



# The Heart Beacon Cycle and Time – Space Meter

- 300 + Message Templates for Structured Data Exchange
  - Syntax Lexicon Library Coder's Guide
- Internet, IeT, IoT, Big Data, Internet of Money Bitcoin Blockchain
  - Metrics Meters for Ecologically Responsible Econometrics
- Swords To Plowshare Re-Use of Battlefield Digitization, Net Enabled Operations NEO



# Humanitarian Assistance Networked Donor System

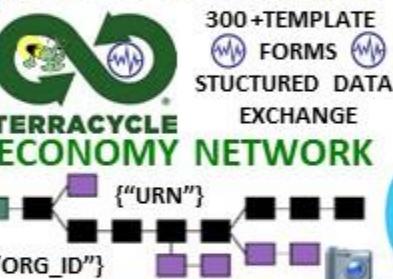
H.A.N.D.S: "Based on the need to speed up the processes of influencing an adversary, new concepts result in the adaptation of military doctrine, organization, training, material, infrastructure, interagency interaction, leadership, personnel and facilities" ... German Bundeswehr : concepts of "Network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



NEO  
<https://neo.org>



Neural Net



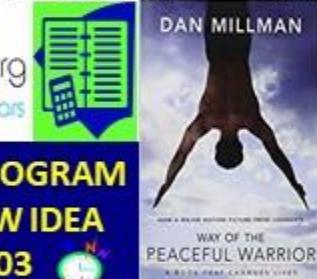
DISTRIBUTED SMART ECONOMY NETWORK



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



## Federation Gateway



## Spatial Econometrics



BFI  
THE WORLD GAME ANNEX  
SIGNALS & TELEMETRY  
r. buckminster fuller  
"Build a new model operating manual for spaceship earth"



Beacon Communities



DAO

OPERATIONS OTHER THAN WAR



Credit Unions  
CU Ledger

MONEYBALL ECONOMICS



Proximity Beacons

Closer < \$ < FUEL

JAEGERS

KAIJU



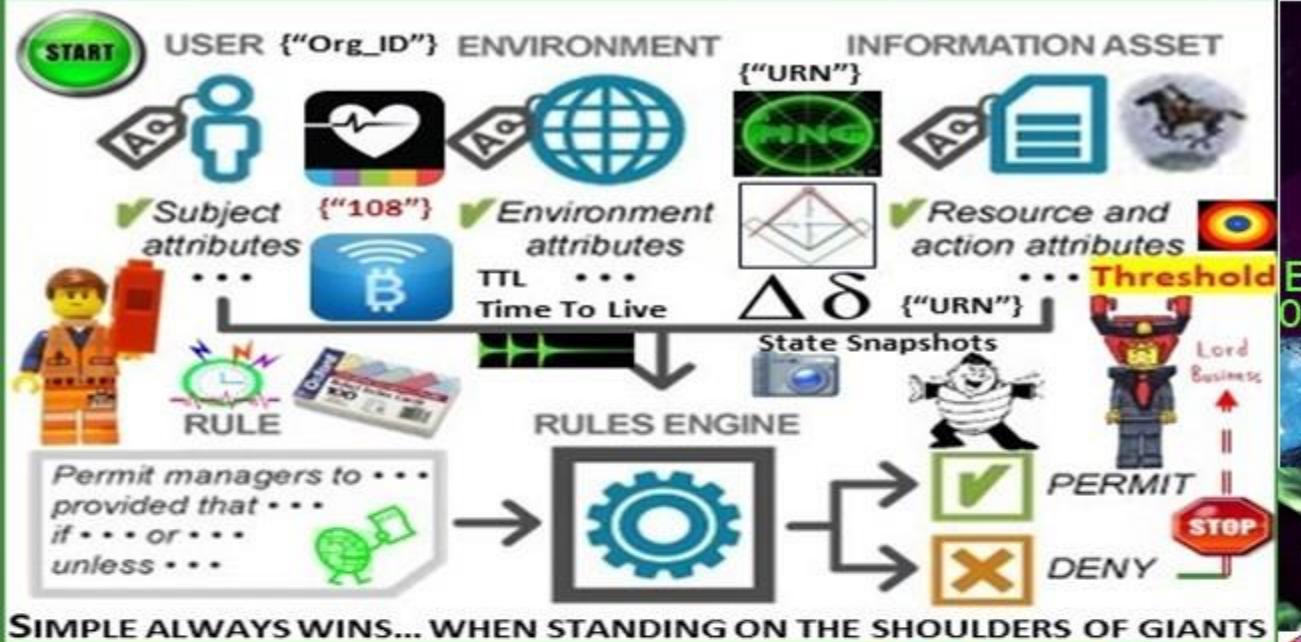
MINIMUM LIST OF COMPONENTS / BUILDING BLOCKS, PROCESSES, PROCEDURES... AGREED ON BY TRADE FEDERATIONS TO ACHIEVE DAO DISTRIBUTED AUTONOMOUS ORGANIZATIONS CONSENSUS

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

CHECKLIST: TRADE FEDERATION ECONOMIC FRAMEWORK EX:

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



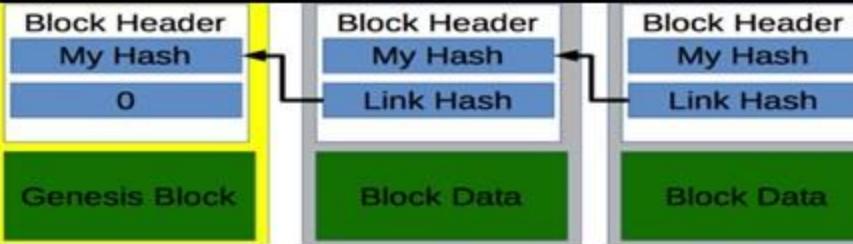


**SIMPLE ALWAYS WINS... WHEN STANDING ON THE SHOULDERS OF GIANTS**

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



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



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

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

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

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

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

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

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

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

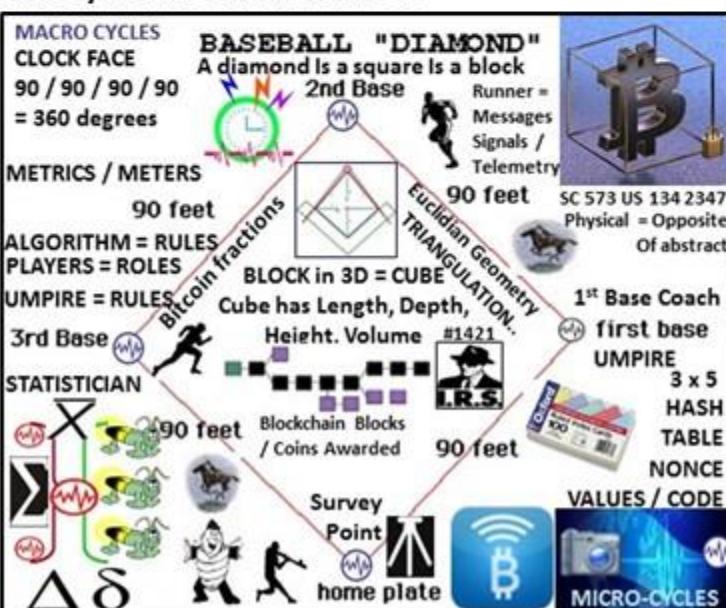
**Consensus strategies**: "proof of work," "proof of stake," and "delegated proof of stake"

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

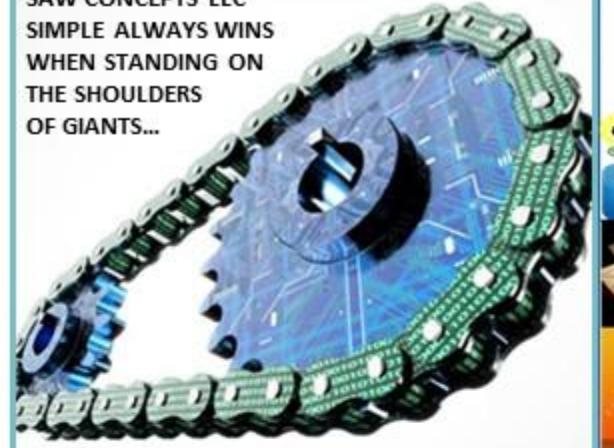
**Proof of stake (PoS)**—A consensus strategy that relies on nodes which hold collateral to participate in contributing blocks to the chain.

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

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



SAW CONCEPTS LLC  
SIMPLE ALWAYS WINS  
WHEN STANDING ON  
THE SHOULDERS  
OF GIANTS...





Structured  
Data  
Exchange

ALPHA NUMERIC  
SYMBOL SETS

Coder's Guide

lexicon:

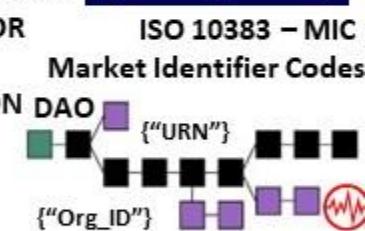
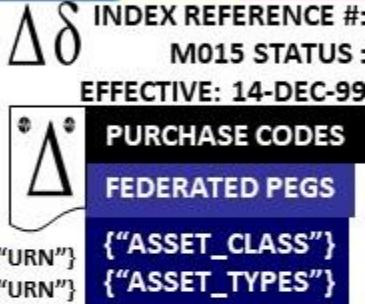


Signal operating instructions (SOI): technical control coordination of signaling, telemetry Current situational awareness, data dictionary, network identification, channels, network directory, brevity code-words, signals. Units maintain 2 SOI copies: PEACE TIME version "Go-To-War" version = BIZ COA (s)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



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

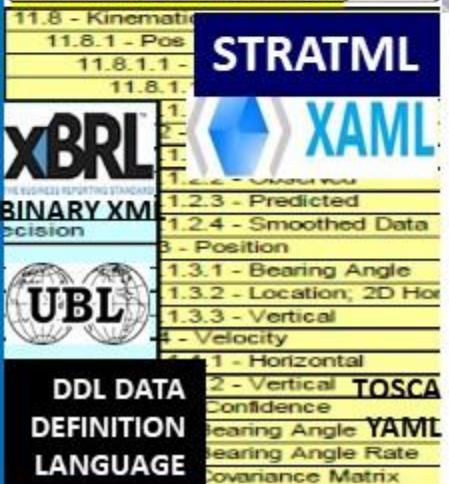
GOAL: vide a common lexicon / syntax / term library used among FEDERATIONS identified by Federated ID  
GOAL: Provide a common, consistent, reliable schedule to share signaling and telemetry within federations.



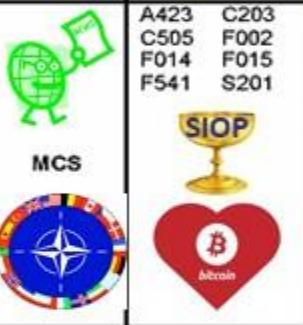
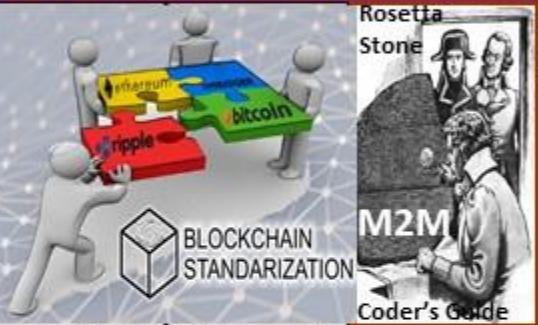
K00.99 / FIX / SWIFT / E-911 Heartbeat Message

STOCK NDN NAMED DATA  
EXCHANGE NETWORKING  
PRECEDENCE  
MIC CODES PROCESSING

FILTERS INFOCON  
5 4 3 2 1  
INFORMATION CONDITION



NUMBERS ARE THE UNIVERSAL LANGUAGE / Symbols Rule the World"

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

## MESSAGE CATALOG 300 + Use Cases

Data Elements: entity, attribute, relationship equivalents

Information Categories and Examples

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

Information Elements Roles

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

**FILTERS**

FFUDN: Field Format Unit Designator #

FFIRN Field Format Index Reference #

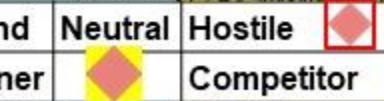
Structured military messaging ID's messages, message sets, data element, symbol fields

BY Form Field Position & NUMBER

 **Firefly-Heartbeat Flash Messages**

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

## OPERATIONAL NODES / ACTIVITIES

DATA	SYSTEM FUNCTIONS	PERFORMANCE
11.4 - Classification	11.8 - Kinematics	
11.4.1 - Category	11.8.1 - Pos / Vel / Acc (PVA)	
11.4.1.1 - Confidence Level	11.8.1.1 - Acceleration	11.8.1.1.1 - Angular
11.4.1.2 - Estimate Type	11.2 - Linear	11.2.1 - Linear
11.4.1.2.1 - Alternative	2 - Estimate Type	2 - Estimate Type
11.4.1.2.2 - Evaluated D	1.2.1 - Estimated	1.2.1 - Estimated
11.4.1.3 - Value	1.2.2 - Observed	1.2.2 - Observed
	1.2.3 - Predicted	1.2.3 - Predicted
	CODES	1.2.4 - Smoothed Data
<b>SYMBOL</b>	<b>Friend</b>	<b>Neutral</b>
2525C	Partner	
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		

# 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

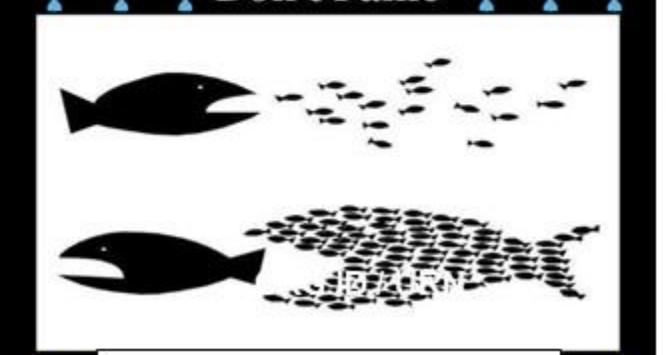
USMTF / XML MTF FORMATTED MESSAGE CATALOG

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

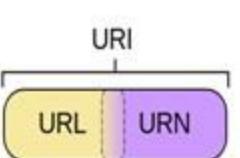
</Organizational\_Identifier\_Org\_ID>

Organizational Units OU, OU, OU

Don't Panic



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



KEYSTONE  
FEDERATION

- ROLES:
- <OPS>
- <INTEL>



- Identity Provider
- Mapping Protocol

<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



# 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

US SUPREME COURT Alice Corp Vs CLS

Bank "claims may not be directed towards an abstract idea"

US SC 573 US 134 2347 PHYSICAL=OPPOSITE OF ABSTRACT

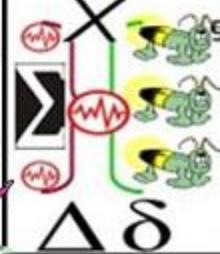


MACRO CYCLES  
CLOCK FACE  
90 / 90 / 90 / 90  
= 360 degrees

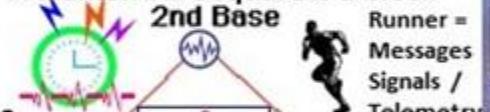
METRICS / METERS

ALGORITHM = RULES  
PLAYERS = ROLES  
UMPIRE = RULES

STATISTICIAN



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



SC 573 US 134 2347  
Physical = Opposite  
Of abstract

90 feet

1st Base Coach  
first base  
UMPIRE

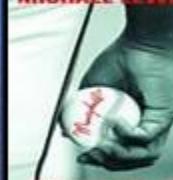
3 x 5  
HASH  
TABLE  
NONCE

VALUES / CODE

MICRO-CYCLES

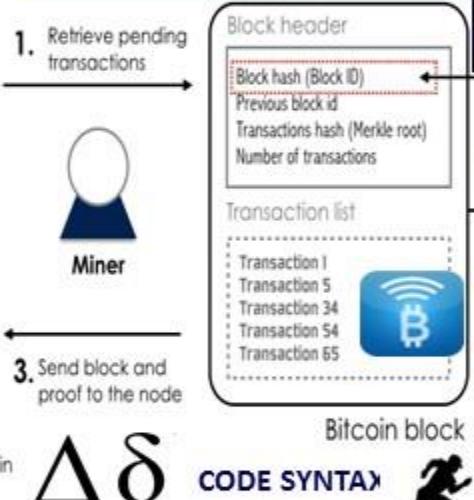
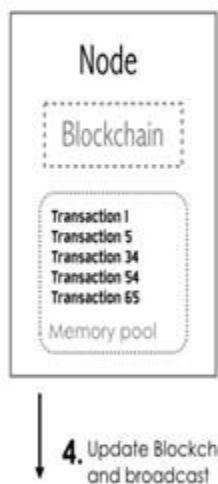


MICHAEL LEWIS





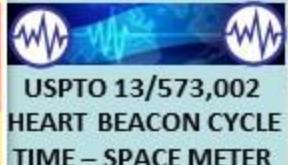
Alice Corp. v. CLS Bank International, 573 U.S. \_\_, 134 S. Ct. 2347 (2014),[1] was a 2014 decision of the United States Supreme Court about patentable subject matter (patent eligibility).[2] The issue in the case was whether certain claims about a computer-implemented, electronic escrow service for 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**

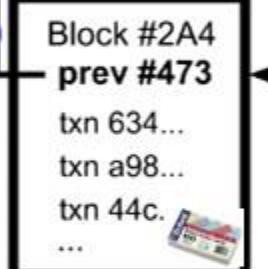
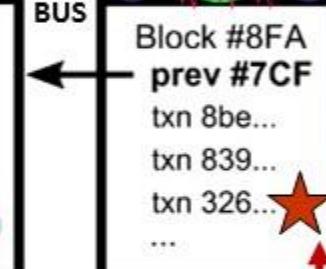
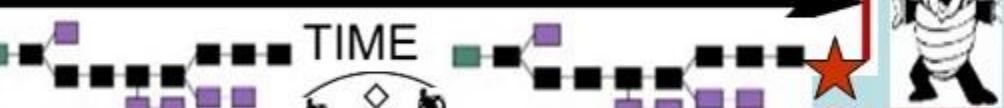
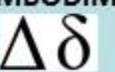
**CODE RUNNER**

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


← cycle n → ← n + 1 → ← n + 2 →


**TIME EPOCH CYCLES**
**ATOMIC CLOCK**


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


**EVENT BUS**

**BLOCKCHAIN = TIME / SYNTAX**

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

**Multi-Meme Multi-Meter**

**ID'd by Alpha-Numerics**
**XBRL / CDL / DAML STOCK MIC CODES**
**STRUCTURED MILITARY MESSAGE TEMPLATE FORMS LOGIC / FILTERS**
**SYNTAX LEXICON LIBRARY**




# Firefly - Heartbeat Algo

University of Bologna Italy / Hungary



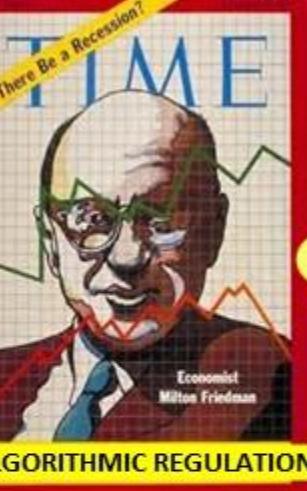
TERRACYCLE



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

Luxor Temple Egypt:

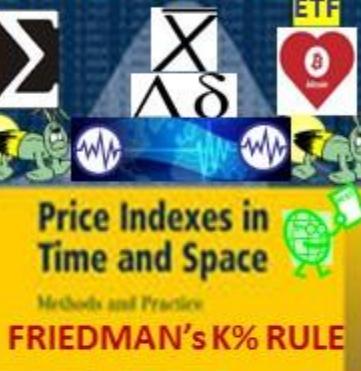
"The shortest road towards knowledge of truth is nature"



