



# The Heart Beacon Cycle

## Time – Space Meter

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





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

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

CHECKLIST: TRADE FEDERATION ECONOMIC FRAMEWORK EX:

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



# Humanitarian Assistance Networked Donor System

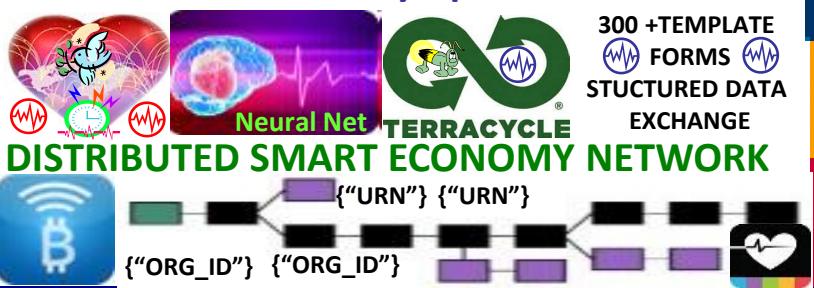
H.A.N.D.S: "Based on the need to speed up the processes of influencing an adversary, new concepts result in the adaptation of military doctrine, organization, training, material, infrastructure, interagency interaction, leadership, personnel and facilities" ... German Bundeswehr : concepts of "Network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



<https://neo.org>



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

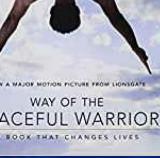


## Federation Gateway



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

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

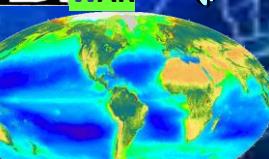


## Beacon Communities

Vernetzte Operationsführung



Closer < \$\$\$ < FUEL



Proximity Beacons  
JAEGERS



KAIJU

# DAO: Distributed Autonomous Organization

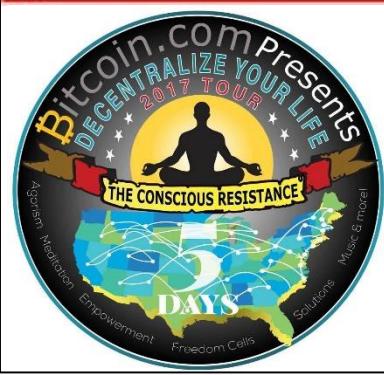
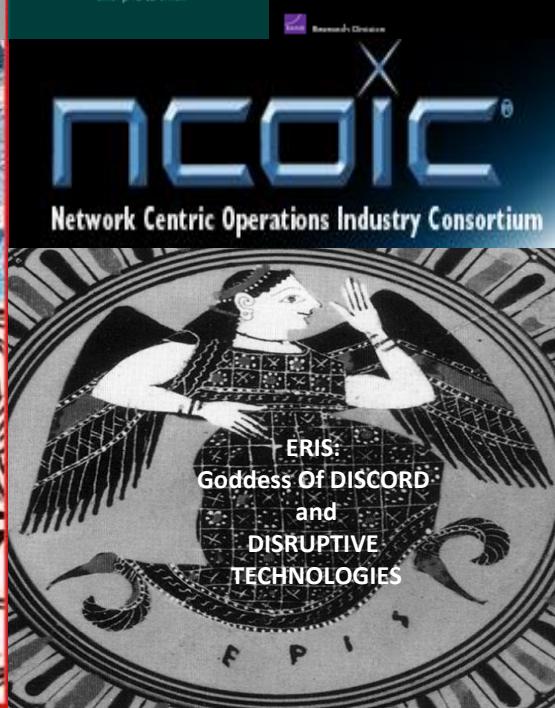
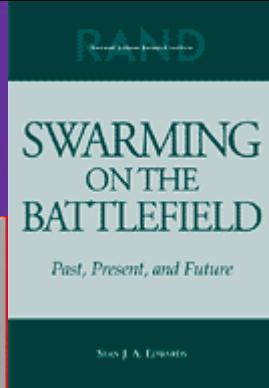
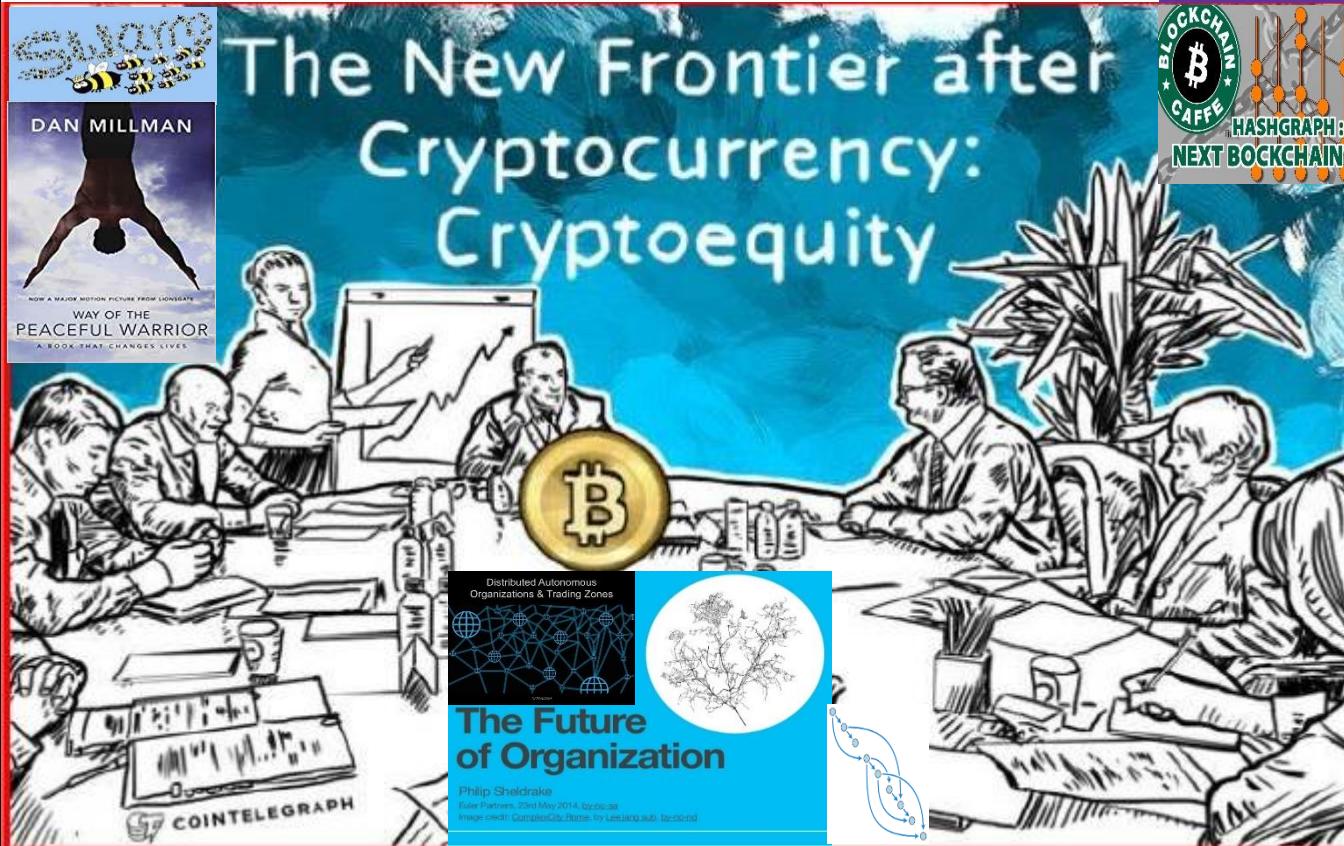
## RAND term circa 2000 / The TAO OF THE DAO

### SWARMING AND THE FUTURE OF CONFLICT



RAND  
Monograph Report

THE  
ADVENT  
Of NETWAR



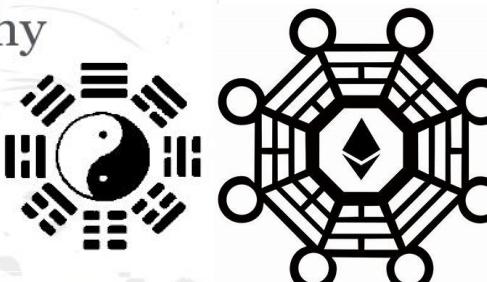
<http://cointelegraph.com/news/112077/the-new-frontier-after-cryptocurrency-cryptoequity>

## Taoism Philosophy

Taoism represents:

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

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



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

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

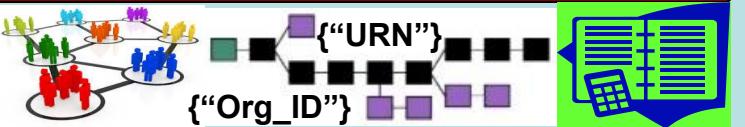
@TheBitcoinArmy





# Heart Beacon Cycle

## FEDERATE / TRADE FEDERATIONS



ECONOMIC HEARTBEAT  
K %



DAO  
FEDERATE  
SHARE  
WIN



GOVERNANCE 2.0

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 nations, states, and... **unions**  
**each retaining control of internal affairs**

