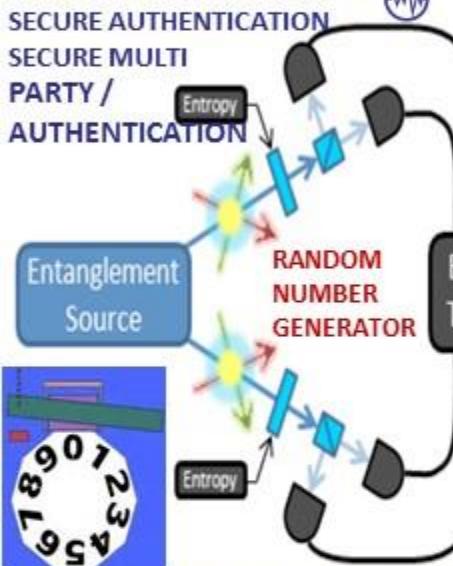


**NIST RANDOMNESS BEACON:** broadcast full-entropy bit-strings in blocks of 512 bits every 60 seconds. Each value is time-stamped, signed, & includes hash of previous value to chain sequence of values together. This prevents all, even the source, from retroactively changing an output packet without being 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

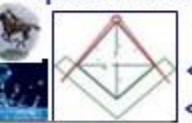
UNPREDICTABLE SAMPLING



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

Metrics and Time - Space Meter uses PHYSICAL Memes / Metaphors

**NAMED DATA NETWORKING**



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>

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

**Time / Distance Metrics**  
PROXIMITY  
OFFSHORE BEACONS  
ONSHORE  
NDN  
</interest></distance>

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**

**Firefly-Heartbeat Algorithm** UNIVERSALTIME ZONE SYNC UTC

Sync Events to Closest HBC

AGGREGATE, SUM STAT MEAN VALUE INDEX

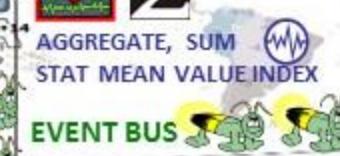
EVENT BUS

{"USER\_ID"} + QRB

{"INTEREST"} {"DISTANCE"}

On Off Shore

{"Org\_ID"} In clear



The proposed Universal Timezone System would do away with all these different time zones and instead use a single global time zone called UTC+0.



