



*"Send forth its cheering ray  
to the storm beaten  
mariner..."*

– Federal Officer, Aug. 1861

ADMIT ONE



TERRA  
TRC

#EM



Sustainable

Ticket Number 0974572

The giant oak is an acorn that held its ground.  
[www.greatdreams.com/72.htm](http://www.greatdreams.com/72.htm)



"The secret of change is to focus all of your energy, not on fighting the old, but on building the new." Dan Millman Way of the Peaceful Warrior

FEDERATION: Latin: foedus, foederis, 1. covenant, union of partially self-governing states under a central government  
2. League or confederacy. People, groups retain autonomy  
3. A federated body formed by a number of nations, states, societies, unions retaining control of own internal affairs



SAW Concepts LLC  
PO Box 28 Oceanport, NJ 07757  
Cell: 732-768-5440  
<http://sawconcepts.com/index.html>



UNUSED  
RESOURCES

vector  
</UNMET>  
("NEEDS")

Annex  
Signals  
Telemetry

r. buckminster fuller  
operating manual  
for  
spaceship earth

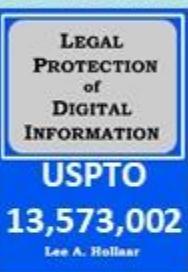
## PROCEDURAL TEMPLATE

COMMON  
BUILDING  
BLOCKS



**Systemic series of actions directed to a goal ex: form, maintain sustainable Eco / Econ federations i.e., closer = less fuel, \$**

Checklist Items refer to detailed treatises



**A continuous action, operation, or series of changes, sync deltas i.e., price indexes**



**Sync trade federations across time-space**

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

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:

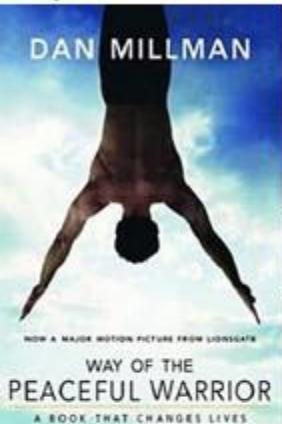
- 1) Organize by assigning Organization Identifiers {"Org\_ID"}
- 2) Track Resources by Uniform Resource Name </URN>
- 3) Take State Meta Data heartbeat snapshots @ 15 / N min
- 4) Honor Satoshi's intent for Bitcoin to be paired w markets
- 5) Use NIST Quantum Random Non-Repudiation Beacon
- 6) Use Bitcoin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





# 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 Capabilities" in Great Britain or "Vernetzte Operationsführung" in Germany



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



"The secret of change is to focus all of your energy, not on fighting the old, but on building the new." Dan Millman  
Way of the Peaceful Warrior A Book That Changes Lives  
[http://en.wikipedia.org/wiki/Way\\_of\\_the\\_Peaceful\\_Warrior](http://en.wikipedia.org/wiki/Way_of_the_Peaceful_Warrior)

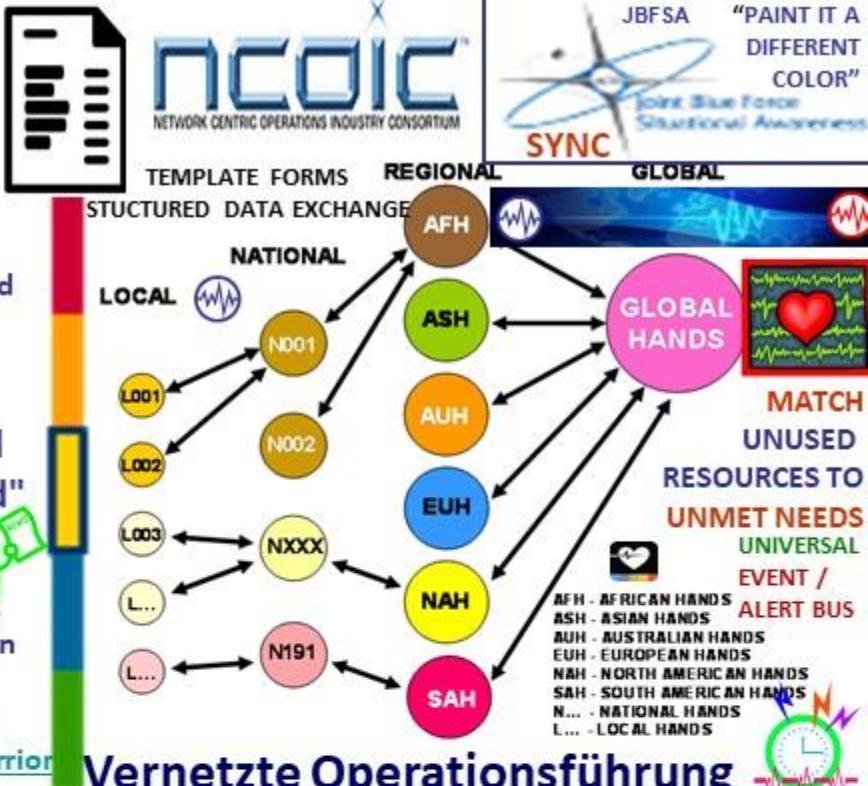
Derive best practice procedural template guides from Battlefield Digitization describing when, where, how, how often systemically among a systems of systems promoting synergy, synchronicity.



Heart Beacon Sculpture  
Oregon  
USA

The sculpture, similar to a lighthouse, is an interactive enclosure of light, color, and sound acting as a symbol of hope and resilience for the community. Pulses create a thumping sound that resonates through the steel frame and flickers the lighting matching the pattern to their heartbeat. By measuring a small, internal element such as a heartbeat and amplifying it to a monumental scale the piece becomes a powerful reflection of individual life and reminder of what is worth saving.

[LINK](#)



JBFSA "PAINT IT A DIFFERENT COLOR"  
Joint Blue Force Situational Awareness

## Vernetzte Operationsführung

REUSE OF A PENTAGON ACAT-1A SITUATION  
AWARENESS PROGRAMS WORDS TO PLOWSHARES  
PROPOSED BY GERMAN MILITARY CIRCA 2003

## FEDERATION



## Beacon Communities

Explore recent program news

Learn more >

JAEGER

OFF SHORE  
OUTER  
BANKS

KAIJU

# INTERNET FORMED BY:

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

"In the beginning"

"The Word"

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

"A 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"

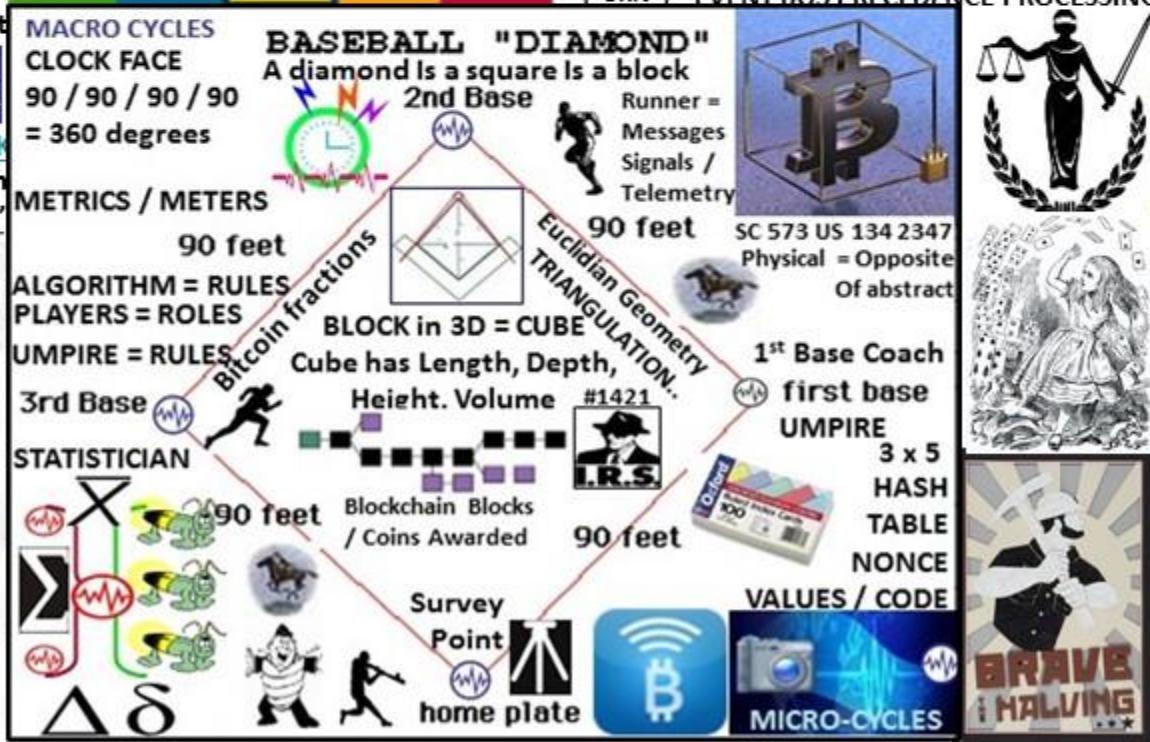
XBRL / CDL / DAML	
STOCK MIC CODES	
STRUCTURED	
MILITARY MESSAGE TEMPLATE FORMS	
LOGIC / FILTERS	
BREVITY CODES	
{URN}{URN}{URN}	
SYNTAX / SYMBOL LEXICON LIBRARY	



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

SC 573 US 134 2347

EU: "FEW UNDERSTAND" Impossible to Regulate PHYSICAL = OPPOSITE OF ABSTRACT DAO





# Firefly - Heartbeat Algo

University of Bologna Italy / Hungary



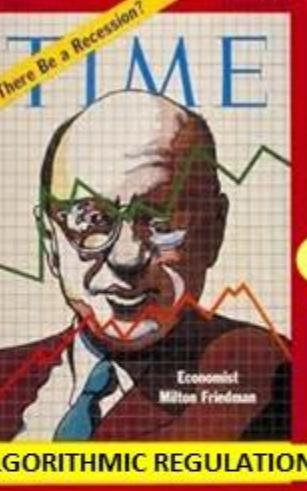
TERRACYCLE



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

Luxor Temple Egypt:

"The shortest road towards knowledge of truth is nature"



FRIEDMAN'S K % RULE  
ECONOMIC MACRO CYCLES

CONTRIBUTIONS TO STATISTICS

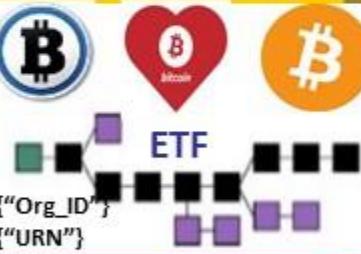
STAT MEAN VALUE INDEX



Price Indexes in Time and Space

Methods and Practices

FRIEDMAN's K% RULE



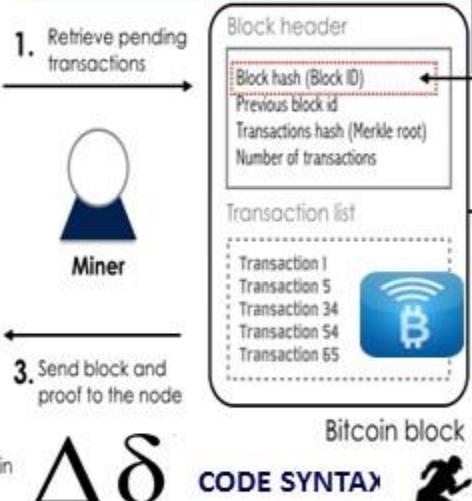
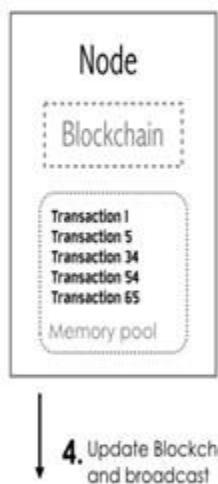
The proposed **Universal Timezone System** would do away with all these different time zones. Instead, it would be the same time all over the world, all the time.

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





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**

**TIME EPOCH CYCLES**
**05:08:53**

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



"Bitcoin is a Language"

**WIRED**

"BITCOIN MAKES MONEY PROGRAMMABLE.  
MONEY IS SIMPLY DATA"



EVENT BUS

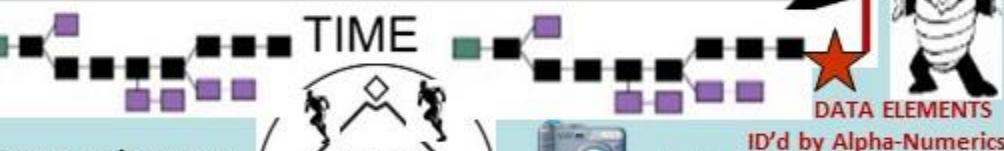
Block #8FA  
prev #7CF  
txn 8be...  
txn 839...  
txn 326...  
...



Block #2A4  
prev #473  
txn 634...  
txn a98...  
txn 12a...  
txn 44c.  
...

Block #7CF  
prev #2A4  
txn 43e...  
txn 12a...  
txn 44c.  
...

**BLOCKCHAIN = TIME / SYNTAX**


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


USPTO 13/573,002  
PHYSICAL MEME  
MAIN EMBODIMENT

**RULES**
 $\Delta\delta$ 
**Metrics**

TIME  
BLOCK  
SYNTAX

Multi-Meme Multi-Meter

State Meta  
Data Snapshots

**ROLES**
**Meters**

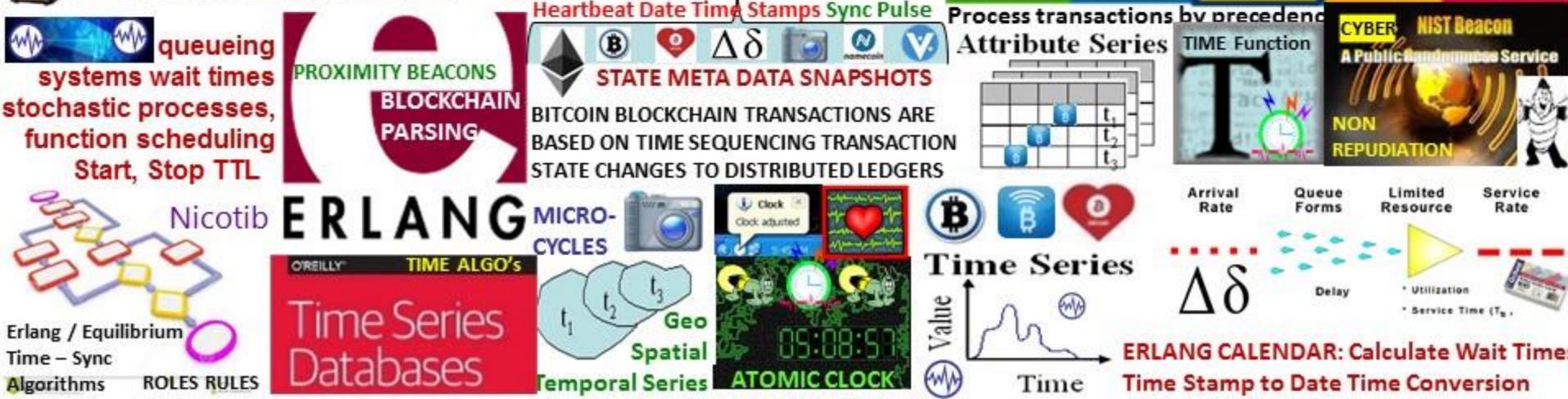
XBRL / CDL / DAML  
STOCK MIC CODES

STRUCTURED  
MILITARY MESSAGE  
TEMPLATE FORMS  
LOGIC / FILTERS

SYNTAX  
LEXICON LIBRARY



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

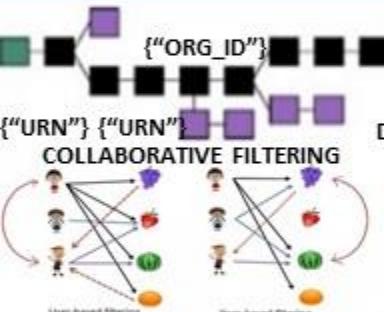




**eGaaS: international blockchain platform for organizing economic, state, social activities of citizens , communities on the basis of smart law, smart contract system. eGaaS offers a comprehensive solution needed for state and business management on the blockchain platform.**

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

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



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

Neural Net

**Neural Net**  -2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 -13

ENVIRONMENT FRIENDLY ECO INCENTIVES  CLOSER = LESS FUEL  ON

ENVIRONMENT FRIENDLY ECO INCENTIVES CLOSER = LESS FUEL G7 vector ON

CLOSER = FASTER Carbon Vector

Named Data Networking: STOCHASTIC HARMONIZATION

Named Data Networking STOCHASTIC HARMONIZATION  
"INTEREST" NDN NDN 3.0 STATE MAPPING

"DISTANCE" NDN STAT MEAN Int'l Date

Sync VALUE INDEX CO<sub>2</sub> Impact Need Line

Credits Unmet Needs OFF

14 

A horizontal collage of various meme images. From left to right, it includes: a close-up of a firefly's face; a red heart icon on a green grid; a black cat sitting on a windowsill; and a green radar screen with concentric circles and a small white icon.