Federation  
Gateway



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



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

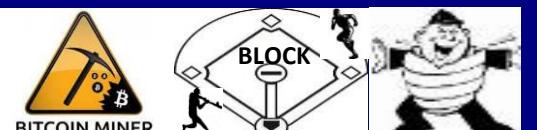


We The People

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



Bitcoin Mining Pools  
MEME / METAPHOR MEDIATION



DISTRIBUTED AUTONOMOUS ORGANIZATION = DAO RAND Corp

term coined circa 1991 now in use by Blockchain tech corporations

Uniform\_Resource\_Name



IeT DEVICE / PLATFORM  
IoT SENSOR DEVICE



FIREFLY FLASH  
HEARTBEAT MESSAGES

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

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

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

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

STOCK EXCHANGE

MIC MARKET IDENTIFIER

CODES / BREVITY CODES

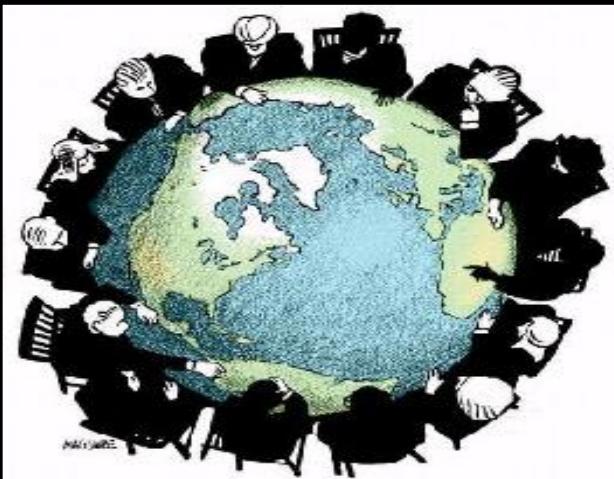


{"DUNS #"} {"Org\_ID"} Heartbeat Snaps

QR CODE

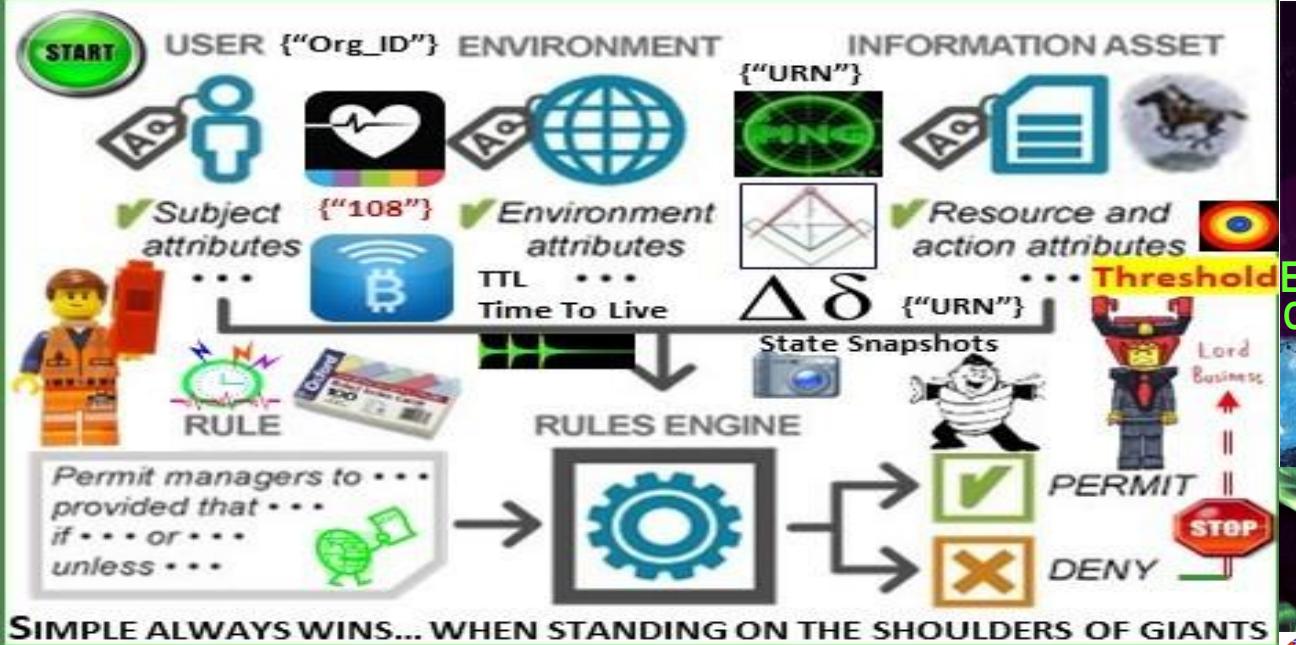
{"URN"} {"URN"} {"URN"} MICRO-CYCLES





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





**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



**Vernetzte Operationsführung**

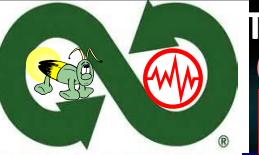
**OOTW: Operations Other Than War**





# Firefly - Heartbeat Algo

University of Bologna Italy / Hungary



THE HEART BEACON CYCLE

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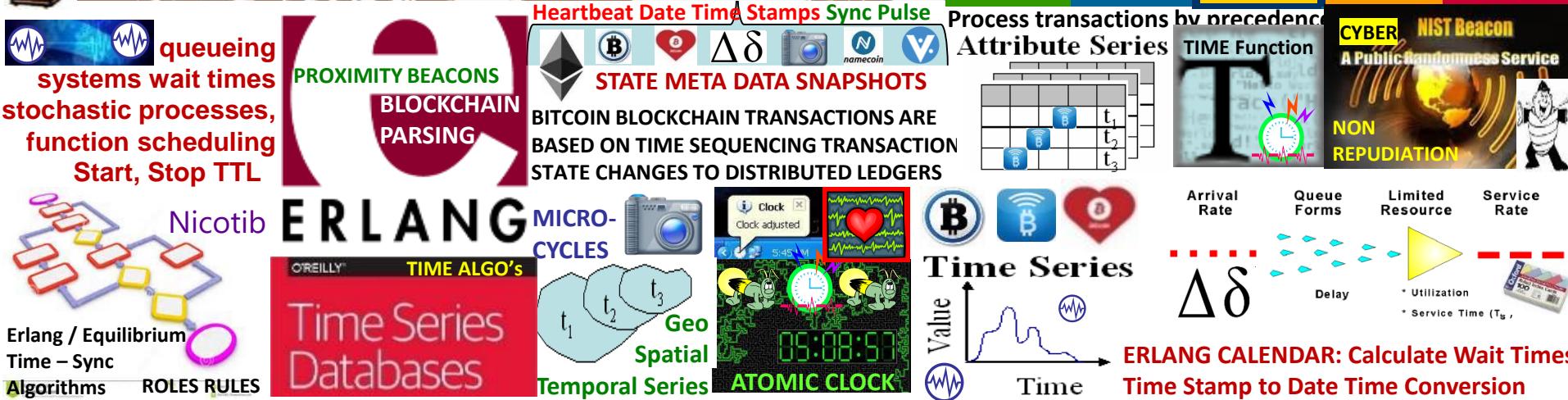
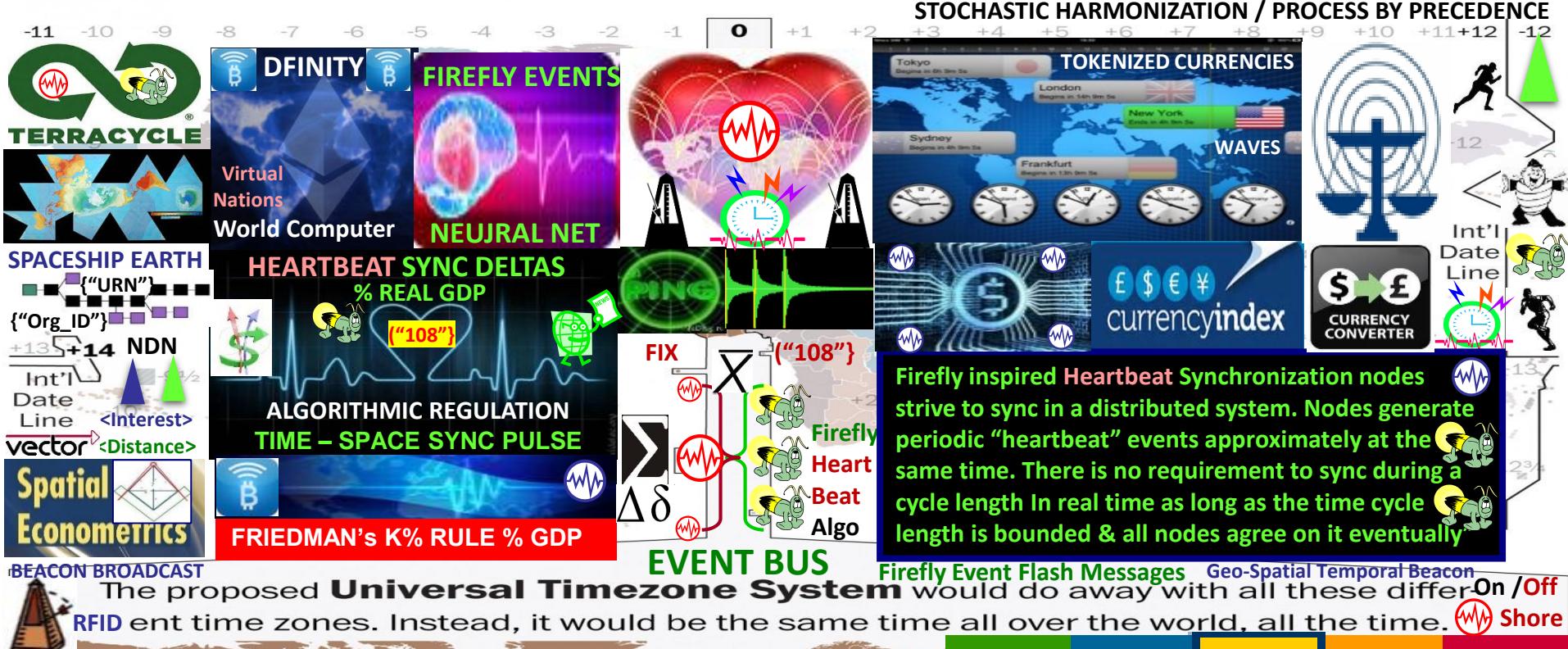
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The current standard time common throughout the world is based on a 24-hour clock, with zones that are either 12 hours ahead or behind **Coordinated Universal Time (UTC)**. However, these time zones are decided upon by individual governments, without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