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

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





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

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



## Autonomous Device Coordination Framework



Registration

Authentication

Proximity based rules

Consensus based rules

FEDERATION AGREEMENTS

PROCEDURAL TEMPLATE

Contracts

Checklists

## FEDERATION

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

## LDAP DIRECTORY

Physical proximity

Social proximity

Temporal proximity

Agreements

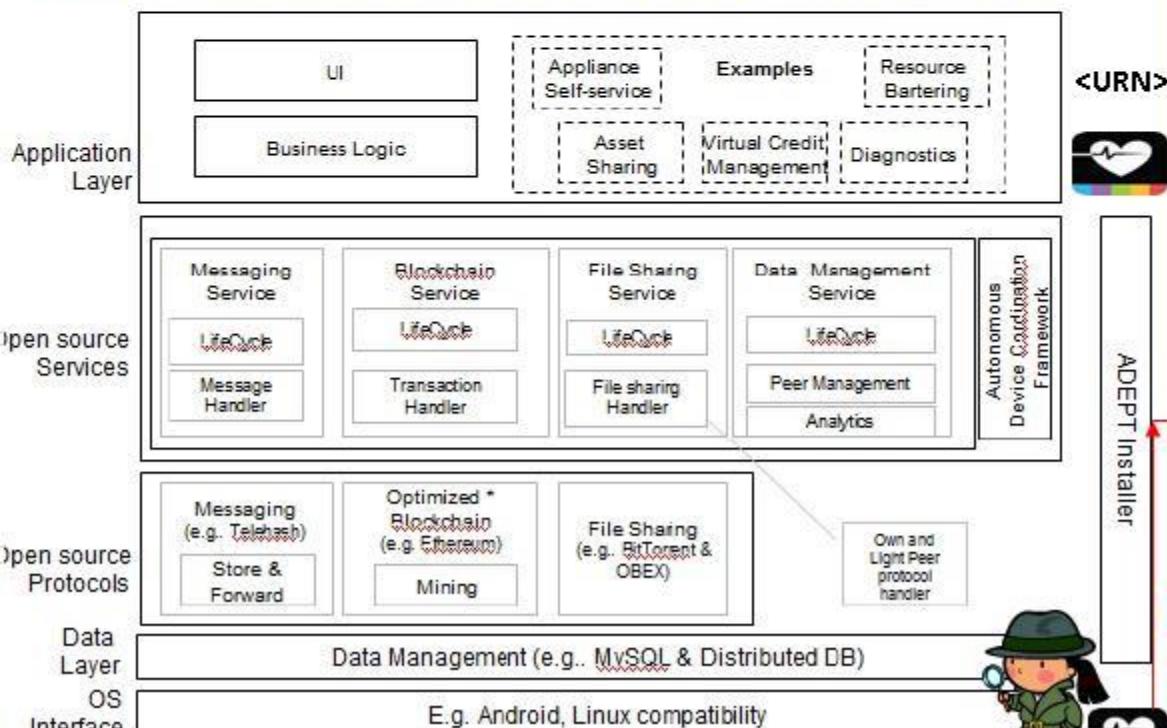
Payments

Barter



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

## ADEPT Standard Peer Architecture – Logical View



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



ASSET SHARING WITHIN FEDERATION

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

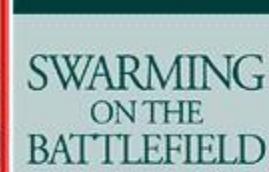
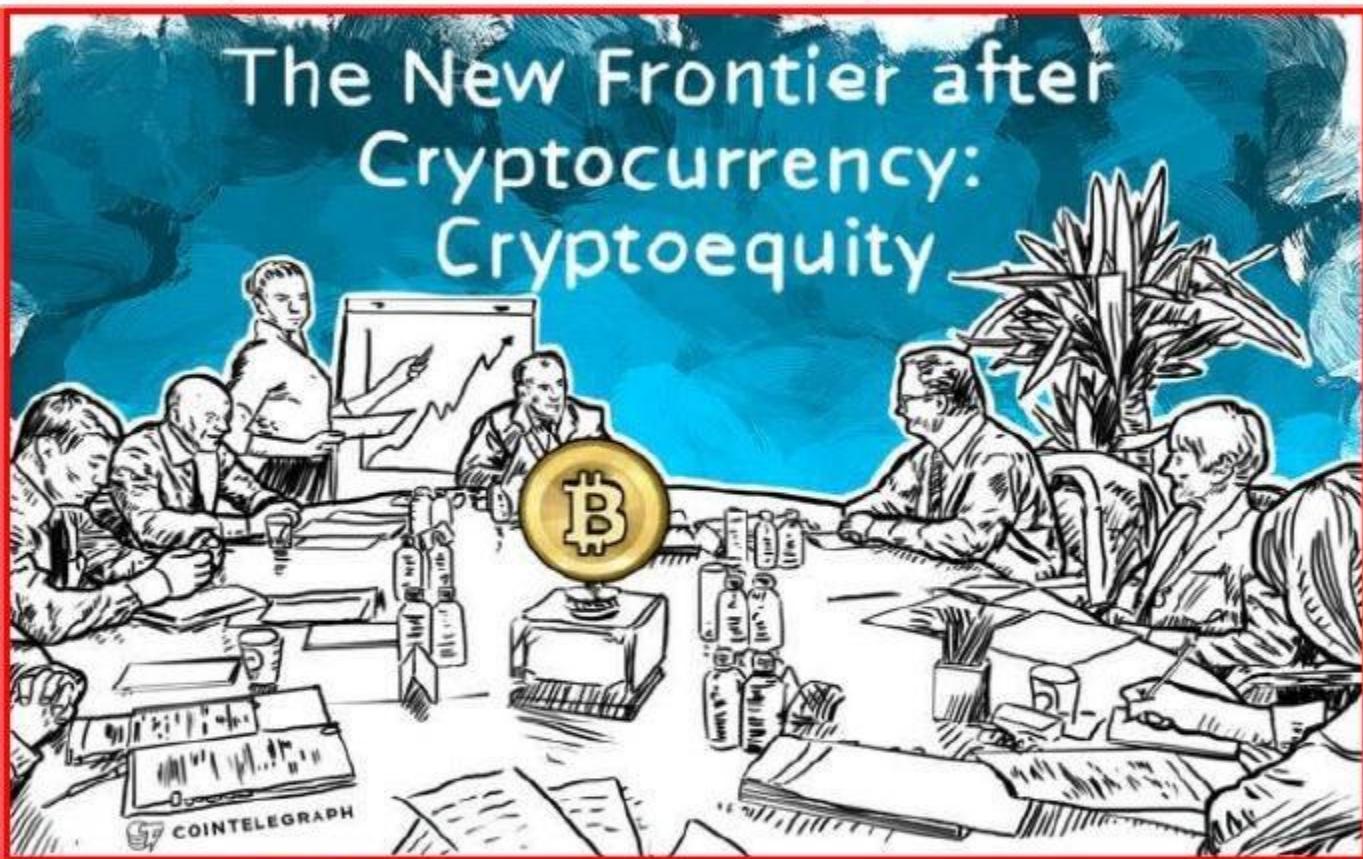
FILE SHARING = CYCLIC SYNC DELTA LEDGER / DOCUMENT REFRESH



OPEN SOURCE = HBC = PROTOCOL AGNOSTIC

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

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



RAND  
Monograph  
Report

THE  
ADVENT  
Of NETWAR

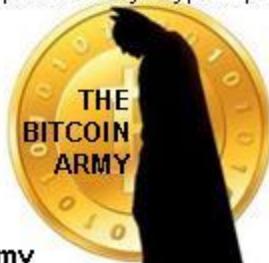


Eris -- The Dawn of Distributed Autonomous Organizations and The Future of Governance



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

<https://twitter.com/TheBitcoinArmy>



ERIS: GODDESS OF DISCORD  
DISRUPTIVE TECHNOLOGIES:

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



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

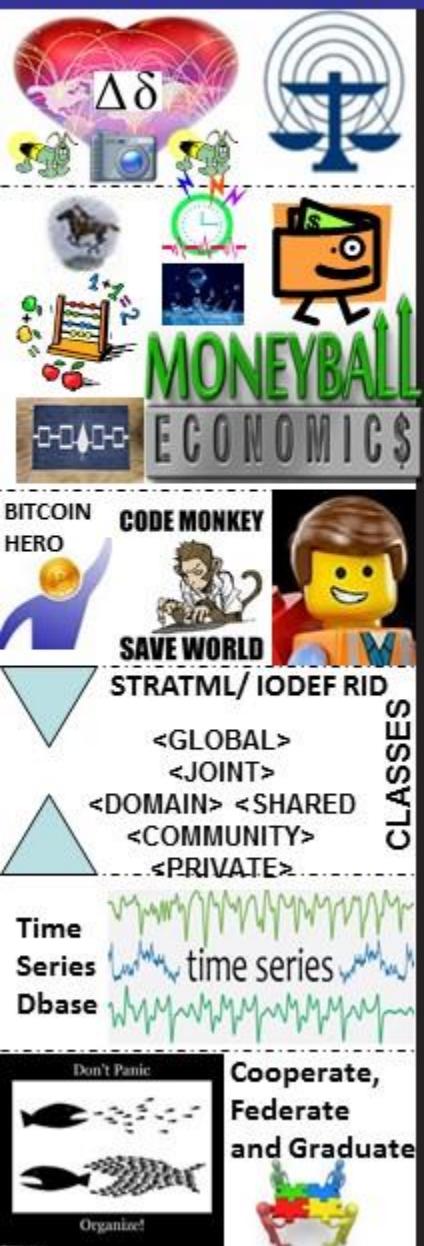
# How 'Bitbanks' Could Solve Bitcoin's Volatility Problem

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

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



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





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

Phase 2: Shared file stores data for 5 tags:

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

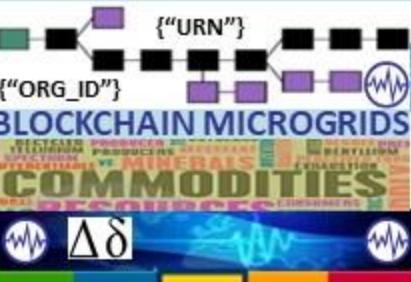
TAG	vector	ENERGY TOKENS ExDesc / COMMODITIES	digitalset
{"Org_ID"} ActiveID		[UFO2_ACTIVEID]	</EVENT>
IF1_Heartbeat (IF-Node1)		[UFO2_HEARTBEAT:#]	</EVENT>
IF2_Heartbeat (IF-Node2)		[UFO2_HEARTBEAT:#]	</EVENT>
{"UUID"} IF1_DeviceStatus (IF-Node1)		[UFO2_DEVICESTAT:#]	</EVENT>
{"UUID"} IF2_DeviceStatus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



TOKENIZED ECONOMY



Paul Revere = Linear, Sequential meme



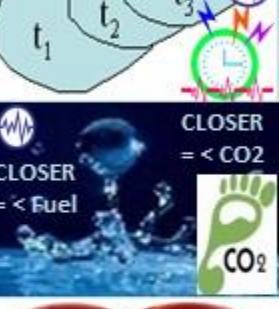
$\Delta\delta$



Geo Spatial  
Temporal Series  
Water Drop Meme

Geospatial Radius  
WATER DROP  
MEME= RADIUS  
DISTANCE FROM

ENERGY SOURCE  
Micro Payments  
Demurrage Fees



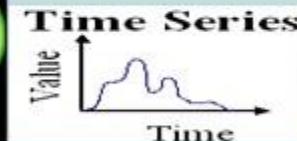
BLOCK TIME – SPACE ARBITRAGE TRADE  
ENERGY TOKENS FOR FOOD, WATER,  
TRANSPORTATION LOCALLY, REGIONALLY



CLOSER = < CO2



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



Spatial Econometrics



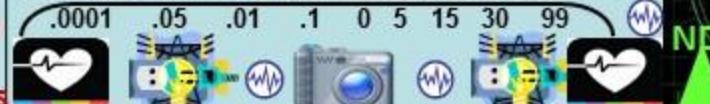
IEEE 802.1AG HOP BY HOP DETECTION  
IEEE 802.11 HbH HOP BY HOP CONTROL

< HOPS = CHEAPER Sync Delta Heartbeat Messages

CROSS LEVEL OVERAGES / SHORTAGES ADJUST FOR  
TIME / DISTANCE BETWEEN NETWORK NODES



FIREFLY-HEARTBEAT ALGO EVENT MESSAGE BUS



SYNC DELTA  
HEART BEAT Match  
events to Closest HBC



$\Delta\delta$   
FIREFLY EVENT BUS  
Distance Estimation Service  
IDMaps SonarHops



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

Heartbeat  
State meta  
Data snapshots



**Demurrage Charges**  
FRIEDMAN'S K % RULE  
**MONEYBALL ECONOMICS**



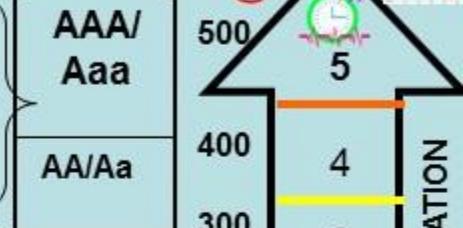
**ECONOMIC MACRO CYCLES**  
Constant % Rate  
Increase Per Terra Cycle



**BLOCKCHAIN MICROGRIDS**  
**TESLA**  
**MEDIATION CONVERSION GATEWAY**



**LAST LOSS**  
AAA/Aaa  
AA/Aa  
A/A  
BBB/Baa  
B/B



Time Series Database  
CONTRIBUTION TO STATISTICS  
**Veritaseum**



IEEE 802.15.4 OASIS MQTT  
TELEMETRY TRANSPORT  
IEEE 802.1AG HOP BY HOP  
DETECTION  
Bitcoin = Property

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

Price Indexes in Time and Space  
Methods and Practice



IRS Memo #1421  
% Block Mined  
% Block owned  
Mined Bitcoins  
Unmined Bitcoins  
 $\Delta\delta$  Land Use Meme