Line ALGORITHM HEARTBEAT Meter

**FIREFLY EVENT BUS FLASH** HEARTBEAT FROGGER    METER  SonarHops 

WIRELESS ENERGY BOOSTER  
HEARTBEAT [100%] MESSAGES EPOCH 3

HEARTBEAT {108'} MESSAGES STATE META DATA SNAPSHOT

The proposed **Universal Timezone System** would do away with all these differ-

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

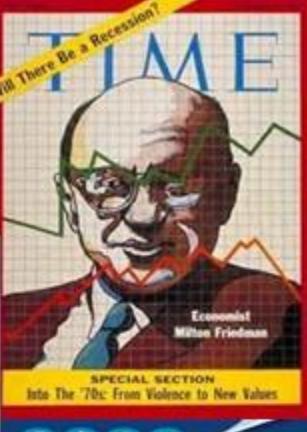






## THE TERRA (TRC)®

## Trade Reference Currency



ECONOMIC HEARTBEAT  
FEDCOIN / WORLDCOIN

FIX {"108"}



#### UNUSED RESOURCES / UNMET NEEDS

## Friedman's K % Rule ALGORITHMIC REGULATION



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

**Example:** 100 Terra = 1 barrel oil  
+ 10 bushels of wheat   
+ 20 kg of copper + 1/10 Oz gold



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”



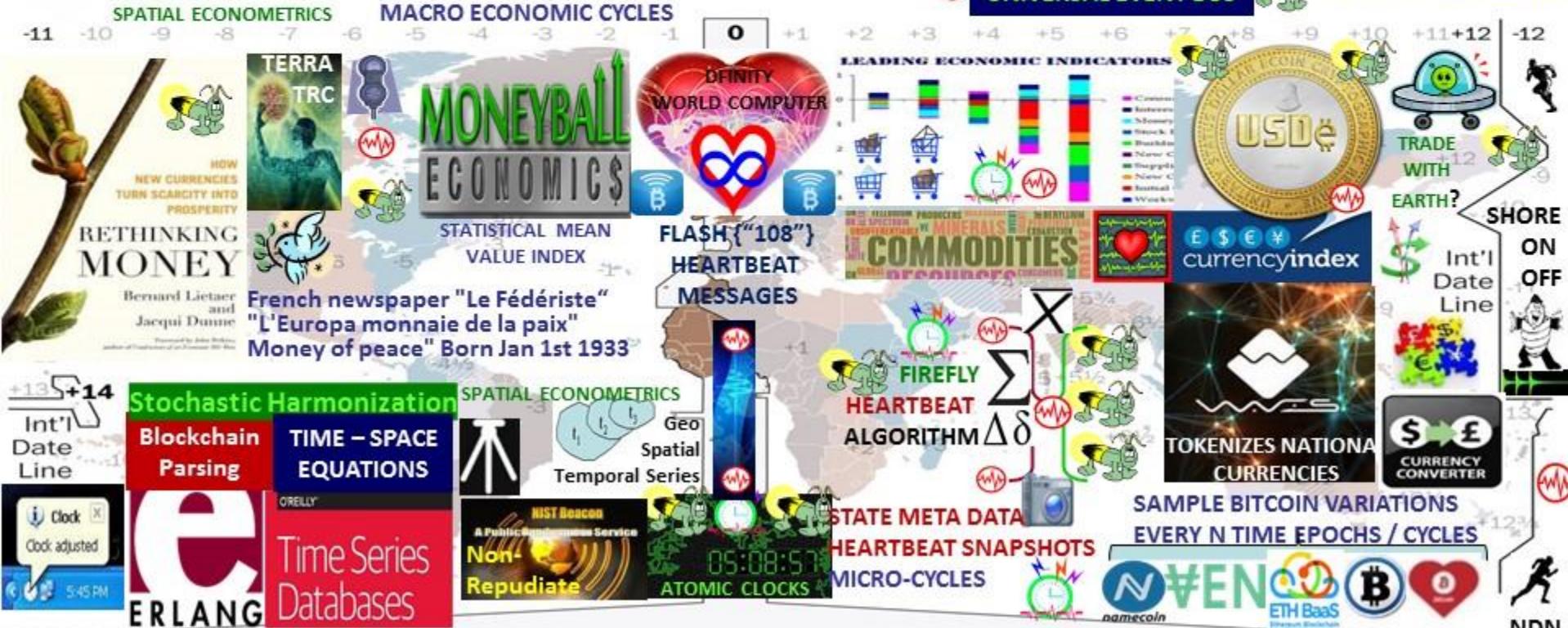
French newspaper "Le Fédériste"  
"L'Europa monnaie de la paix"  
Money of peace" Born Jan 1st 1933 \$\$\$

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





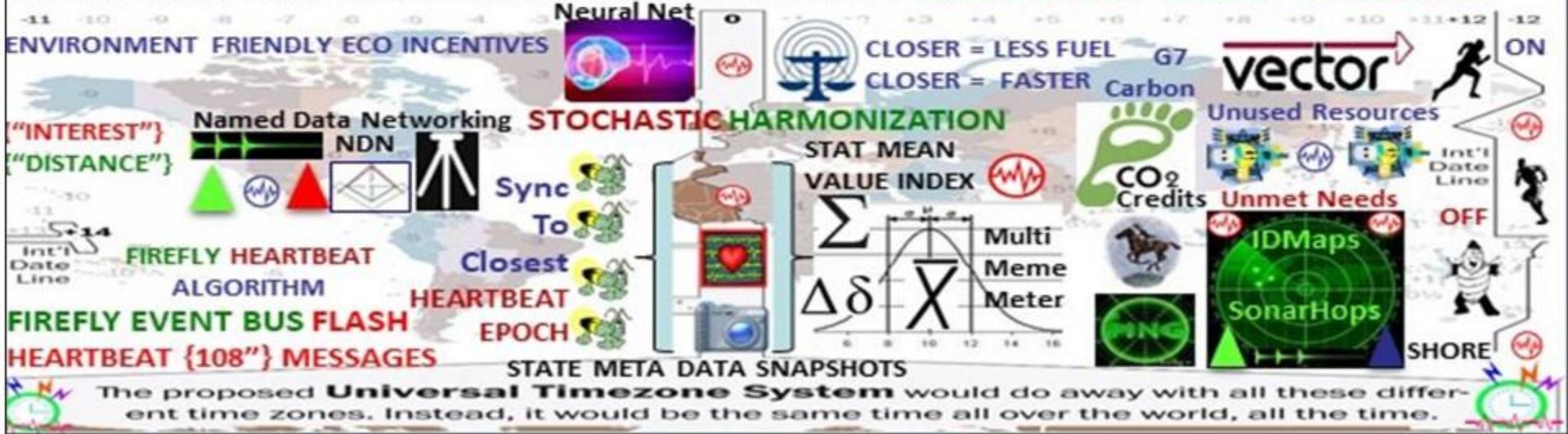
The current standard time common throughout the world is based on a 24-hour clock, with zones that are either 12 hours ahead or behind **Coordinated Universal Time (UTC)**. However, these time zones are decided upon by individual governments, without overall coordination and can even extend fourteen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



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



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





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

**ALGORITHMIC SAMPLING PRICE, RATE, SPEED, TRANSACTION RATE PARITY ACROSS TIME ZONES UTZ**

**Server on/off floor adjust**

**IDMaps SonarHop**

**Time-Space Metrics**

**EQUILIBRIUM CONSTANT**

**NASH Equilibrium Algorithms**

**Nash Game Theory Algorithms**

**Int'l Date Line**

**HB Cycle**

**STATE META**

**DATA SNAPS**

**Match Event to closest**

**STOP**

**START**

**</108>**

**NGINX**

**Send signal to Master process ID ##### - new config / Worker process checks new config syntax**

**SCOTT PATTERSON**

**Author of the New York Times Bestseller *The Quants***

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.

**05:08:57**

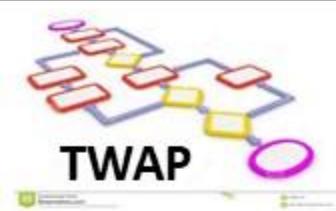
**NIST TIME BEACON**

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

# TWAP Algorithm Manages Bitcoin Price Volatility Algorithm

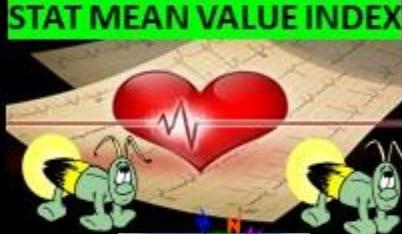


## TWAP GOAL: provide a Time Weighted Average Price Benchmark



FIREFLY HEARTBEAT ALGO  
STAT MEAN VALUE INDEX

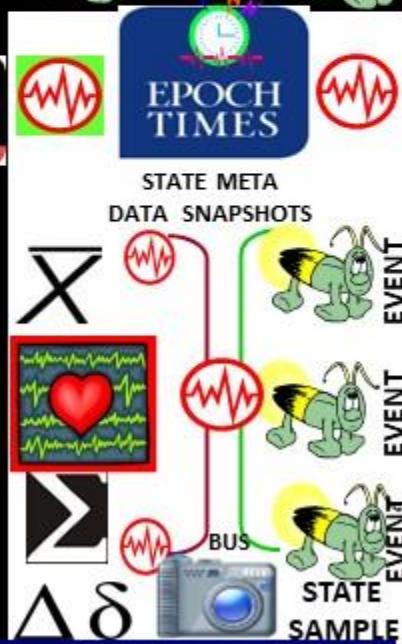
**TWAP Works To gauge trading performance, many traders in different asset classes (equity, fixed income, currency) often use average price as a benchmark. The two common ways to calculate an average are a time-weighted average price (TWAP) and a volume-weighted average price (VWAP). TWAP is the average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



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  $\frac{\text{Arrival Rate } \Delta \delta}{\text{Service Rate per unit time}}$  queueing systems wait times  
stochastic processes, function scheduling Start, Stop TTL

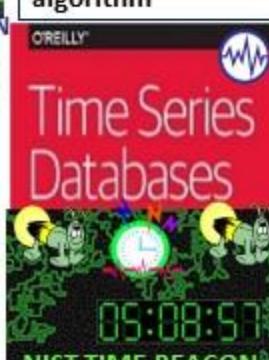
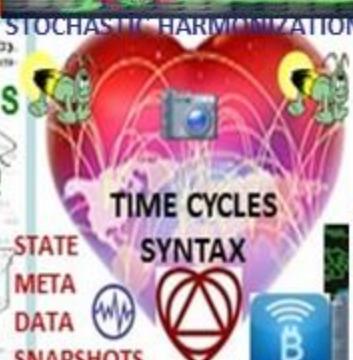


distributed "noSQL" database, embedded right into Erlang,  
supports indexing, replication, transactions, and fail-over  
Fast ETS in-memory, and DETS persistent on-disk database

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

Global name resolution

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





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



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



HASH TABLES  
NONCE VALUES

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



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



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

AZURE: Core/Kernel/Universal Protocol

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

## Unspent Transaction Output protocols UTXO

**Crypto Tokenized Assets Digital Bearer Bonds**  
unique identity for owned artifacts

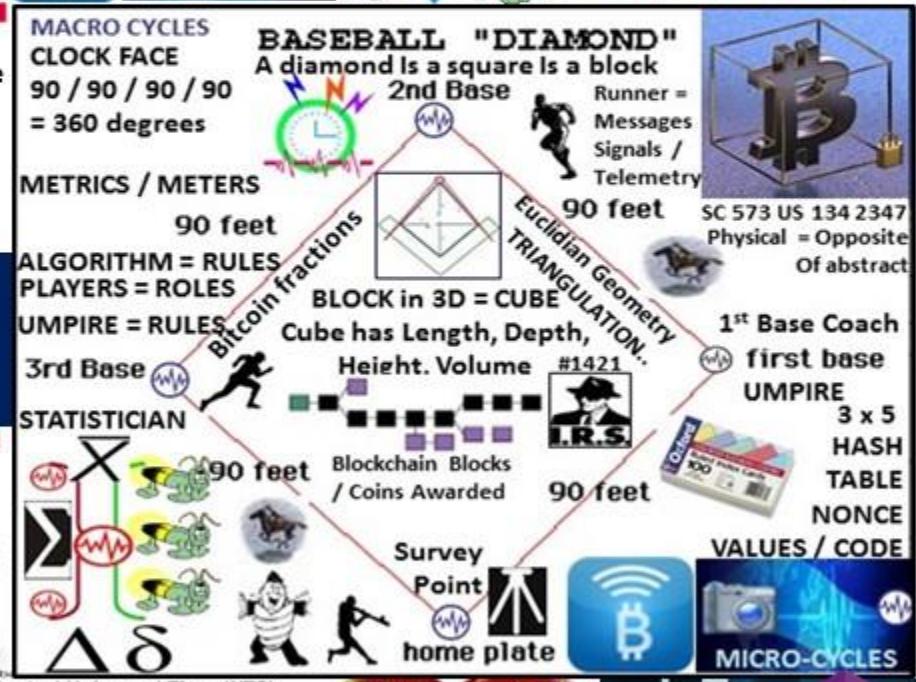
**Utility Cryptlets** encryption, time & date events, external data access, authentication “CryptoDelegate” / adapter

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

**Blockchain Fabric: Blockchain Gateway Services** [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





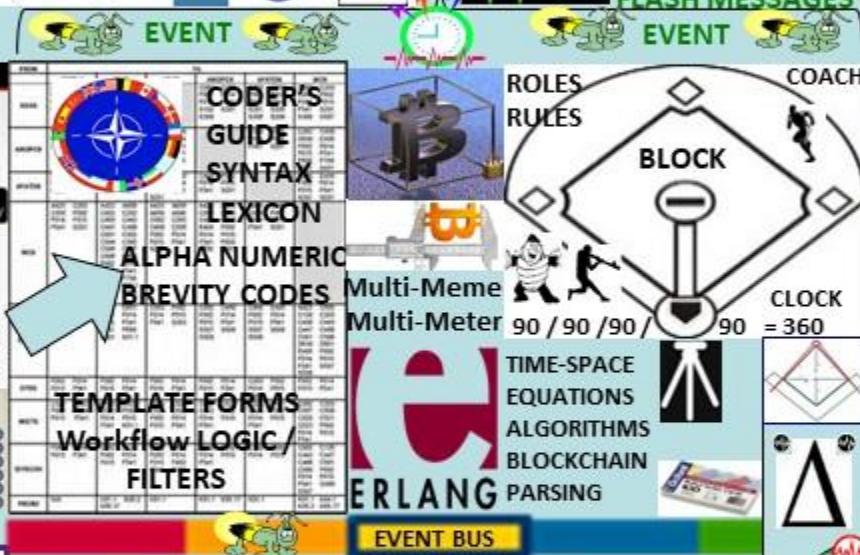
**real-time gross settlement system,  
currency exchange, remittance network**

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

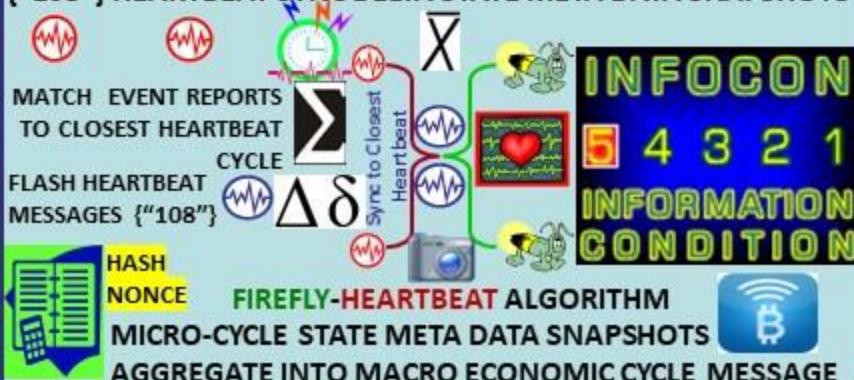
**Connects to receiving bank's Ripple Connect to exchange KYC, risk info, fees, payment details, expected time of funds delivery**

**Provides information about total costs of the transaction**  

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



**LOCKED QUOTED ACCEPT / DENY In Progress SUCCEEDED**  
{"108"} HEARTBEAT SYNC DELTA STATE META DATA SNAPSHOTS



**DFINITY**

**RANDOM # BEACON**

**NIST Beacon**  
A Public Randomness Service

**QUANTUM RANDOM #**

**Each process has mining identity**

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

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

**FIREFLY-HEARTBEAT** **FLASH Msg EVENT BUS**

**GROUP Signature is random number**

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

**BLS signature scheme**

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

**HYPER GEOMETRIC PROBABILITY CALCULATOR**

**CONSENSUS / RANDOM BEACON**

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

**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

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

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

**METRICS / METERS**

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

**90 feet**  
**Euclidian Geometry TRIANGULATION:**  
**Blockchain Blocks / Coins Awarded**

**90 feet**  
**BITCOIN FRACTIONS**  
**Block in 3D = CUBE**  
Cube has Length, Depth, Height, Volume #1421

**90 feet**  
**STATISTICIAN**

**90 feet**  
**Survey Point**  
**home plate**

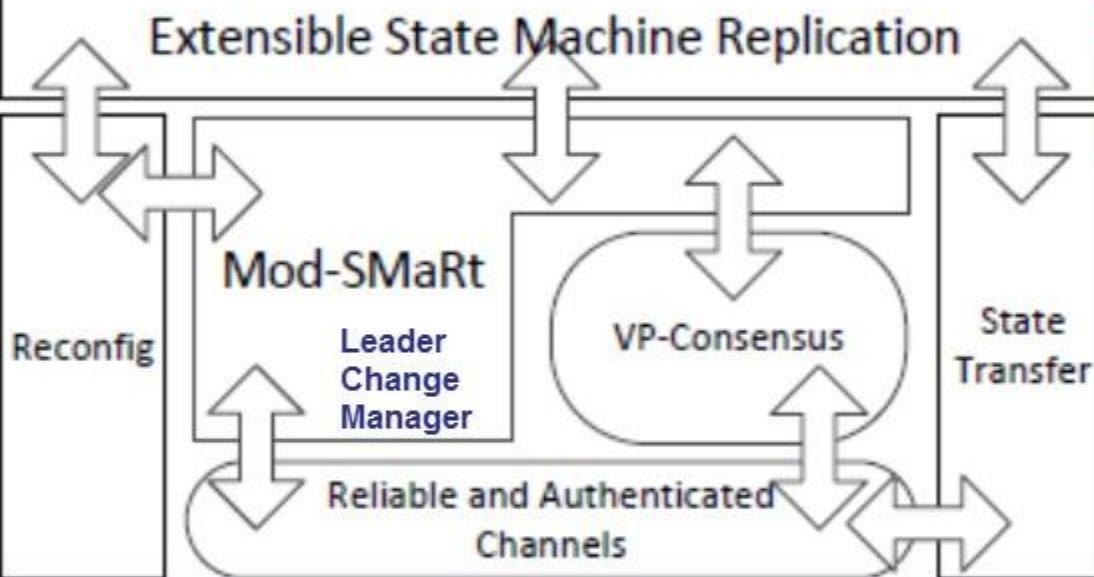
**SC 573 US 134 2347**  
Physical = Opposite Of abstract

**1st Base Coach**  
**first base**  
**UMPIRE**  
**3 x 5**  
**HASH TABLE**  
**NONCE**  
**VALUES / CODE**

**MICRO-CYCLES**

## 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

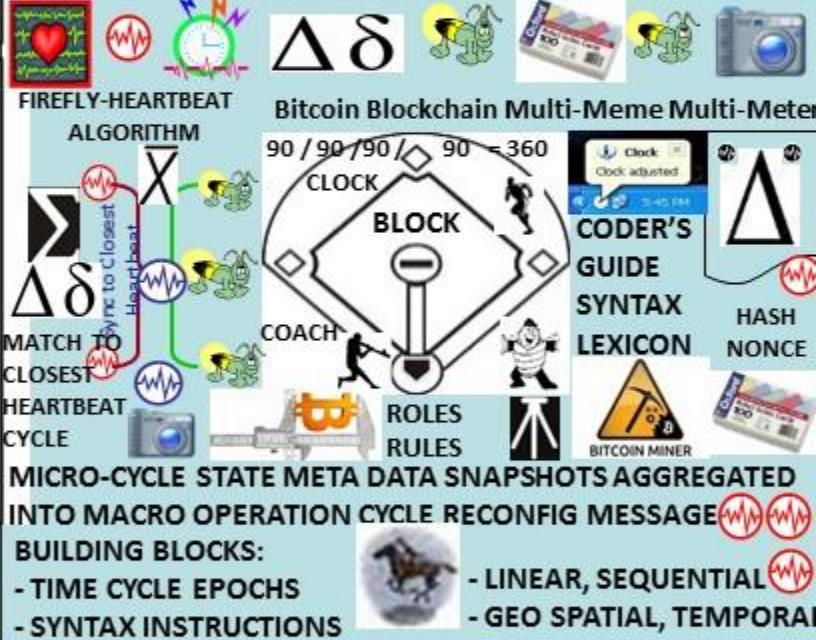


DERIVED FROM BATTLEFIELD DIGITIZATION DISTRIBUTED AUTONOMOUS ORGANIZATION DAO SYSTEM OF SYSTEMS

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"