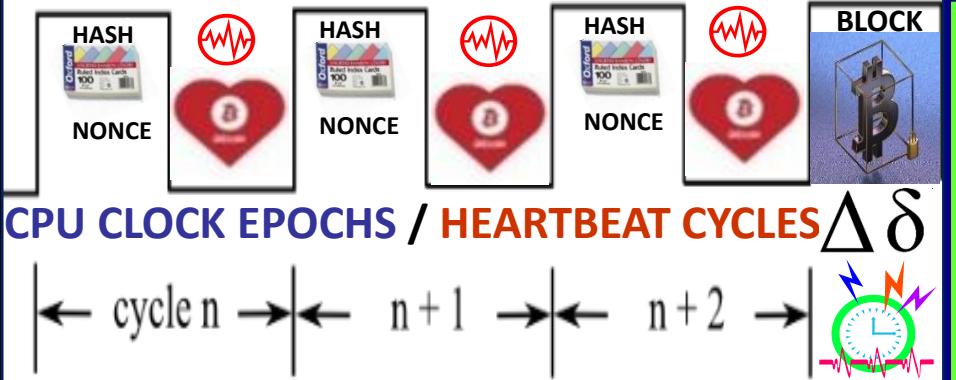




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The proposed **Universal Timezone System** would do away with all these different time zones. Instead, it would be the same time all over the world, all the time.



**CPU CLOCK EPOCHS / HEARTBEAT CYCLES**



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







### Blocknet internet of blockchains

Bitcoin, Ethereum, XCurrency, BitNation, StealthCoin, and BitSwift

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

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

### P2P atomic swap exchange using BIP65 capable chains

BlocknetDX Specs:

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

• core components are:

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

• The core services are:

- Decentralized exchange of coins
- Inter-blockchain service delivery
- Service monetisation



# PHOENIX

Phoenix Project Financial Algorithm

**Phoenix autonomous decentralized organization (DAO) ensuring transparency and safety of all processes happening within its framework using the Ethereum virtual machine global decentralized computer storing information on all system transactions.**

**Phoenix financial algorithm works on a system of rounds. accruals happen after the successful termination of each round.**

**Each round proceeds until it reaches the target sum which is calculated as the doubled target sum of the previous round plus the sum paid under the contract for the entire period. For the first round the target sum is 100 ETH. The round can last up to 365 days or before achievement of the target sum. The rounds which were not closed can become the only risk for investors. In that case, only those participants that have made the investments on the round previous to the open one will be able to receive a return of the funds.**



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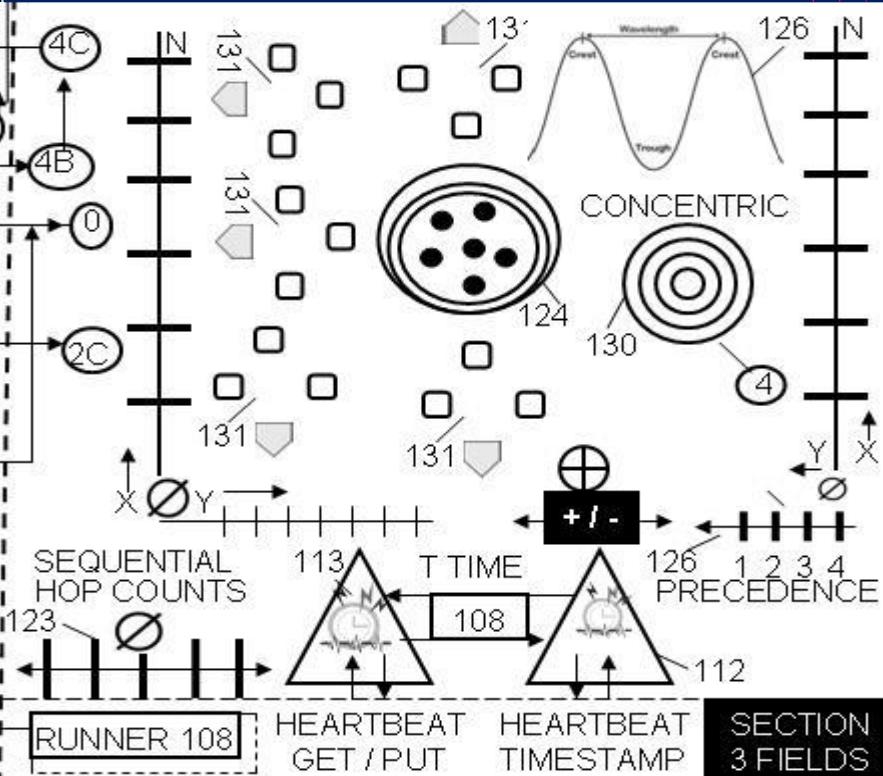
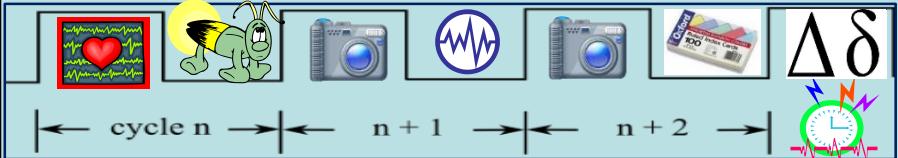
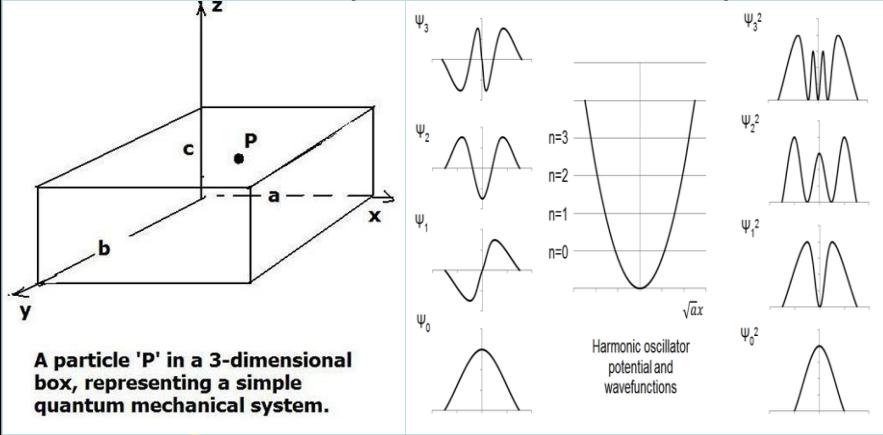


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## QUANTUM COMPUTING / HBC TIME – SPACE METER / METRICS



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

US Sct Alice Corp Vs CLS Bank Physical memes

Linear sequential “Paul Revere” meme = horizontal polarization

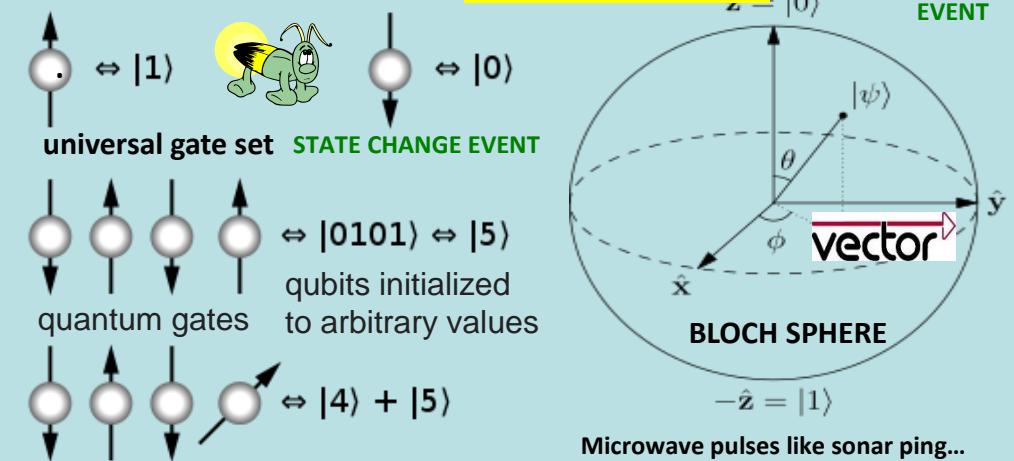
Vertical polarization vectors from a known point 0 null Sonar Hop meme



particle representation / samples



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



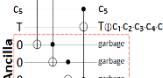
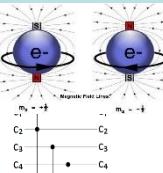
qubits can be in a superposition of all the classically allowed states

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



Fock state number state quantum state that is an element of a Fock space with a well-defined number of particles (or quanta)

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





# THE BITCOIN BLOCKCHAIN FOR DUMMIES



Satoshi Nakamoto Craig WRIGHT a.k.a.  
Satoshi Nakamoto

"Bitcoin is a Wright Brother's 1<sup>st</sup> Flight LANGUAGE" Cape Hatteras Outer Banks