FRIEDMAN'S K % RULE  
ECONOMIC MACRO CYCLES

CONTRIBUTIONS TO STATISTICS

STAT MEAN VALUE INDEX



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

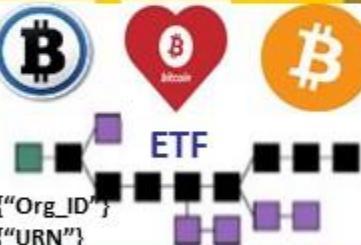
**UTZ TIME ZONE SYNC**

UNIVERSAL EVENT / ALERT BUS  
STOCHASTIC HARMONIZATION



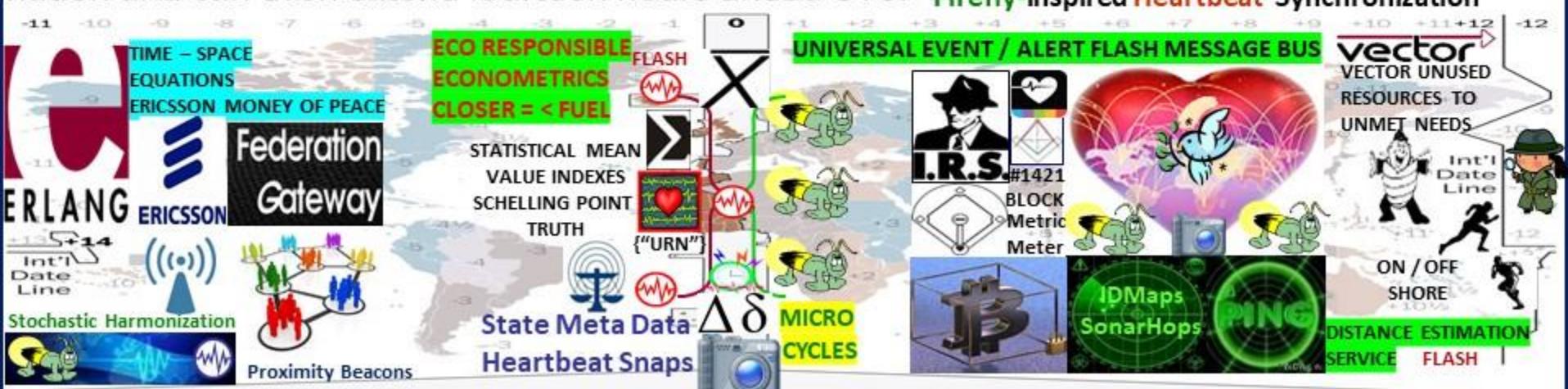
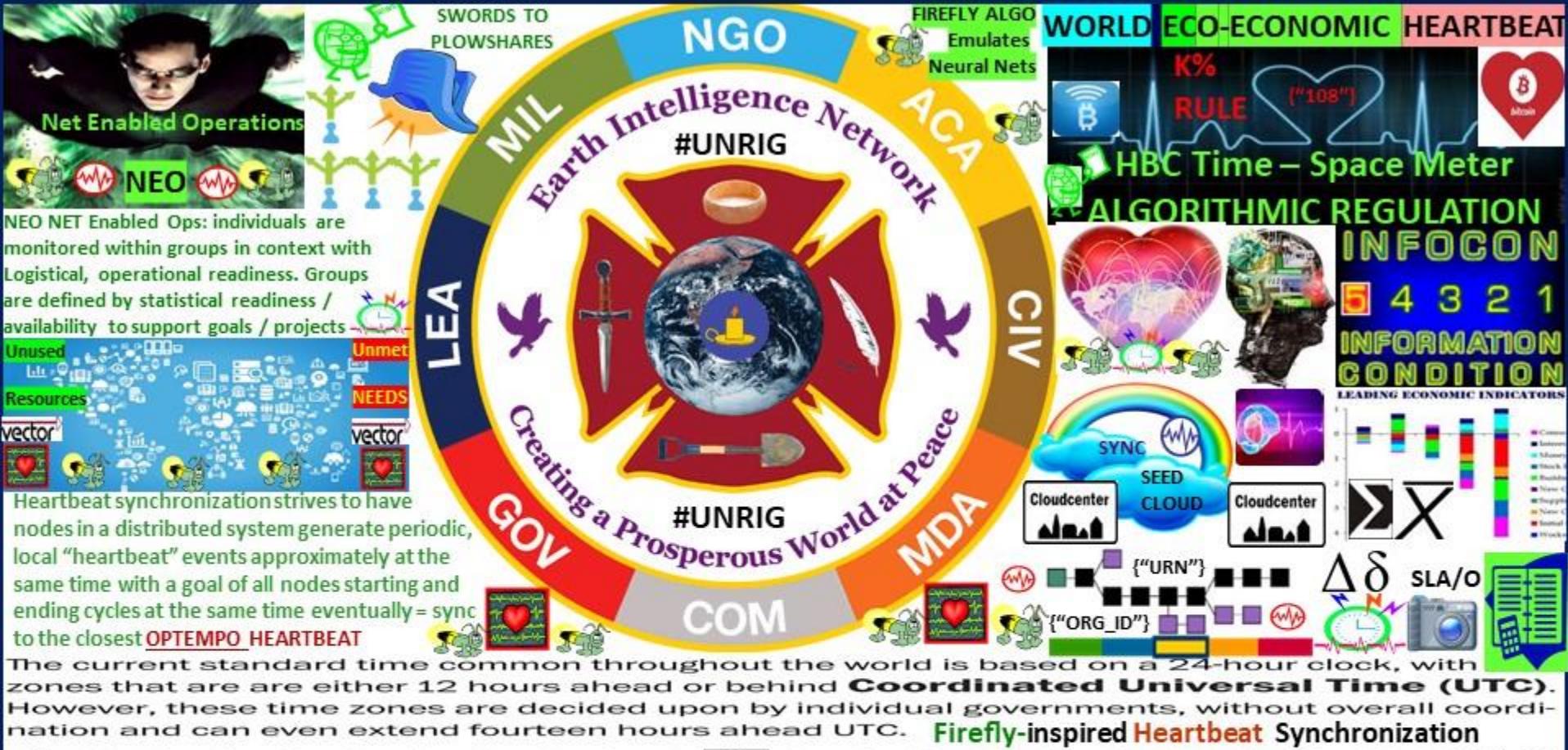
€ \$ € ¥ currencyindex

COMMODITIES



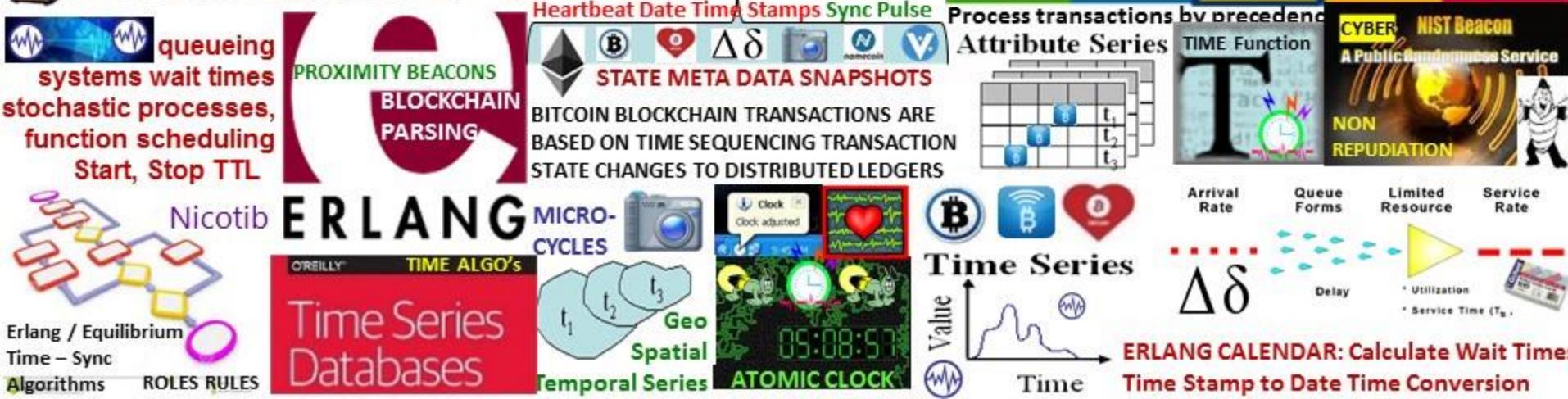
"Heartbeat Synchronization nodes in a distributed system generate periodic local heartbeat events approximately at the same time. It differs from classical clock sync in that nodes are not interested in counting cycles and agreeing on the ID of the current clock cycle. No rule governs the length of a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

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.



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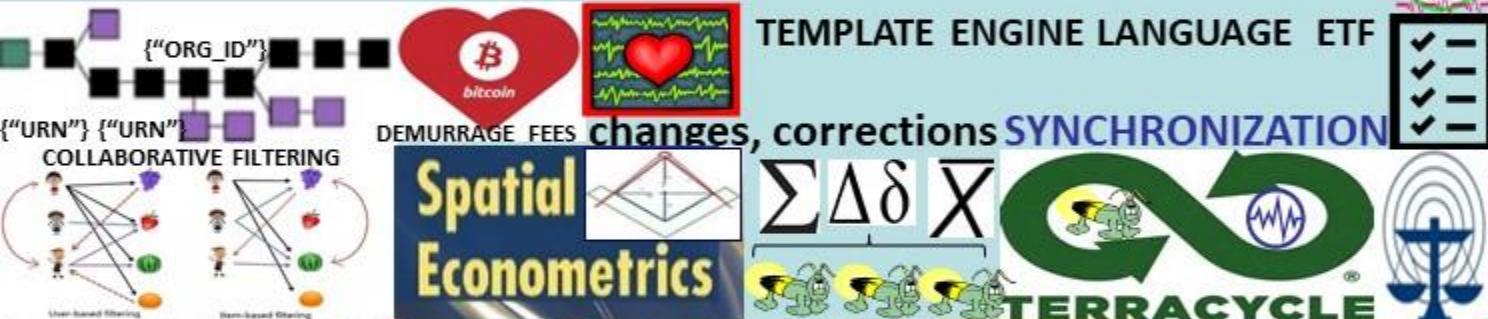




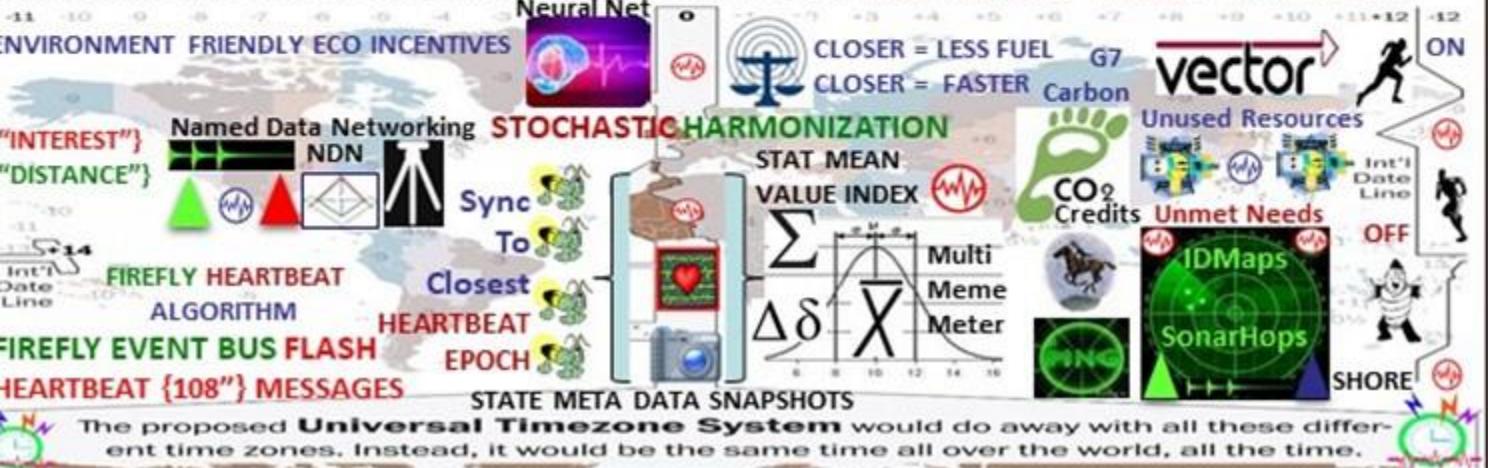
eGaaS: international blockchain platform for organizing economic, state, social activities of citizens, communities on the basis of smart law, smart contract system. eGaaS offers a comprehensive solution needed for state and business management on the blockchain platform.

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

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



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



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

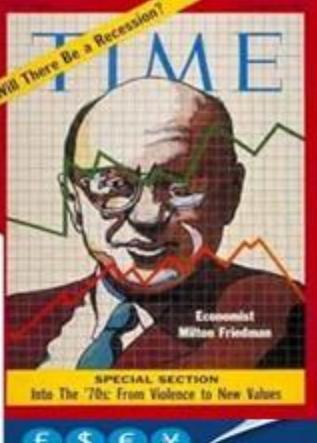






# THE TERRA (TRC)

Trade Reference Currency



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



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"

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

**UNIVERSAL TIME ZONE UTZ**  
**UNIVERSAL MESSAGE EVENT BUS**





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

## Futarchy PREDICTION MARKETS GnosisAMA

Gnosis trading interface alpha  
WIZ token fee payment  
INFORMATION ARBITRAGE ECONOMICS



**TERRACYCLE**

Price Oracle

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



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

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

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

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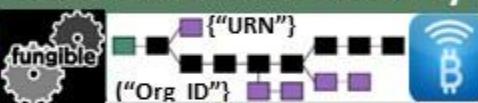


The proposed **Universal Timezone System** would do away with all these different time zones. Instead, it would be the same time all over the world, all the time.



## THE TERRA (TRC)

Trade Reference Currency



\$0.49 USD  
0.001076 BTC

MICRO PAYMENTS  
Bitcoin



## Demurrage Fees



Geo-Spatial Temporal Econometrics meters



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

# ZEPPELIN

## ZEPPELIN OPEN, GLOBAL ECONOMY

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



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



### ZEPPELIN / zeppelinOS Common Functionality:

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

Create and customize your own ERC20 Token.

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



#### Contract development

Dapp

Dapp

Dapp

Dapp

#### Contract interaction

Kernel libraries

Scheduler

Marketplace

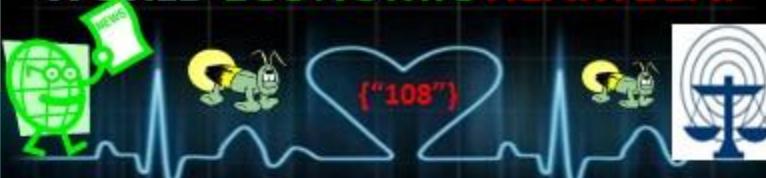
State channels

zeppelinOS

EVM

Blockchain

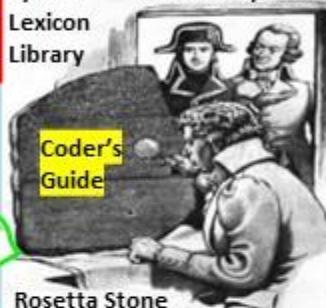
## WORLD ECONOMIC HEARTBEAT



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

Syntax  
Lexicon  
Library

300+ Templates



Rosetta Stone

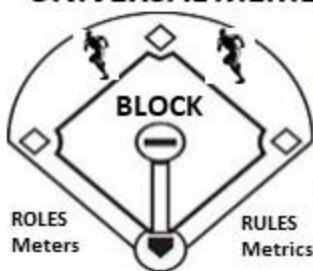
### STRUCTURED DATA EXCHANGE



### STOCHASTIC HARMONIZATION for TELCO Mesh Fabrics



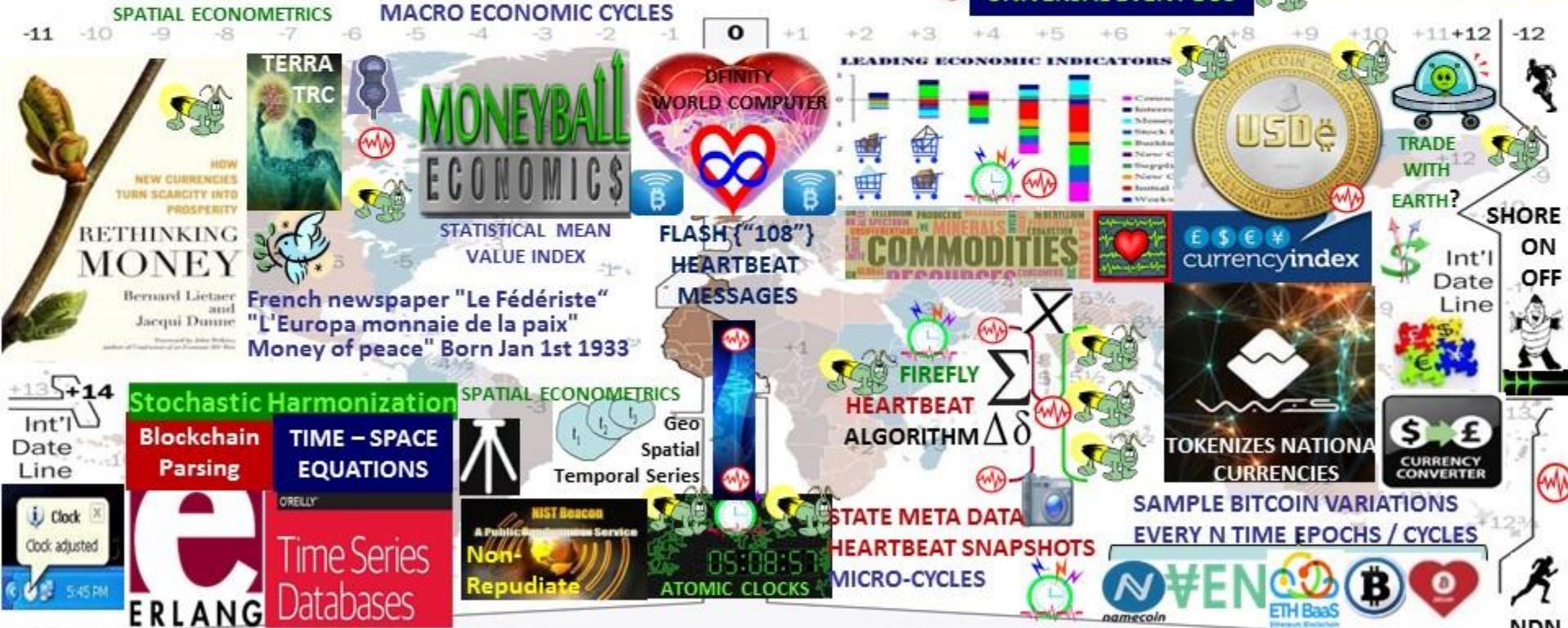
### UNIVERSAL MEME







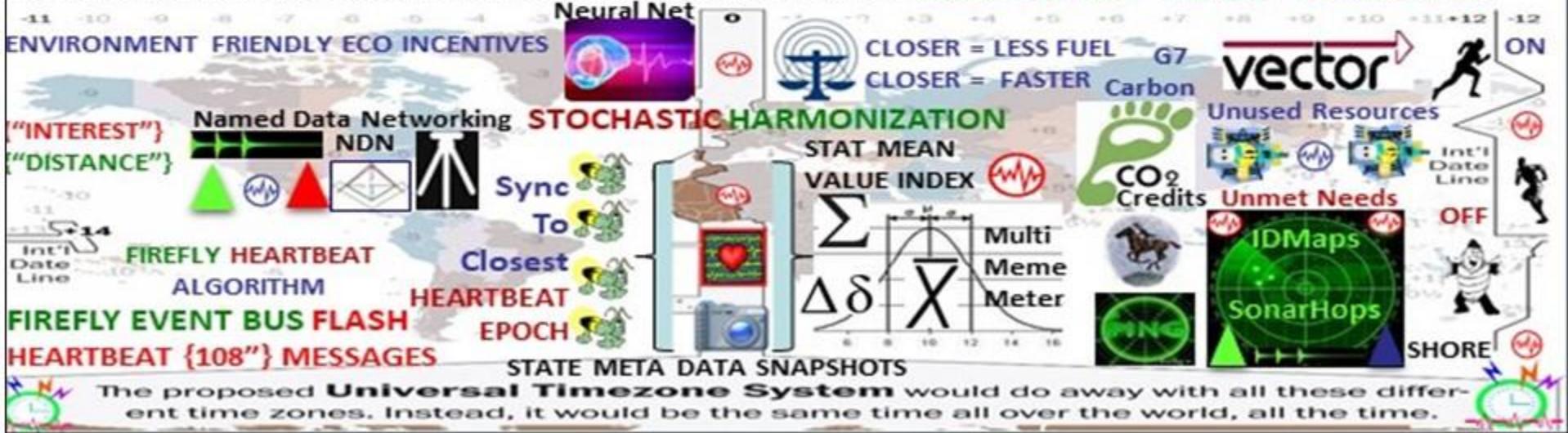
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The proposed **Universal Timezone System** would do away with all these different time zones. Instead, it would be the same time all over the world, all the time.