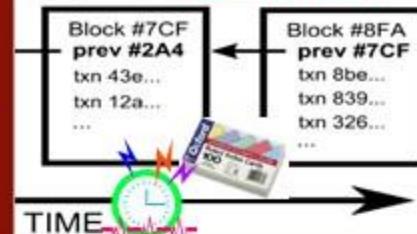
# HYPER LEDGER OPEN SOURCE BLOCKCHAIN

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

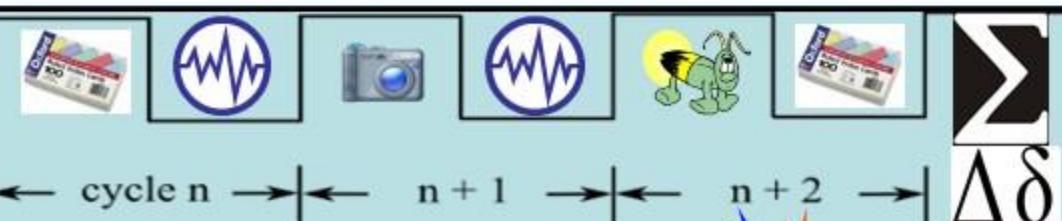
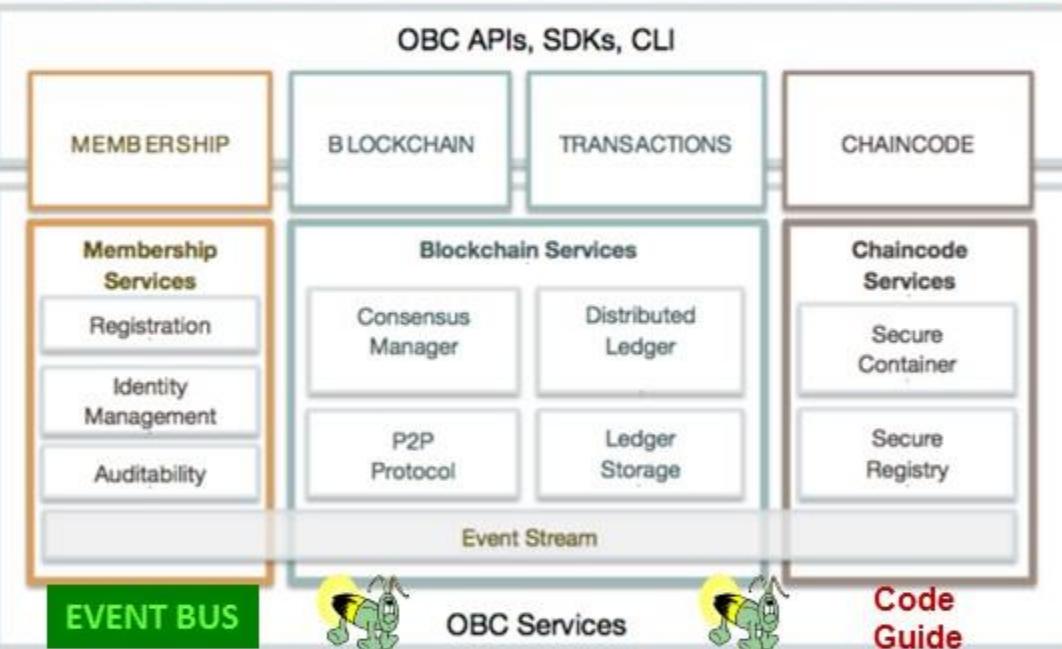
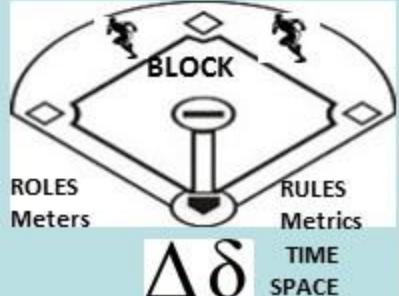
FEDERATION  
**Federation Gateway**

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

e.g. Derivatives

e.g. Trade Finance

e.g. KYC / AML

App

App

App

App

App

App

App

App

App

## Concord Platform Services

CorDapp Store

Notaries

Network Map Service

Trusted Digital Backbone Network

Regulatory Reporting

Oracles

Service Provider Gateways

Bank-Internal Gateways

## Concord Vault Interoperability

Asset Registry

Trade Registry

Cash

Identity Vault

## Concord Operations Centre

Business Monitoring

Technical Alerting

Management Information

Compliance Audit



Δδ

Inter-Network Adapters

FEDWIRE

CHIPS

DTCC

CLS

## Corda Core Node Services

Agreement States

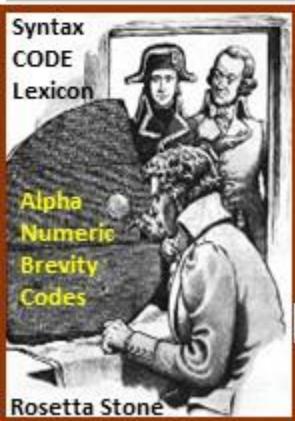
Transactions

Sandbox

Digital Signing

Interaction Protocols

Contract Verification



UNIVERSAL EVENT BUS



Syntax CODE Lexicon

STRUCTURED MILITARY MESSAGE TEMPLATE FORMS LOGIC / FILTERS

XBRL / CDL / DAML STOCK MIC CODES



300+ Use Case Templates



PROOF OF WORK



PROOF OF STAKE

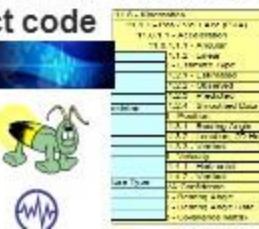


STATE CHANNELS



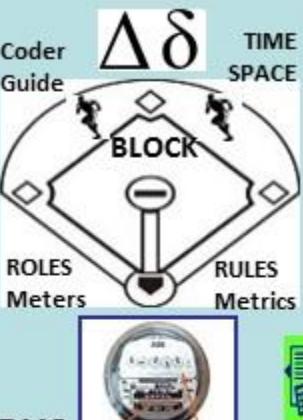
BITCOIN NEXGEN LIGHTNING / DASH..

Federation Gateway



## KEY BLOCKS:

- NO CONTENT = NULL
- LEADER ELECTION



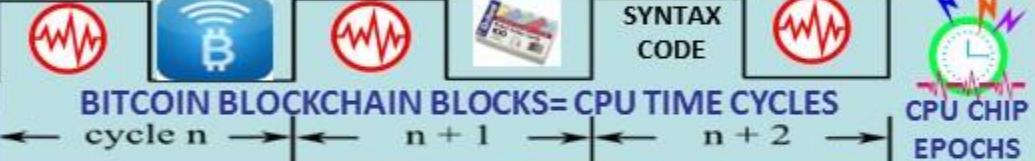
## MICRO BLOCKS:

- ONLY CONTENT
- NO CONTENTION



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

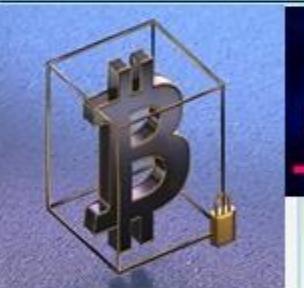
EVENT BUS



long exponential intervals (10 min)

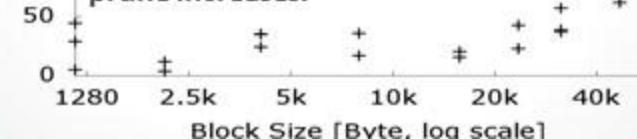


COMMAND SYNTAX  
RESTFUL State Transfer



Subjective Time to Prune

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



short deterministic intervals (10 sec)



MICRO-CYCLES



## ETHER: Compensate Resource Contribution

Gas: price to  
Run contract  
transactions

ethereum

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



Ether hedged against other  
crypto / FIAT currencies  
price changes

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

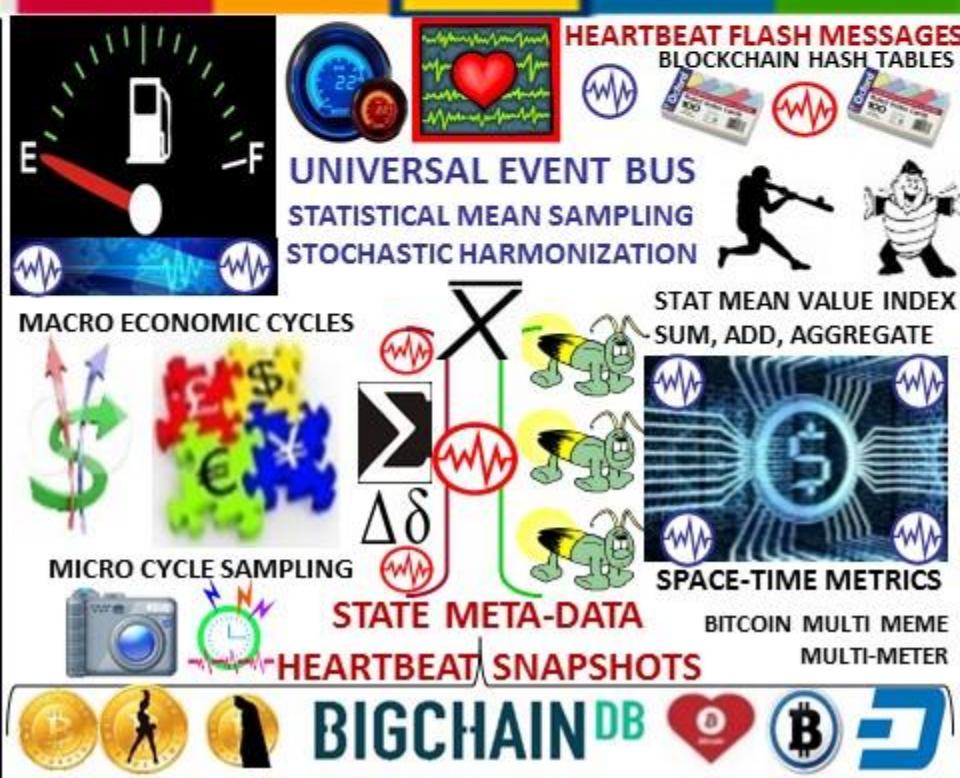
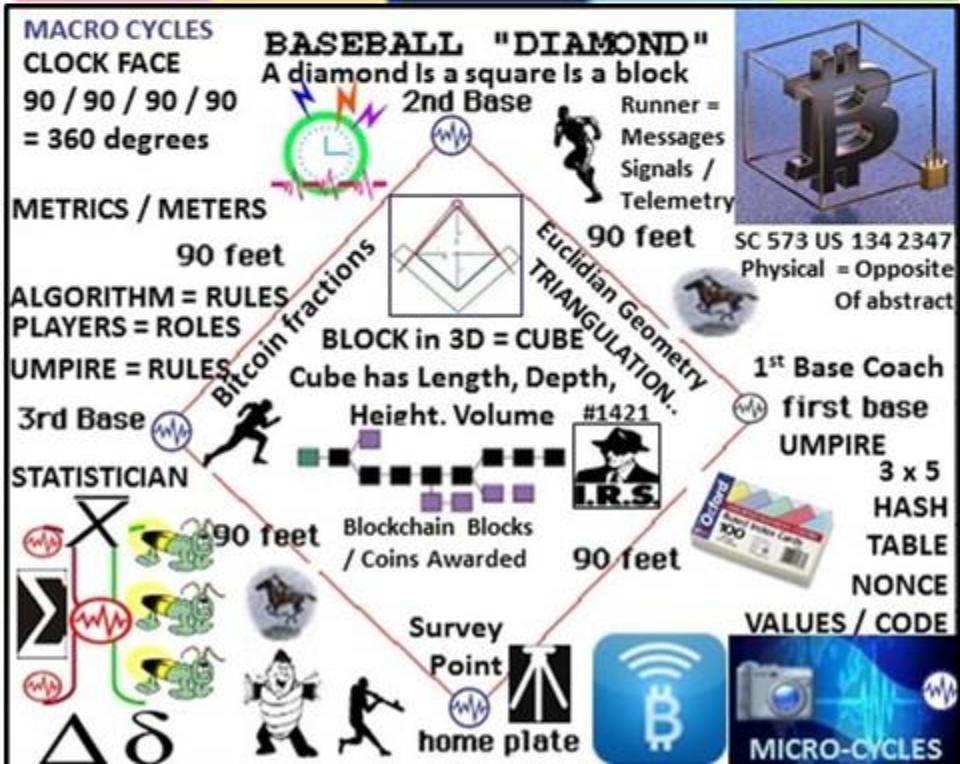
**EVENTUALLY**

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

**SWARM**  
(storage)

**WHISPER**  
(messaging)

**EVM**  
(consensus)



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

**METRICS / METERS**

90 feet

ALGORITHM = RULES

PLAYERS = ROLES

UMPIRE = RULES

3rd Base

STATISTICIAN

X

90 feet

Blockchain Blocks / Coins Awarded

90 feet

Survey Point

home plate

$\Delta \delta$

TRANSACTIONS

PER CYCLE

METRICS

cycle n

COMPUTER CHIP EPOCHS

n + 1

n + 2

SPATIAL

TEMPORAL Series

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

PROOF-OF-STAKE

UXTO

Mined Bitcoins

Unmined Bitcoins

Survey Methods

Proximity Beacons

MICRO-CYCLES

CALENDAR

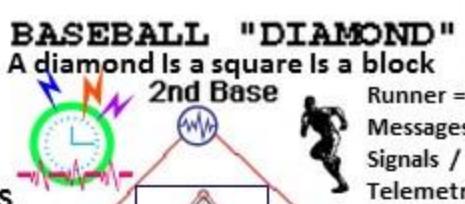
Unmined Bitcoins

Radar

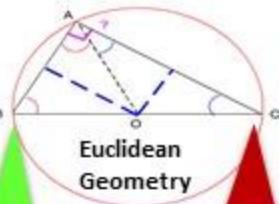
UTXO: unspent transaction output'. bitcoins sent somewhere

but not yet spent. Unspent transaction output set= latest

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



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



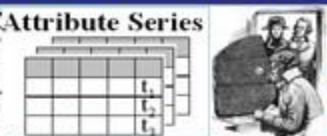
## NAMED DATA NETWORKING

Time Series

Value ↑ Time

time ↑ FIX {"108"} distance →

NDN



Digital Asset Modeling Language DAML ("INTEREST")

Contract Description Language CDL ("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

CALENDAR

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



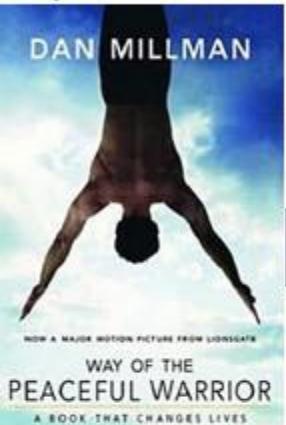
VOTE





# 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 Capabilities" in Great Britain or "Vernetzte Operationsführung" in Germany



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

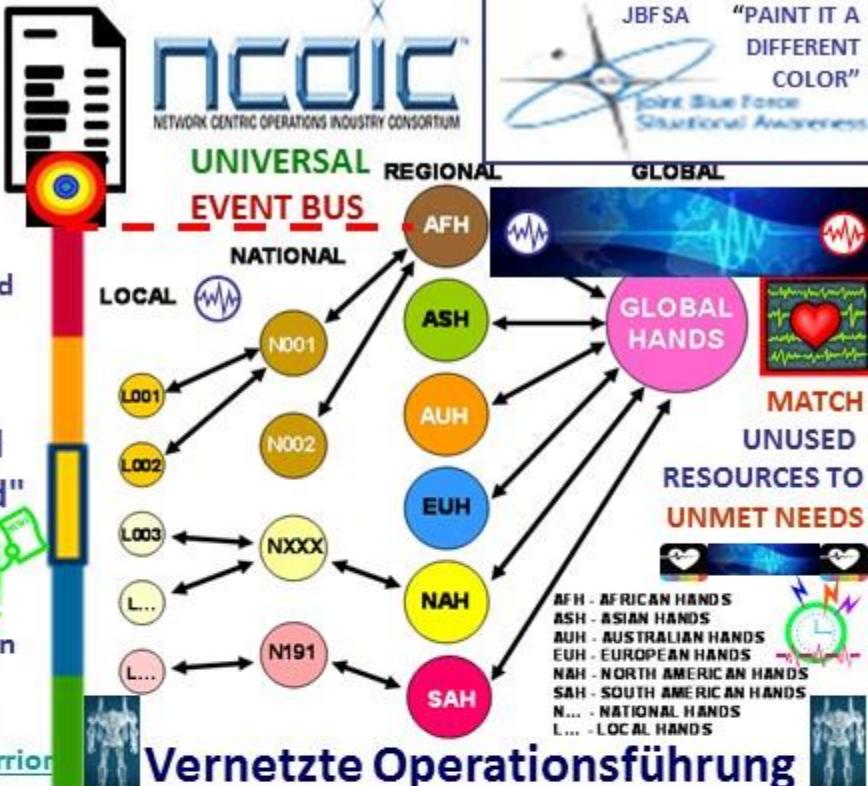


"The secret of change is to focus all of your energy, not on fighting the old, but on building the new." Dan Millman  
Way of the Peaceful Warrior A Book That Changes Lives  
[http://en.wikipedia.org/wiki/Way\\_of\\_the\\_Peaceful\\_Warrior](http://en.wikipedia.org/wiki/Way_of_the_Peaceful_Warrior)

Derive best practice procedural template guides from Battlefield Digitization describing when, where, how, how often systemically among a systems of systems promoting synergy, synchronicity.



The sculpture, similar to a lighthouse, is an interactive enclosure of light, color, and sound acting as a symbol of hope and resilience for the community. Pulses create a thumping sound that resonates through the steel frame and flickers the lighting matching the pattern to their heartbeat. By measuring a small, internal element such as a heartbeat and amplifying it to a monumental scale the piece becomes a powerful reflection of individual life and reminder of what is worth saving.



## Vernetzte Operationsführung

REUSE OF A PENTAGON ACAT-1A SITUATION  
AWARENESS PROGRAMS WORDS TO PLOWSHARES  
PROPOSED BY GERMAN MILITARY CIRCA 2003

## FEDERATION



## JAEGER

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

## STATE CHANNELS: blockchain interactions

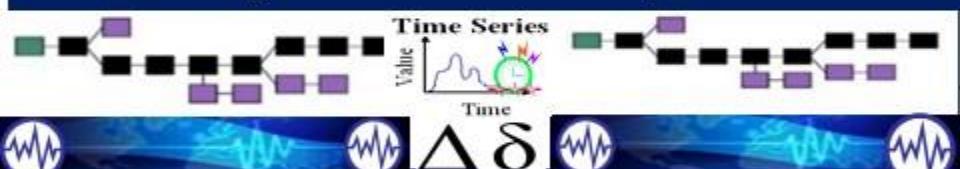
which could occur on the blockchain, but instead get conducted off of the blockchain, without significantly increasing the risk of any participant.



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

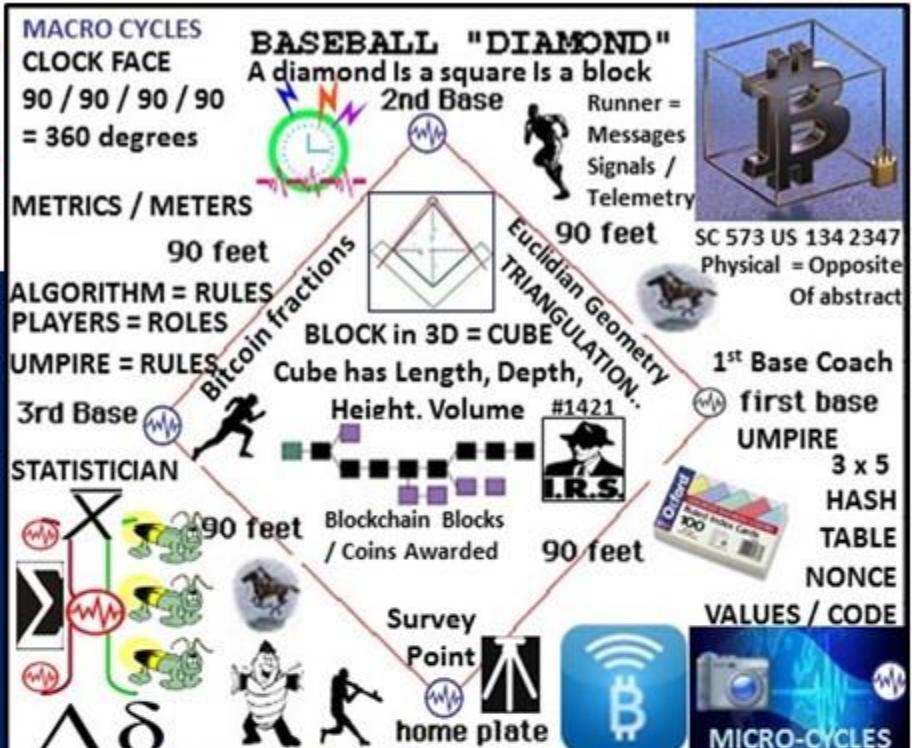
**2. Participants update the state amongst themselves** by constructing and signing transactions that *could* be submitted to the blockchain, but instead are merely held onto for now. Each new update "trumps" previous updates.