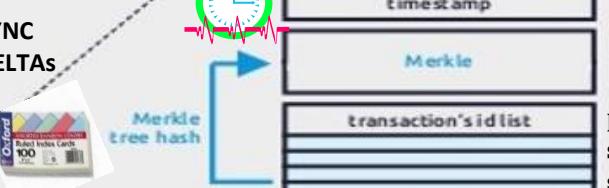
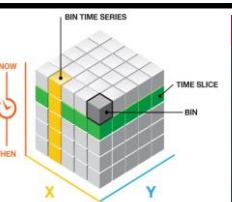
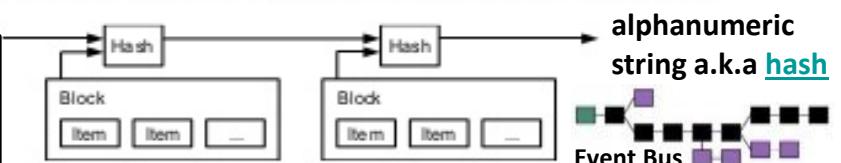
Satoshi Nakamoto Bitcoin Paper

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

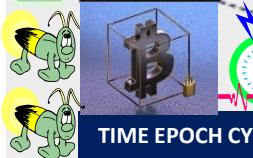
### 3. Timestamp Server

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

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



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



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

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

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

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

"THE VALUE OF BITCOIN IS TIME ITSELF"



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

3 X 5  
HASH TABLE  
Nonce / Syntax  
90 feet  
RULES / ROLES  
INSTRUCTIONS  
UMPIRE  
COACH

3rd Base  
STATISTICIAN  
Metrics, Meters  
State Meta  
Data Snapshots  
90 feet  
MICRO-CYCLES

I.R.S.  
Org ID  
Blockchain Blocks / Coins Awarded  
Survey Point  
home plate

EVENT BUS  
FIX {"108"}  
Firefly Algo  
X  
UMPIRE  
 $\Sigma$   
SYNC Deltas

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

Runner = Messages Signals / Telemetry  
90 feet  
BLOCK in 3D = CUBE  
Cube has Length, Depth, Height, Volume

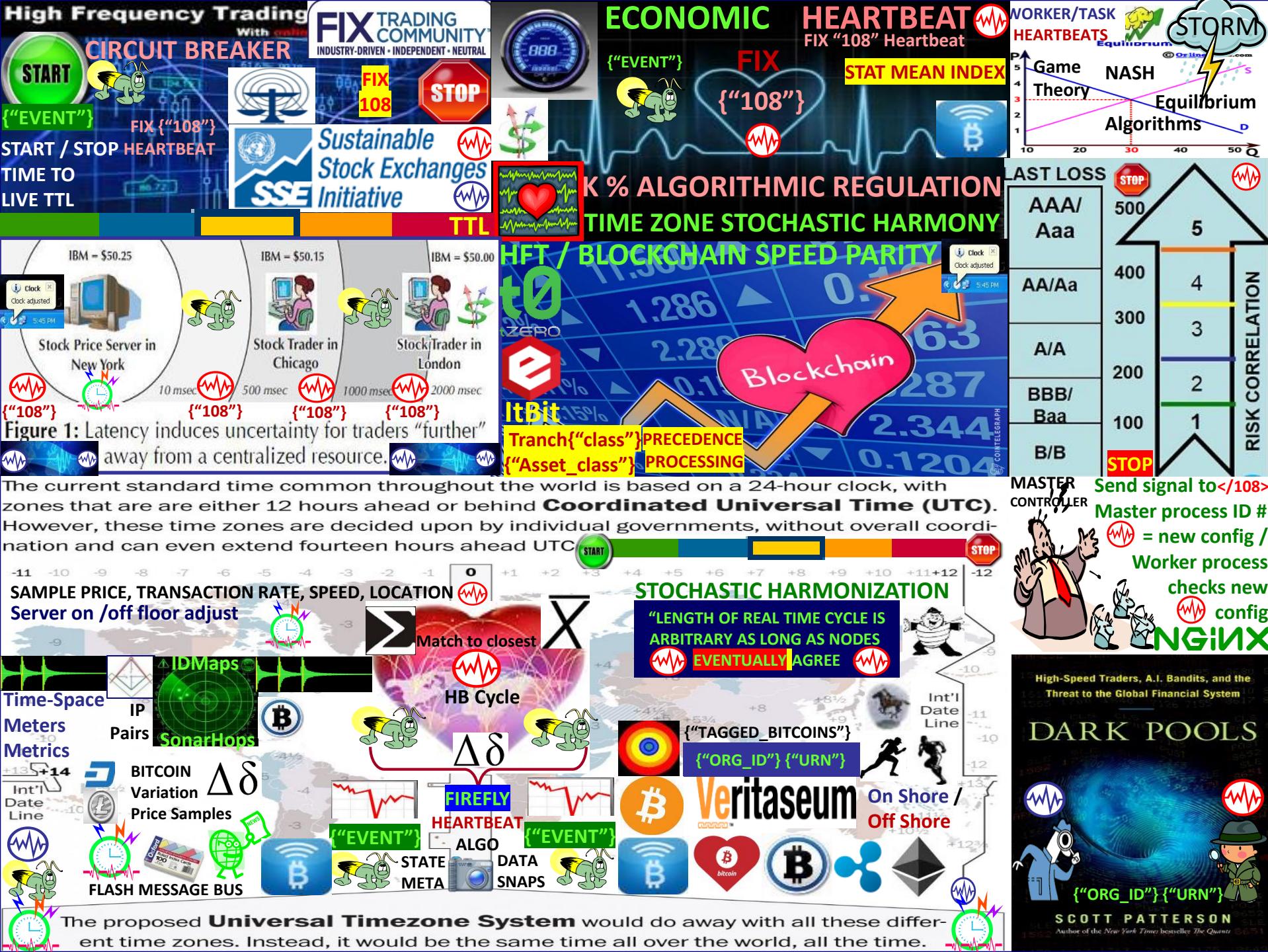
first base  
Euclidian Geometry TRIANGULATION..  
SC 573 US 134 2347  
Physical = Opposite Of abstract

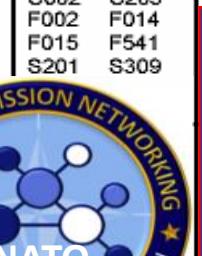
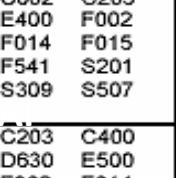
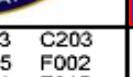
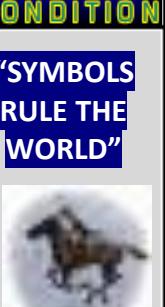


Physical = Opposite Of abstract  
Euclidian Geometry TRIANGULATION..  
first base

Fix {"108"}  
Firefly Algo  
X  
UMPIRE  
 $\Sigma$   
SYNC Deltas





FROM	GCCS-A	ALPHA-Numeric Brevity Codes						CODE GUIDE
		C002	C203	C002	C203	C002	ATDS	MCS
ASAS	C002 F002 F015 S201	C203 F014 F541 S309	C002	C203	C002	C203 F014 F541 S305 S309	C002 E400 F014 F541 S201 S309	C203 C203 E400 F002 F015 F541 S201 S507
		<b>USMTF / XML MTF FORMATTED MESSAGE CATALOG = 300 + messages info exchange sets using common, CONSENSUS Message Text Formats MTFs.</b> 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						 <b>INFOCON</b> <b>5 4 3 2 1</b> 
	 A423 C505 F014 F541	 C203 F002 F015 S201	 BLOCKCHAIN STANDARDIZATION	 Rosetta Stone	 M2M Coder's Guide	A423 C505 F014 F541	C400 F002 F015 S201	<b>"SYMBOLS RULE THE WORLD"</b>  

# ALPHA-NUMERIC BREVITY CODES

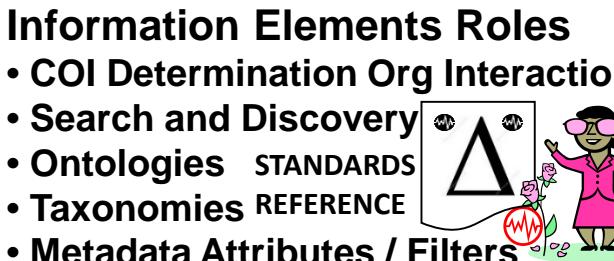
**USMTF / XML MTF FORMATTED MESSAGE CATALOG = 300 + messages**  
info exchange sets using common,  
**CONSENSUS** Message Text Formats  
MTFs. MTFs specify </CONTENT> / info  
agreed by group consensus presenting  
information in a logical, well specified  
unambiguous layout resulting in a **highly**  
**efficient info payload to overhead ratio**



## **G Data Elements:** entity, attribute, relationship equivalents



# HEARTBEAT MESSAGE = K00.99



{“Org\_ID”} {“URN”}

# 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



### **FILTERS**



The logo features a cartoon firefly on the left, a red heart rate monitor icon in the center, and the text "NDN Flash Message" on the right.