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**



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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**

**EQUILIBRIUM CONSTANT**

**NASH Equilibrium Algorithms**

**Time-Space Metrics**

**Nash Game Theory Algorithms**

**HB Cycle STATE META DATA SNAPS**

**STATE META DATA SNAPS**

**05:08:57 NIST TIME BEACON**

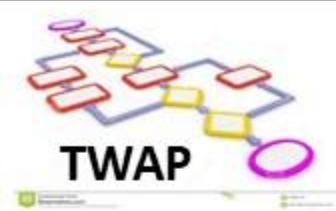
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# TWAP Algorithm Manages Bitcoin Price Volatility Algorithm

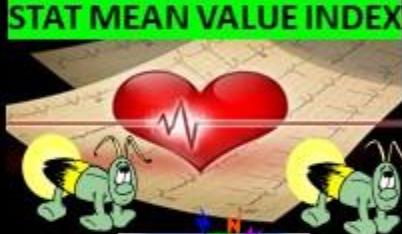


## TWAP GOAL: provide a Time Weighted Average Price Benchmark



FIREFLY HEARTBEAT ALGO  
STAT MEAN VALUE INDEX

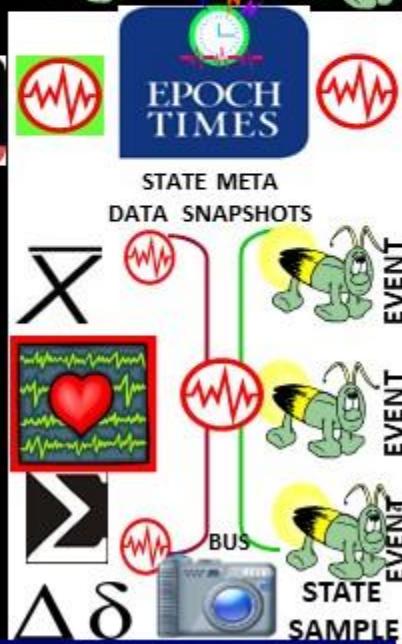
**TWAP** Works To gauge trading performance, many traders in different asset classes (equity, fixed income, currency) often use average price as a benchmark. The two common ways to calculate an average are a time-weighted average price (TWAP) and a volume-weighted average price (VWAP). TWAP is the average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



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



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



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





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



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



**Functional Sequential Erlang**

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

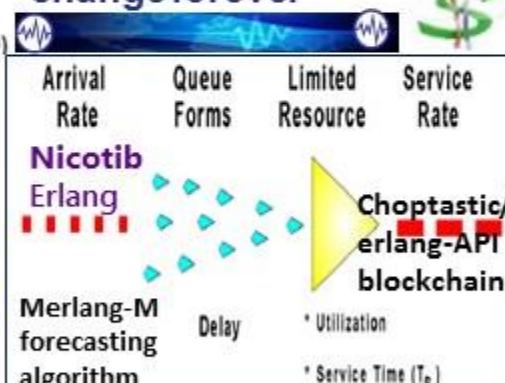


Ericsson Open Money  
For Society Patent App



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

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



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

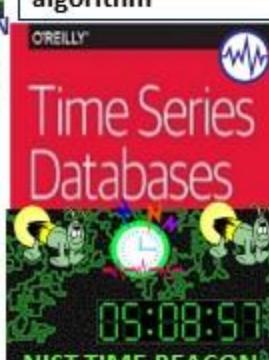


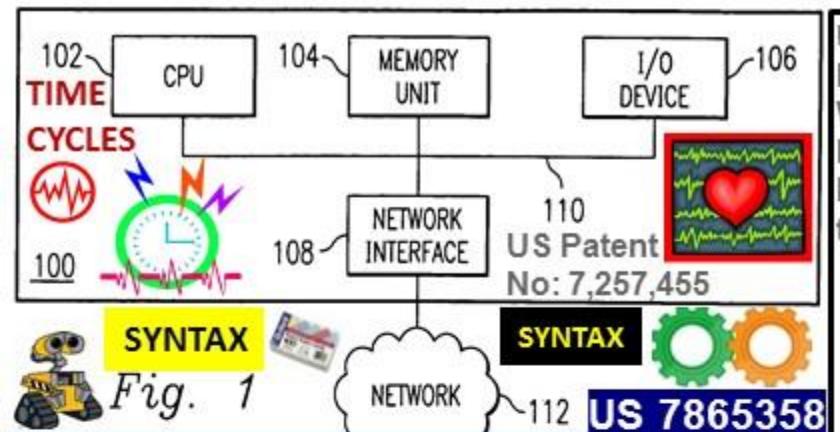
distributed "noSQL" database, embedded right into Erlang,  
supports indexing, replication, transactions, and fail-over  
Fast ETS in-memory, and DETS persistent on-disk database

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

Global name resolution

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



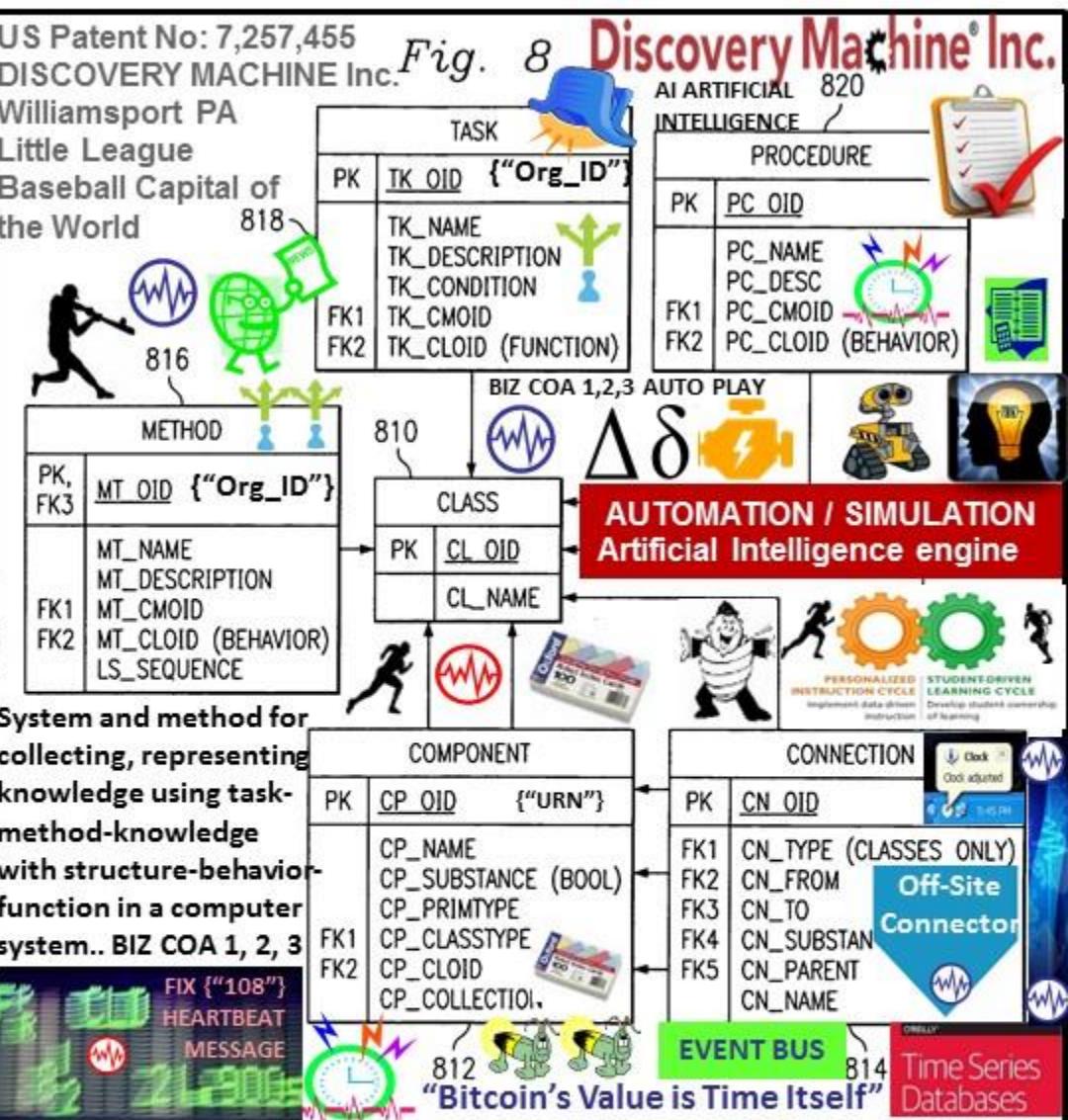
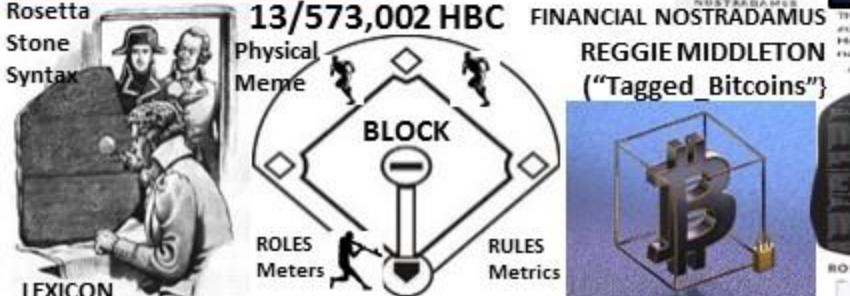


Machine-based system for transforming data from a source form to a target form, a tool is provided for sharing information established in developing a transformation model. The shared information may relate to rules for mapping source collection terms to standardized terms, rules for ordering or **SYNTAX**,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

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

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

ORACLE Veritaseum



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



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



HASH TABLES  
NONCE VALUES

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



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



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

AZURE: Core/Kernel/Universal Protocol

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

Unspent Transaction Output protocols UTXO

Crypto Tokenized Assets Digital Bearer Bonds  
unique identity for owned artifacts

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

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

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

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

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



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

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

FIREFLY EVENTS  
FLASH MESSAGES  
SYNC TO CLOSEST  
HEARTBEAT EPOCH

EVENTBUS  
FIREFLY HEARTBEAT ALGORITHM  
 $\Delta\delta$   
STATE META DATA SNAPSHOT

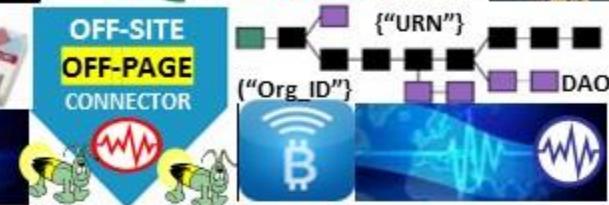
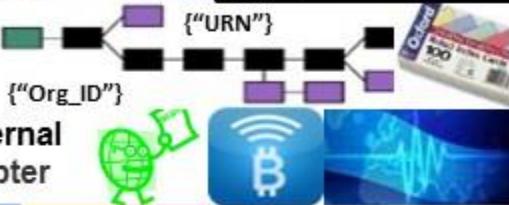
MULTI-MEME MULTI-METER  
MYRIAD MEMES MEDIATION  
BLOCKCHAIN

MULTI-MEME MULTI-METER

Microsoft  
AZURE BLETCHLEY

Blockchain Startups

Top Blockchain startups  
disrupting non-financial markets



MACRO CYCLES

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

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

Runner =  
Messages  
Signals /  
Telemetry

METRICS / METERS

90 feet

ALGORITHM = RULES

PLAYERS = ROLES

UMPIRE = RULES

3rd Base

STATISTICIAN

90 feet

Blockchain Blocks / Coins Awarded

Survey Point

home plate

BLOCK in 3D = CUBE

Cube has Length, Depth,  
Height. Volume #1421

Euclidian Geometry TRIANGULATION.

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

MICRO-CYCLES



SC 573 US 134 2347 Physical = Opposite Of abstract

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

MICRO-CYCLES

IoT Microsoft Orleans

TIME-SPACE EQUATIONS ALGORITHMS BLOCKCHAIN PARSING

ERLANG



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

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

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

Provides information about total costs of the transaction



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

**pull model**



**Bitcoin Address Shortener**

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

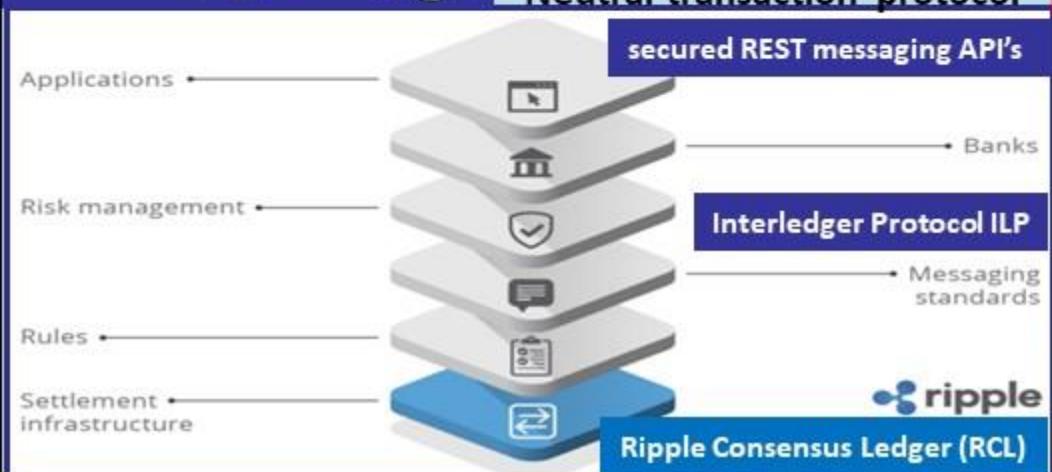
**ALPHA NUMERIC BREVITY CODES**

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

**A.I**

Clock: Clock adjusted

**Neutral transaction protocol**



SchellingPoint



**EVENT**

**ROLES RULES**

**COACH**

**BLOCK**

**CLOCK**

**TIME-SPACE EQUATIONS ALGORITHMS BLOCKCHAIN PARSING**

**ERLANG**

**EVENT BUS**

**LOCKED QUOTED ACCEPT / DENY In Progress SUCCEEDED**

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

MATCH EVENT REPORTS TO CLOSEST HEARTBEAT CYCLE

FLASH HEARTBEAT MESSAGES {"108"} Sync to Closest Heartbeat

**X**

**INFOCON**

5 4 3 2 1

**INFORMATION CONDITION**

**FIREFLY-HEARTBEAT ALGORITHM MICRO-CYCLE STATE META DATA SNAPSHOTS AGGREGATE INTO MACRO ECONOMIC CYCLE MESSAGE**

World Economic Heartbeat ALGORITHMIC REGULATION



"108"

**BLOCK TIME ARBITRAGE System of Systems Sync**

Stochastic Harmonization Telco Mesh Fabrics Wide Area Sync

**FIREFLY EVENTS FLASH MESSAGES**

**EVENT**

**DFINITY**

**RANDOM # BEACON**

**NIST Beacon**  
A Public Randomness Service

**QUANTUM RANDOM #**

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

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

**FIREFLY-HEARTBEAT** FLASH Msg EVENT BUS

**GROUP Signature is random number**

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

**- BLS signature scheme**

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

**HYPER GEOMETRIC PROBABILITY CALCULATOR**

**CONSENSUS / RANDOM BEACON**

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

**Each process has mining identity**

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

**Threshold Relay Chain techniques**

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

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

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

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

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

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

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

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

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

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

**STATISTICIAN**

**90 feet**

**Survey Point**

**home plate**

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

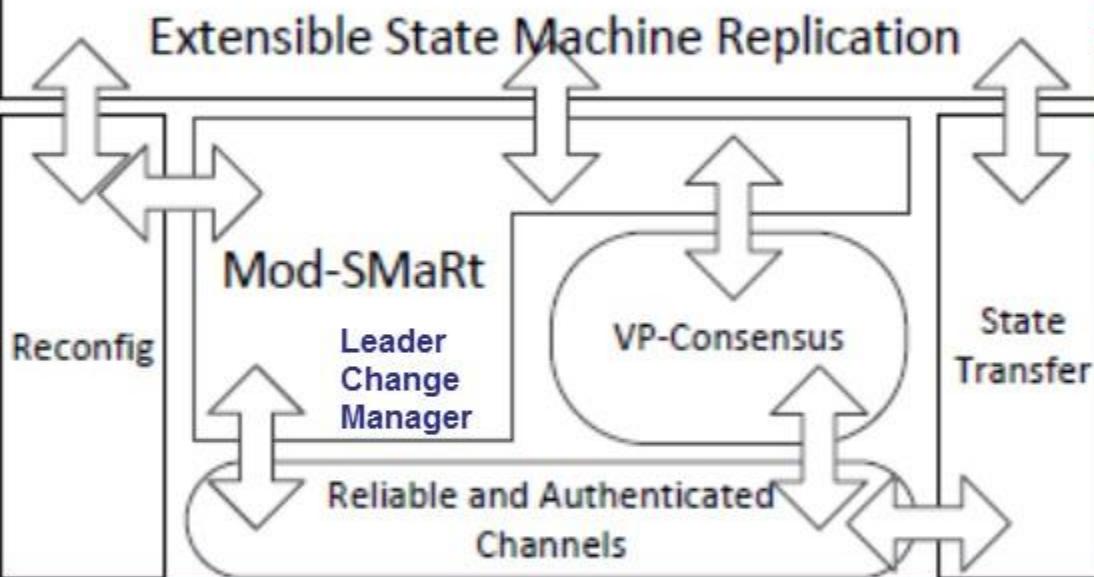
**1<sup>st</sup> Base Coach**  
**first base**  
**UMPIRE**  
 **$3 \times 5$**   
**HASH TABLE**  
**NONCE**

**VALUES / CODE**

**MICRO-CYCLES**

## Byzantine Fault-Tolerant State Machine Replication

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



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

### BFT-SMaRt needs an eventually synchronous system

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

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

USCt ALICE CORP V CLS BANK

PHYSICAL = OPPOSITE OF ABSTRACT



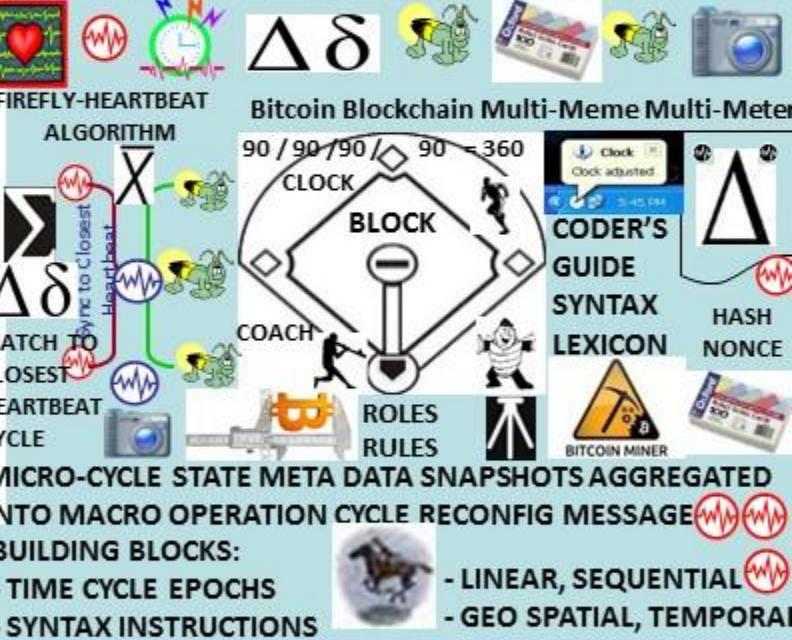
DERIVED FROM BATTLEFIELD DIGITIZATION DISTRIBUTED AUTONOMOUS ORGANIZATION DAO SYSTEM OF SYSTEMS