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



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

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



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

## HASH TABLES

A cartoon illustration of two ants carrying a large heart-shaped balloon. The balloon is filled with colorful, wavy lines and features a brain icon in the center. The ants are smiling and appear to be working together to carry the balloon.

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



# PROOF-OF-WORK



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



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



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

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



GUESS stores the guess  
Effectively, it begins at infinity.



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

## OREILLY Time Series Databases



## FIREFLY-HEARTBEAT ALGORITHM STOCHASTIC HARMONY ACROSS TIME ZONES



- MESSAGE ex:
  - Hashing string
  - Hash Table

## 300+Message Templates

LOGIC FILTERS	LOGIC GATES
SYNTAX LIBRARY	LEXICON
CODER'S GUIDE	

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

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



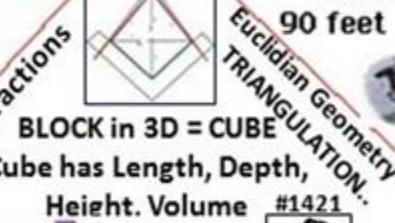
Runner =  
Messages  
Signals /  
Telemetry

SC 573 US 134 2347  
Physical = Opposite  
Of abstract

METRICS / METERS

90 feet

ALGORITHM = RULES  
PLAYERS = ROLES

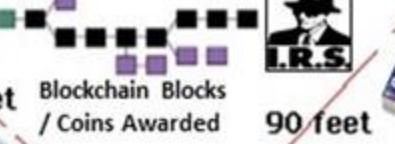


UMPIRE = RULES

STATISTICIAN

3rd Base

NONCE



3 x 5  
HASH  
TABLE  
NONCE

VALUES / CODE

MICRO-CYCLES

HASH

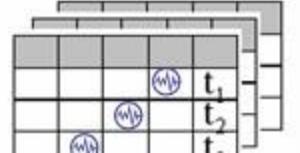
NONCE

HASH

← cycle n → ← n+1 → ← n+2 →

$\Delta\delta$

POW PAYLOAD :  
COMBINATIONS OF  
ENCRYPTED SYNTAX  
Attribute Series



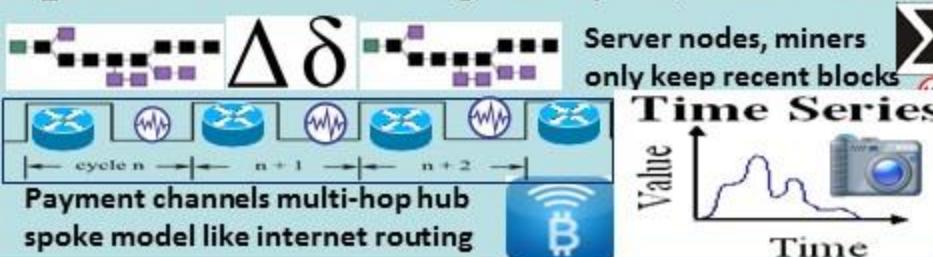


## PROJECT LIGHTING



## Hashed TIME LOCK contracts component for global consensus

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



# **FIREFLY – HEARTBEAT ALGORITHM**





# EVENT REPORTING ACROSS TIME-SPACE



## SEGREGATED WITNESS SegWit



### OUT OF BAND / CHANNEL

**fitness = Separated**



- 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
    - signatures 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**



# Time Series Databases

## QUORUM VOTING PROTOCOL

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

**Voting based selection** Instead of only using the stake size, the block generators can be selected by votes

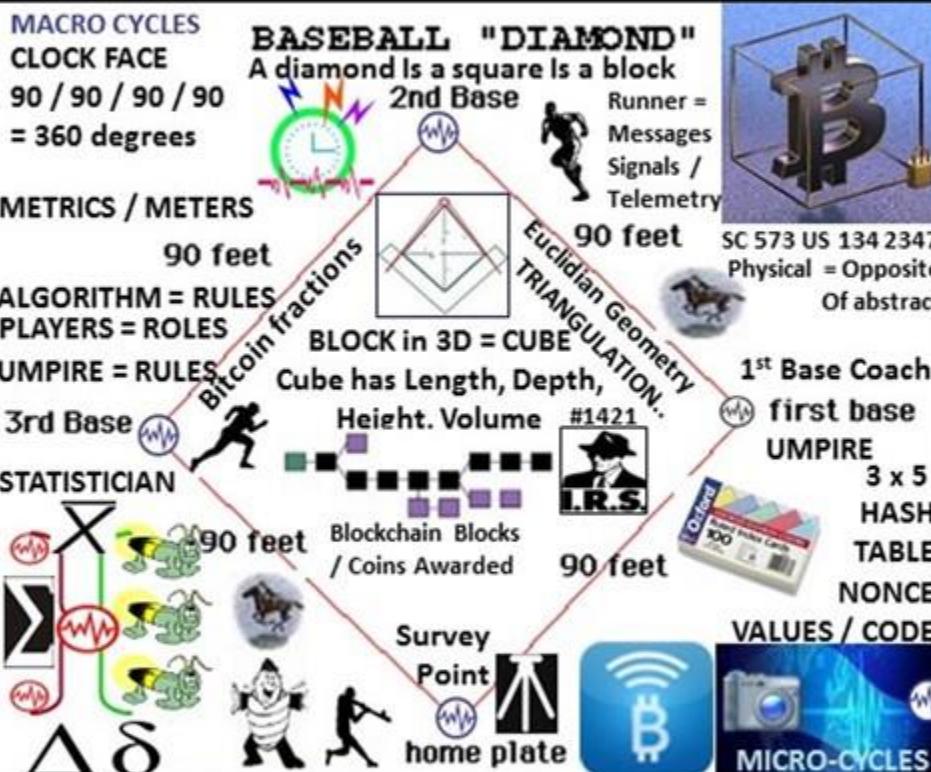
**ex: League MVP**



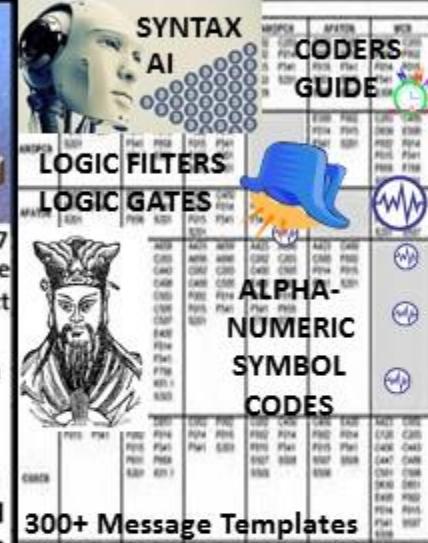
**Robert's Rules quorum = minimum # of voting members who must be present at meetings to conduct business of the group**

## TOURNAMENT LEAGUE BOARD

Sct #573 ALICE CORP V CLS BANKPHYSICAL UNIVERSAL MEME BITCOIN IS A LANGUAGE



## FIREFLY-HEARTBEAT FLASH MESSAGES UNIVERSAL EVENT BUS



## Attribute Series



## HASH TABLES / NONCE VALUES

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

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

#### Key Features:

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



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

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

All rates time-stamped in UTC.



Ability to look up by time-stamp.

Ability to look up by block-height.

Asset Classes: Digital Currencies

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

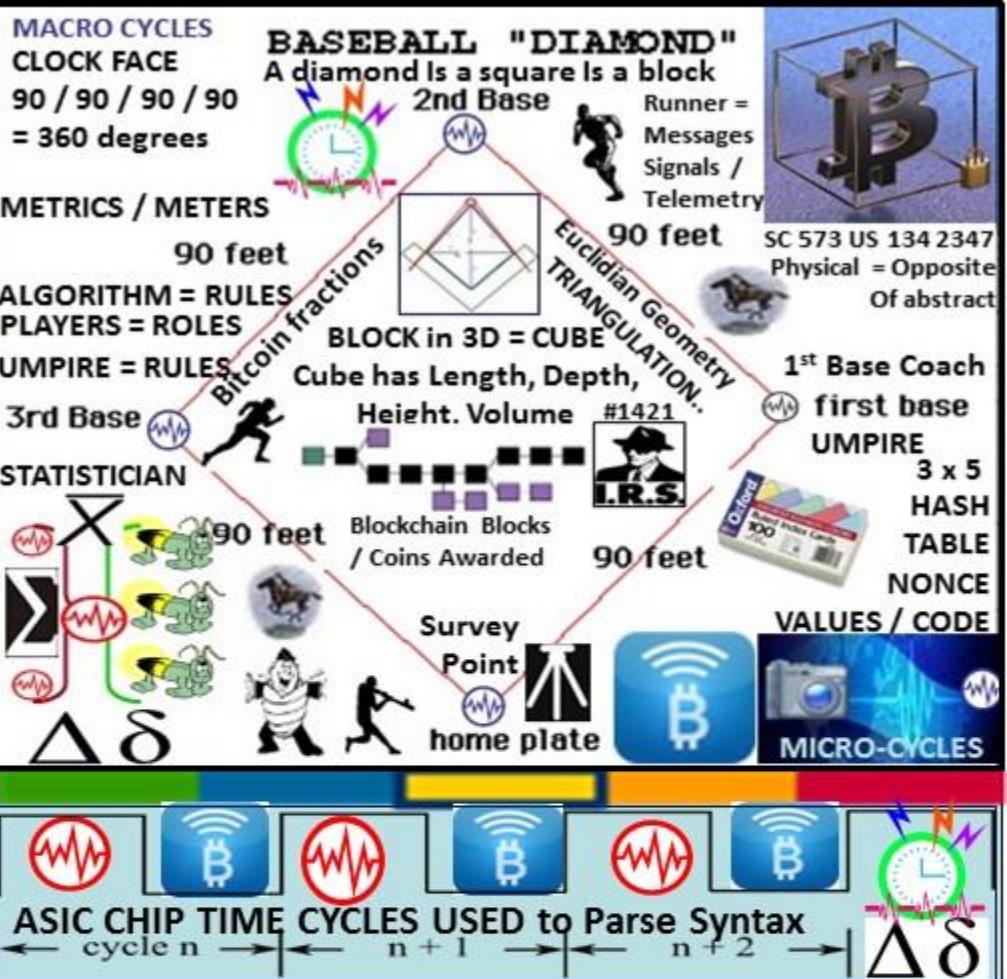
Transaction ID, Block ID, time-stamp, BWAP per block, Value in USD. BTC per transaction, bitcoin transaction fees per transaction

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

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

**BRAVE NEW COIN.**  
Digital Currency Insights

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



#### API CODE INSTRUCTIONS



HASH



NONCE

#### UTZ TIME ZONE TIME SYNC



EVENT BUS



STATE META DATA SNAP SHOTS



# DASH



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

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

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

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

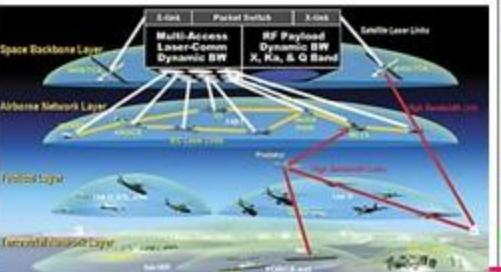
"Its makeup is thus: the block reward is divvied up in three parts. The first 45 percent goes to [Dash's miners](#). Another 45 percent goes to its Masternodes. And 10 percent is set aside to fund whatever other jobs or expenditures the Dash network deems necessary"

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

Masternodes receive payments for their service to the network.

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

NETWORK CENTRIC WARFARE  
Developing and improving information superiority



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

**METRICS / METERS**

90 feet

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

**UMPIRE = RULES**

3rd Base

**STATISTICIAN**

90 feet

Blockchain Blocks / Coins Awarded

Survey Point

home plate

$\Delta\delta$

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



Euclidian Geometry TRIANGULATION..

1<sup>st</sup> Base Coach first base UMPIRE

3 x 5 HASH TABLE NONCE

VALUES / CODE



MICRO-CYCLES



STOCHASTIC HARMONIZATION FIREFLY-HEARTBEAT EVENT BUS

HEART BEACON CYCLE = IMPROVEMENT TO NETWORK CENTRIC WARFARE



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



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

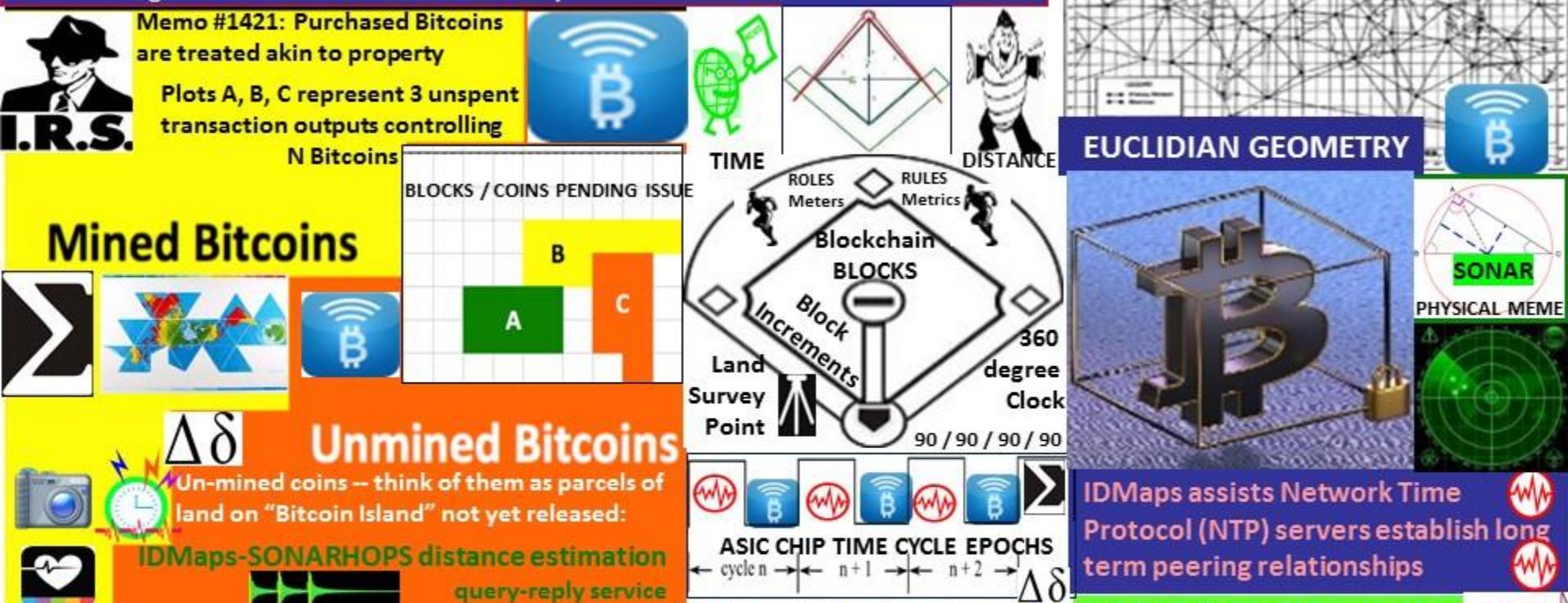
HEART BEACON CYCLE

USPTO 13/573,002

SURVEY METHODS

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

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



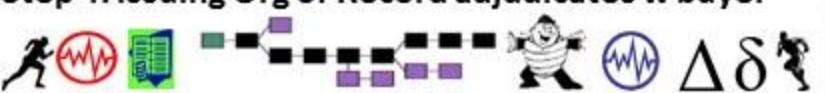
- End-state Bitcoin quantity will be fixed like land  
"Bitcoin as protocol of ownership, not transfer"  
Coins never travel, but simply switch owners"

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

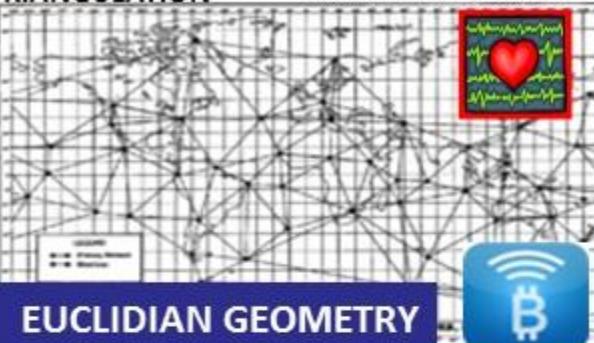
Step 2: coins sent where, when Lat-Long, Time Stamp

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

Step 4: Issuing Org of Record adjudicates w buyer



TRIANGULATION



EUCLIDIAN GEOMETRY



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



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



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

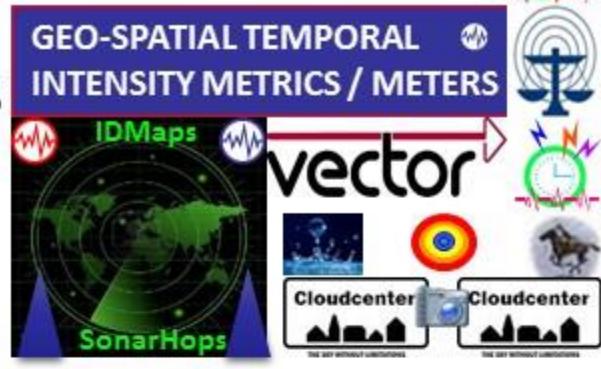
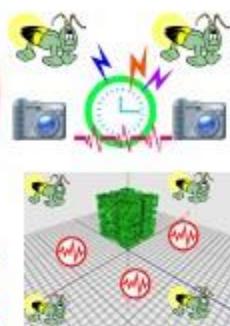




# IDMaps: Global Internet Host Distance Estimation Service



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



IDMaps scalable Internet-wide architecture measures, disseminates distance information



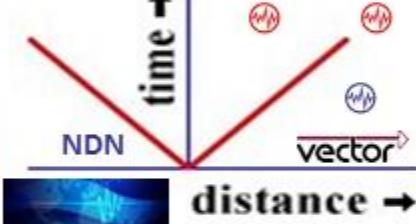
HOP COUNTS



REACHABILITY



/localhost/nfd/fib/add-nexthop



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

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

Name Prefix  
<Org\_ID> Trie (NPT)



NDN NAMES

NDN NAMED DATA NETWORK RIB /  
FIB Datasets event notification

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



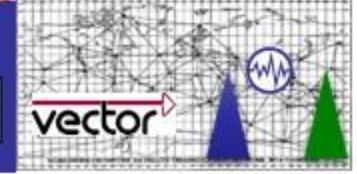
NDN RIB

NDN INTEREST LENGTH  
= DISTANCE BY HOPS

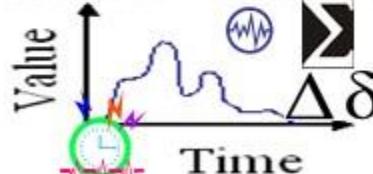
NDN  
INTEREST

IS DATA  
FRESH ?