BLOCKTIME ARBITRAGE  
Blockchain Timestamps



BITCOIN / FIAT Convert

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



BLOCKCHAIN PARSING  
ERLANG



Spatial Econometrics

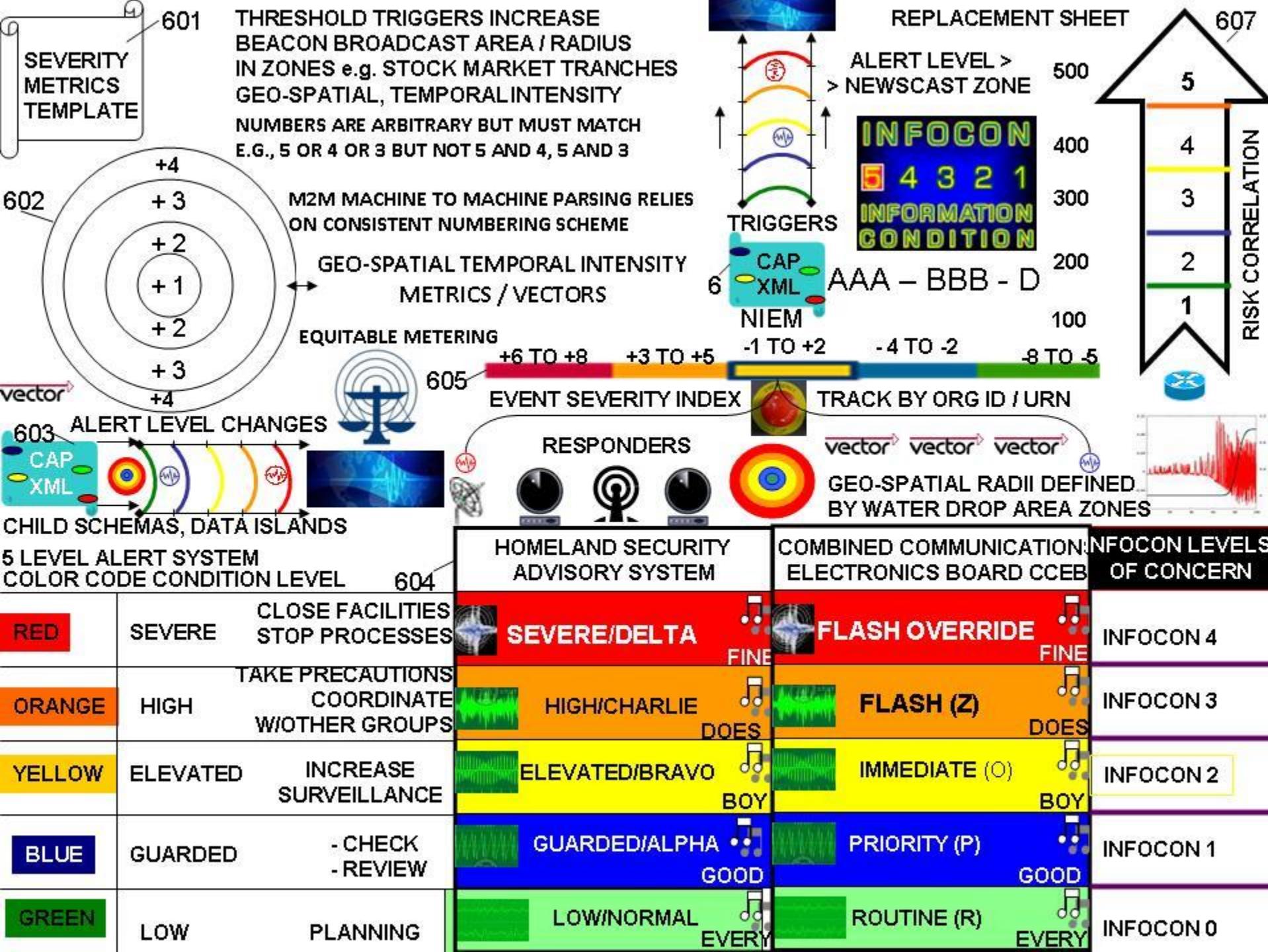
**vector**

$\Delta\delta$  Heartbeat Snapshots

MICRO CYCLES

Heartbeat Cycle





# 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**

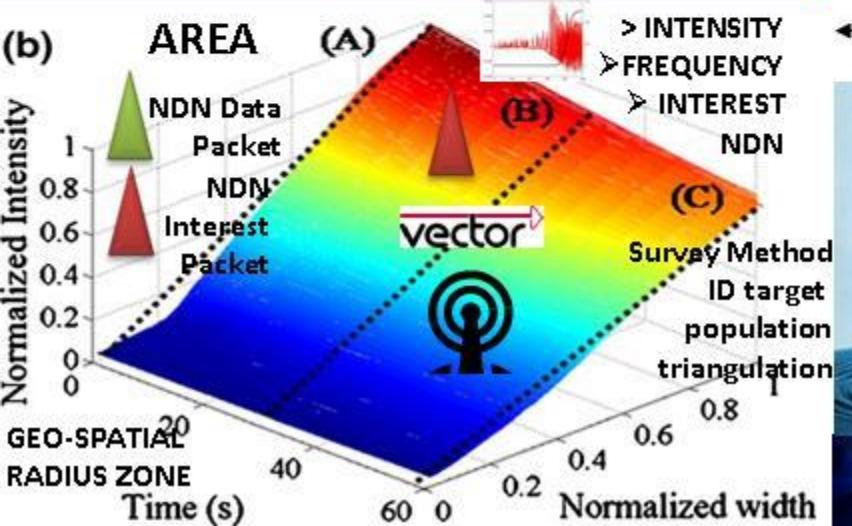
## **Geo-Spatial Temporal Intensity NOVEL METRICS / METERS:**