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

ADDS, JOINS, DROPS, MOVES TO / FROM DAO

CHANGES IN STATE VIEWED IN "APPLIQUE' OVERLAY VIEWS

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



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

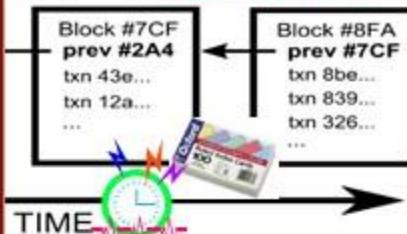
# HYPER LEDGER OPEN SOURCE BLOCKCHAIN

Core APIs, & SDKs

$\Delta\delta$  Shared Ledger



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



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

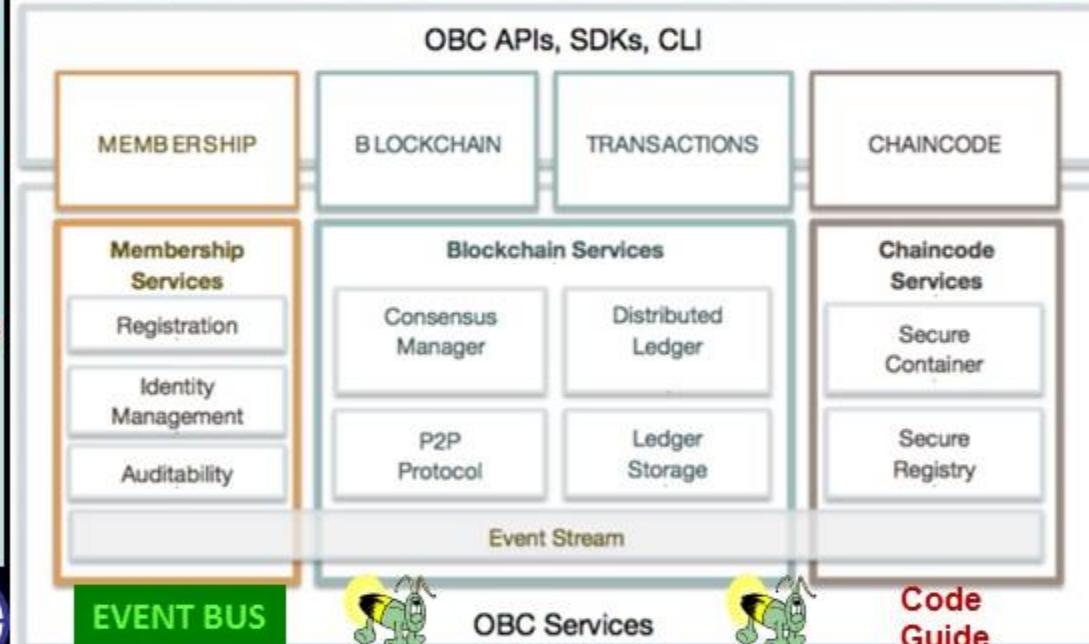
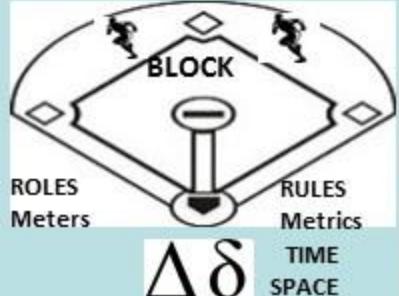
FEDERATION  
**Federation Gateway**

METRICS ("Organization ID")  
METERS

RESTFUL SYNC DELTA  
CHANGE MANAGEMENT  
MICRO-MACRO CYCLE



BLOCK TIME ARBITRAGE

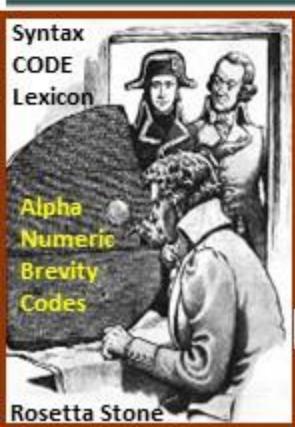
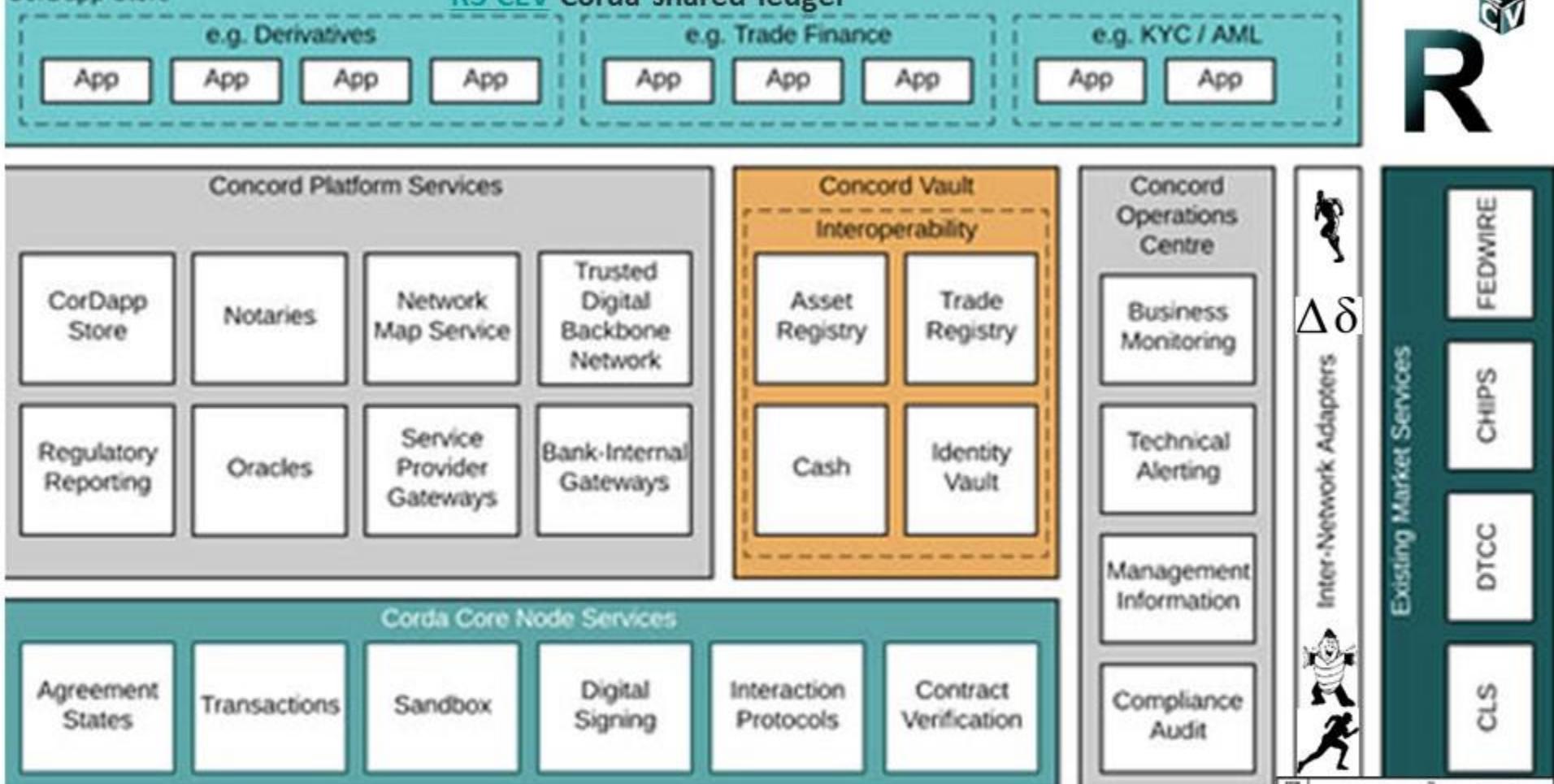


ROSETTA STONE



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




**UNIVERSAL EVENT BUS**


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

FEDERATION GATEWAY

STATE CHANNELS

BITCOIN NEXGEN

LIGHTNING / DASH..

PROOF OF WORK

PROOF OF STAKE

STATE CHANNELS

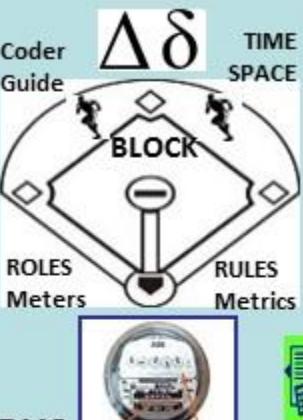
BITCOIN NEXGEN

LIGHTNING / DASH..


**XBRL / CDL / DAML STOCK MIC CODES**
**STRUCTURED MILITARY MESSAGE TEMPLATE FORMS LOGIC / FILTERS**  
**300+ Use Case Templates**


## KEY BLOCKS:

- NO CONTENT = NULL
- LEADER ELECTION



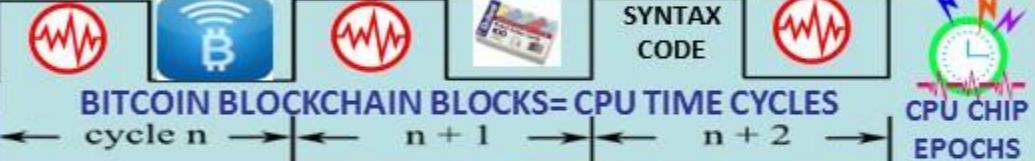
## MICRO BLOCKS:

- ONLY CONTENT
- NO CONTENTION



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

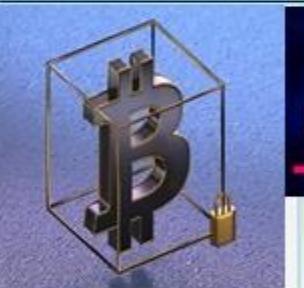
EVENT BUS



long exponential intervals (10 min)

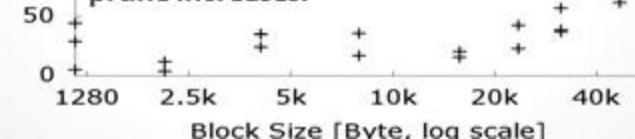


COMMAND SYNTAX  
RESTFUL State Transfer



Subjective Time to Prune

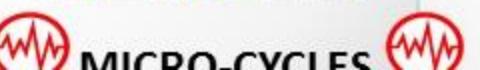
Additional metrics used by researchers included "time to prune", or the time it takes for miners whether they are on the correct "branch" or version of the blockchain they are processing transactions. As block sizes increase, suggested time to prune increases.



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...

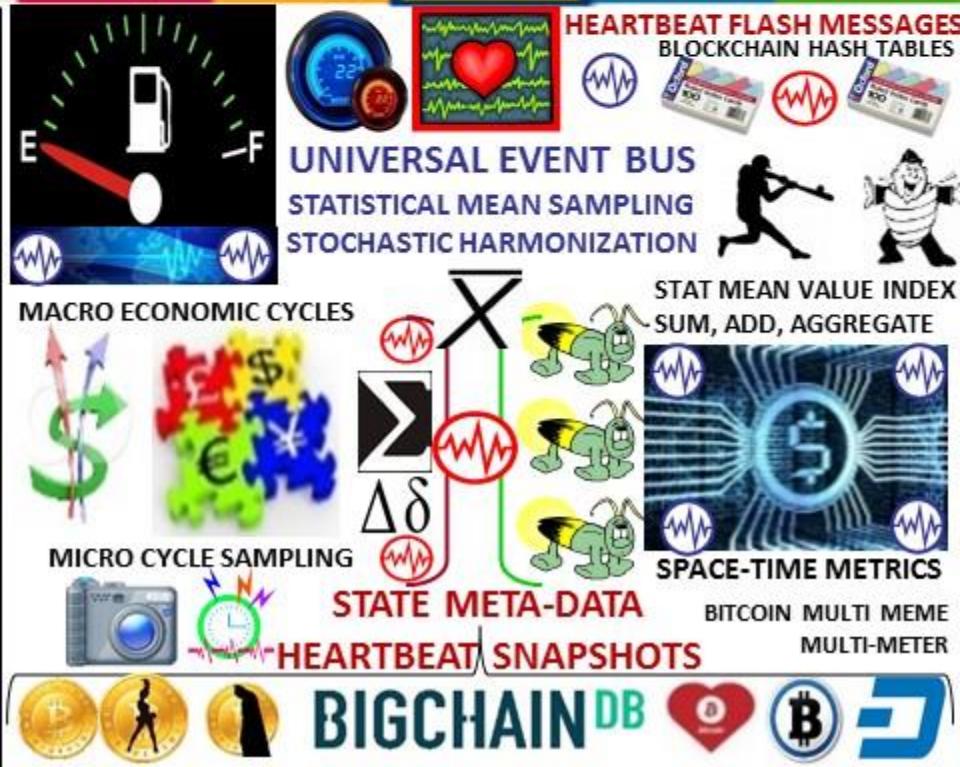
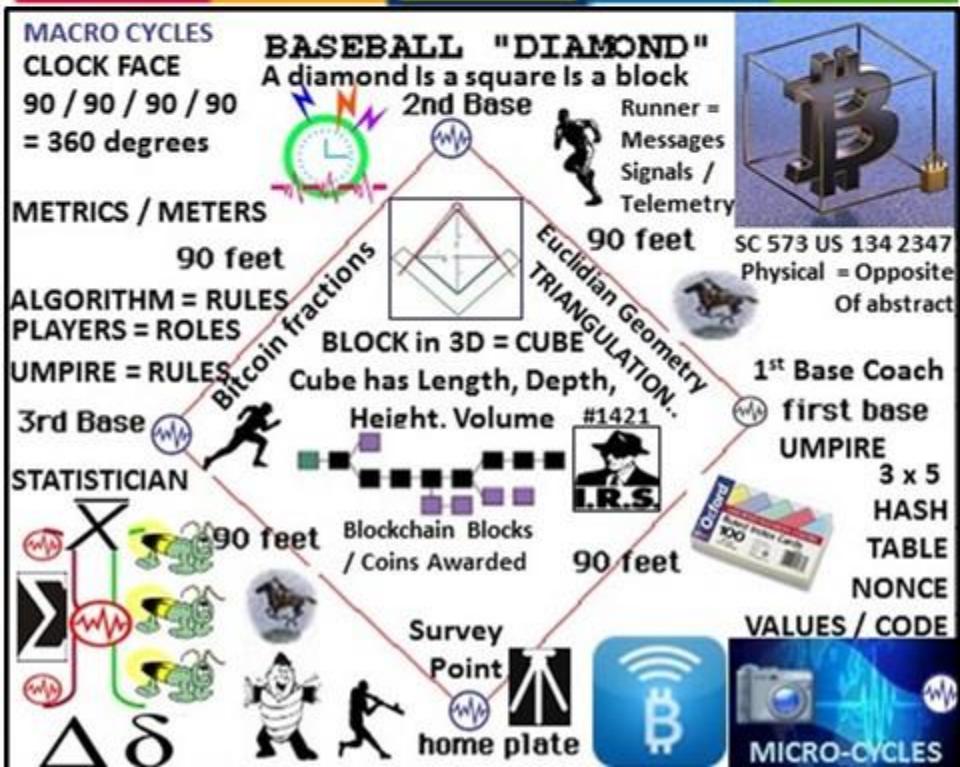
**EVENTUALLY**

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)



**BIGCHAINDB**



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

METRICS / METERS

90 feet

ALGORITHM = RULES

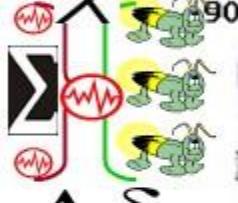
PLAYERS = ROLES

UMPIRE = RULES

3rd Base

STATISTICIAN

X



$\Delta \delta$

TRANSACTIONS

PER CYCLE

METRICS



## BASEBALL "DIAMOND"

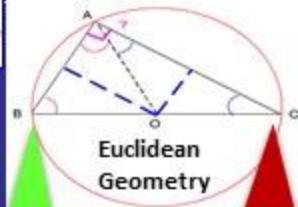
A diamond Is a square Is a block  
2nd Base  
Runner =  
Messages  
Signals / Telemetry



90 feet

SC 573 US 134 2347  
Physical = Opposite  
Of abstract

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



90 feet

Bitcoin fractions

BLOCK in 3D = CUBE

Cube has Length, Depth,  
Height, Volume #1421

1<sup>st</sup> Base Coach

first base

UMPIRE

3 x 5 HASH

TABLE

NONCE

VALUES / CODE

MICRO-CYCLES

SPATIAL TEMPORAL Series

Firefly - Heartbeat Event Bus

COMPUTER CHIP EPOCHS

cycle n -> n + 1 -> n + 2

STAKE-TIME algorithm favors both # of coins

held & how often, frequently coins are staked

Velocity based selection PoSV encourages velocity

i.e. coin movement between people Vs hoarding.

PROOF-OF-STAKE

UXTO

Mined Bitcoins

Survey Methods

Proximity Beacons

CALENDAR

MICRO-CYCLES

Unmined Bitcoins

MICRO-CYCLES

Voting based selection Instead of only using the stake size, the block

generators can be selected by votes ex: League MVP

Voting Based Selection: stake size &

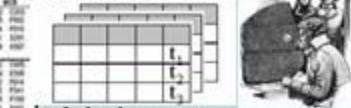
block generators selected by votes

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

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

STRUCTURED {"CONTENT"} TEMPLATES

Attribute Series



Digital Asset

Modeling Language

DAML Language CDL

{"INTEREST"} {"DISTANCE"}

FBI



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

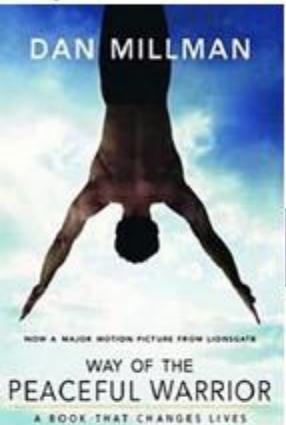
Time Series Databases





# 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"

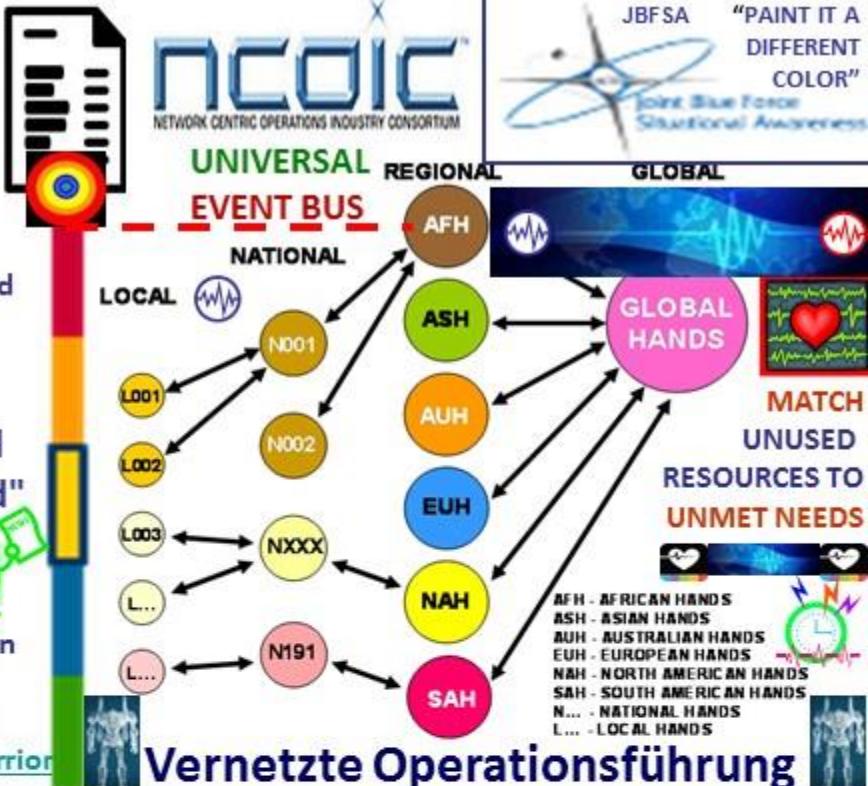


"The secret of change is to focus all of your energy, not on fighting the old, but on building the new." Dan Millman  
Way of the Peaceful Warrior A Book That Changes Lives  
[http://en.wikipedia.org/wiki/Way\\_of\\_the\\_Peaceful\\_Warrior](http://en.wikipedia.org/wiki/Way_of_the_Peaceful_Warrior)

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



**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.

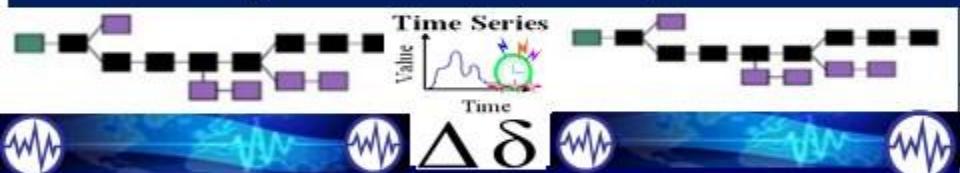


**1. Part of the blockchain state is locked** via multisignature or some sort of smart contract, so that a specific set of participants must completely agree with each other to update it.