# PROCESS MESSAGE BY PRECEDENCE UNIVERSAL EVENT / ALERT MESSAGE BUS

# MESSAGE CATALOG

## 300 + Use Cases

300 + Use Cases		Information Categories and Examples								
Object Categories	Examples	Location	Movement	Identify	Status	Activity	Intent			
OOB	SYNTAX LEXICON	STRUCTURED DATA lat/long	MOVEMENT spd/hdg	EXCHANGE country / alliance, type/class	Message readiness	Sets targeting, reconitering	COA {"Java JS"}			
Infrastructure	Comm, power, transportation, water/sewer	network, grid	throughput, flow rates,	name, part-of relationship	BDA, op levels	repair, broadcasts	YAML expansion plan			
Sociological		temples, historic structures	E-R Model	Class Diagram	Relational Database	Object DBMS	XML DTD / Schema	TADILs		
				Entity	Class	Table	Class	Element	Message	Message
Geophysical	Terrain, weather, climatology, oceanography, astrometry	feature lat/long, alt/dpth	Domain Value	Attribute	Attribute	Field / Column	Attribute	Child Element or Element Attribute	DFI	FFIRN / FFN / FUDN
				PURCHASE CODES	Instance, Value	FEDERATE		DUI	FUD	

# OPERATIONAL NODES / ACTIVITIES

DATA SYSTEM FUNCTIONS			PERFORMANCE
11.4 - Classification	11.8 - Kinematics		
11.4.1 - Category	11.8.1 - Pos / Vel / Acc (PVA)		
11.4.1.1 - Confidence Level	11.8.1.1 - Acceleration	11.8.1.1.1 - Angular	
11.4.1.2 - Estimate Type	11.2 - Linear	1.1.2 - Estimate Type	
11.4.1.2.1 - Alternative	11.2.1 - Estimated	1.2.1 - Estimated	
11.4.1.2.2 - Evaluated D	PURCHASE	1.2.2 - Observed	
11.4.1.3 - Value	CODES	1.2.3 - Predicted	
SYMBOL	Friend	Neutral	Hostile
2525C	Partner		Competitor
11.4.1.3.4 - Subsurface			4 - Velocity
11.4.1.3.5 - Surface			1.4.1 - Horizontal
11.4.2 - Platform / Point / Feature Type			1.4.2 - Vertical
11.4.3 - Specific Type			V/A Confidence
11.4.4 - Type Modifier			1 - Bearing Angle
11.4.5 - Unit			0 - Bearing Angle Rate
			3 - Covariance Matrix

Structured Data Exchange



ALPHA NUMERIC SYMBOL SETS

Coder's Guide

lexicon.

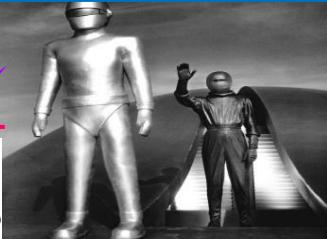
FROM	GCCB-A	TO	AFATDS	MCS
ASAS	F002 C003 F002 F014 F015 F041 S201 S309	F015 F041 F014 F020 F002 F015 F014 F021	F002 F002 F015 F041 S201 S309	
AMDPBS	F002 F014 F015 F041 S201 S309	F002 F014 F015 F041 F002 F015 F014 F021	F002 F002 F015 F041 S201 S309	
AFATDS	F002 F014 F015 F041	F002 F014 F015 F041 F002 F015 F014 F021	A423 A425 C003 C005 F002 F015 F014 F021	A423 A425 C003 C005 F002 F015 F014 F021
MCS	A423 C003 C005 F002 F002 F015 F014 F021 F541 S201	F002 F014 F015 F041 F002 F015 F014 F021 F541 S201	C003 A425 A426 A428 C005 F002 F002 F015 F014 F021	C003 A425 C005 F002 F002 F015 F014 F021 F768 S201



"SYMBOLS RULE THE WORLD"

11.8 - Kinematic	STRATML	XAML
11.8.1 - Pos		
11.8.1.1 -		
11.8.1 -		
XBRL		
THE BUSINESS REPORTING STANDARD		
BINARY XML		
Decision		
UBL		
DDL DATA DEFINITION LANGUAGE	TOSCA	YAML
1 - Horizontal		
2 - Vertical		
Confidence		
Bearing Angle		
Bearing Angle Rate		
Covariance Matrix		

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



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

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

MESSAGE TEXT FORMAT :

{"URN"} {"URN"}

vector

{"TRANSACTION ID"}

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



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



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



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



M // (NU) REFERENCED MESSAGE

DATE-TIME GROUP

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

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

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

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

M // (NU) 1.D COMMANDERS EVALUATION

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

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

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

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

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

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

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

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

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

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

SYMBOLS Friend Neutral Hostile DICAL EVAC & HOSPITALISATION

Partner Competitor L - MILITARY OPERATIONS

NUMBERS ARE THE UNIVERSAL LANGUAGE / Symbols Rule the World"

$\Delta\delta$

INDEX REFERENCE #:

M015 STATUS :



PURCHASE CODES

FEDERATED PEGS

{"ASSET\_CLASS"}

{"ASSET\_TYPES"}

ISO 10383 – MIC

Market Identifier Codes

DAO

{"URN"}

{"Org\_ID"}

(W)

STOCK

NDN NAMED DATA

EXCHANGE

NETWORKING

PRECEDENCE

PRECEDENCE

MIC CODES

PROCESSING

FILTERS

INFOCON



5 4 3 2 1

INFORMATION CONDITION



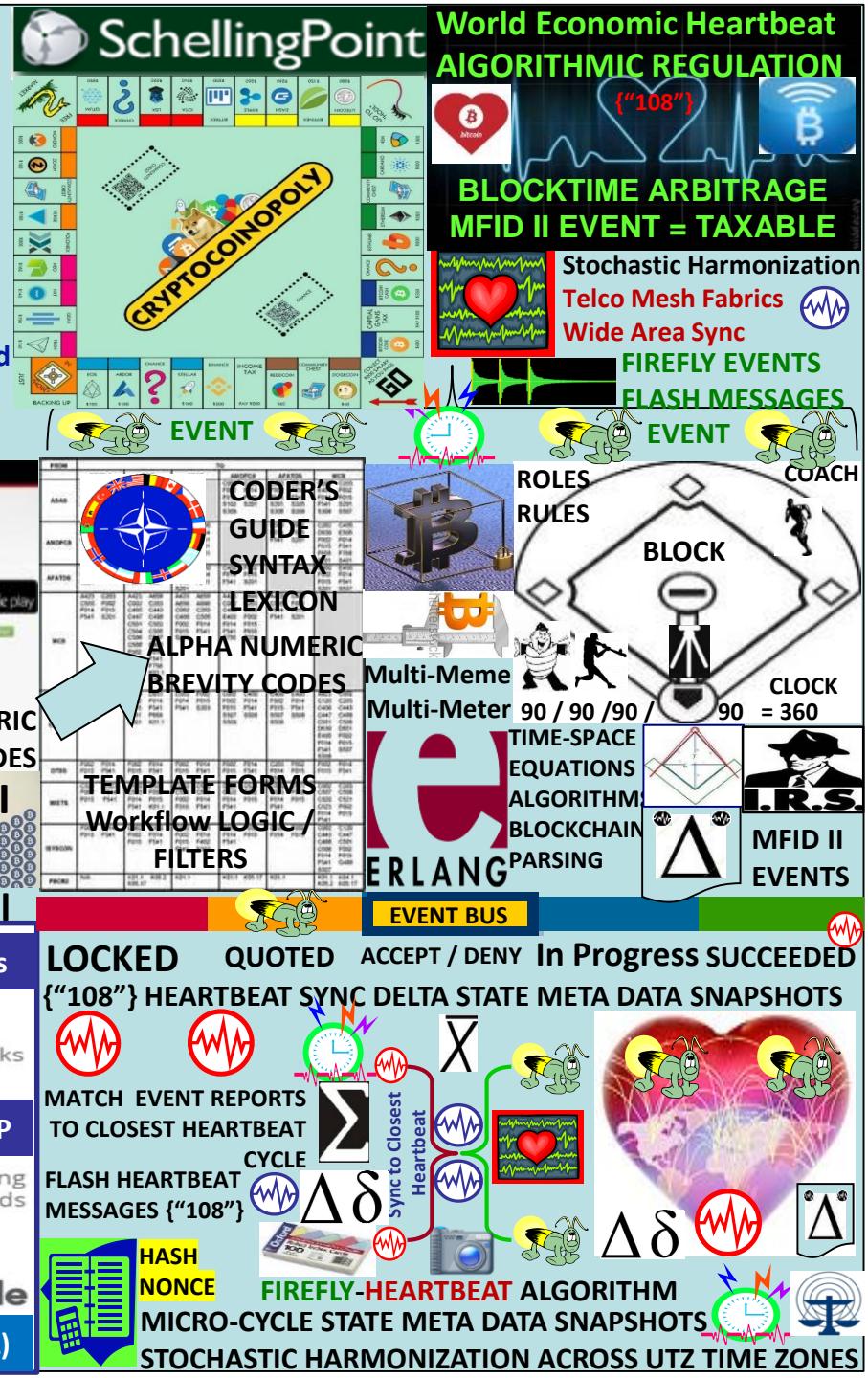
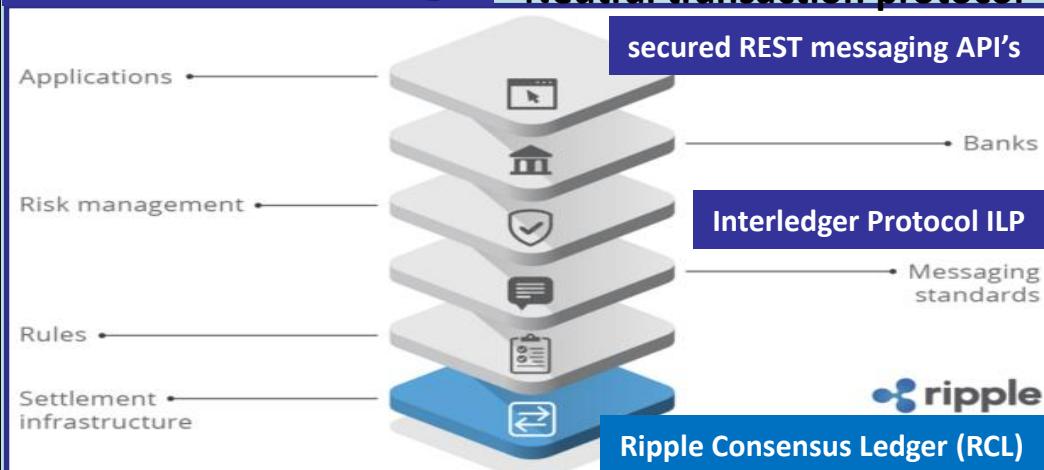
**real-time gross settlement system,  
currency exchange, remittance network**