**Paul Revere = linear, sequential**

## TCP/IP hop by hop counts, by hop controls

**Water Drop = AREA / INTENSITY  
Cyclic Frequency**



# **NAMED DATA NETWORKING**

A graph with 'time' on the vertical axis and 'distance' on the horizontal axis. A straight line starts from the origin and slopes upwards to the right, representing motion with constant velocity. A shaded triangular area is shown below the line, indicating the path of motion.

XML  
MTF  
300 +  
MSG  
  
INFOCON  
5 4 3 2 1  
INFORMATION  
CONDITION

OASIS

IEEE 802.15.4

OASIS MQTT

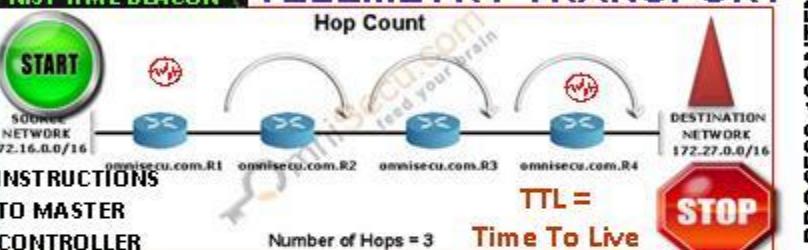