**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/)

**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

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

BLOCK in 3D = CUBE

Cube has Length, Depth,

Height, Volume #1421

I.R.S

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



SC 573 US 134 2347

Physical = Opposite Of abstract

1st Base Coach first base UMPIRE

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

1st Base Coach first base UMPIRE

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1st Base Coach first base UMPIRE

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



FLASH HEARTBEAT MESSAGES

HEARTBEAT STATE META-DATA

SNAPSHOTS EVERY

10, N MIN MICRO TO

MACRO ECON CYCLE

HASH TABLES

STATE SNAPS

SYNTAX

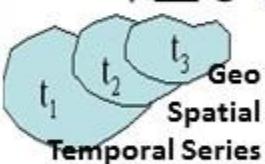
TIME SERIES

Value

Time



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



Geo Spatial Temporal Series

Attribute Series

META-DATA

t1 t2 t3

1st Base Coach first base UMPIRE

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

1st Base Coach first base UMPIRE

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

1st Base Coach first base UMPIRE

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

1st Base Coach first base UMPIRE



# PROOF-OF-WORK



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



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



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

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



GUESS stores the guess  
Effectively, it begins at infinity.



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

## OREILLY Time Series Databases



## FIREFLY-HEARTBEAT ALGORITHM STOCHASTIC HARMONY ACROSS TIME ZONES



- MESSAGE ex:
  - Hashing string
  - Hash Table

## 300+Message Templates

LOGIC FILTERS	LOGIC GATES
SYNTAX LIBRARY	LEXICON
CODER'S GUIDE	

## POW PAYLOAD : COMBINATIONS OF ENCRYPTED SYNTAX Attribute Series

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

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



Runner =  
Messages  
Signals /  
Telemetry

SC 573 US 134 2347  
Physical = Opposite  
Of abstract

METRICS / METERS

90 feet

ALGORITHM = RULES

90 feet

PLAYERS = ROLES

UMPIRE = RULES

90 feet

3rd Base

90 feet

STATISTICIAN

90 feet

X

90 feet

Σ

90 feet

Blockchain Blocks / Coins Awarded

90 feet

Survey Point

90 feet

Δ

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



#1421  
I.R.S.

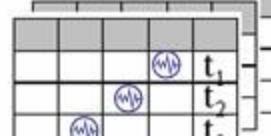
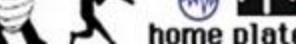
1st Base Coach  
first base  
UMPIRE

3 x 5  
HASH  
TABLE

NONCE  
VALUES / CODE

MICRO-CYCLES

home plate





## 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

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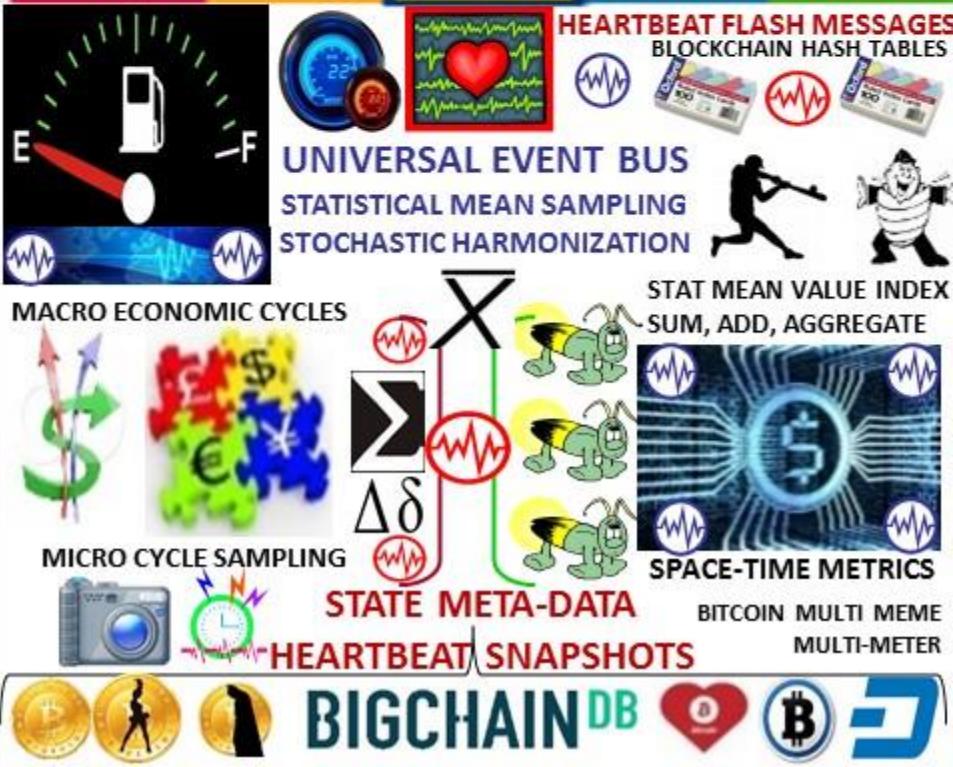
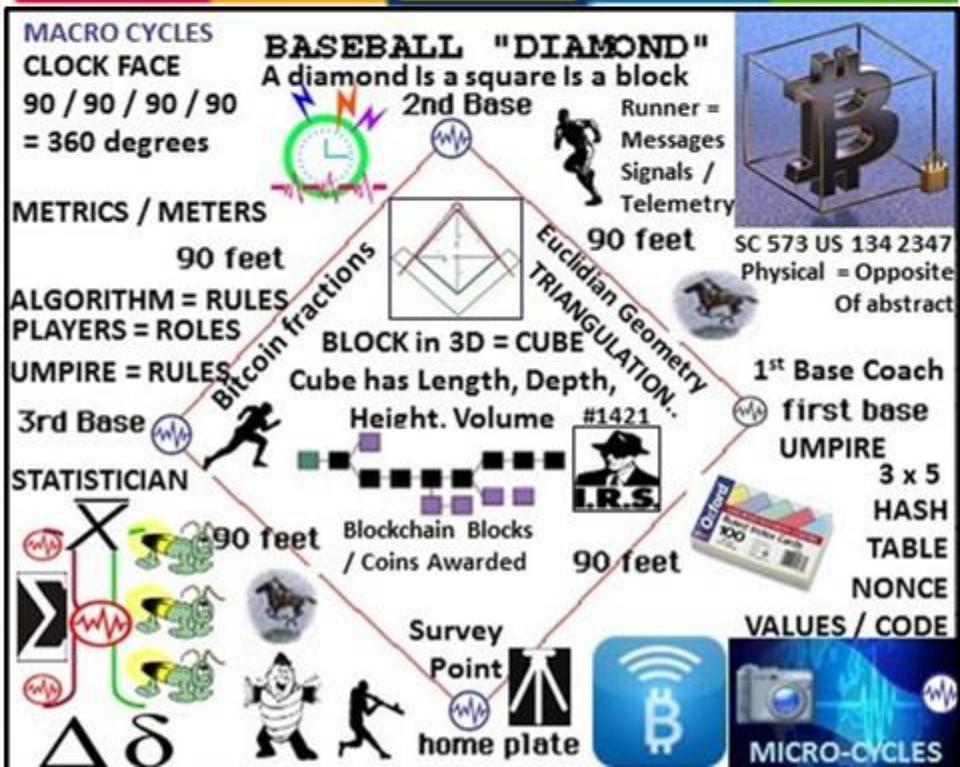
**EVENTUALLY**

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

SWARM  
(storage)

WHISPER  
(messaging)

EVM  
(consensus)





**PROJECT LIGHTING**

**FIREFLY - HEARTBEAT ALGORITHM**

**FIREFLY - HEARTBEAT**

**ERLANG**

**Time Series Databases**

**UTZ UNIVERSAL TIME ZONE SYNC**

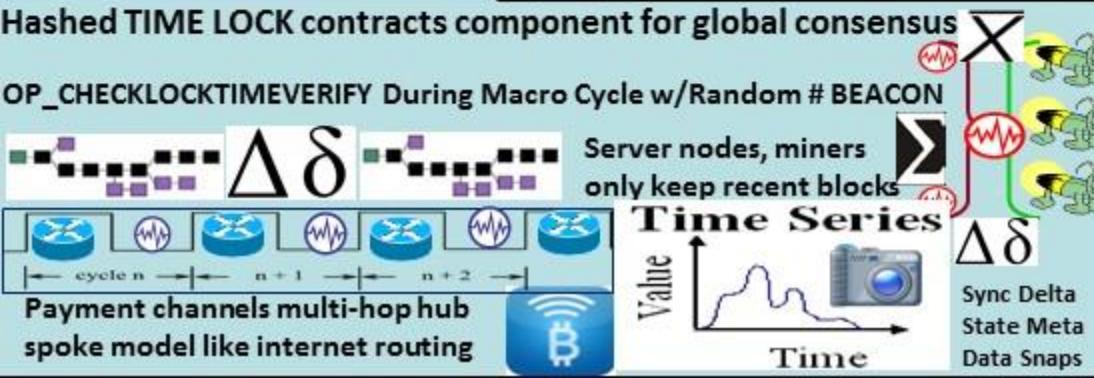
**OP\_CHECKLOCKTIMEVERIFY During Macro Cycle w/ Random # BEACON**

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

**transactions sent over off blockchain micropayment channels**

**OREILLY**

**Stochastic Harmonization**



**Segregated witness = Separated signatures**

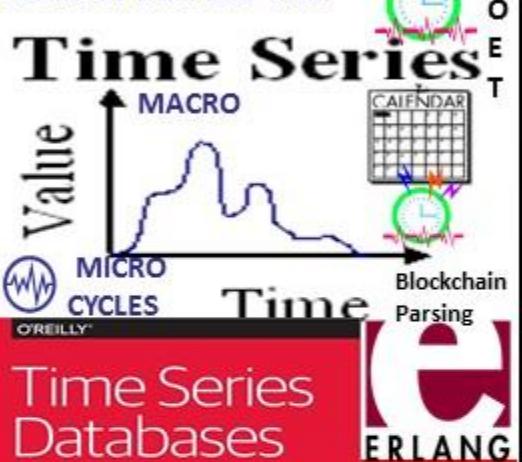
- signatures are cryptographic proofs also known as witnesses
  - moving signatures out of transactions
  - keeping a separate repository of the signatures
  - making them optional in propagation and storage
  - signature are the biggest part of transactions
  - can be implemented as a **soft-fork**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

# SAWTOOTH LAKE POETIC CONSENSUS PROOF OF ELAPSED TIME: POET

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



## PROOF OF ELAPSED TIME



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

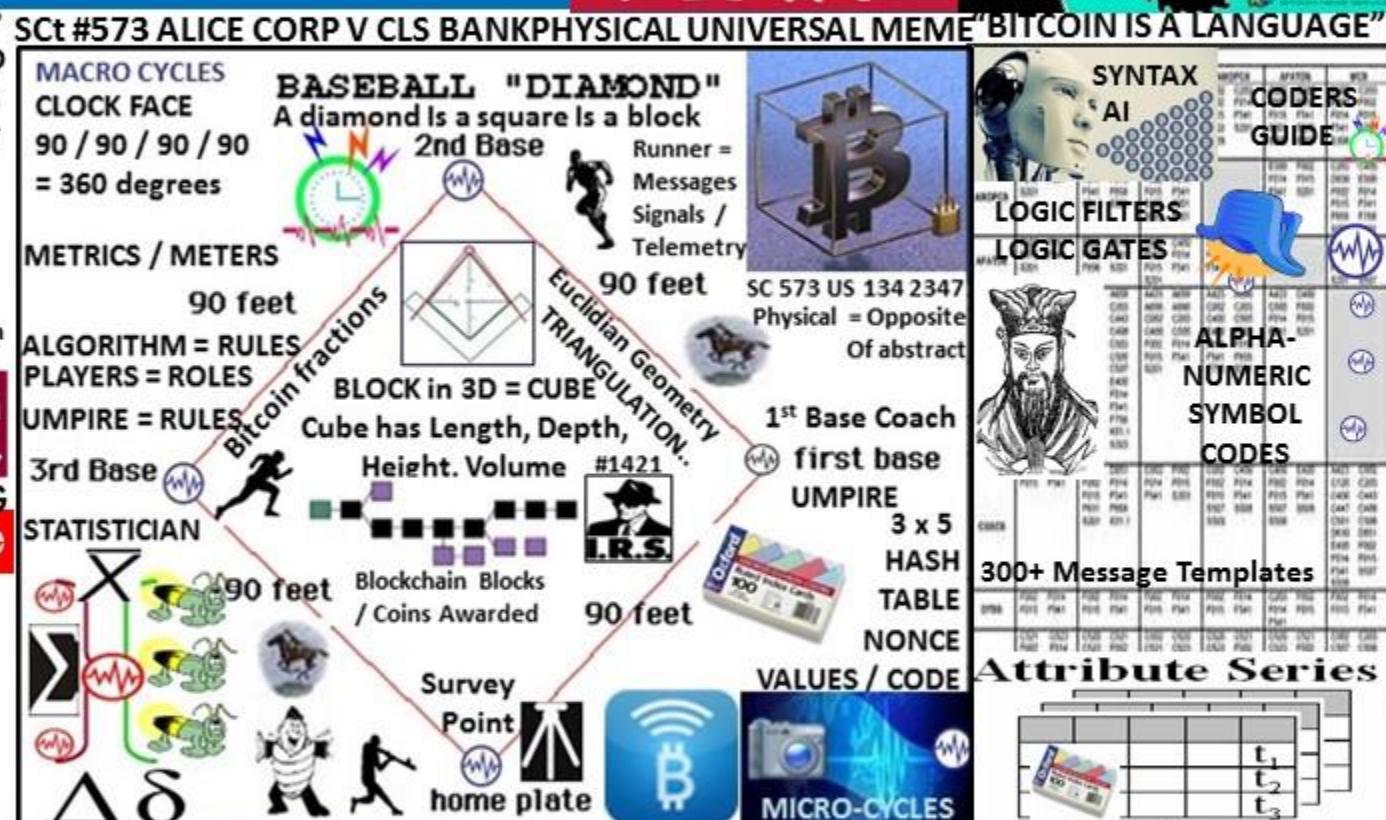
Voting based selection Instead of only using the stake size, the block generators can be selected by votes  
ex: League MVP

MVP



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

## TOURNAMENT LEAGUE BOARD



## FIREFLY-HEARTBEAT FLASH MESSAGES UNIVERSAL EVENT BUS



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



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

#### Key Features:

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



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

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

All rates time-stamped in UTC.



Ability to look up by time-stamp.

Ability to look up by block-height.

Asset Classes: Digital Currencies

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

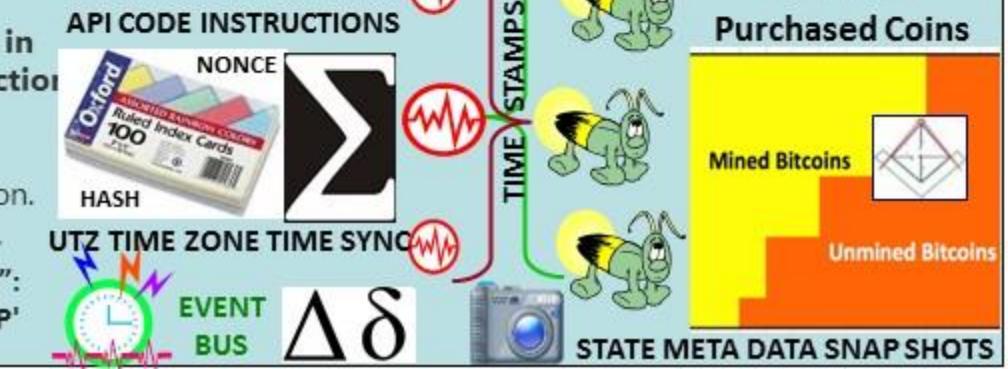
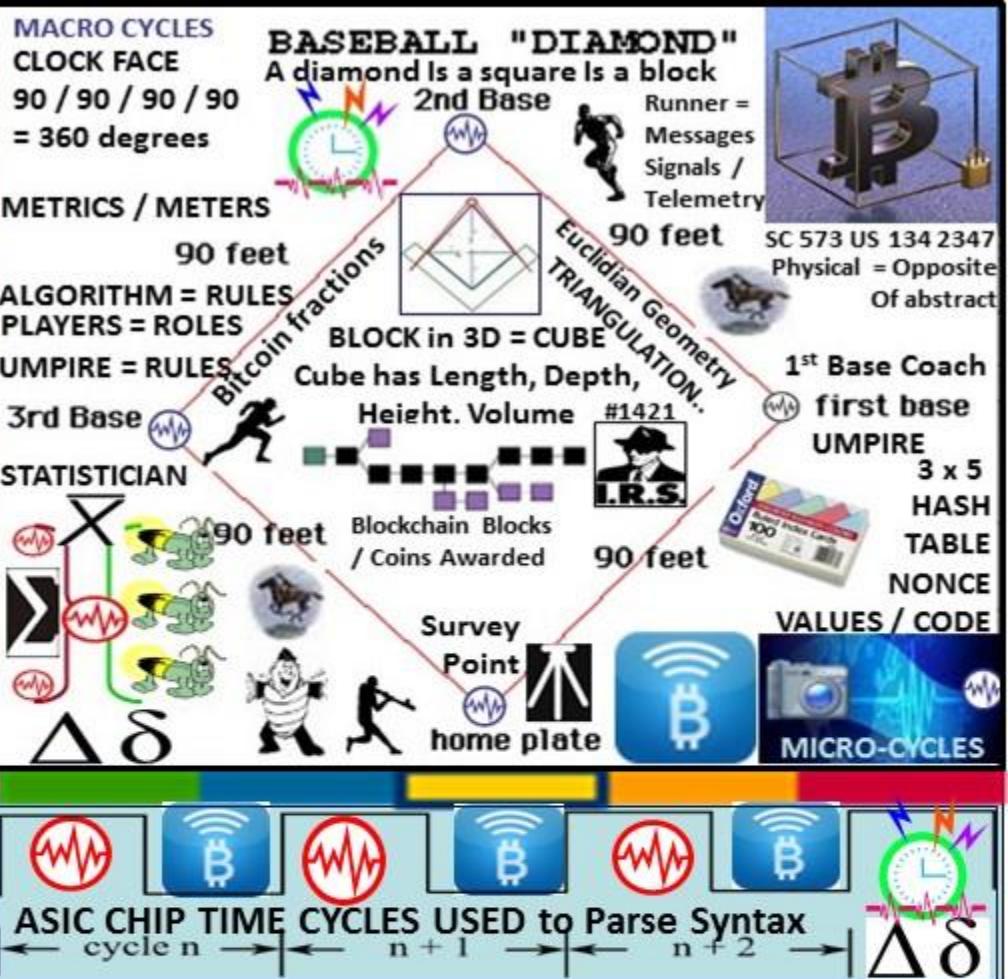
Transaction ID, Block ID, time-stamp, BWAP per block, Value in USD. BTC per transaction, bitcoin transaction fees per transaction

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

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

**BRAVE NEW COIN.**  
Digital Currency Insights

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



# DASH



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

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

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

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

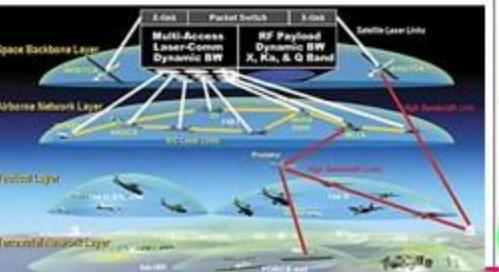
"Its makeup is thus: the block reward is divvied up in three parts. The first 45 percent goes to [Dash's miners](#). Another 45 percent goes to its Masternodes. And 10 percent is set aside to fund whatever other jobs or expenditures the Dash network deems necessary"

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

Masternodes receive payments for their service to the network.