TRIANGULATION



Time Series



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

Datasets and Event Notification

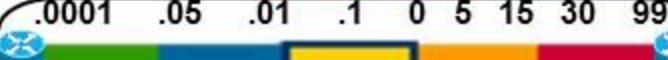
IDMaps assists Network Time Protocol (NTP) servers establish long term peering relationships



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

# Electronic Product Code Information Services (EPCIS)

GS1 Standard for creating, sharing visibility event data



Edge

REGISTERED  
ORGANISATION  
VOCABULARY

## Epcis EPCIS DATA MODEL



SERVICE LAYER

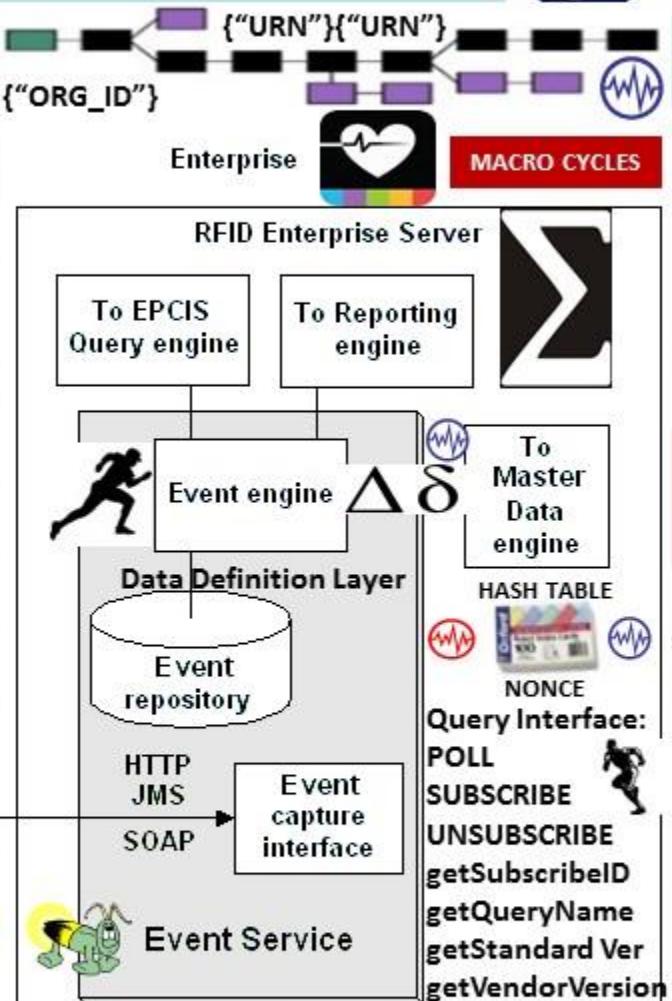
XML

ObjectEvent

AggregationEvent

QuantityEvent

TransactionEvent



## Core Business Vocabulary (CBV)

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

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

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

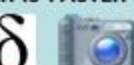
Why Information about the business context, including:  
a Identifier that indicates the business step taking place

MICRO  
CYCLES



CLOSER IS CHEAPER  
CLOSER IS FASTER

$\Delta\delta$

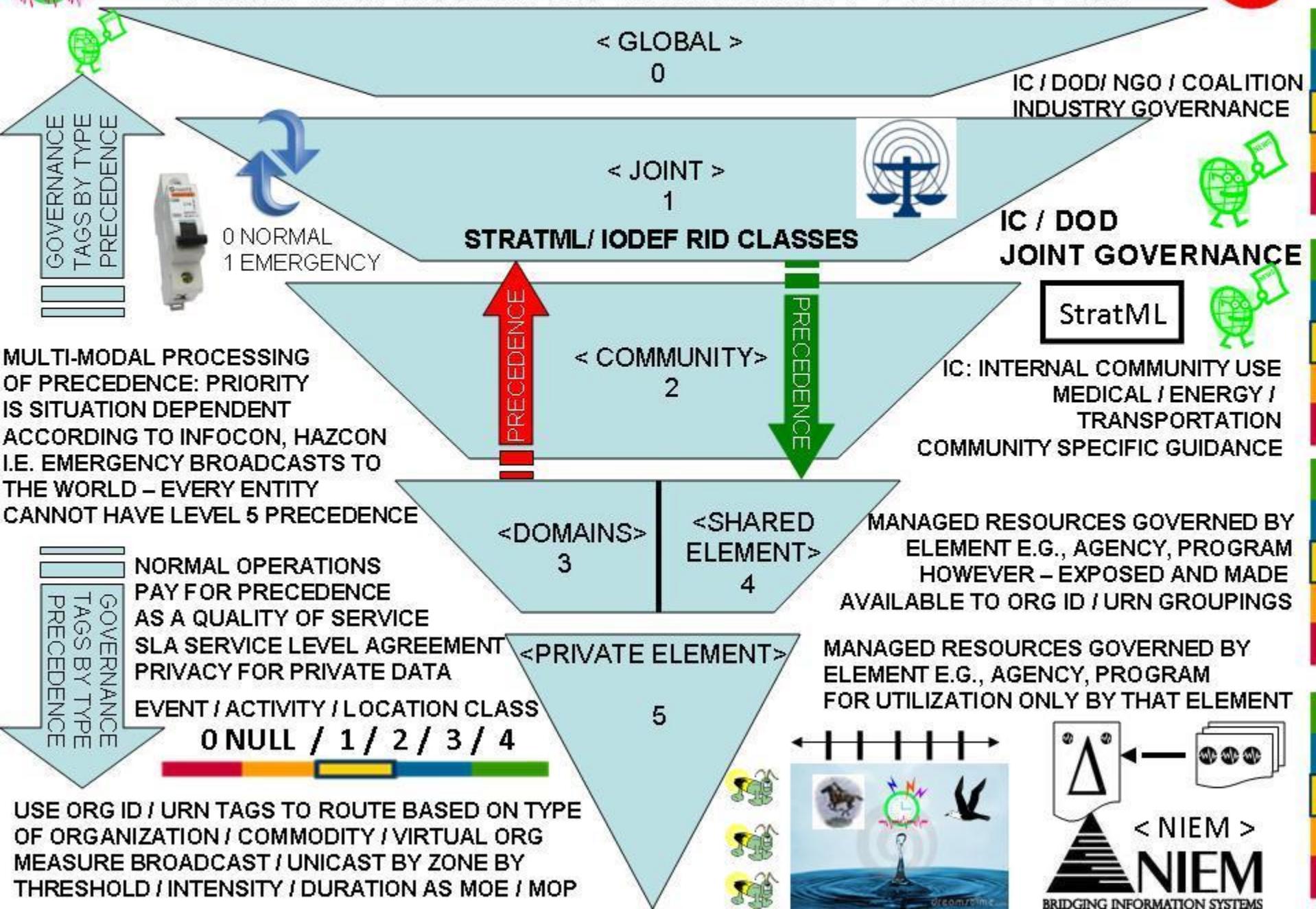


$\Delta\delta$





# 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/>



Industrial Control System  
Information Sharing and  
Analysis Center

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

<ELEMENTS>

STRATEGIC  
MARKUP

StratML

LANGUAGE

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

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

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



vector

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

GEO-SPATIAL TEMPORAL INTENSITY METRICS

UNIFIED EVENT / ALERT TRIGGER / THRESHOLDS

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

CONTENT LEXICON  
ROSETTA STONE

NDN

<GEO\_LOC\_GPS><STATUS>



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



STIX

NDN

<INTEREST>

Cybox

<INTEREST>

STIX

<INTEREST>

Cybox

<INTEREST>

STIX



FROM	GCCS-A	ALPHA-NUMERIC BREVITY CODES																																																																																									
 <b>FEDERATE</b> 		<p><b>USMTF / XML MTF FORMATTED MESSAGE CATALOG = 300 + messages info exchange sets using common, CONSENSUS Message Text Formats MTFs.</b> MTFs specify &lt;CONTENT&gt; / info agreed by group consensus presenting information in a logical, well specified unambiguous layout resulting in a highly efficient info payload to overhead ratio <b>M2M</b></p>																																																																																									
		<table border="1"> <tr> <td>C400</td> <td>C443</td> <td>C002</td> <td>C203</td> <td>C400</td> <td>C505</td> <td>F014</td> </tr> <tr> <td>C447</td> <td>C488</td> <td>C400</td> <td>C505</td> <td>E400</td> <td>F002</td> <td>F541</td> </tr> <tr> <td>C501</td> <td>C503</td> <td>F002</td> <td>F014</td> <td>F014</td> <td>F015</td> <td>S201</td> </tr> <tr> <td>C504</td> <td>C505</td> <td>F015</td> <td>F541</td> <td>F541</td> <td>F658</td> <td></td> </tr> <tr> <td>C506</td> <td>C507</td> <td>S201</td> <td></td> <td>F756</td> <td>S201</td> <td></td> </tr> <tr> <td>C508</td> <td>E400</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>F002</td> <td>F014</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>F015</td> <td>F541</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>F658</td> <td>F756</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>G489</td> <td>K01.1</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>S201</td> <td>S303</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>S507</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		C400	C443	C002	C203	C400	C505	F014	C447	C488	C400	C505	E400	F002	F541	C501	C503	F002	F014	F014	F015	S201	C504	C505	F015	F541	F541	F658		C506	C507	S201		F756	S201		C508	E400						F002	F014						F015	F541						F658	F756						G489	K01.1						S201	S303						S507							 F002 F015 S201		 AI M2M	
C400	C443	C002	C203	C400	C505	F014																																																																																					
C447	C488	C400	C505	E400	F002	F541																																																																																					
C501	C503	F002	F014	F014	F015	S201																																																																																					
C504	C505	F015	F541	F541	F658																																																																																						
C506	C507	S201		F756	S201																																																																																						
C508	E400																																																																																										
F002	F014																																																																																										
F015	F541																																																																																										
F658	F756																																																																																										
G489	K01.1																																																																																										
S201	S303																																																																																										
S507																																																																																											
		<table border="1"> <tr> <td>C400</td> <td>E400</td> </tr> <tr> <td>F002</td> <td>F014</td> </tr> <tr> <td>F015</td> <td>F541</td> </tr> <tr> <td>S201</td> <td>S507</td> </tr> </table>		C400	E400	F002	F014	F015	F541	S201	S507			C400 E400 F002 F014 F015 F541 S201 S507																																																																													
C400	E400																																																																																										
F002	F014																																																																																										
F015	F541																																																																																										
S201	S507																																																																																										
		 <b>INFOCON</b> 5 4 3 2 1 <b>INFORMATION CONDITION</b>		 <b>THE LIBERTY BEACON™</b>		<b>STRUCTURED DATA EXCHANGE Message Sets</b> 																																																																																					
		<p><b>Data Elements:</b> entity, attribute, relationship equivalents</p>																																																																																									
		<p><b>HEARTBEAT MESSAGE = K00.99</b></p>																																																																																									
		<p><b>PROCESS MESSAGE BY PRECEDENCE</b>  <b>NDN &lt;/INTEREST&gt; &lt;/DISTANCE&gt; PACKETS</b></p>																																																																																									
		<p><b>OPERATIONAL NODES / ACTIVITIES</b></p>																																																																																									
		<table border="1"> <thead> <tr> <th colspan="7">Information Categories and Examples</th> </tr> <tr> <th>Object Categories</th> <th>Examples</th> <th>Location</th> <th>Movement</th> <th>Identify</th> <th>Status</th> <th>Activity</th> </tr> </thead> <tbody> <tr> <td>OOB</td> <td><b>SYNTAX LEXICON</b></td> <td>lat/long</td> <td>spd/hdg</td> <td>country / alliance, type/class</td> <td>readiness</td> <td>targeting, reconning</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>COA</td> <td>{"Java JS"}</td> </tr> <tr> <td>Infrastructure</td> <td>Comm, power, transportation, water/sewer</td> <td>network, grid</td> <td>throughput, flow rates,</td> <td>name, part-of relationships</td> <td>BDA, op levels</td> <td>repair, broadcasts</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>YAML expansion plans</td> </tr> <tr> <td>Sociological</td> <td>Culture, religion, economic, ethnic, government, history, languages</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Geophysical</td> <td>Terrain, weather, climatology, oceanography, astrometry</td> <td>feature</td> <td>lat/long, alt/dpth</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>						Information Categories and Examples							Object Categories	Examples	Location	Movement	Identify	Status	Activity	OOB	<b>SYNTAX LEXICON</b>	lat/long	spd/hdg	country / alliance, type/class	readiness	targeting, reconning						COA	{"Java JS"}	Infrastructure	Comm, power, transportation, water/sewer	network, grid	throughput, flow rates,	name, part-of relationships	BDA, op levels	repair, broadcasts							YAML expansion plans	Sociological	Culture, religion, economic, ethnic, government, history, languages													Geophysical	Terrain, weather, climatology, oceanography, astrometry	feature	lat/long, alt/dpth																								
Information Categories and Examples																																																																																											
Object Categories	Examples	Location	Movement	Identify	Status	Activity																																																																																					
OOB	<b>SYNTAX LEXICON</b>	lat/long	spd/hdg	country / alliance, type/class	readiness	targeting, reconning																																																																																					
					COA	{"Java JS"}																																																																																					
Infrastructure	Comm, power, transportation, water/sewer	network, grid	throughput, flow rates,	name, part-of relationships	BDA, op levels	repair, broadcasts																																																																																					
						YAML expansion plans																																																																																					
Sociological	Culture, religion, economic, ethnic, government, history, languages																																																																																										
Geophysical	Terrain, weather, climatology, oceanography, astrometry	feature	lat/long, alt/dpth																																																																																								
		<table border="1"> <thead> <tr> <th>ER Model</th> <th>Class Diagram</th> <th>Relational Database</th> <th>Object DBMS</th> <th>XML DTD / Schema</th> <th>TADILs</th> <th>MTF</th> </tr> <tr> <th>Entity</th> <th>Class</th> <th>Table</th> <th>Class</th> <th>Element</th> <th>Message</th> <th>Message</th> </tr> </thead> <tbody> <tr> <td>Attribute</td> <td>Attribute</td> <td>Field / Column</td> <td>Attribute</td> <td>Child Element or Element Attribute</td> <td>DFT</td> <td>FFIRN / FFN / FUDN</td> </tr> <tr> <td>Domain Value</td> <td></td> <td>Instance, Value</td> <td></td> <td></td> <td>DUI</td> <td>FUD</td> </tr> </tbody> </table>						ER Model	Class Diagram	Relational Database	Object DBMS	XML DTD / Schema	TADILs	MTF	Entity	Class	Table	Class	Element	Message	Message	Attribute	Attribute	Field / Column	Attribute	Child Element or Element Attribute	DFT	FFIRN / FFN / FUDN	Domain Value		Instance, Value			DUI	FUD																																																								
ER Model	Class Diagram	Relational Database	Object DBMS	XML DTD / Schema	TADILs	MTF																																																																																					
Entity	Class	Table	Class	Element	Message	Message																																																																																					
Attribute	Attribute	Field / Column	Attribute	Child Element or Element Attribute	DFT	FFIRN / FFN / FUDN																																																																																					
Domain Value		Instance, Value			DUI	FUD																																																																																					
		<table border="1"> <thead> <tr> <th>DATA</th> <th>SYSTEM FUNCTIONS</th> <th>PERFORMANCE</th> </tr> </thead> <tbody> <tr> <td rowspan="5"> </td> <td>"SYMBOLS"</td> <td>11.8 - Kinematics</td> </tr> <tr> <td>"RULE THE WORLD"</td> <td>11.8.1 - Pos / Vel / Acc (PVA)</td> </tr> <tr> <td>"WORLD"</td> <td>11.8.1.1 - Acceleration</td> </tr> <tr> <td>1 - Alternative</td> <td>11.8.1.1.1 - Angular</td> </tr> <tr> <td>2 - Evaluated D</td> <td>1.1.2 - Linear</td> </tr> <tr> <td>value</td> <td>2 - Estimate Type</td> </tr> <tr> <td rowspan="4"> </td> <td>1 - Alternative</td> <td>1.2.1 - Estimated</td> </tr> <tr> <td>2 - Evaluated D</td> <td>1.2.2 - Observed</td> </tr> <tr> <td>value</td> <td>1.2.3 - Predicted</td> </tr> <tr> <td>CODES</td> <td>1.2.4 - Smoothed Data</td> </tr> <tr> <td colspan="3"> <b>SYMBOL</b>      <b>Friend</b>      <b>Neutral</b>      <b>Hostile</b>  <b>2525C</b>      <b>Partner</b>      <b>Competitor</b> </td> </tr> <tr> <td colspan="3">           11.4.1.3.5 - Surface            11.4.2 - Platform / Point / Feature Type            11.4.3 - Specific Type            11.4.4 - Type Modifier            11.4.5 - Unit         </td> </tr> </tbody> </table>						DATA	SYSTEM FUNCTIONS	PERFORMANCE		"SYMBOLS"	11.8 - Kinematics	"RULE THE WORLD"	11.8.1 - Pos / Vel / Acc (PVA)	"WORLD"	11.8.1.1 - Acceleration	1 - Alternative	11.8.1.1.1 - Angular	2 - Evaluated D	1.1.2 - Linear	value	2 - Estimate Type		1 - Alternative	1.2.1 - Estimated	2 - Evaluated D	1.2.2 - Observed	value	1.2.3 - Predicted	CODES	1.2.4 - Smoothed Data	<b>SYMBOL</b> <b>Friend</b> <b>Neutral</b> <b>Hostile</b> <b>2525C</b> <b>Partner</b> <b>Competitor</b>			11.4.1.3.5 - Surface 11.4.2 - Platform / Point / Feature Type 11.4.3 - Specific Type 11.4.4 - Type Modifier 11.4.5 - Unit																																																							
DATA	SYSTEM FUNCTIONS	PERFORMANCE																																																																																									
	"SYMBOLS"	11.8 - Kinematics																																																																																									
	"RULE THE WORLD"	11.8.1 - Pos / Vel / Acc (PVA)																																																																																									
	"WORLD"	11.8.1.1 - Acceleration																																																																																									
	1 - Alternative	11.8.1.1.1 - Angular																																																																																									
	2 - Evaluated D	1.1.2 - Linear																																																																																									
value	2 - Estimate Type																																																																																										
	1 - Alternative	1.2.1 - Estimated																																																																																									
	2 - Evaluated D	1.2.2 - Observed																																																																																									
	value	1.2.3 - Predicted																																																																																									
	CODES	1.2.4 - Smoothed Data																																																																																									
<b>SYMBOL</b> <b>Friend</b> <b>Neutral</b> <b>Hostile</b> <b>2525C</b> <b>Partner</b> <b>Competitor</b>																																																																																											
11.4.1.3.5 - Surface 11.4.2 - Platform / Point / Feature Type 11.4.3 - Specific Type 11.4.4 - Type Modifier 11.4.5 - Unit																																																																																											

# Heart Beacon Cycle

TRADE FEDERATION Bitcoin Blockchain



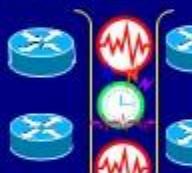
1. **FEDERATION:** Latin: *foedus, foederis, covenant, union* of partially self-governing states or regions under a central (federal) government
2. A league or confederacy. Individuals / groups retain **AUTONOMY**
3. A federated body formed by a number of nations, states, unions each retaining control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

Net joins, drops, splits, merges, moves



Office 365 Groups

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



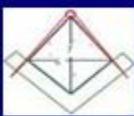
{"GROUP ID"}



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



Bitcoin Mining Pools  
MEME / METAPHOR MEDIATION



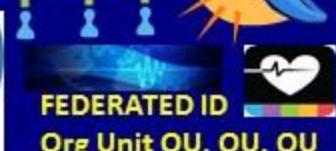
Federation  
Gateway

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

**TERM DISTRIBUTED AUTONOMOUS ORGANIZATION DAO** first used by RAND Corp  
Circa 1991 now in use by Blockchain tech corporations..