#### Y TRANSPORT

1



ARRESTED-D

## TELEMETRY TRANSPORT



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

**IDMAPS  
SONARHOPS  
INTERNET  
TRIANGULATION**

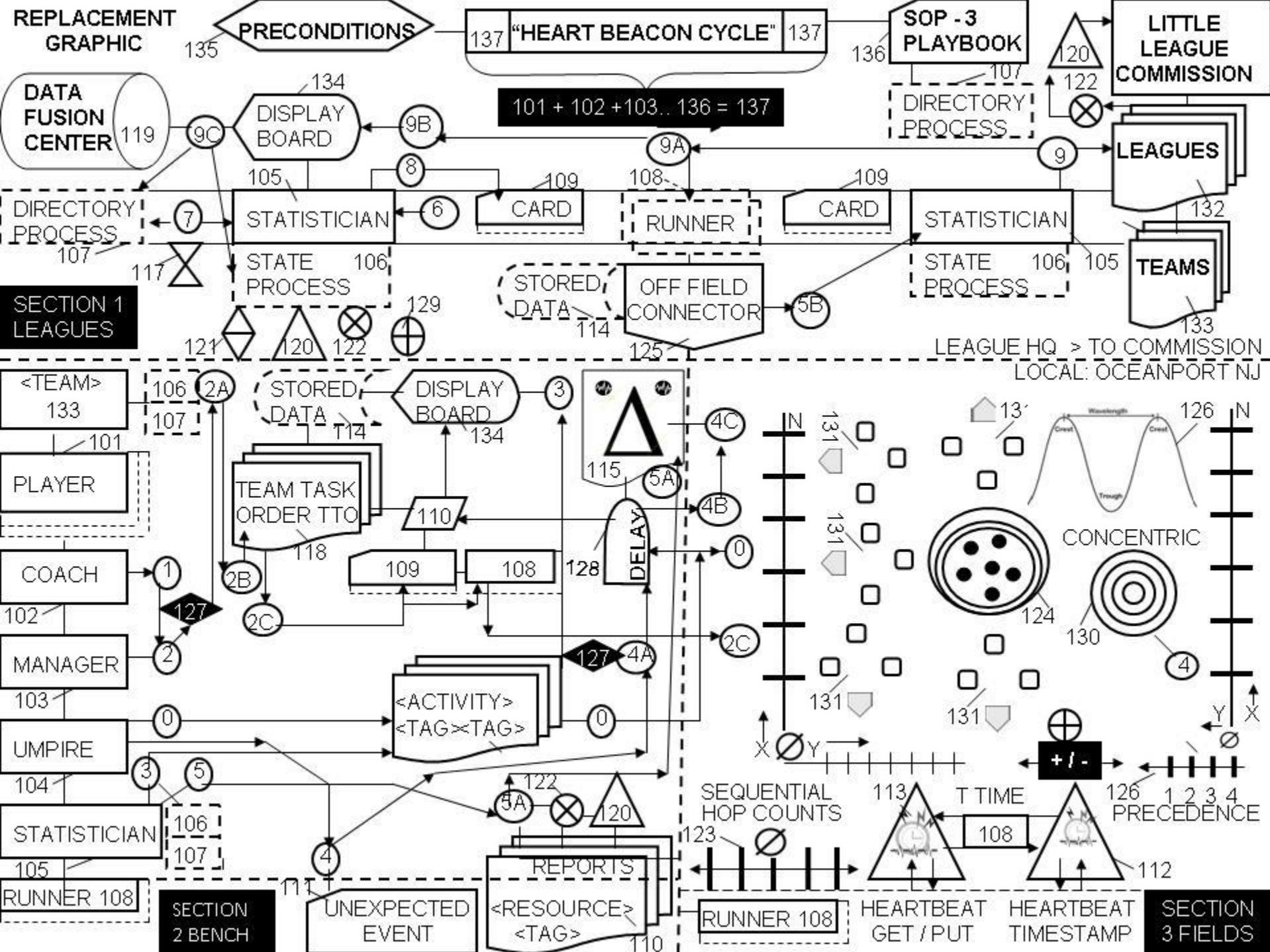


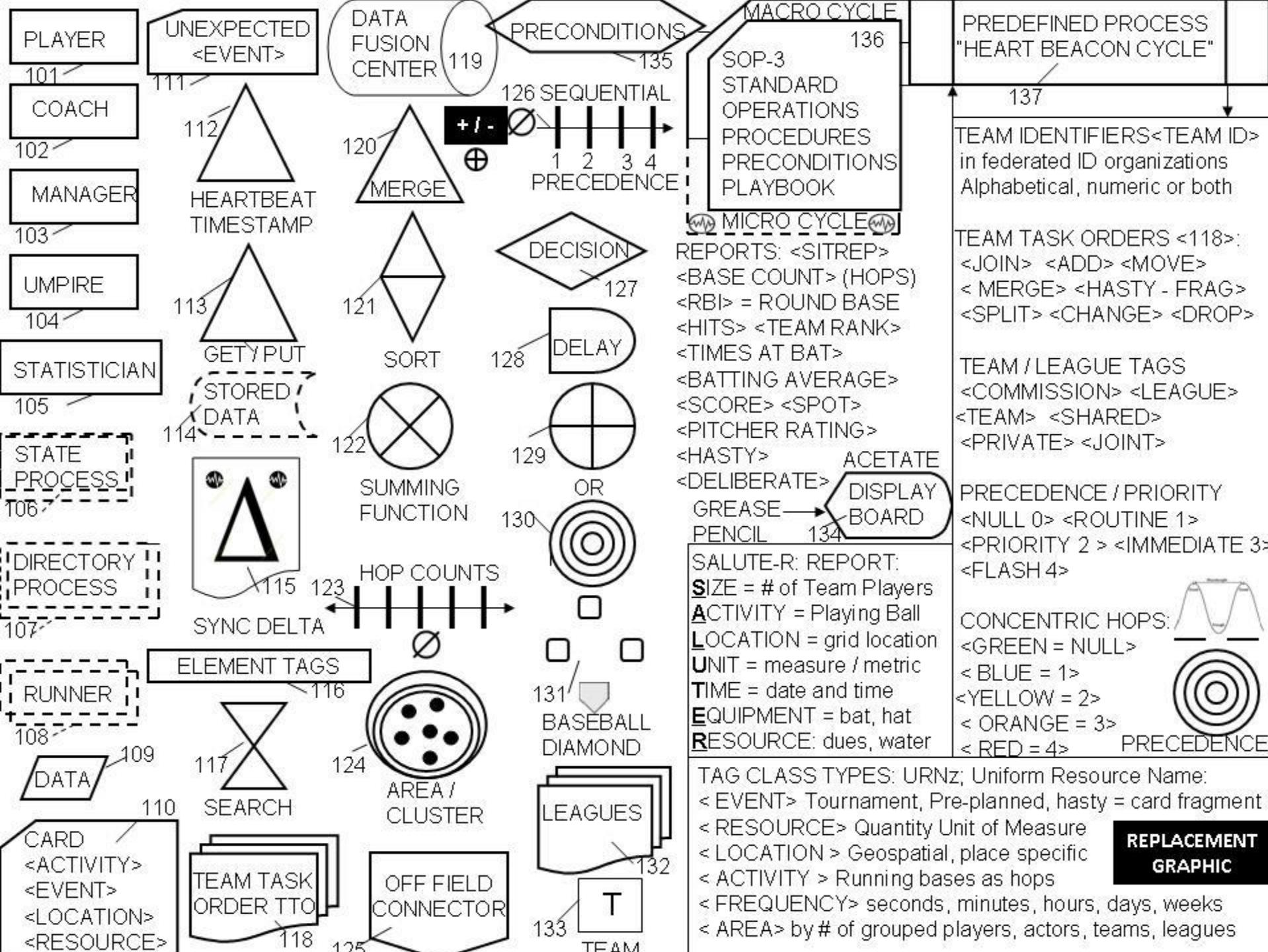
**vector** **WirelessHART**  
time synchronized,  
self-organizing,  
mesh Net

A horizontal collage of five images: a white horse silhouette, a green clock face with red lightning bolts, a black bird in flight, a graph showing a red sine wave and an orange cosine wave, and a diagram of three concentric circles labeled '+3' and '+2'.