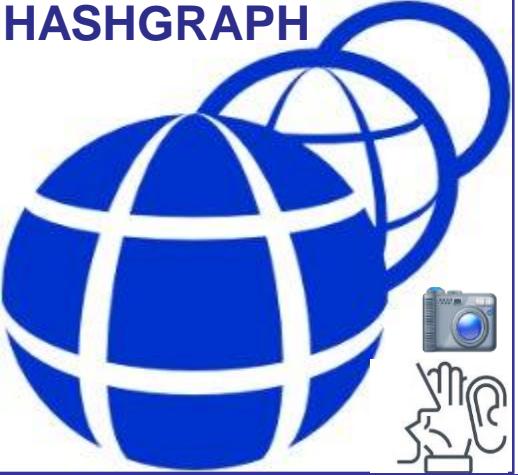
A.K.A Ripple Transaction Protocol or Ripple protocol, built on a distributed open source Internet protocol, consensus ledger and native currency called XRP. Ripple enables "secure, instant and nearly free global financial transactions of any size with no chargebacks." Ripple supports tokens representing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





**Hashgraph consensus algorithm for replicated state machines**

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

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

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



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

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

**DAG finite directed graph**  
= no directed cycles

**Consensus Order**

$$\sum \Delta\delta \times$$


Round created  
Witness



Famous witness  
Election



Vote  
See

Strongly see  
Supermajority  
Decide

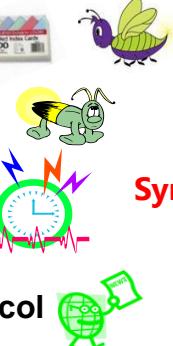


0 / 1

Round created  
Round received

Consensus timestamp  
Consensus order  $\Delta\delta$

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

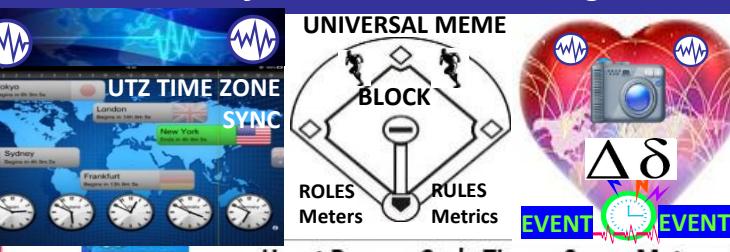


Hash  
Nonce

Synchronous  
Asynchronous  
Micro-Cycle  
State Meta  
Data Snapshots

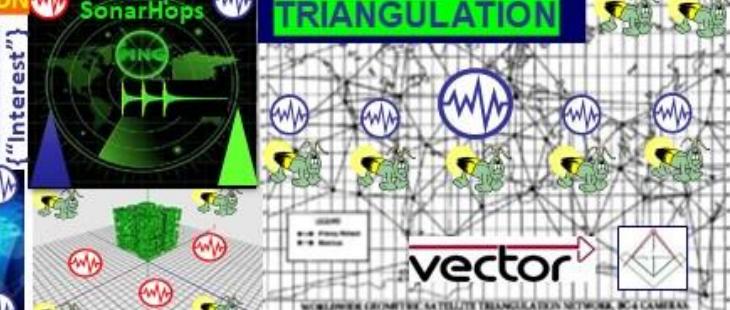
Round created  
Witness  
Famous witness  
Election  
Vote  
See  
Strongly see  
Supermajority  
Decide  
Round created  
Round received  
Consensus timestamp  
Consensus order  $\Delta\delta$