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

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*?

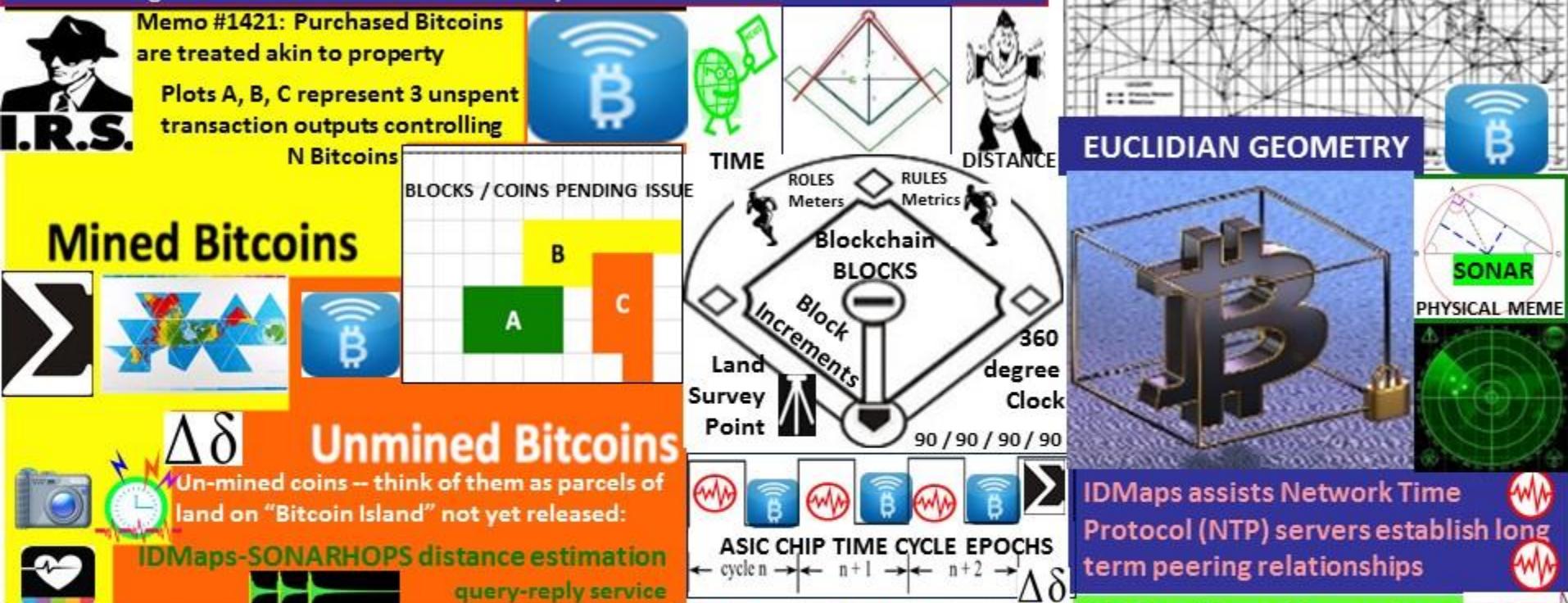
HEART BEACON CYCLE

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.



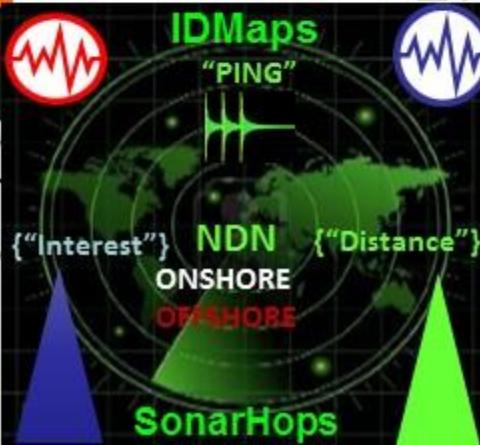
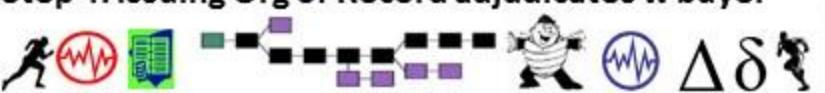
- End-state Bitcoin quantity will be fixed like land  
"Bitcoin as protocol of ownership, not transfer"  
Coins never travel, but simply switch owners"

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



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



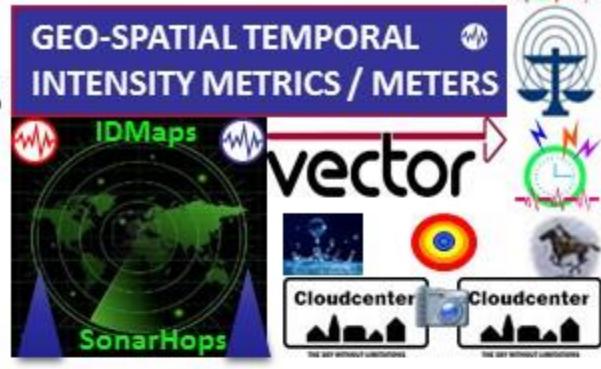
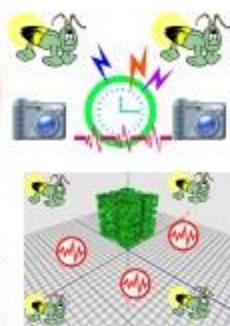
IDMaps Distance Metrics:  
latency (round-trip delay)  
available bandwidth estimation



# IDMaps: Global Internet Host Distance Estimation Service



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



IDMaps scalable Internet-wide architecture measures, disseminates distance information



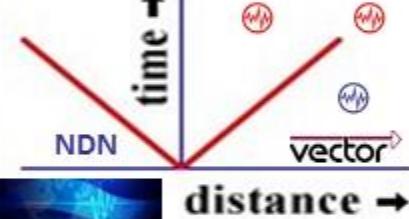
HOP COUNTS



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

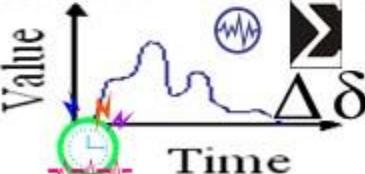
TRIANGULATION



NDN  
INTEREST

IS DATA  
FRESH ?

Time Series



INTEREST in <URNs>

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



REGISTERED  
ORGANISATION  
VOCABULARY

Edge

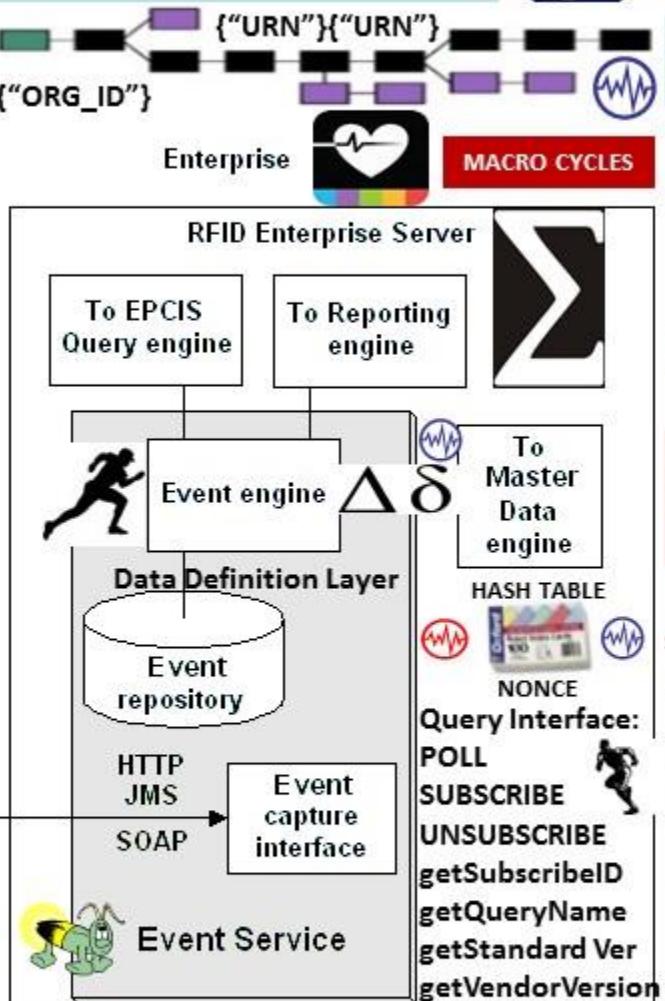
## EPCIS DATA MODEL



SERVICE LAYER

XML

- ObjectEvent
- AggregationEvent
- QuantityEvent
- TransactionEvent



## Core Business Vocabulary (CBV)

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

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

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

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

MICRO  
CYCLES



CLOSER IS CHEAPER  
CLOSER IS FASTER

$\Delta\delta$



$\Delta\delta$



Proximity Wireless Sensor Networks in Combination With RFID ... on reading tag in RF-field the router sends heartbeat message

## RFID Configuration TCP/IP heartbeat message

STRUCTURED DATA EXCHANGE /  
STRUCTURED MILITARY MESSAGES

FROM	BATTLEFIELD DIGITIZATION	TO
ASIAN NETWORK	NETCENTRIC WARFARE	
AMEROS	SYSTEM OF SYSTEMS	
AFRICA	BEST PRACTICE	

FROM	BATTLEFIELD DIGITIZATION	TO
ASIAN NETWORK	NETCENTRIC WARFARE	
AMEROS	SYSTEM OF SYSTEMS	
AFRICA	BEST PRACTICE	

FROM	BATTLEFIELD DIGITIZATION	TO
ASIAN NETWORK	NETCENTRIC WARFARE	
AMEROS	SYSTEM OF SYSTEMS	
AFRICA	BEST PRACTICE	

FROM	BATTLEFIELD DIGITIZATION	TO
ASIAN NETWORK	NETCENTRIC WARFARE	
AMEROS	SYSTEM OF SYSTEMS	
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FROM	BATTLEFIELD DIGITIZATION	TO
ASIAN NETWORK	NETCENTRIC WARFARE	
AMEROS	SYSTEM OF SYSTEMS	
AFRICA	BEST PRACTICE	

FROM	BATTLEFIELD DIGITIZATION	TO
ASIAN NETWORK	NETCENTRIC WARFARE	
AMEROS	SYSTEM OF SYSTEMS	
AFRICA	BEST PRACTICE	

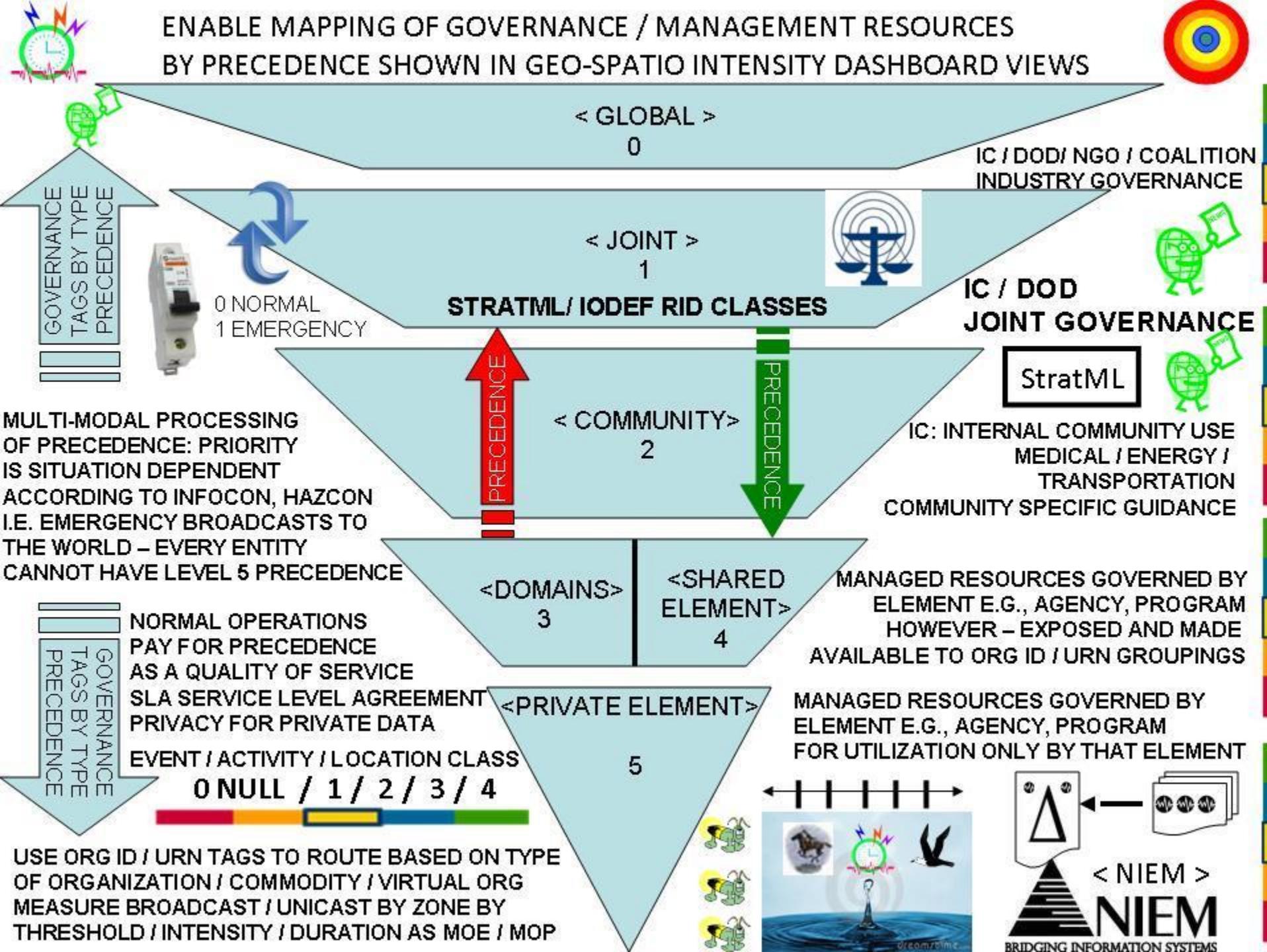
FROM	BATTLEFIELD DIGITIZATION	TO
ASIAN NETWORK	NETCENTRIC WARFARE	
AMEROS	SYSTEM OF SYSTEMS	
AFRICA	BEST PRACTICE	

FROM	BATTLEFIELD DIGITIZATION	TO
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AMEROS	SYSTEM OF SYSTEMS	
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FROM	BATTLEFIELD DIGITIZATION	TO
ASIAN NETWORK	NETCENTRIC WARFARE	
AMEROS	SYSTEM OF SYSTEMS	
AFRICA	BEST PRACTICE	

FROM	BATTLEFIELD DIGITIZATION	TO
ASIAN NETWORK	NETCENTRIC WARFARE	
AMEROS	SYSTEM OF SYSTEMS	
AFRICA	BEST PRACTICE	





# 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>



AVALANCHE

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

NIST CYBER SECURITY FRAMEWORK

MIL-STD  
2525A

STRUCTURED  
<CONTENT>  
TEMPLATES

<TAG>  
LIBRARY

USMTF / XML MTF FORMATTED MESSAGE CATALOG

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



NAMED DATA  
NETWORKING  
<Content> Centric



# Heart Beacon Cycle

Trade Federation on Bitcoin Blockchain



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

Net joins, drops, splits, merges, moves

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

Federation Gateway



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

Bitcoin Mining Pools  
MEME / METAPHOR MEDIATION



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

Circa 1991 now in use by Blockchain tech corporations..

FIREFLY FLASH  
HEARTBEAT MESSAGES



Uniform\_Resource\_Name

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



iET DEVICE / PLATFORM  
IoT SENSOR DEVICE



STOCK EXCHANGE  
MIC MARKET IDENTIFIER  
CODES / BREVITY CODES

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

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

EVENT BUS



Signaling, Telemetry



# 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



$\Sigma$



$\Delta\delta$



Price Indexes in Time and Space

Methods and Practice



SchellingPoint

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

**Bitcoin: OpenBazaar transactional currency**



**Cryptographic Security**

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

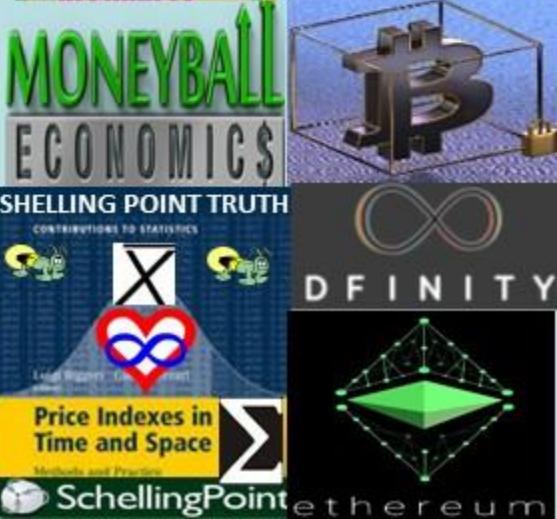
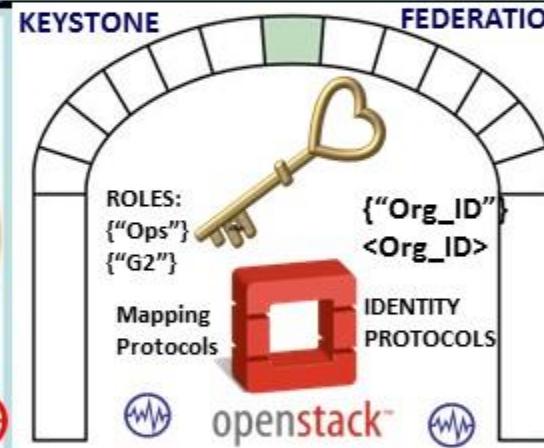
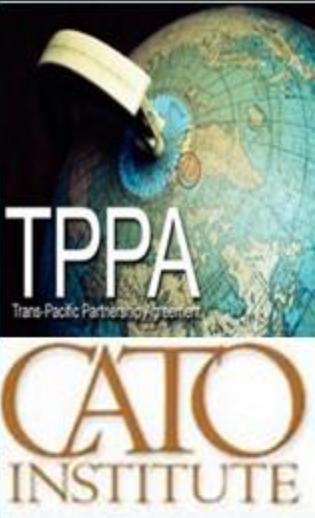


NIST Beacon  
A Public Randomness Service  
Non-Reputation



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



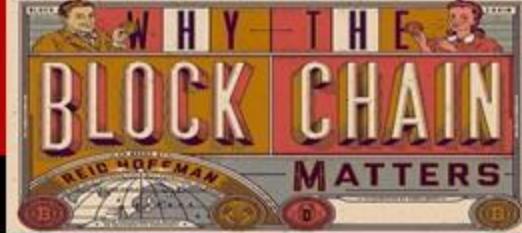
HEART BEACON CYCLE: ALL THINGS INTERNET ARE PROGRAMMED USING TIME CYCLES USED / NOT USED TO PROCESS / NOT PROCESS SYNTAX



# TradeNet

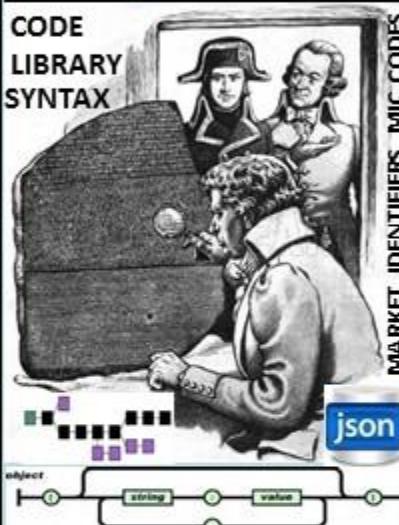


Programmable Money \$\$\$



RIED HOFFMAN 15 May 2015 [LINK](#)

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



NAME	DESCRIPTION
300 + MESSAGE TEMPLATES	SYNTAX LIBRARY
PROGRAMMING	
STRUCTURED <CONTENT>	EXCHANGE
BREVITY CODES	MARKET ID CODES
USE CASE TEMPLATES	SIGNALLING, TELEMETRY