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

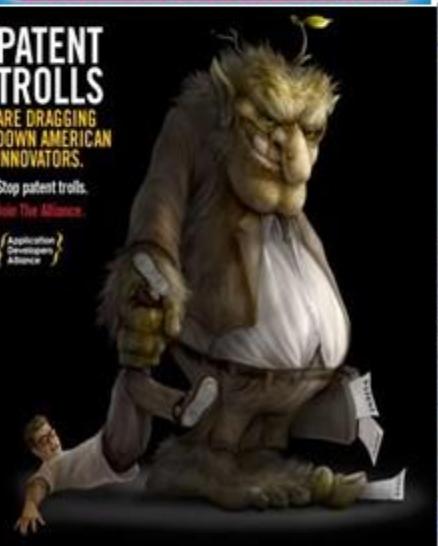
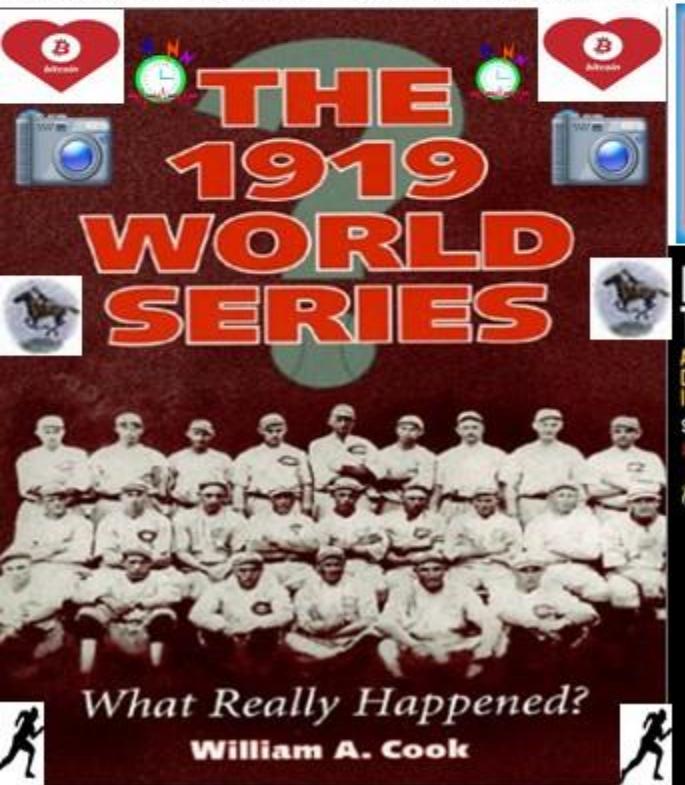




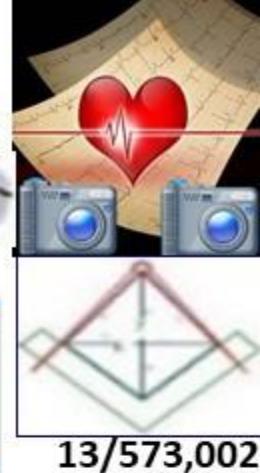




SAW Concepts LLC Owner's Father is from Blackfoot First Nation Native American Indian