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

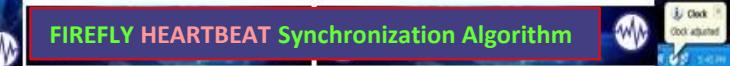


UTZ TIME ZONE SYNC  
ROLES Meters  
RULES Metrics  
EVENT EVENT

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



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



**FIREFLY HEARTBEAT Synchronization Algorithm**

CLOCK TIME CYCLE INTERVAL EPOCHS

cycle n      n + 1      n + 2

**FIREFLY – INSPIRED HEARTBEAT SYNCHRONIZATION ALGORITHM**

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

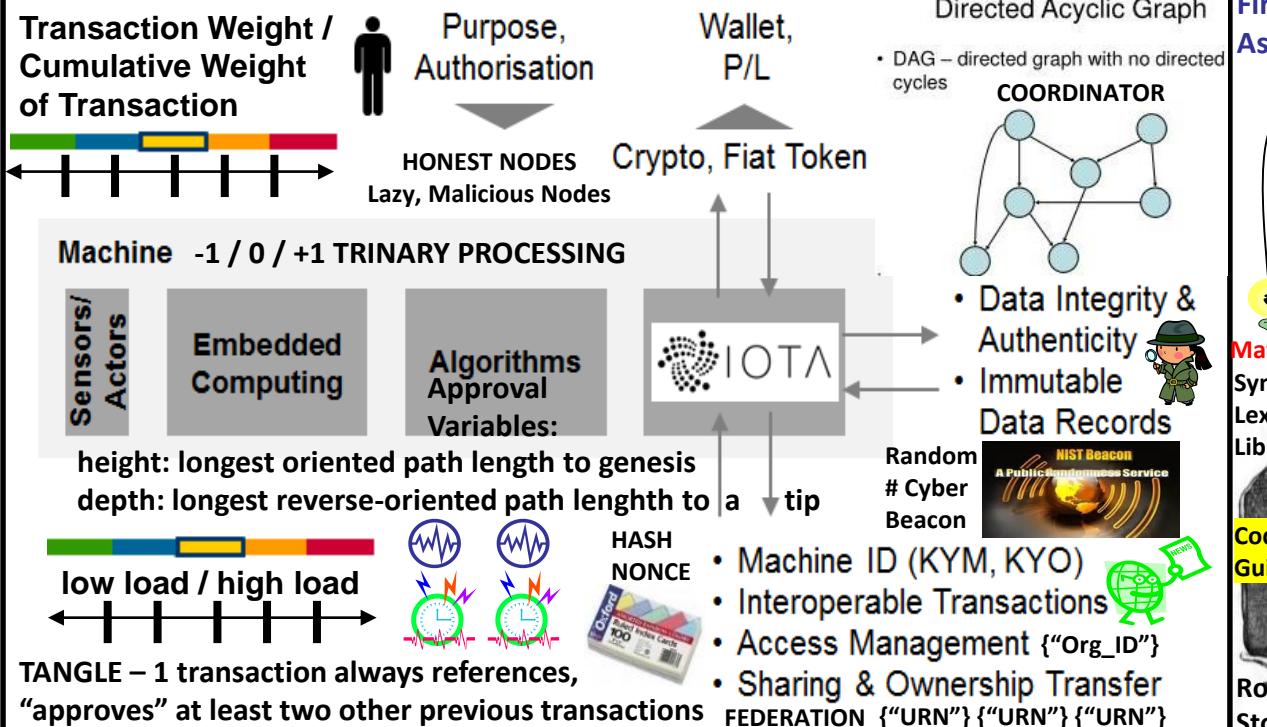


## IOTA: Internet Of Things IOT distributed ledger with microtransactions without fees

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

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

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



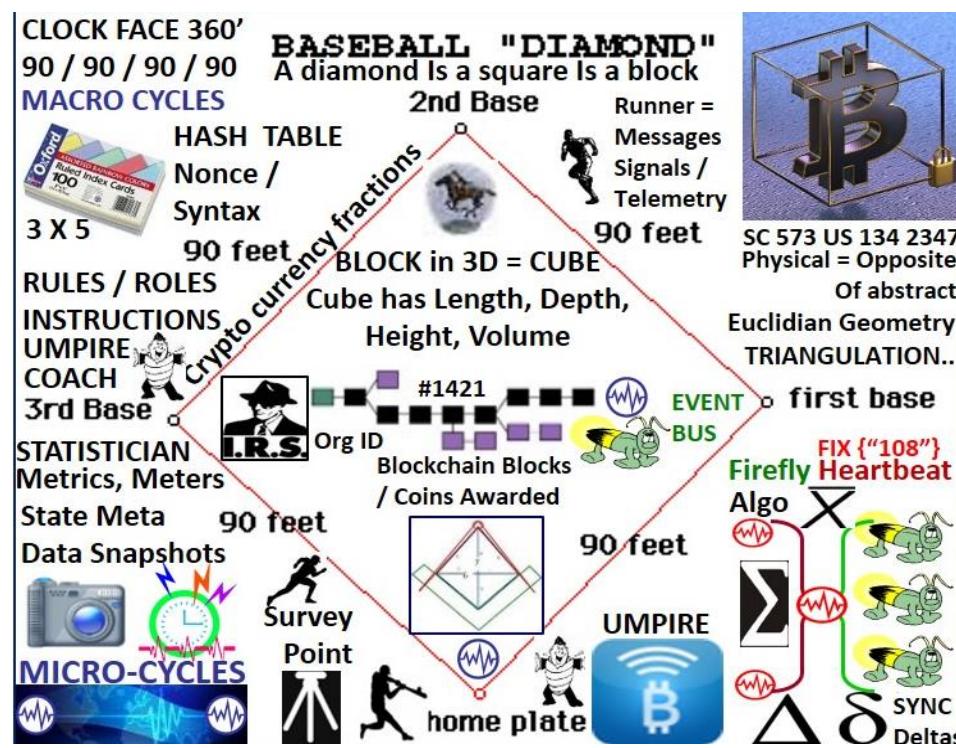
# STELLAR LUMEN



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

## CUSTOMIZABLE PAYMENTS INFRASTRUCTURE

middleware between financial products and institutions





# ZEPPELIN

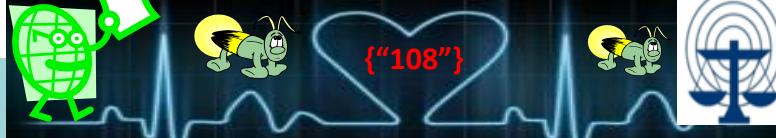


## ZEPPELIN OPEN, GLOBAL ECONOMY

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

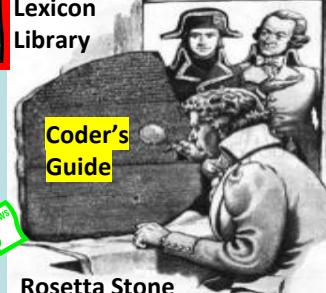
zeppelinOS, operating system for smart contracts  
*"the rate of innovation in building decentralized applications is limited by the manual and duplicative efforts developers must make to ensure basic usability and security."*

## WORLD ECONOMIC HEARTBEAT



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

Syntax Lexicon Library  
300 + Templates



### STRUCTURED DATA EXCHANGE

STRUCTURE	DATA	FORMAT	TYPE	VERSION
ASAS	ASAS	ASAS	ASAS	ASAS
ANOPIC	ANOPIC	ANOPIC	ANOPIC	ANOPIC
APAFTR	APAFTR	APAFTR	APAFTR	APAFTR
MIC	MIC	MIC	MIC	MIC
COCOM	COCOM	COCOM	COCOM	COCOM

LOGIC / FILTERS  
ALPHA-NUMERIC  
BREVITY CODES

### STOCHASTIC HARMONIZATION for TELCO Mesh Fabrics

Rosetta Stone

HASH / NONCE

PAUSABLE START STOP  
TIME TO LIVE INSTRUCTIONS

FLASH MESSAGE BUS  
TIME CYCLES SYNTAX

Erlang Time Equations Function calls

FLASH HEARTBEAT MESSAGE BUS

ERLANG

Blockchain Parsing

UNIVERSAL MEME

BLOCK

ROLES Meters RULES Metrics

Micro Cycle State Snaps

EVM

Blockchain

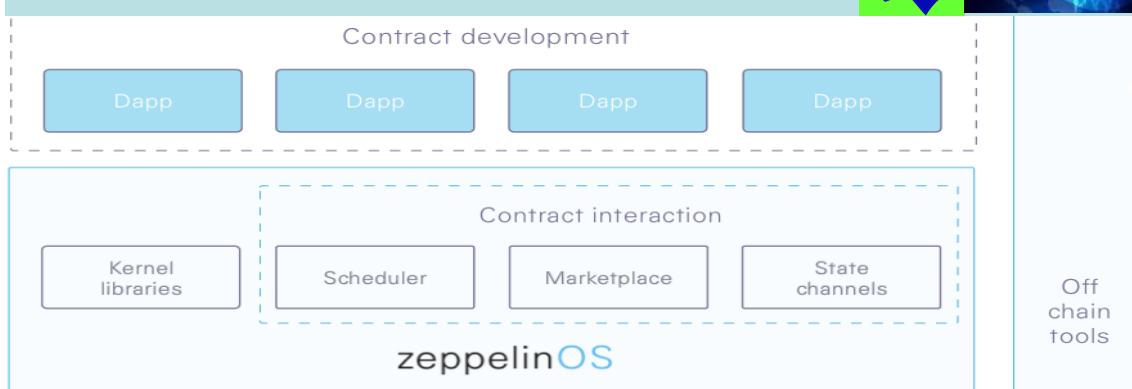
Off chain tools

zeppelinOS

Kernel libraries Scheduler Marketplace State channels

Dapp Dapp Dapp Dapp

Contract development

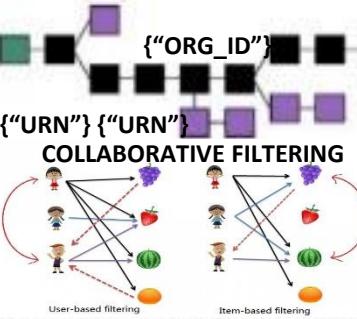




# EGaaS

ELECTRONIC GOVERNMENT AS A SERVICE

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



TEMPLATE ENGINE LANGUAGE  
NAMED DATA NETWORKING  
Time Series Databases  
BLOCKCHAIN PARSING

changes, corrections SYNCHRONIZATION



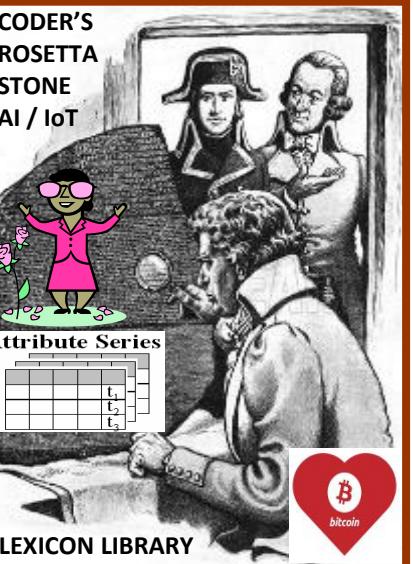
The current standard time common throughout the world is based on a 24-hour clock, with zones that are either 12 hours ahead or behind Coordinated Universal Time (UTC). However, these time zones are decided upon by individual governments, without overall coordination and can even extend fourteen hours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



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



FORM	CODEC-A	CODEC-B	CODEC-C	CODEC-D	CODEC-E	CODEC-F	CODEC-G	CODEC-H	CODEC-I	CODEC-J	CODEC-K	CODEC-L	CODEC-M	CODEC-N	CODEC-O	CODEC-P	CODEC-Q	CODEC-R	CODEC-S	CODEC-T	CODEC-U	CODEC-V	CODEC-W	CODEC-X	CODEC-Y	CODEC-Z
ASAB	PRE1	PRE2	PRE3	PRE4	PRE5	PRE6	PRE7	PRE8	PRE9	PRE10	PRE11	PRE12	PRE13	PRE14	PRE15	PRE16	PRE17	PRE18	PRE19	PRE20	PRE21	PRE22	PRE23	PRE24	PRE25	PRE26
ANOMIA	PRE1	PRE2	PRE3	PRE4	PRE5	PRE6	PRE7	PRE8	PRE9	PRE10	PRE11	PRE12	PRE13	PRE14	PRE15	PRE16	PRE17	PRE18	PRE19	PRE20	PRE21	PRE22	PRE23	PRE24	PRE25	PRE26
AFATOR	PRE1	PRE2	PRE3	PRE4	PRE5	PRE6	PRE7	PRE8	PRE9	PRE10	PRE11	PRE12	PRE13	PRE14	PRE15	PRE16	PRE17	PRE18	PRE19	PRE20	PRE21	PRE22	PRE23	PRE24	PRE25	PRE26







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

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

Gnosis trading interface alpha  
WIZ token fee payment  
INFORMATION ARBITRAGE ECONOMICS

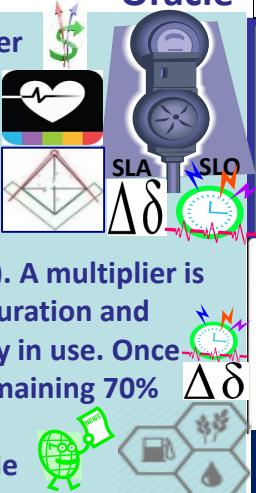
  
**TERRACYCLE** Price Oracle

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

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

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

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



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



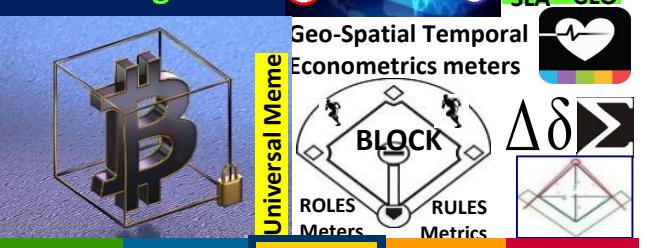
The proposed **Universal Timezone System** would do away with all these different time zones. Instead, it would be the same time all over the world, all the time.



**THE TERRA (TRC)**  
Trade Reference Currency



**Demurrage Fees**



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



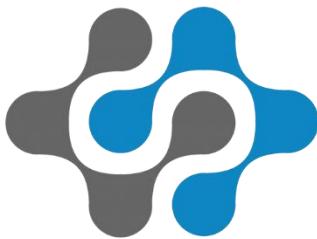
**Ardor is a blockchain-as-a-service platform that will allow people to utilize the blockchain technology of Nxt through the use of child chains.**



# ARAGON

Unstoppable organizations

Create value without borders or intermediaries



# bitsquare

- Infrastructure: Bitsquare uses a P2P network (there are no servers);
- Security: Bitsquare does not hold users funds (neither bitcoin nor fiat);
- Privacy: Bitsquare does not hold users data (no registration, uses Tor);
- Openness: It is open source (AGPL license);
- Independence: It is funded by donations and personal savings;
- Governance: Bitsquare is organized as a DAO (Decentralized Autonomous Organisation), comprising the people who build, support and maintain the project;
- Sustainability: Trading fees go to arbitrators and the DAO.