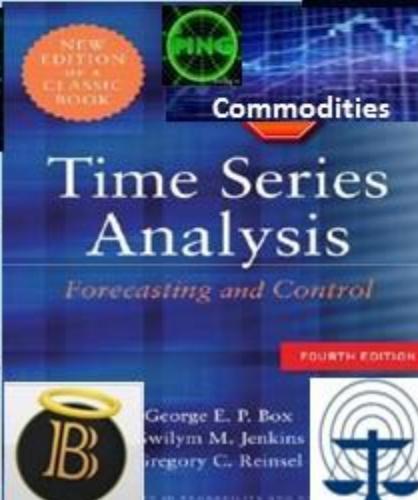
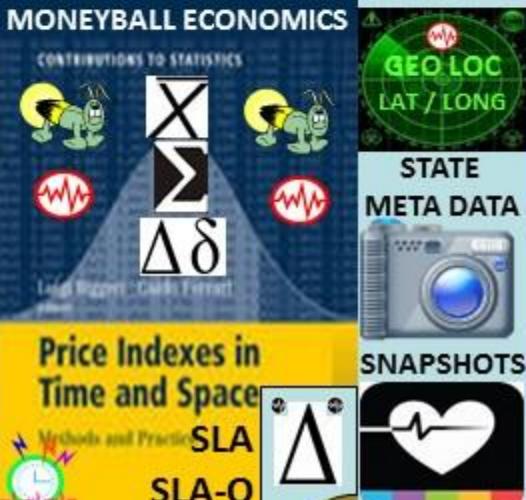


Bitcoin and the blockchain function as a medium of exchange, a store of value, a unit of account. Bitcoin adds digital, cryptographic, distributed server functions to currencies. Because it functions simultaneously as a currency, an asset and a platform, Bitcoin is better described as a global cryptoCAP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

WIRE

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

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





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

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

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

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

Purchasing Veritas tokens is analogous to purchasing keys to the internet of money – the most monumental paradigm shift since the advent of the net

Place Order

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

NEWS EVENT BUS FIREFLY HEARTBEAT ALGO EVENT BUS

**DAO Distributed Autonomous Organization SOFTWARE POOLS**

All Market Orders Search

Collateral Notional Expiry

Heartbeat Flash Messages Precedence Processing

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

FINANCIAL  
NOSTRADAMUS  
REGGIE MIDDLETON



**ECONOMIC HEARTBEAT**  
STATISTICAL MEAN VALUE INDEX PULSE



AETERNITY / DFINITY NEURAL NET

**ALGORITHMIC REGULATION**



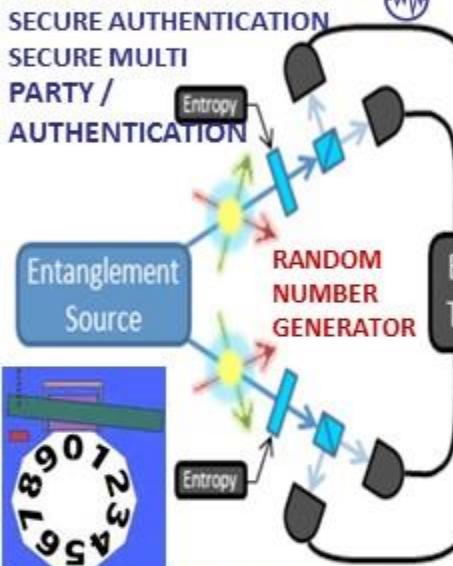
COMMODITIES

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



## NIST QUANTUM ENCRYPTION RANDOMIZATION BEACON

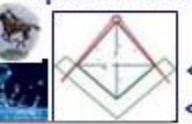
UNPREDICTABLE SAMPLING



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

Metrics and Time - Space Meter uses PHYSICAL Memes / Metaphors

**NAMED DATA NETWORKING**



NDN  
</Interest>  
</Distance>

SURVEY METHODS + TRIANGULATION  
Euclidian Geometry

Geodesic System Routing Info Base RIB

ACCOUNT BELONGS TO </Org\_ID>

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

DEVICE / SENSORS <UUID><UUID>

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

Time / Distance Metrics  
PROXIMITY  
NDN  
</interest></distance>

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

Stochastic Harmonization



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



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

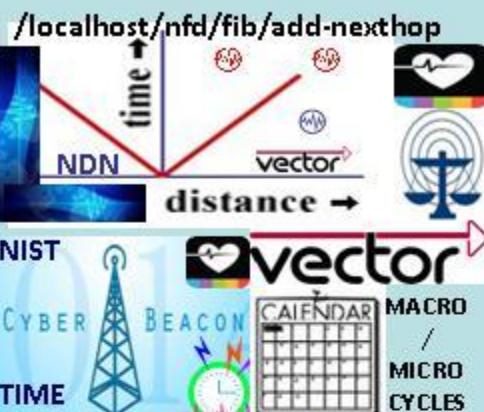
Social proximity

Temporal proximity

Agreements

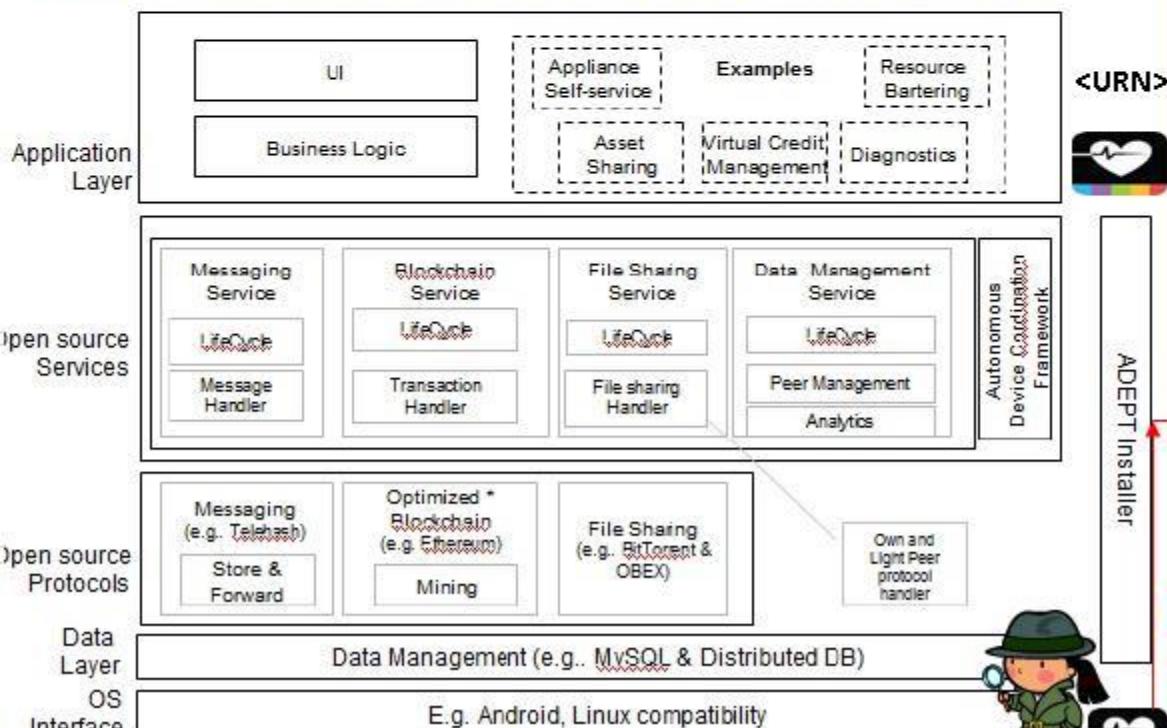
Payments

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

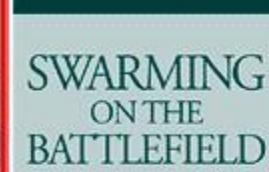
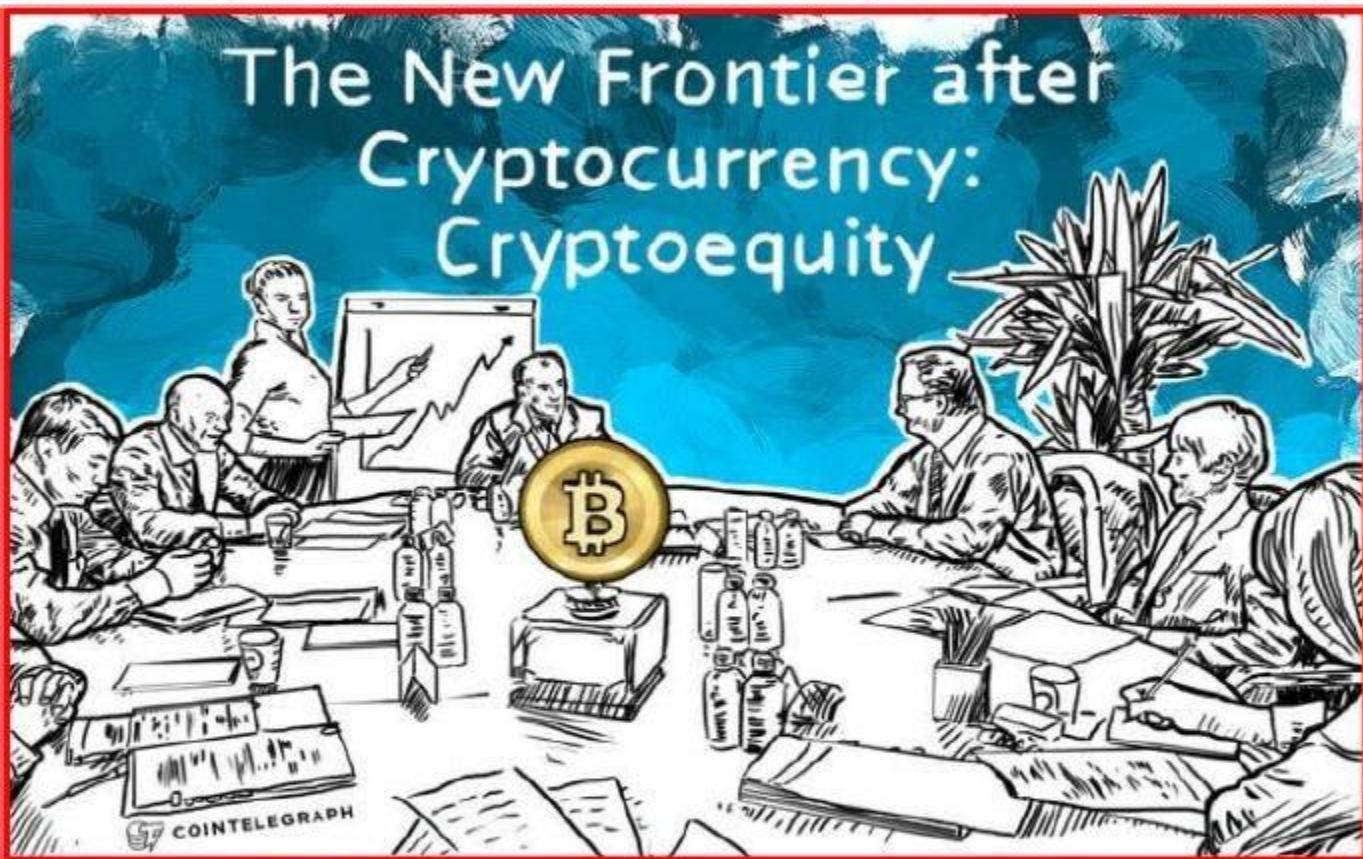


OPEN SOURCE = HBC = PROTOCOL AGNOSTIC

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

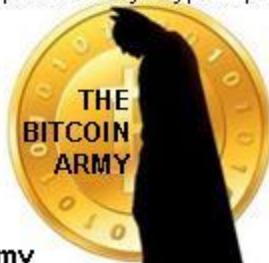


Eris -- The Dawn of Distributed Autonomous Organizations and The Future of Governance



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/>

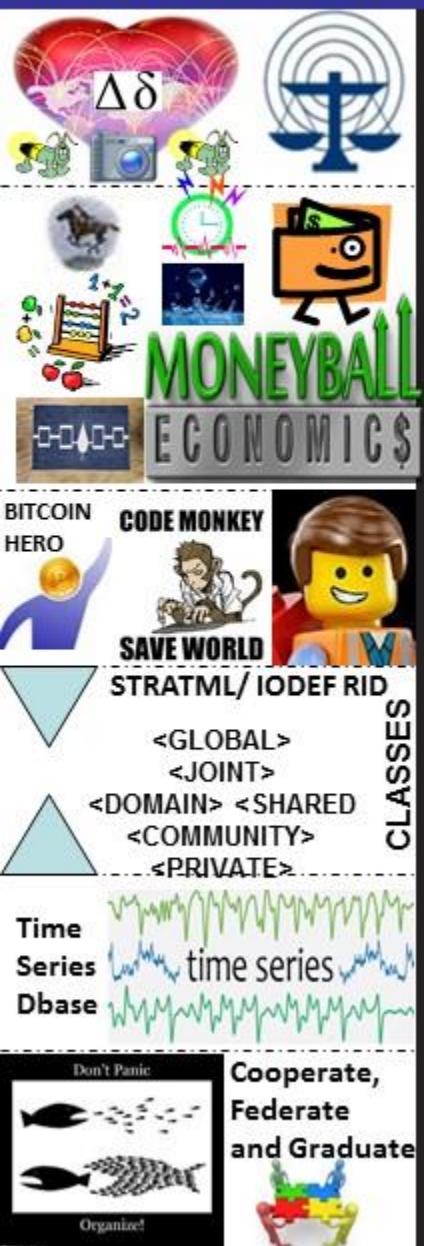
# How 'Bitbanks' Could Solve Bitcoin's Volatility Problem

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

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.





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

Phase 2: Shared file stores data for 5 tags:

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

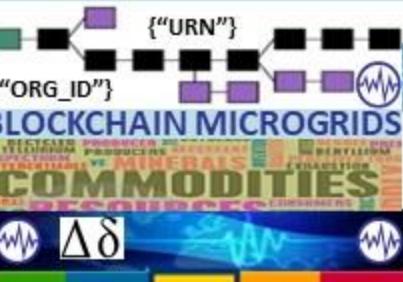
TAG	vector	ENERGY TOKENS ExDesc / COMMODITIES	digitalset
{"Org_ID"} ActiveID		[UFO2_ACTIVEID]	</EVENT>
IF1_Heartbeat (IF-Node1)		[UFO2_HEARTBEAT:#]	</EVENT>
IF2_Heartbeat (IF-Node2)		[UFO2_HEARTBEAT:#]	</EVENT>
{"UUID"} IF1_DeviceStatus (IF-Node1)		[UFO2_DEVICESTAT:#]	</EVENT>
{"UUID"} IF2_DeviceStatus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



TOKENIZED ECONOMY

↔

Paul Revere = Linear, Sequential meme



$\Delta\delta$



Geo Spatial

Temporal Series

Water Drop Meme

Geospatial Radius

WATER DROP

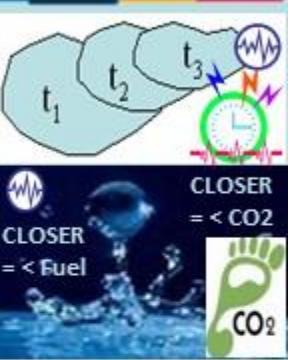
MEME= RADIUS

DISTANCE FROM

ENERGY SOURCE

Micro Payments

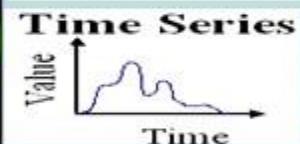
Demurrage Fees



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



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



Spatial  
Econometrics



IEEE 802.1AG HOP BY HOP DETECTION

IEEE 802.11 HbH HOP BY HOP CONTROL

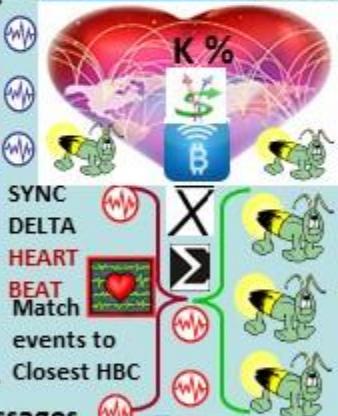
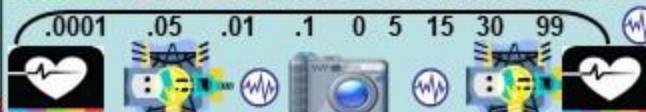
< HOPS = CHEAPER Sync Delta Heartbeat Messages

CROSS LEVEL OVERAGES / SHORTAGES ADJUST FOR

TIME / DISTANCE BETWEEN NETWORK NODES



FIREFLY-HEARTBEAT ALGO EVENT MESSAGE BUS



K %

SYNC DELTA

HEART BEAT

Match

events to Closest HBC

$\Delta\delta$

FIREFLY EVENT BUS



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

Heartbeat  
State meta  
Data snapshots

# 13/573,002 HEART BEACON CYCLE

## The four dimensions of Big Data

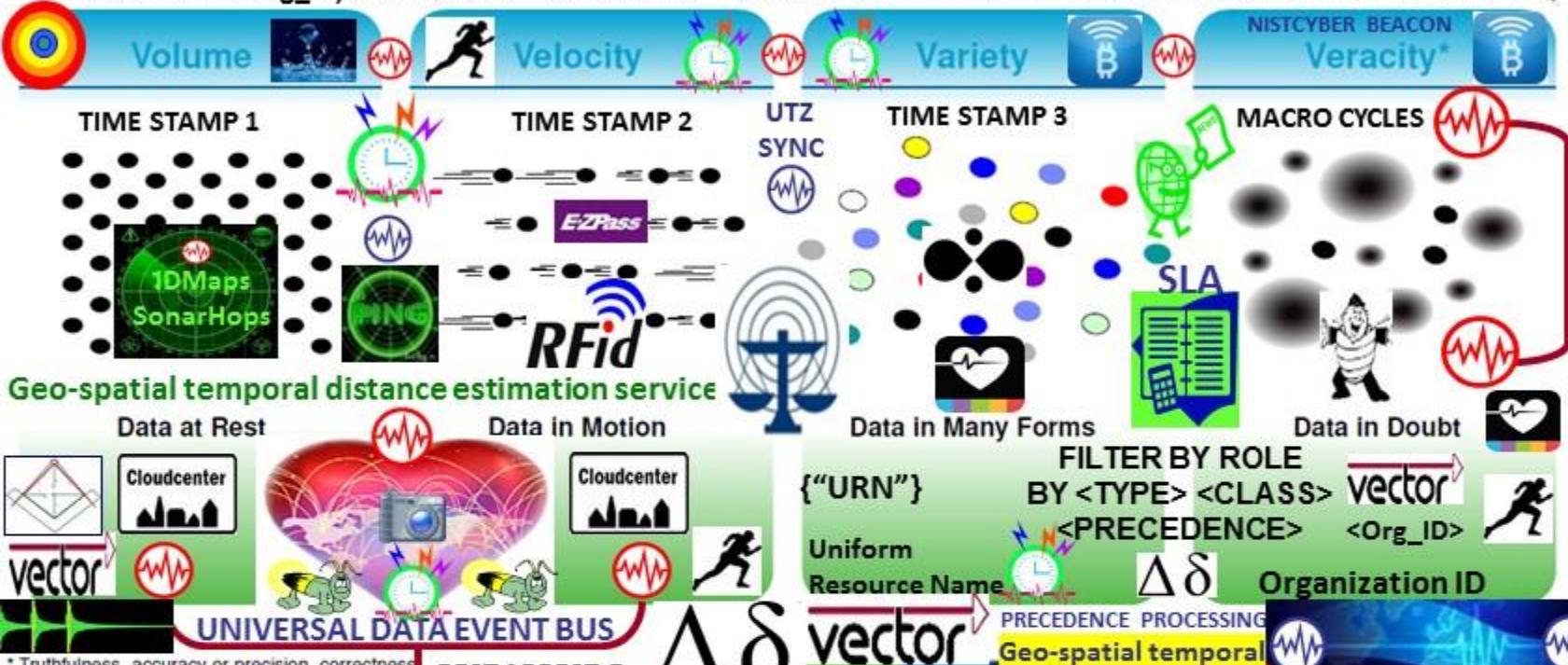
TIME STAMP BY Org\_ID, URN Before FUSION CENTER