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

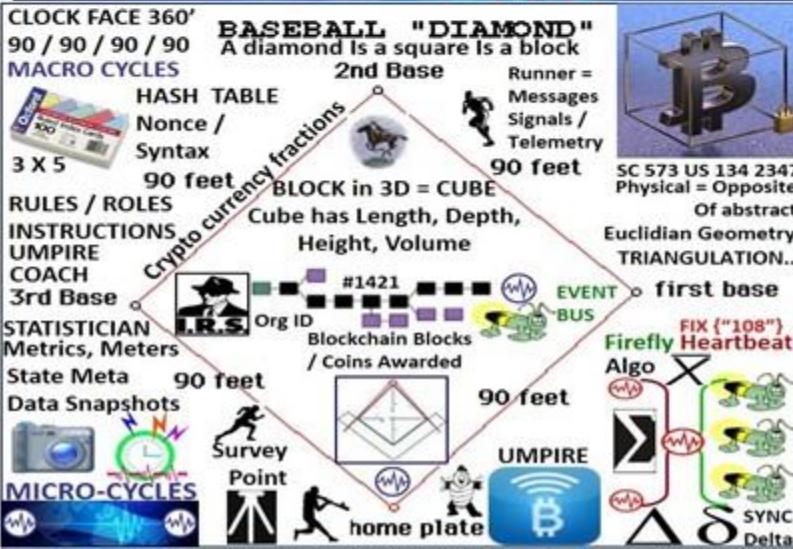


13/573,002



## USPTO SCREEN CAPTURES SUSPENDED PAIR RULES

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





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

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

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



TIME / DISTANCE SERVICE LEVEL  
AGREEMENT SLA / O Operations

IEEE 802.15.4 OASIS MQTT

IEEE 802.11



TELEMETRY TRANSPORT

HOP BY HOP CONTROL

IEEE 802.1AG HOP BY HOP  
DETECTION

Unused Resources / Unmet Needs

/localhost/nfd/fib/add-nexthop

Geo-Spatial Temporal

Metrics, Meters

DISTANCE  
INFO SERVICE

Time Series

RISK

Value

Time

WATER DROP IN POND MEME IS

SONAR NAVY METAPHOR / MEME

NDN </INTEREST>

NDN {"DISTANCE"}

NAMED DATA

NETWORKING

IEEE C37.118

Harmonization

& Sync heartbeat

update Interval

CLOSER SOURCE

CHEAPER RATE

Energy Attenuates over Distances

TCP/IP HOP BY HOP COUNT

Attribute Series

INTEREST

DISTANCE

Temporal Series

Geo Spatial

Paul Revere

LINEAR, SEQUENTIAL

602

603

NULL

+1

+2

RADIUS

WATER DROP IN POND MEME

Attribute Series

INTEREST

DISTANCE

Temporal Series

Geo Spatial

Paul Revere

LINEAR, SEQUENTIAL

602

603

NULL

+1

+2

RADIUS

WATER DROP IN POND MEME

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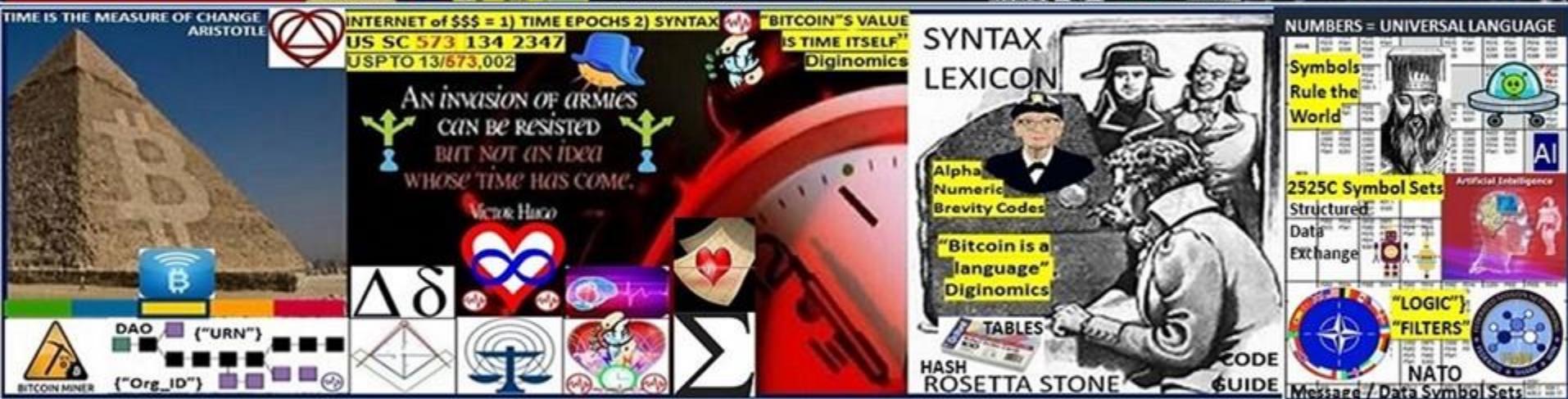
+2

RADIUS

WATER DROP IN POND MEME

Attribute Series

INTEREST



SIGNALS  
Telemetry  
ANNEX



Buckminster Fuller 1968 *Operating Manual for Spaceship Earth*  
"we can make all of humanity successful through science's world-engulfing industrial evolution. We have the tools"

"The Dymaxion Map reveals a One-World Island in a One-World Ocean" which helps us to view the world as one interdependent system [of systems] of relationships. This is what is most fundamentally at HEART when we speak of Spaceship Earth "The planet is a [system of ] system (s)"

SPACESHIP EARTH: comprehensive planetary planning describing new strategies intended to enable all of humanity to live with freedom, comfort and dignity, without negatively impacting the earth's ecosystem's regenerative ability

INFOCON

5 4 3 2 1

INFORMATION CONDITION  
The World Game

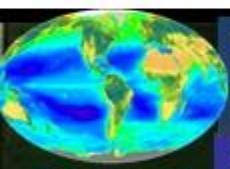


INCENTIVIZE SUSTAINABLE Eco-Econometrics

Eco-Econometrics

The Book Spaceship Earth relates Earth to a spaceship flying through space. Our spaceship has a finite amount of resources and cannot be resupplied.

HEART BEACON CYCLE: SIGNALING, TELEMETRY FRAMEWORK ANNEX  
BUCKMINSTER FULLER'S OPERATING MANUAL for SPACESHIP EARTH



Spatial Econometrics

70 / 30 RULE

UNUSED RESOURCES

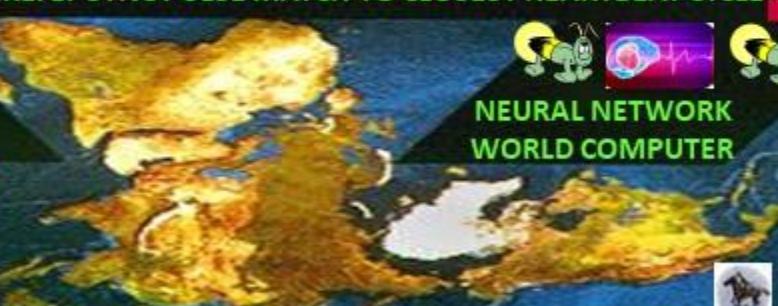
Firefly  
Heartbeat  
Algorithm

UNMET NEEDS

COMMODITIES

SLA/Q

FIREFLY SYNC PULSE MATCH TO CLOSEST HEARTBEAT CYCLE



vector

Our Spaceship Earth  
one Island in one ocean ... from space

$\Delta\delta$

HEARTBEAT CYCLE

UNIVERSAL EVENT / ALERT BUS

TRADE WITH EARTH

Trade w Earth ???

Closer = < Fuel

CLOSER = Cheaper, Faster

ENERGY TOKENS

TRADE WITH EARTH



TERRACYCLE  
Crypto Currency  
Micro Payment  
Demurrage Fees

TRADE WITH EARTH

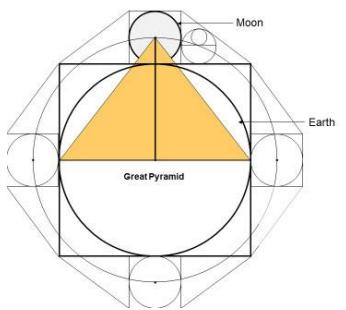
USPTO APPLICATION 13/573 002

## The Heart Beacon Cycle Time-Space Meter

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

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

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



- 卷之三



GENESIS OF ALL FORM