PURCHASE CODE



Signaling, Telemetry

FIREFLY FLASH

HEARTBEAT MESSAGES



iET DEVICE / PLATFORM  
IoT SENSOR DEVICE

{"Asset\_Type"}

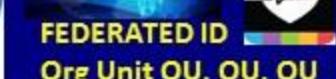
Uniform\_Resource\_Name

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

STOCK EXCHANGE

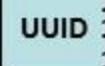
MIC MARKET IDENTIFIER  
CODES / BREVITY CODES

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



FEDERATED ID  
Org Unit OU, OU, OU

Heartbeat Snaps  
MICRO-CYCLES



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

# 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

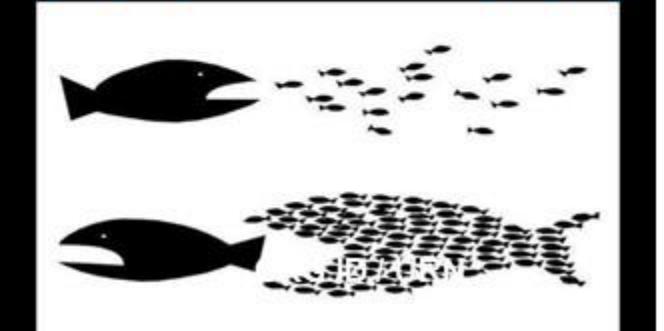
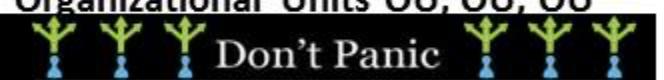
PARSED, PROCESSED, COMPILED TELEMETRY SIGNALING STANDARDIZATION

USMTF / XML MTF FORMATTED MESSAGE CATALOG

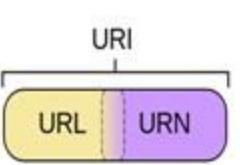
Catalog has over 300 messages to choose from have a wide number of information exchange requirements using common, CONSENSUS Message Text Formats MTFs. MTFs specify <CONTENT> / information agreed by group consensus presenting information in a logical, well specified and unambiguous layout resulting in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

</Organizational\_Identifier\_Org\_ID>

Organizational Units OU, OU, OU



FEDERATE



ARIN  
American Registry for Internet Numbers

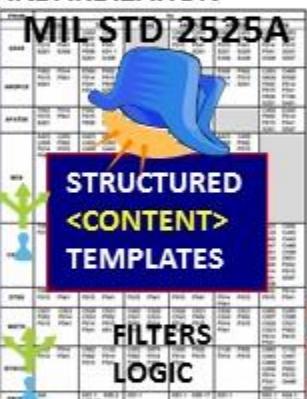
**Uniform Resource Names (URNs):** A Uniform Resource Identifier (URI). Both URNs (names) and URLs (locators) are URIs, and a particular URI may be a name & locator. Each plays a specific role:

- 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

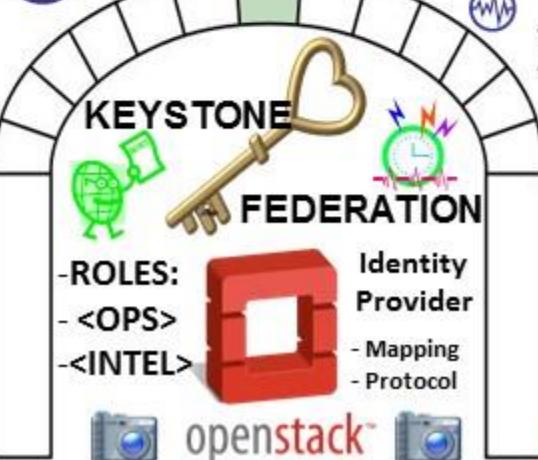
BY <TAG\_TYPES>  
Ledgers  
Contracts  
Trade SLA  
Agreements



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





# 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



**Federation**

**Gateway**

CONTRIBUTIONS TO STATISTICS

PING

Σ

Δ

Δ

Δ

Δ

Δ

Δ

Δ

Δ

Δ

Δ

Δ

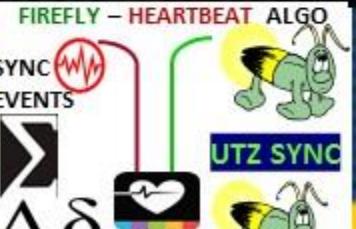
Δ

Δ

Δ

Δ

**Bitcoin: OpenBazaar transactional currency**



Price Indexes in Time and Space

Methods and Practice

SchellingPoint

**Cryptographic Security**

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

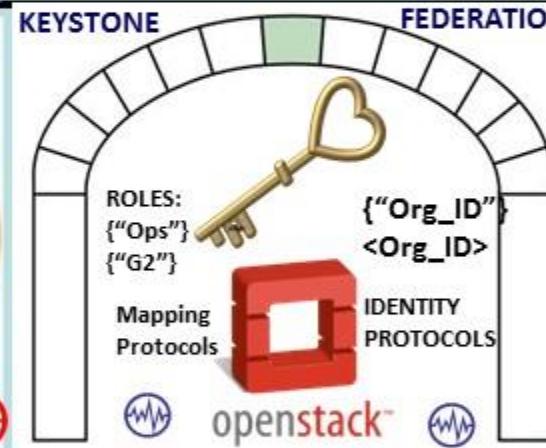
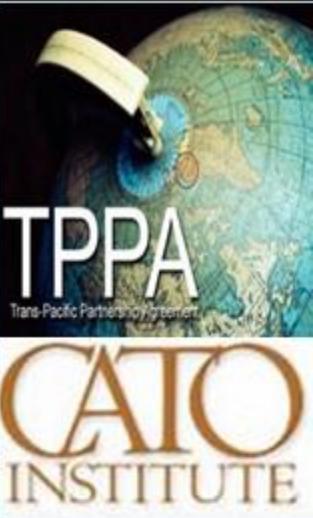


Non-  
Repudiation



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



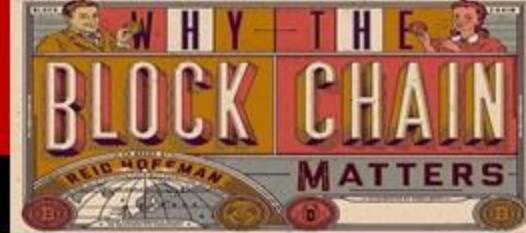
HEART BEACON CYCLE: ALL THINGS INTERNET ARE PROGRAMMED USING TIME CYCLES USED / NOT USED TO PROCESS / NOT PROCESS SYNTAX



# TradeNet

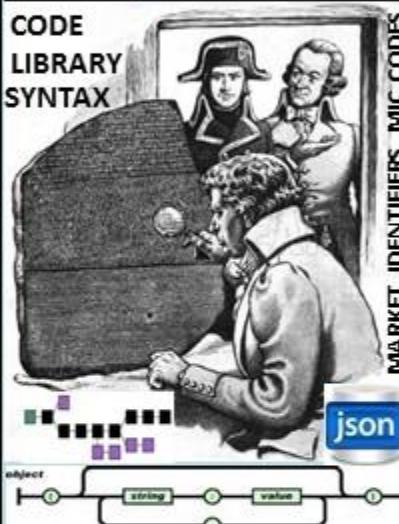


Programmable Money \$\$\$



RIED HOFFMAN 15 May 2015 [LINK](#)

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

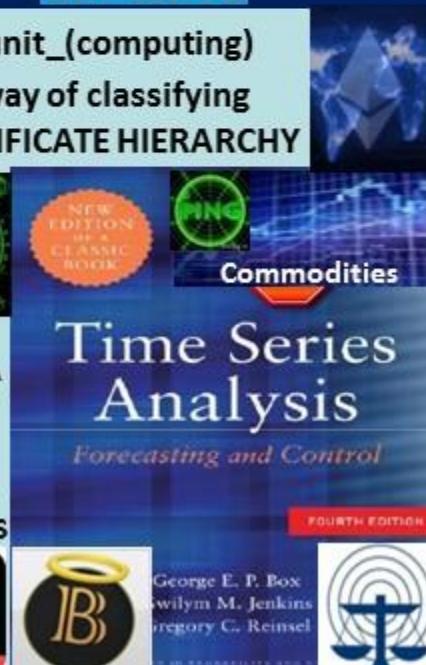


Bitcoin and the blockchain function as a medium of exchange, a store of value, a unit of account. Bitcoin adds digital, cryptographic, distributed server functions to currencies. Because it functions simultaneously as a currency, an asset and a platform, Bitcoin is better described as a global cryptoCAP (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

# DAO Distributed Autonomous Organization SOFTWARE POOLS

All Market Orders      Search

**Collateral**  **Notional** **Expiry**

**Heartbeat Flash Messages Precedence** 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.



**INFOCON  
5 4 3 2 1  
INFORMATION  
CONDITION**

# ECONOMIC HEARTBEAT

STATISTICAL MEAN VALUE INDEX PULSE



SHELLING POINT TRUTH



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



## NIST QUANTUM ENCRYPTION RANDOMIZATION BEACON

UNPREDICTABLE SAMPLING



SECURE AUTHENTICATION  
SECURE MULTI  
PARTY /  
AUTENTICATION



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



NDN

</interest></distance>

**Snap Shots**  
The proposed Universal Timezone System would do away with all these different time zones and replace them with a single global time zone called UTC.

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

Int'l Date Line

12 11 10 9 8 7 6 5 4 3 2 1 0

12 11 10 9 8 7 6 5 4 3 2 1 0

12 11 10 9 8 7 6 5 4 3 2 1 0

12 11 10 9 8 7 6 5 4 3 2 1 0

12 11 10 9 8 7 6 5 4 3 2 1 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

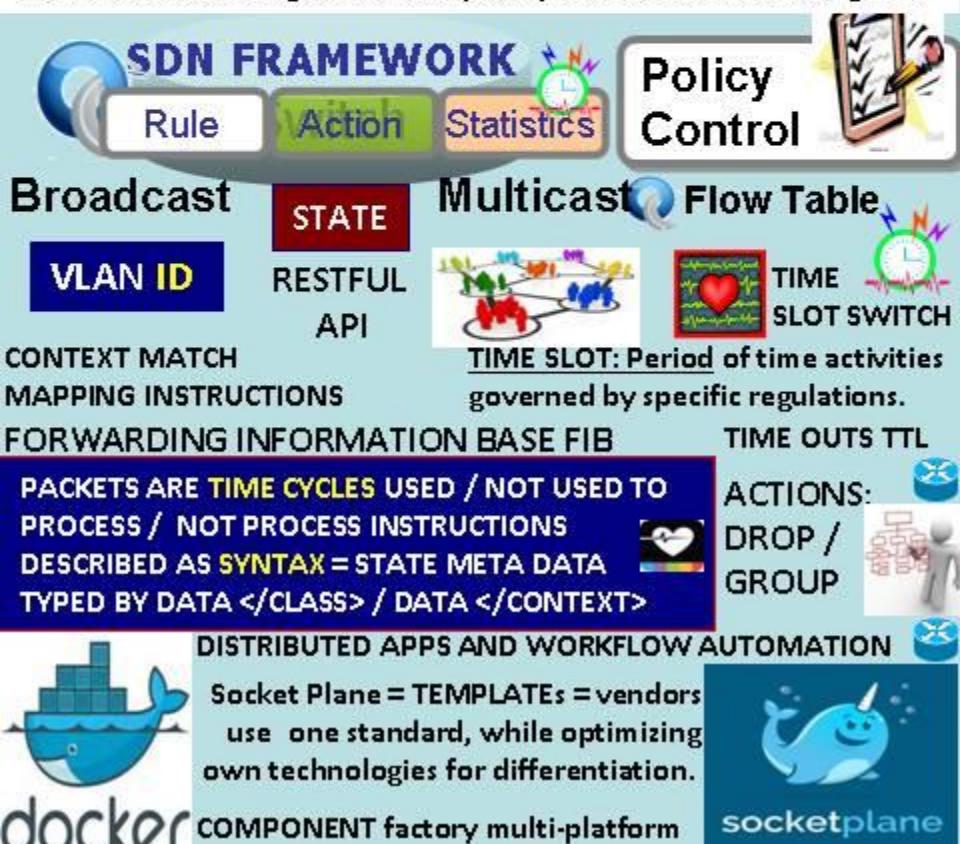
The current standard time common throughout the world is based on a 24-hour clock, with zones that are either 12 hours ahead or behind **Coordinated Universal Time (UTC)**. However, these time zones are decided upon by individual governments, without overall coordination and can even extend fourteen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

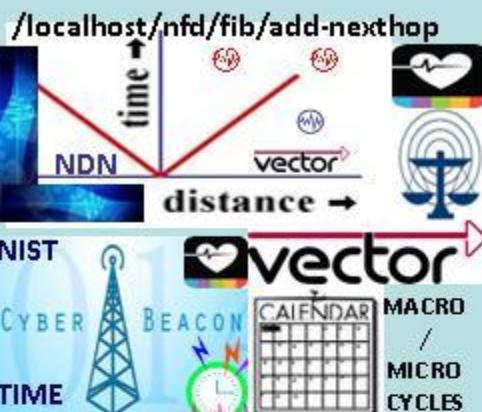
Social proximity

Temporal proximity

Agreements

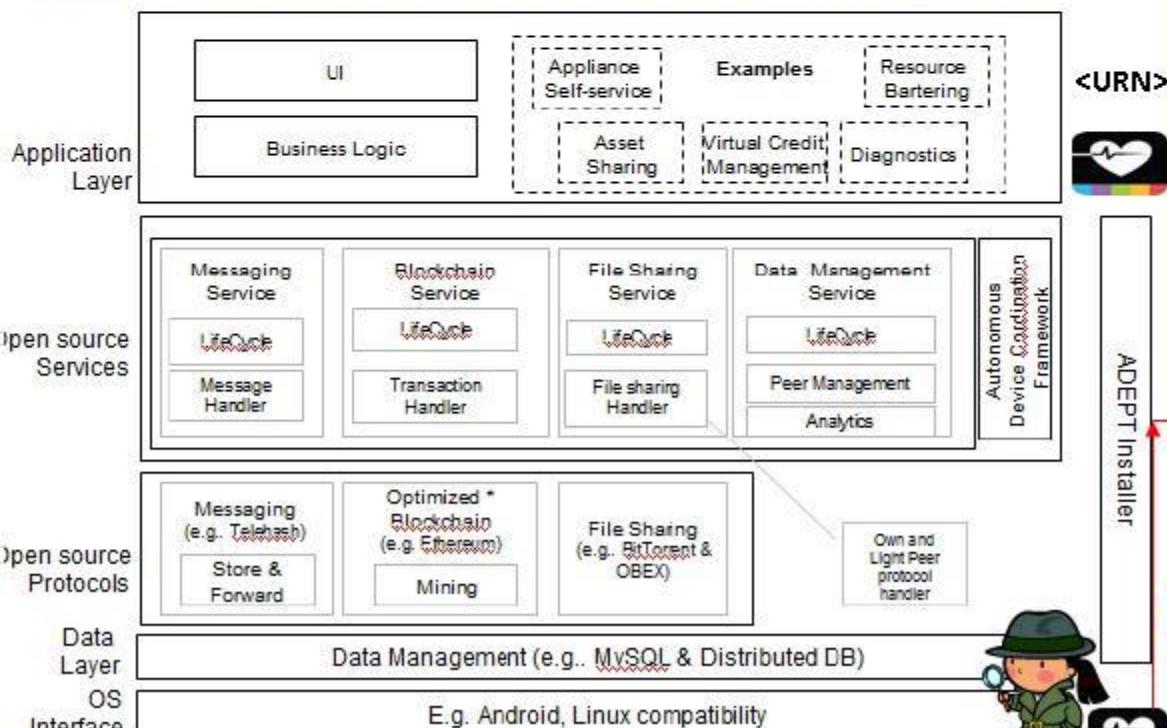
Payments

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



&lt;URN&gt;



ADEPT Installer



ASSET SHARING WITHIN FEDERATION

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

FILE SHARING = CYCLIC SYNC DELTA LEDGER / DOCUMENT REFRESH

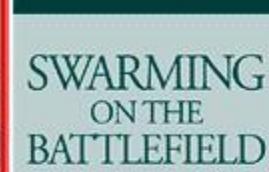
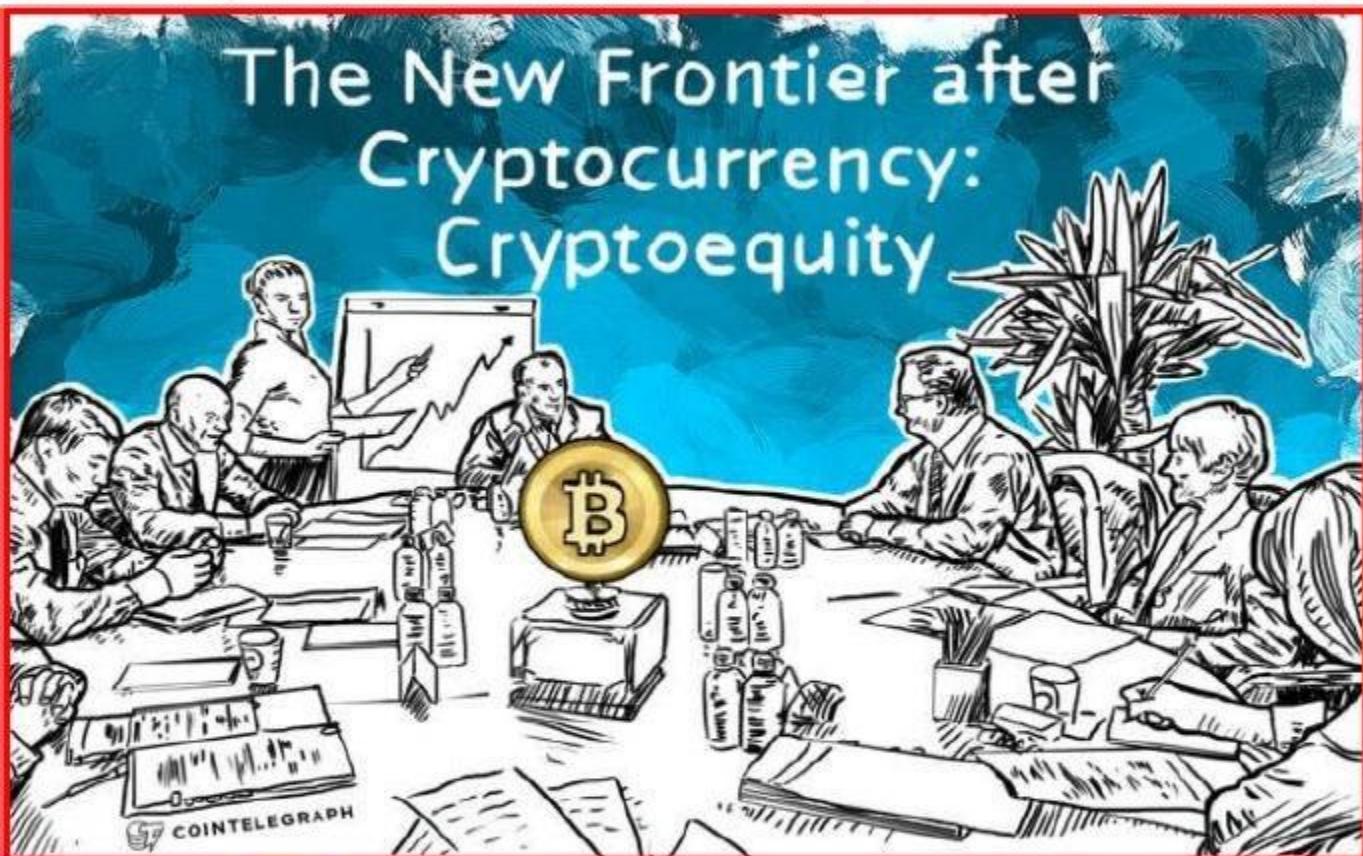