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

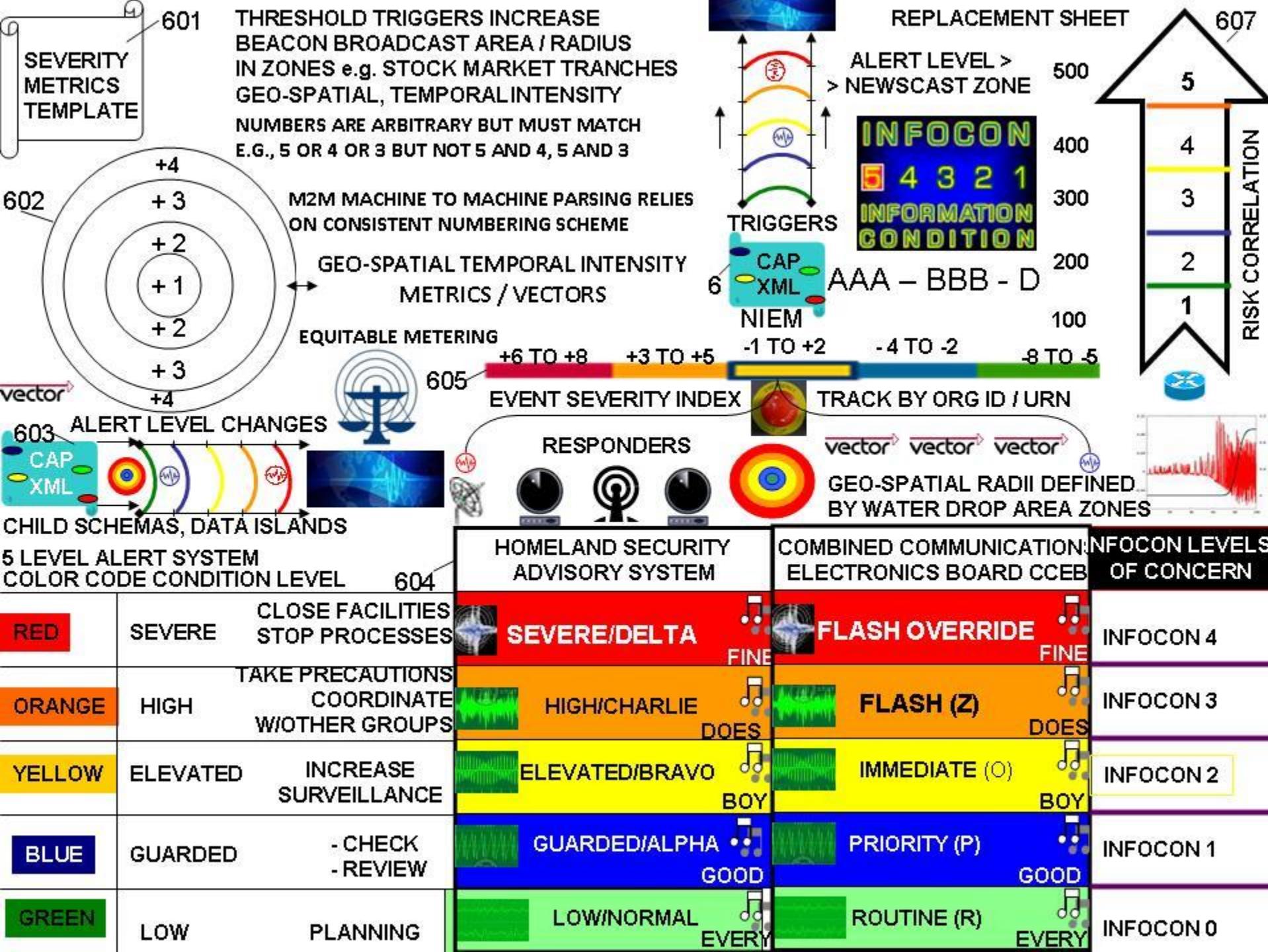


INFOCON  
5 4 3 2 1  
INFORMATION CONDITION

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







# 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



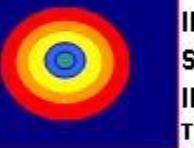
Geo-Spatial Temporal Intensity NOVEL METRICS / METERS:



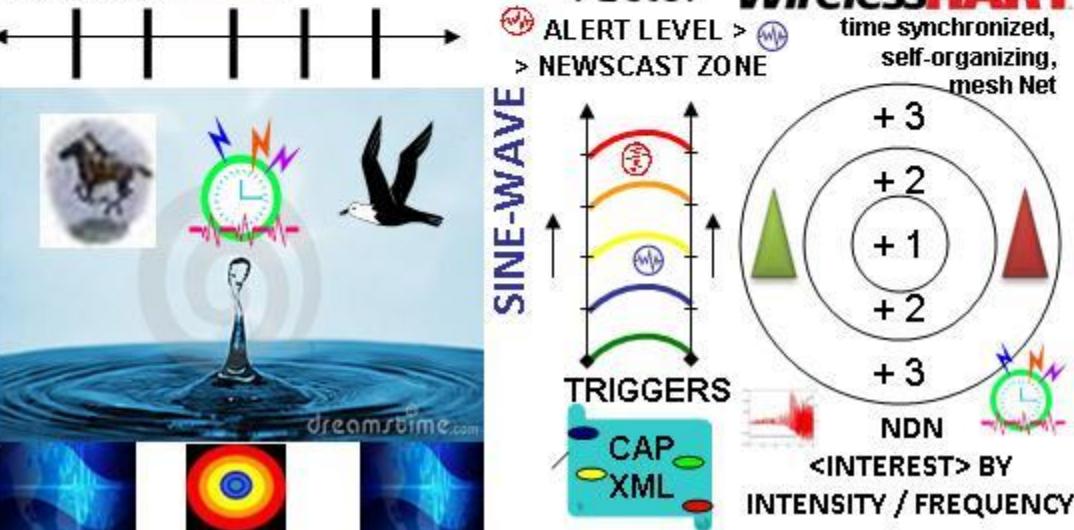
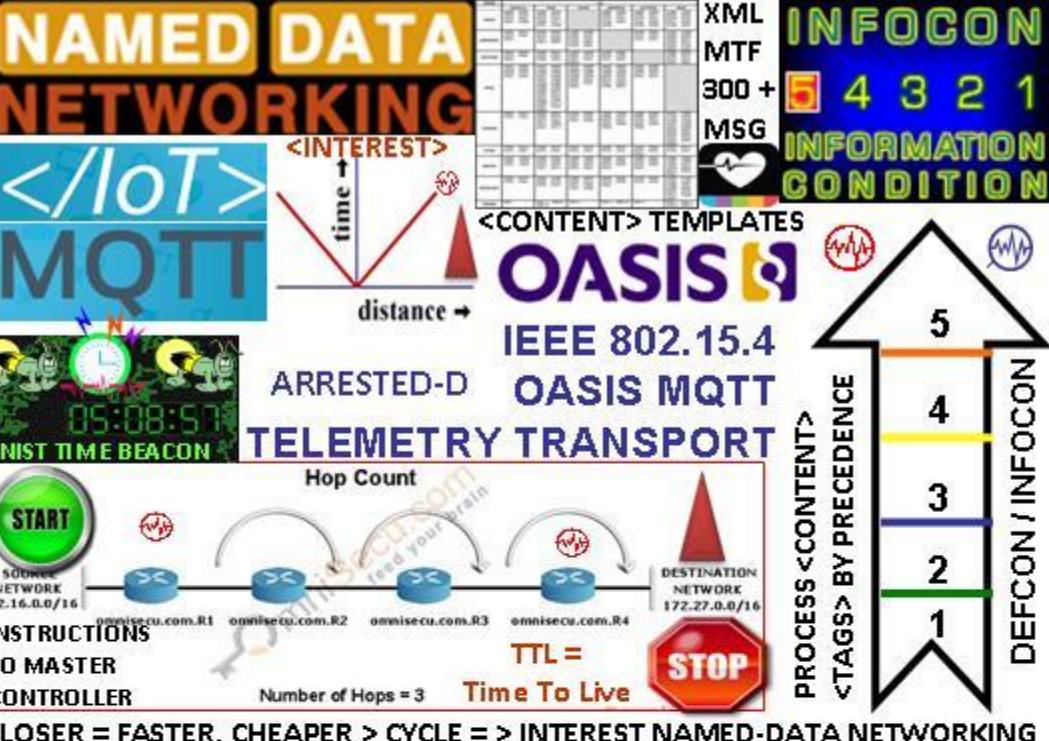
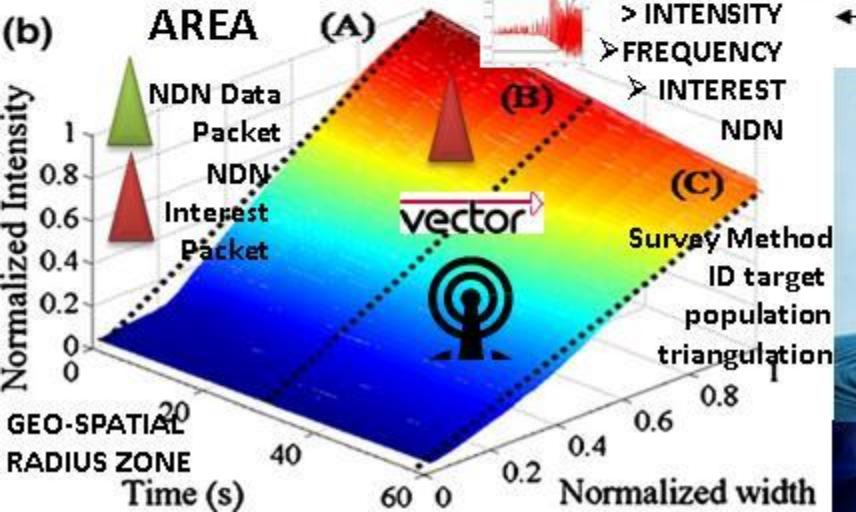
Paul Revere = linear, sequential



TCP/IP hop by hop counts, by hop controls



Water Drop = AREA / INTENSITY Cyclic Frequency

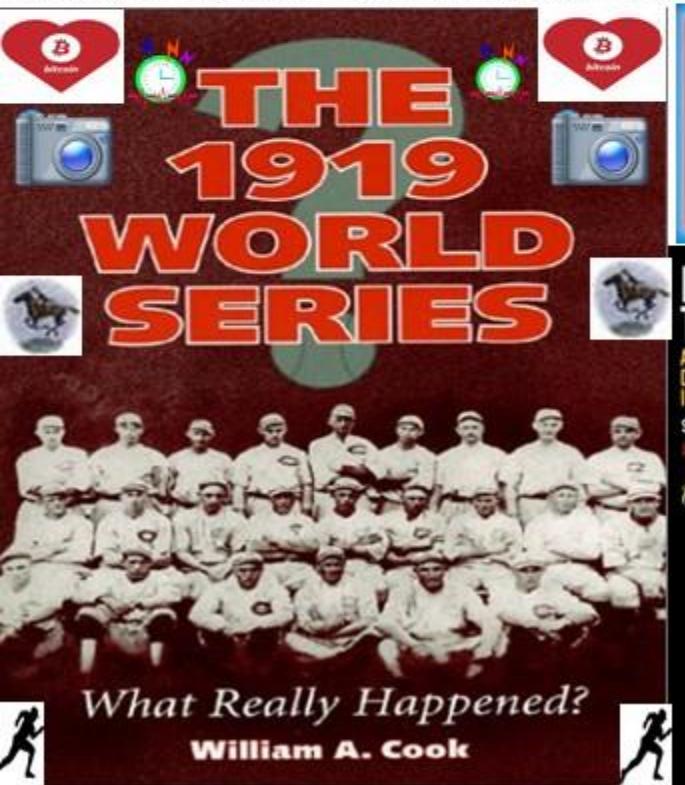


Interface Name	HEARTBEAT Administration Interface [SCOP]		
Documentation URL	<a href="http://scop.sourceforge.net/">http://scop.sourceforge.net/</a> <a href="http://linuxvirtualserver.org/software/index.html">http://linuxvirtualserver.org/software/index.html</a>		
API Information	      		
#Big_Data	Functionality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

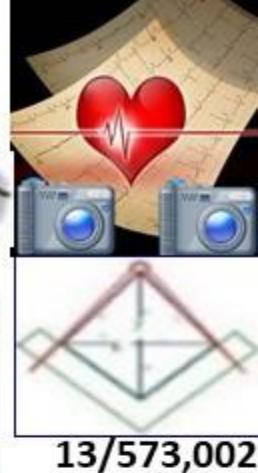
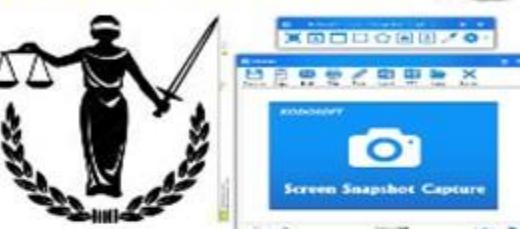




SAW Concepts LLC Owner's Father is from Blackfoot First Nation Native American Indian



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

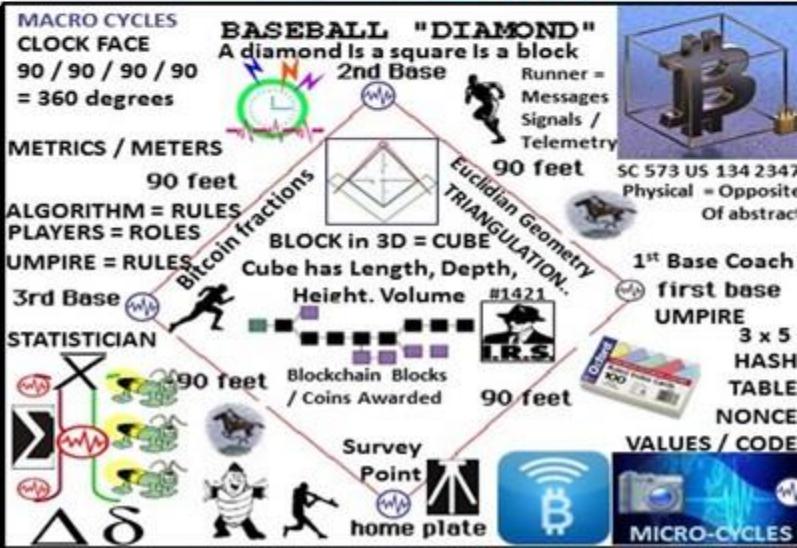


13/573,002



## USPTO SCREEN CAPTURES SUSPENDED PAIR RULES

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





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

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

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



TIME / DISTANCE SERVICE LEVEL  
AGREEMENT SLA / O Operations

IEEE 802.15.4 OASIS MQTT

TELEMETRY TRANSPORT

IEEE 802.1AG HOP BY HOP  
DETECTION

IEEE 802.11  
HOP BY HOP CONTROL



Unused Resources / Unmet Needs

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

DISTANCE  
INFO SERVICE

Time Series



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



**vector**



UNUSED RESOURCES  
UNMET NEEDS

602

+3

+ 2

+ 1

Null

0

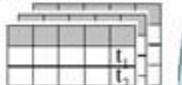
+ 1

+ 2

+3

RADIUS  
WATER DROP IN POND MEME

Attribute Series



INTEREST  
DISTANCE

Temporal Series

Micro Grids Closer - Cheaper

BLOCKCHAIN  
MICROGRIDS



Spatial  
Econometrics



TIME-SPACE BEACON



METRICS / METERS

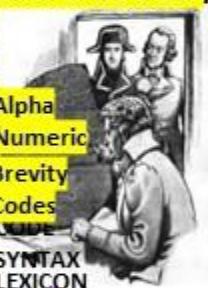
TRADE WITH EARTH

INFOCON  
4 3 2 1  
INFORMATION  
CONDITION



SIRIUS DISCLOSURE

"Numbers are the  
Universal Language  
offered by deity to humans as  
confirmation of the truth"



Alpha  
Numeric  
Brevity  
Codes

SYNTAX  
LEXICON

K00.99



ANDERSON  
INSTITUTE

43 22 13 0 1.5 2.7 5.2  
Light minutes Astronomical units

FIREFLY - HEARTBEAT ALGORITHM MESSAGE EVENT BUS







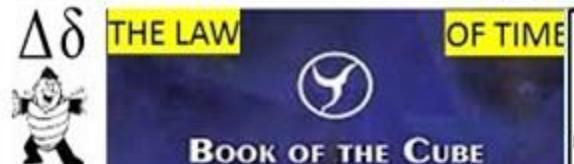
USPTO APPLICATION 13/573 002

The Heart Beacon Cycle Time-Space Meter

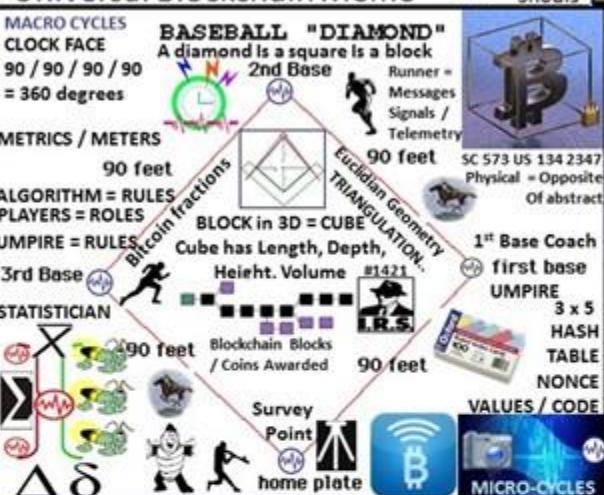
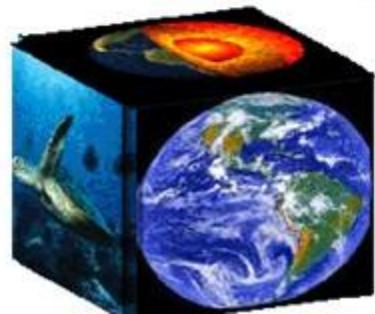
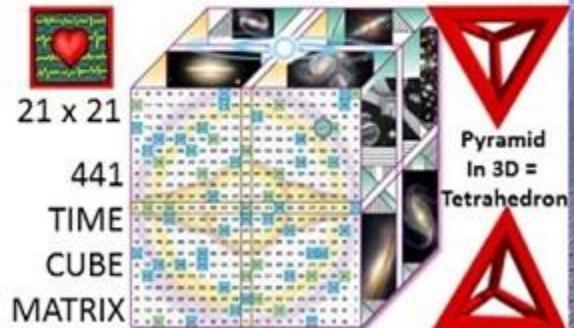
Main Embodiment: Baseball Diamond = block in 3D = cube

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

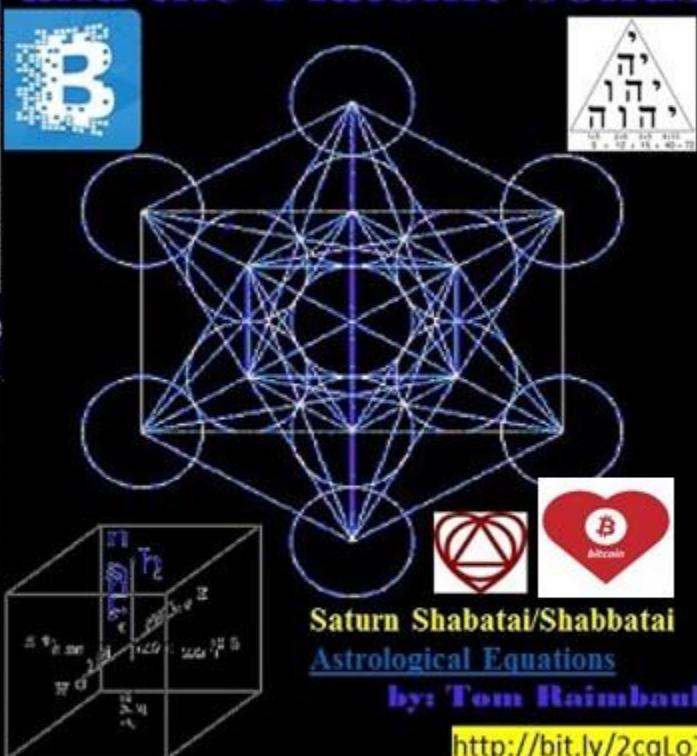
"We can synchronize ourselves in time for a common purpose" Universal Blockchain Meme



First  
Baseball  
Players  
Union  
Formed  
1870



## Metatron's Cube and the Platonic Solids



Saturn Shabatai/Shabbatai  
Astrological Equations

by: Tom Rimbault

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

INSTITUTE OF HEARTMATH®

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