OPEN SOURCE = HBC = PROTOCOL AGNOSTIC

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

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

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

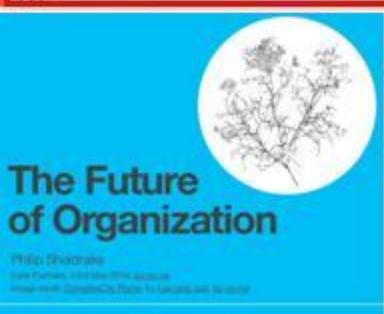


RAND  
Monograph  
Report

THE  
ADVENT  
Of NETWAR



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



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

<https://twitter.com/TheBitcoinArmy>



ERIS: GODDESS OF DISCORD  
DISRUPTIVE TECHNOLOGIES:

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



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

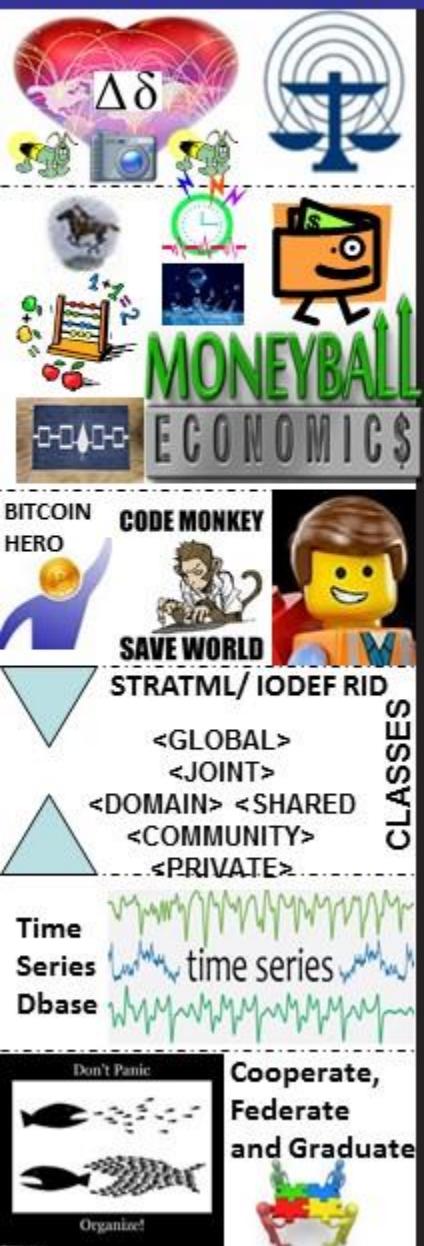
# How 'Bitbanks' Could Solve Bitcoin's Volatility Problem

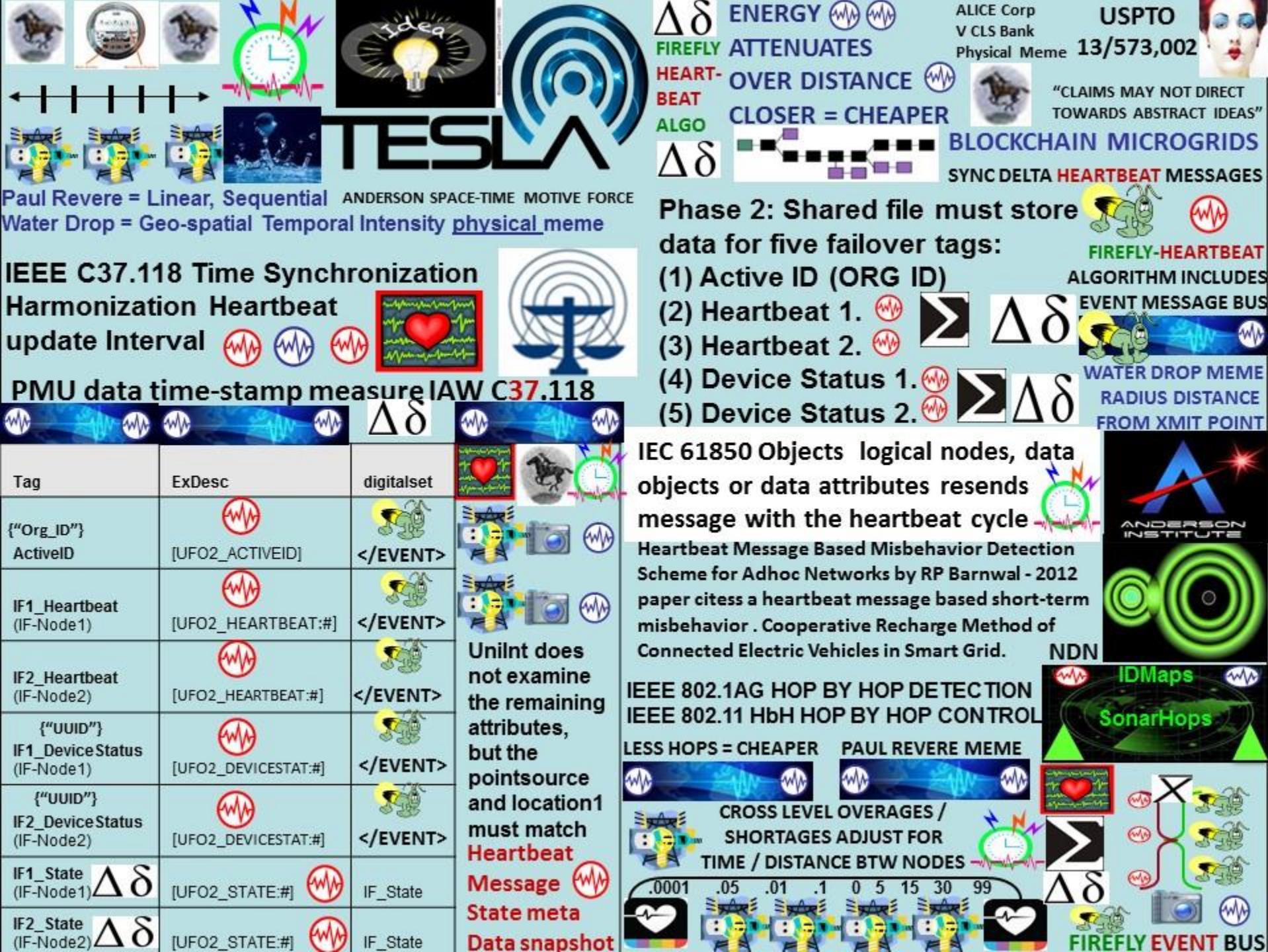
$$MV=PQ \text{ Money} \times \text{Velocity} = \text{Price} \times \text{Quantity}$$

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



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





# 13/573,002 HEART BEACON CYCLE

## The four dimensions of Big Data

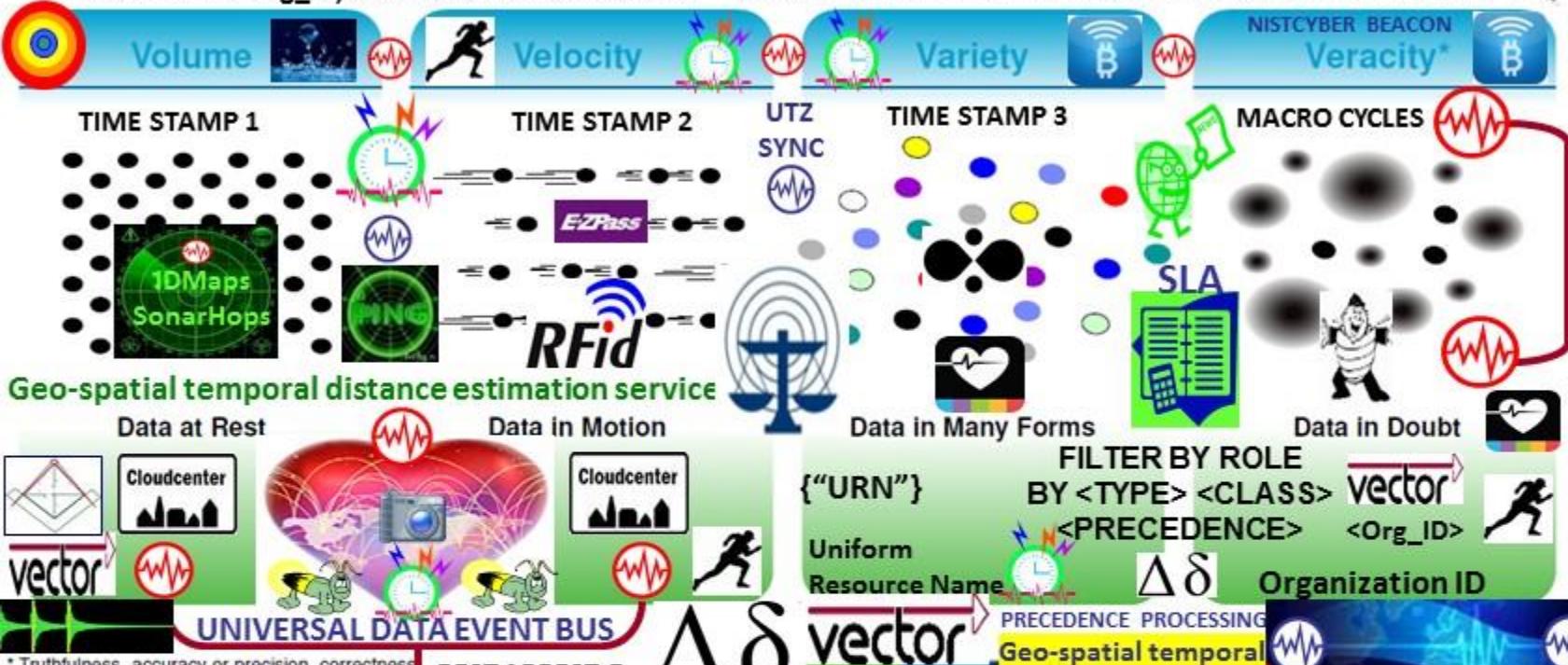
TIME STAMP BY Org\_ID, URN Before FUSION CENTER

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



INFOCON  
5 4 3 2 1  
INFORMATION CONDITION

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



**B1: BUILDING BLOCK: TCP/IP HEARTBEAT TIME STAMP & DATA GET / PUT OF <ORG\_ID> / <URN> DURING MICRO CYCLES PRIOR TO DATA FUSION CENTER INSERTION**



BUILDING

BLOCKS

IEEE 1588 PTP



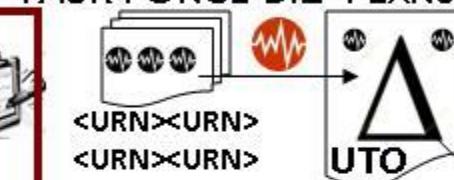
TASK MICRO CYCLES  
ON / OFF .0001

#BIG\_DATA

**FEDERATED GROUP JOINS, MERGE, ADDS, DROPS**

**B2: BUILDING BLOCK: ADAPTIVE, CYCLIC, ITERATIVE PROCEDURAL TEMPLATES: XML ARTIFACTS i.e., <ORG\_ID> TASK ORDER & K00.99 HEARTBEAT SYNC DELTA MESSAGES / STATE META DATA SNAPSHOTS IN NETWORK EXECUTION MANAGEMENT / NEO NET ENABLED OPERATIONS, MISSION AWARE NETOPS**

TASK FORCE BIZ PLANS



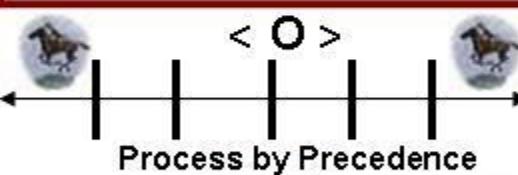
<ORG\_ID>



ADHOC / AGILE FEDERATED <ORG\_ID> GROUPS VS LEADER'S INTENT MERGER, ACQUISITION SUPPORT CHANNEL JOIN, MERGE, ADD, DROP, SPLIT, MOVE SUBNETS DECISIONS BUSINESS COURSE OF ACTIONS <ORG\_ID1><ORG\_ID2>

**B3: BUILDING BLOCK: PAUL REVERE LINEAR, SEQUENTIAL HOP COUNT MEME**

CLOUD, ENERGY NODE HOP COUNT METRICS, METERS SLA CLAUSES MOE, MOP METER IN TAX CODES, TRANCHE CLASSES / EVENT, ALERT TRIGGERS



**vector**  
TIME / DISTANCE,  
VECTORS, THRESHOLD,  
INTENSITY, DURATION

SEARCH BY <UUID><ORG\_ID><URN>,  
REAL TIME AUCTION, CROWD SOURCING INVITES NEWSCASTS  
**APPLIQUE' OVERLAYS**

**B4: BUILDING BLOCK: WATER DROP IN POND RADIUS MEME, GEO-SPATIAL TEMPORAL INTENSITY**

#IeT / IoT



SENSOR NETS

BEACON BROADCAST, NEWSCAST

MICRO-CYCLE STATE META DATA CYCLIC SNAPSHOTS



M2M

MAP VIEWS GEO-LOCATION SPECIFIC

SHOW <URN> RESOURCES BY <ORG\_ID>  
<GROUP> / RESOURCE TYPE, EVENT, ALERT / NEWSCAST BY TRANCHE <CLASSES>

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



SUN

SUN

SUN

SUN

# TEMPLATE SYSTEM

## HEART BEACON TEMPLATE: DERIVED FROM DARPA SITUATIONAL AWARENESS SYSTEM COMMON BUILDING BLOCKS DESCRIBED IN PROCEDURAL TEMPLATE

FBCB2 / TIMS ON SAME PLATFORM

ALL FBCB2'S ON CURRENT HEARTBEAT

ARMY INFORMATION SERVER AIS

AIS

STATE MANAGER

WEB APPLICATION SERVER W/BUSINESS LOGIC EQUIVALENT TO MILITARY MISSION THREADS

9 AIS

C2R SERVER LDAP

GTCS

2

3

4A

GTCS 8

TIMS: TACTICAL INTERNET MANAGEMENT SERVER

MULTICAST GROUP MCG UPDATE TOOL

LDAP SERVER

GROUND TACTICAL COMMS SERVER GOTS GOVERNMENT STRUCTURED MILITARY MESSAGING

2

3

4A

GTCS 8

MCS: 0  
MANEUVER CONTROL SYSTEM

4 5

LDAP SERVER

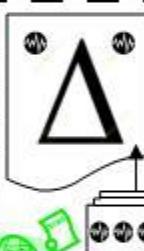
GROUND TACTICAL COMMS SERVER GOTS GOVERNMENT STRUCTURED MILITARY MESSAGING

### B2: TEMPLATES



<XML>

SYNC DELTA / HEARTBEAT MESSAGES.  
STATE META DATA SNAPSHOTS  
NET OPS / NET MANAGEMENT



STOCHASTIC HARMONIZATION  
STATISTICAL MEAN SUM / AVERAGE



NETWORK INITIALIZATION DATA:  
NETWORK CONFIGURATION DATA

NETOPS / NEO:  
JOIN / MOVE  
SPLIT / MERGE  
ADD / DROP



ENERGY MICROGRIDS CLOSER + CHEAPER



Demurrage

Charges

FRIEDMAN'S  
K % RULEMONEYBALL  
ECONOMICS

COMMODITIES

currencyindex



TERRACYCLE

TERRA  
TRCTime Series Database  
CONTRIBUTION TO STATISTICS $\Sigma$ Price Indexes in  
Time and Space

Methods and Practice

 $\Delta\delta$ 

Blockchain Timestamps

Blockchain Time

Blockchain Timestamps

Blockchain Time

ECONOMIC  
MACRO CYCLES

Constant % Rate

Increase Per Terra Cycle  
</CLASS\_TYPE>

&lt;"Org\_ID"&gt;{&lt;"URN"&gt;}

&lt;&lt;"URN"&gt;&gt;

HB MSG </108>  
PROTOCOL  
INDUSTRY-DRIVEN MESSAGING STANDARD™

LAST LOSS

AAA/  
Aaa

AA/Aa

A/A

BBB/  
Baa

B/B

500

400

300

200

100

FIRST  
LOSS

4

3

2

1

RISK CORRELATION

HEARTBEAT STATE META DATA SNAPSHOTS

Cloudcenter Cloudcenter

IEEE 802.15.4 OASIS MQTT

TELEMETRY TRANSPORT

IEEE 802.1AG HOP BY HOP

DETECTION

Bitcoin = Property

IRS Memo #1421

% Block Mined  
% Block owned  
Mined Bitcoins

Unmined Bitcoins

Land Use Meme

Triangulation

Euclidian Geo

GPS GEO LOC

DATE TIME STAMP

NDN &lt;/INTEREST&gt;

NDN {"DISTANCE"}

vector

 $\Delta\delta$ 

Heartbeat Snapshots

MICRO CYCLES

Heartbeat Cycle

ALGORITHM

Firefly-Heartbeat

Event Bus

Match to Closest

Heartbeat Cycle

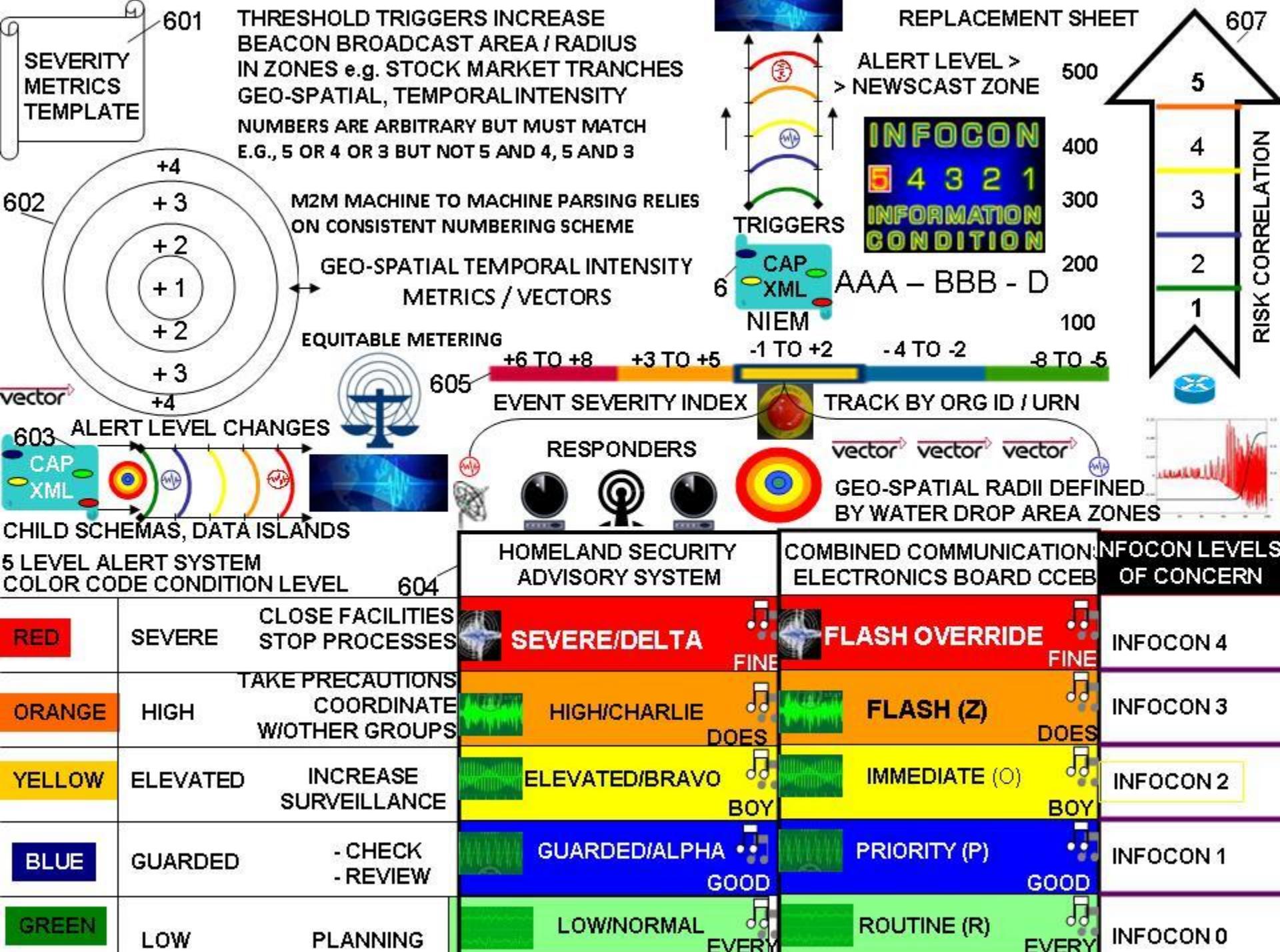
FIREFLY-HEARTBEAT

ALGORITHM

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**

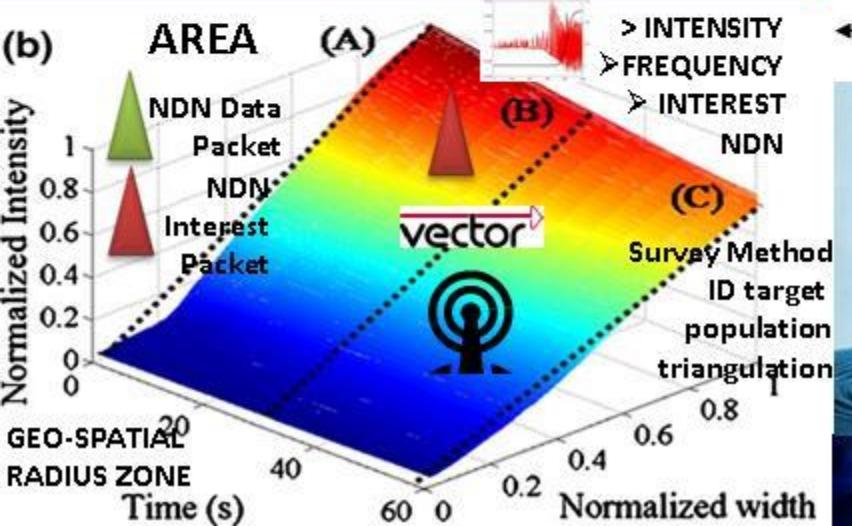
## **Geo-Spatial Temporal Intensity NOVEL METRICS / METERS:**



**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 red triangle is formed by the line, the vertical axis, and the horizontal axis.

**INFOCON  
4 3 2 1  
INFORMATION  
CONDITION**



4 / 3  
.0001

/2/1/1

NULL / 1

/2/3/

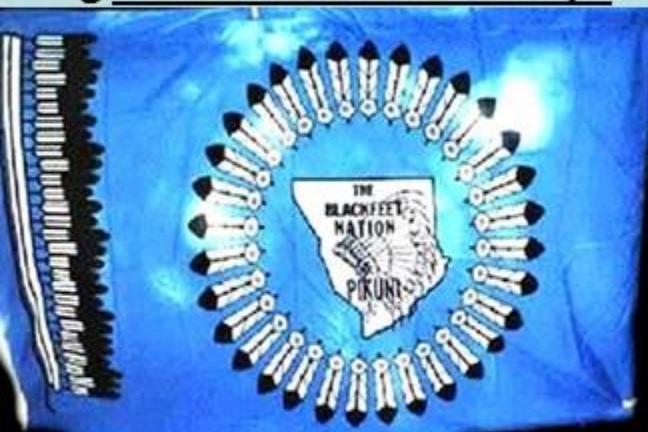
4  
99

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	     <b>#Big_Data</b>		
#IeT	Functionality Areas	Cloud Interface Management, configuration, start, stop cloud services, edit configuration (heartbeat messages)	
	API Operation Count	 LOCATE <CONTENT> IDMAPS / SonarHOPS  4 / 3 / 2 / 1 / NULL / 1 / 2 / 3 / 4  0.0001 .05 .01 .1 0 5 15 30 90 	
	Web service access type	Web application, front end to [network, device, system] heartbeat	
	LANGUAGE / PLATFORM BINDINGS	<b>PHP</b>  	
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>		



# uspto

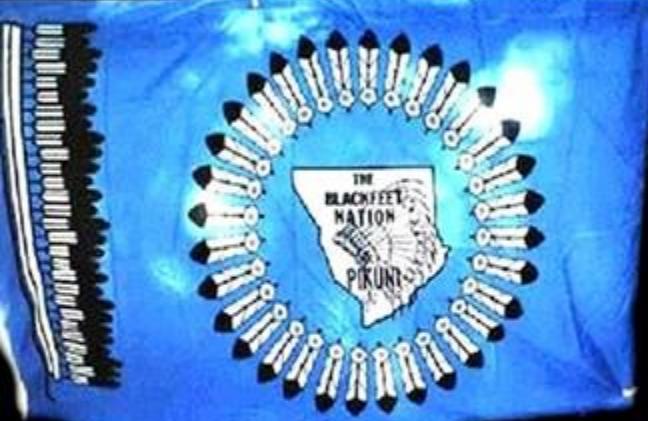
SCREEN CAPTURES TAKEN  
BEFORE, AFTER 13/573,002  
filing lacked Date Time Stamps



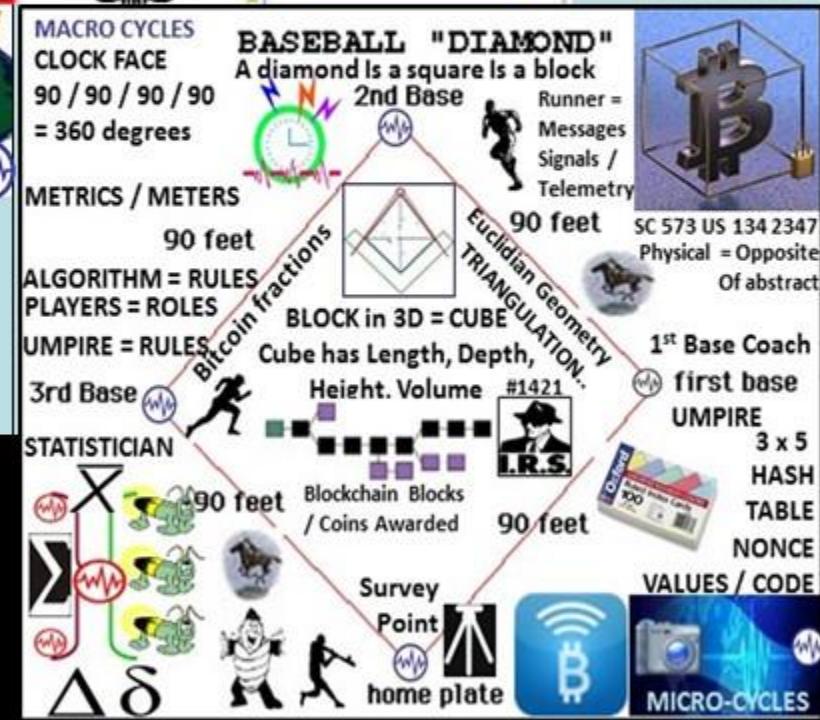
Alice Corp. v. CLS Bank  
International, 573  
U.S. 134 S. Ct. 2347 (2014)  
“claims may not direct  
towards abstract ideas”



USPTO  
13/573,002



SAW Concepts LLC  
Simple (Always) Wins  
Owner's Father was  
Blackfoot Native  
American Indian Tribe



**USPTO SCREEN CAPTURES SUSPENDED PAIR RULES**

- Moved Examination outside PAIR
- No need for forms, fees, amendment
- No Time Stamps = Temporal Ambiguity





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

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

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



TIME / DISTANCE SERVICE LEVEL  
AGREEMENT SLA / O Operations

IEEE 802.15.4 OASIS MQTT

IEEE 802.11



TELEMETRY TRANSPORT

HOP BY HOP CONTROL

IEEE 802.1AG HOP BY HOP  
DETECTION

Unused Resources / Unmet Needs

/localhost/nfd/fib/add-nexthop

Geo-Spatial Temporal

Metrics, Meters

DISTANCE  
INFO SERVICE

Time Series

RISK

Value

Time

WATER DROP IN POND MEME IS

SONAR NAVY METAPHOR / MEME

NDN </INTEREST>

NDN {"DISTANCE"}

NAMED DATA

NETWORKING

IEEE C37.118

Harmonization

& Sync heartbeat

update Interval

CLOSER SOURCE

CHEAPER RATE

Energy Attenuates over Distances

TCP/IP HOP BY HOP COUNT

Attribute Series

INTEREST

DISTANCE

Temporal Series

Geo Spatial

Paul Revere

LINEAR, SEQUENTIAL

602

603

NULL

+1

+2

Radius

Water Drop in Pond Meme

Attribute Series

Interest

Distance

Temporal Series

Geo Spatial

Paul Revere

Linear, Sequential

602

603

NULL

+1

+2

Radius

Water Drop in Pond Meme

Attribute Series

Interest

Distance

Temporal Series

Geo Spatial

Paul Revere

Linear, Sequential

602

603

NULL

+1

+2

Radius

Water Drop in Pond Meme

Attribute Series

Interest

Distance

Temporal Series

Geo Spatial

Paul Revere

Linear, Sequential

602

603

NULL

+1

+2

Radius

Water Drop in Pond Meme

Attribute Series

Interest

Distance

Temporal Series

Geo Spatial

Paul Revere

Linear, Sequential

602

603

NULL

+1

+2

Radius

Water Drop in Pond Meme

Attribute Series

Interest

Distance

Temporal Series

Geo Spatial

Paul Revere

Linear, Sequential

602

603

NULL

+1

+2

Radius

Water Drop in Pond Meme

Attribute Series

Interest

Distance

Temporal Series

Geo Spatial

Paul Revere

Linear, Sequential

602

603

NULL

+1

+2

Radius

Water Drop in Pond Meme

Attribute Series

Interest

Distance

Temporal Series

Geo Spatial

Paul Revere

Linear, Sequential

602

603

NULL

+1

+2

Radius

Water Drop in Pond Meme

Attribute Series

Interest

Distance

Temporal Series

Geo Spatial

Paul Revere

Linear, Sequential

602

603

NULL

+1

+2

Radius

Water Drop in Pond Meme

Attribute Series

Interest

Distance

Temporal Series

Geo Spatial

Paul Revere

Linear, Sequential

602

603

NULL

+1

+2

Radius

Water Drop in Pond Meme

Attribute Series

Interest

Distance

Temporal Series

Geo Spatial

Paul Revere

Linear, Sequential

602

603

NULL

+1

+2

Radius

Water Drop in Pond Meme

Attribute Series

Interest

Distance

Temporal Series

Geo Spatial

Paul Revere

Linear, Sequential

602

603

NULL

+1

+2

Radius

Water Drop in Pond Meme

Attribute Series

Interest

Distance

Temporal Series

Geo Spatial

Paul Revere

Linear, Sequential

602

603

NULL

+1

+2

Radius

Water Drop in Pond Meme

Attribute Series

Interest

Distance

Temporal Series

Geo Spatial

Paul Revere

Linear, Sequential

602

603

NULL

+1

+2

Radius

Water Drop in Pond Meme

Attribute Series

Interest

Distance

Temporal Series

Geo Spatial

Paul Revere

Linear, Sequential

602

603

NULL

+1

+2

Radius

Water Drop in Pond Meme

Attribute Series

Interest

Distance

Temporal Series

Geo Spatial

Paul Revere

Linear, Sequential

602

603

NULL

+1

+2

Radius

Water Drop in Pond Meme

Attribute Series

Interest

Distance

Temporal Series

Geo Spatial

Paul Revere

Linear, Sequential

602

603

NULL

+1

+2

Radius

Water Drop in Pond Meme

Attribute Series

Interest

Distance

Temporal Series

Geo Spatial

Paul Revere

Linear, Sequential

602

603

NULL

+1

+2

Radius

Water Drop in Pond Meme

Attribute Series

Interest

Distance

Temporal Series

Geo Spatial

Paul Revere

Linear, Sequential

602

603

NULL

+1

+2

Radius

Water Drop in Pond Meme

Attribute Series

Interest

Distance

Temporal Series

Geo Spatial

Paul Revere

Linear, Sequential

602

603

NULL

+1

+2

Radius

Water Drop in Pond Meme

Attribute Series

Interest

Distance

Temporal Series

Geo Spatial

Paul Revere

Linear, Sequential

602

603

NULL

+1

+2

Radius

Water Drop in Pond Meme

Attribute Series

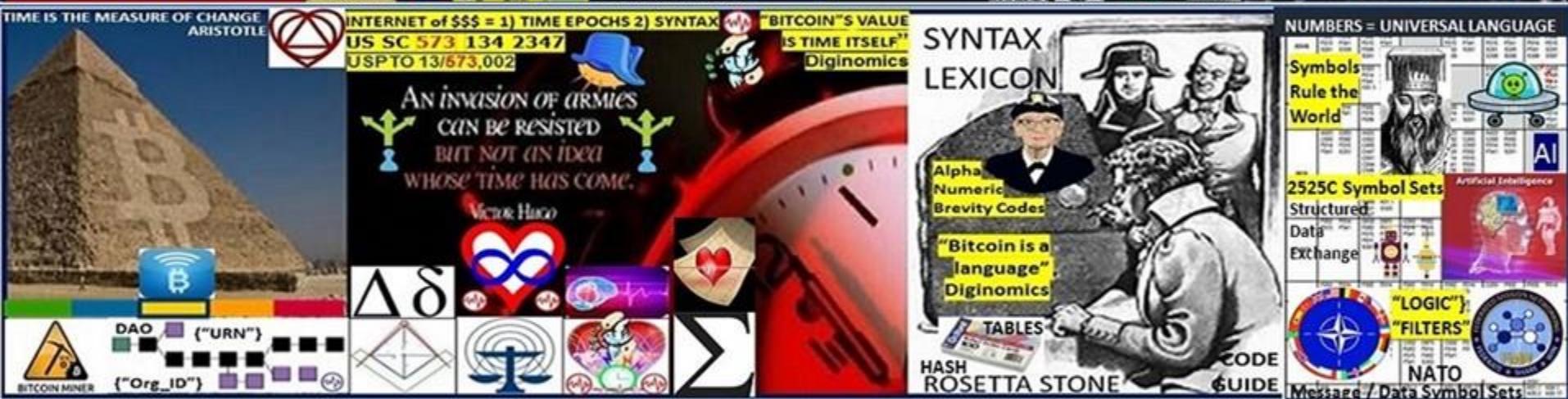
Interest

Distance

Temporal Series

Geo Spatial

Paul Revere







**Heart Beacon** is an interactive enclosure of light, color and sound that senses and artistically displays the heartbeats of visitors who lay their hands on the piece. This highly interactive sculpture takes the literal and metaphoric ‘pulse’ of the Portland community. The sculpture takes inspiration from the life-saving mission of the Emergency Coordination Center.

**WEB PAGE**

<http://www.jbpublicart.com/portfolio/heart-beacon-2> [LINK](#)

**Dimensions:** 9' x 9' x 18'

**Materials:** stainless steel, acrylic, LED lighting, electronics, sound transducers,  
**HEARTBEAT SENSORS**

**Location:** Emergency Coordination Center, Portland, OR

**Commissioning Agency:**  
City of Portland

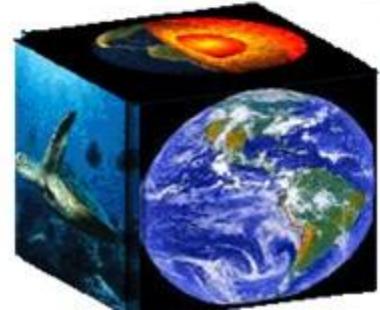
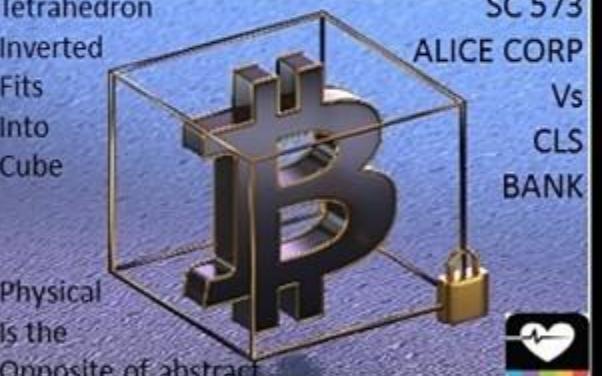
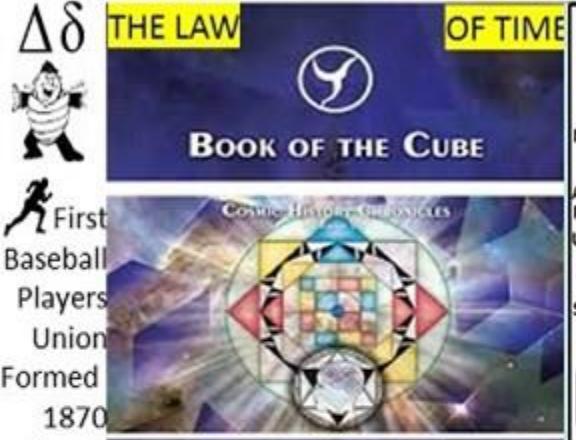
USPTO APPLICATION 13/573 002

## 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



INSTITUTE OF HEARTMATH®

Empowering Heart-Based Living  
<https://www.heartmath.org>

<https://www.heartmath.org>





"May the heart of Earth flow to the heart of heaven through my heart and through all hearts together. May our hearts be the heart of every being in all the starry sky, May the heart of the heavens flow to the heart of the earth through my heart and though all of our hearts together. And, may our hearts be the heart of every earthly creature". Chichicastenango Guatemala from "Stargate 2012: Surfing the tides of the Milky Way as drawn from ancient Mayan prophecies.