***But a community which has a common goal – like making Bitcoin a success – should strive for solutions which are efficient and have been proven to deliver great results.***



 BitTorrent

 bitcoin

 bitsquare

 OpenBazaar

 BitMarkets

# NAMED DATA NETWORKING

<CONTENT> CENTRIC NETWORKING



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

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

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

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

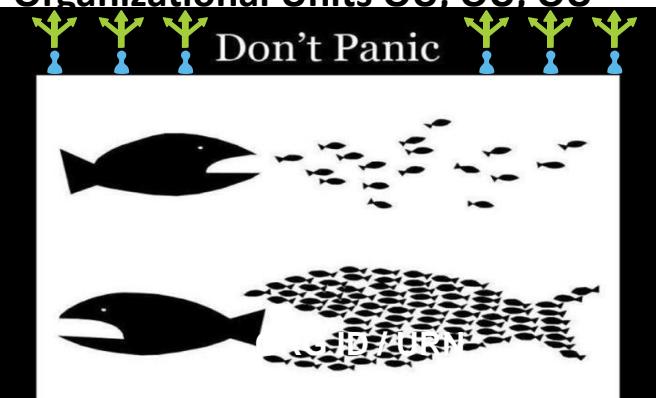
STRUCTURED MILITARY MESSAGING FORMS: FIELD TYPES, FILTERS, TAGS  
PARSED, PROCESSED, COMPILED TELEMETRY SIGNALING STANDARDIZATION

### USMTF / XML MTF FORMATTED MESSAGE CATALOG

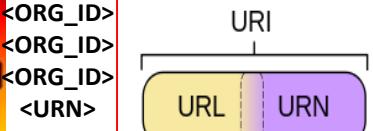
Catalog has over 300 messages to choose from have a wide number of information exchange requirements using common, CONSENSUS Message Text Formats MTFs. MTFs specify <CONTENT> / information agreed by group consensus presenting information in a logical, well specified and unambiguous layout resulting in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

</Organizational\_Identifier\_Org\_ID>

Organizational Units OU, OU, OU



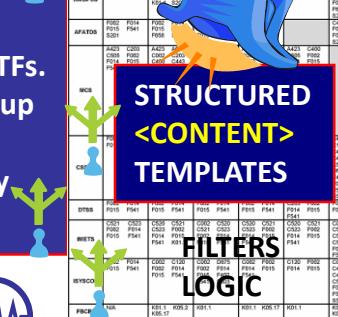
**FEDERATE**



**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)
- URCs INCLUDE META-INFO
- URLs LOCATE / FIND RESOURCES

### SITUATION AWARENESS



IDMaps  
SonarHOPS



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

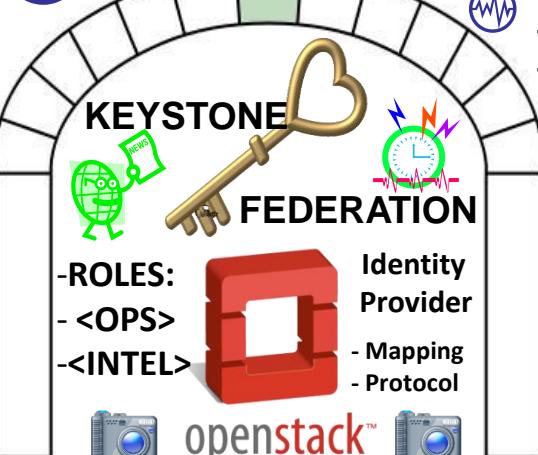
BY <TAG\_TYPES>  
Ledgers  
Contracts  
Trade SLA  
Agreements



TELCO MESH FABRIC

vector

CROWD SOURCING / FUNDING



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

PARTIDO X:  
Distributed  
Democratic  
Participation

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

DAO  
ETHEREUM:  
Decentralized  
Autonomous  
Organizations



PARTIDO DEL FUTURO  
FEDERATED ID





**NEO NET Enabled Ops:** individuals are monitored within groups for Logistics, operational readiness. Groups are defined by statistical readiness / availability to support goals / projects

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

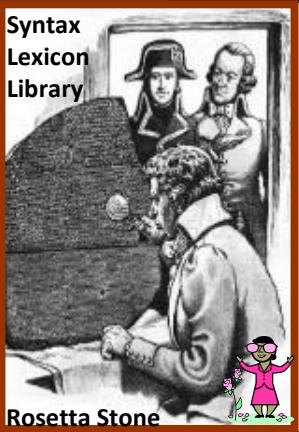
The current standard time common throughout the world is based on a 24-hour clock, with zones that are either 12 hours ahead or behind **Coordinated Universal Time (UTC)**. However, these time zones are decided upon by individual governments, without overall coordination and can even extend fourteen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



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



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



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



Tool	NGO-A	NGO-B	NGO-C	NGO-D	NGO-E	NGO-F	NGO-G	NGO-H	NGO-I	NGO-J	NGO-K	NGO-L	NGO-M	NGO-N	NGO-O	NGO-P	NGO-Q	NGO-R	NGO-S	NGO-T	NGO-U	NGO-V	NGO-W	NGO-X	NGO-Y	NGO-Z
ARAB	F001	F002	A003	B004	C005	D006	E007	F008	G009	H010	I011	J012	K013	L014	M015	N016	O017	P018	Q019	R020	S021	T022	U023	V024	W025	X026
AMERICAS	F001	F002	F003	F004	F005	F006	F007	F008	F009	F010	F011	F012	F013	F014	F015	F016	F017	F018	F019	F020	F021	F022	F023	F024	F025	F026
AFRICA	F001	F002	F003	F004	F005	F006	F007	F008	F009	F010	F011	F012	F013	F014	F015	F016	F017	F018	F019	F020	F021	F022	F023	F024	F025	F026
EUROPE	F001	F002	F003	F004	F005	F006	F007	F008	F009	F010	F011	F012	F013	F014	F015	F016	F017	F018	F019	F020	F021	F022	F023	F024	F025	F026
ASIA	F001	F002	F003	F004	F005	F006	F007	F008	F009	F010	F011	F012	F013	F014	F015	F016	F017	F018	F019	F020	F021	F022	F023	F024	F025	F026
ESSENTIALS	F001	F002	F003	F004	F005	F006	F007	F008	F009	F010	F011	F012	F013	F014	F015	F016	F017	F018	F019	F020	F021	F022	F023	F024	F025	F026
STRUCTURE	F001	F002	F003	F004	F005	F006	F007	F008	F009	F010	F011	F012	F013	F014	F015	F016	F017	F018	F019	F020	F021	F022	F023	F024	F025	F026
METRICS	F001	F002	F003	F004	F005	F006	F007	F008	F009	F010	F011	F012	F013	F014	F015	F016	F017	F018	F019	F020	F021	F022	F023	F024	F025	F026
PERIODS	F001	F002	F003	F004	F005	F006	F007	F008	F009	F010	F011	F012	F013	F014	F015	F016	F017	F018	F019	F020	F021	F022	F023	F024	F025	F026
300+	F001	F002	F003	F004	F005	F006	F007	F008	F009	F010	F011	F012	F013	F014	F015	F016	F017	F018	F019	F020	F021	F022	F023	F024	F025	F026

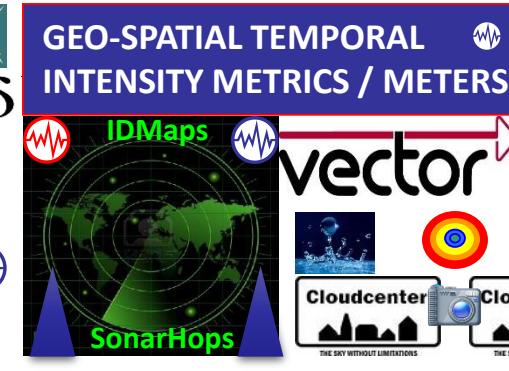
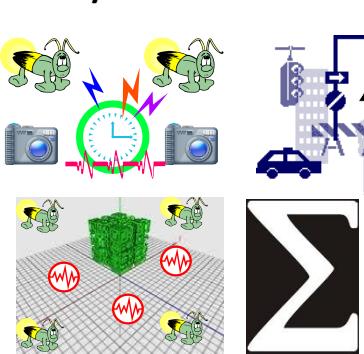
**PROJECT HBCnet:** build artificial intelligence neural network supporting #UNRIG's Earth Intelligence Network EIN with Signals, Telemetry Mesh



# IDMaps: Global Internet Host Distance Estimation Service



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



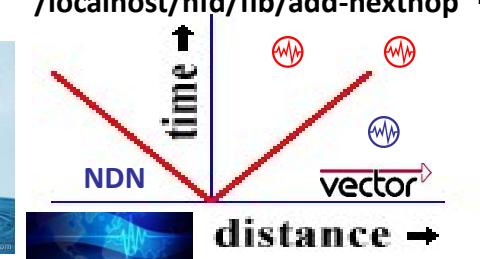
IDMaps scalable Internet-wide architecture measures, disseminates distance information  
`/localhost/nfd/fib/add-nexthop`



**HOP COUNTS**



**REACHABILITY**



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



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

Name Prefix  
<Org\_ID> Trie (NPT)



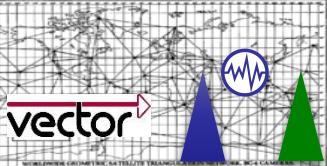
**NDN NAMES**

**NDN NAMED DATA NETWORK RIB / FIB Datasets event notification**

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



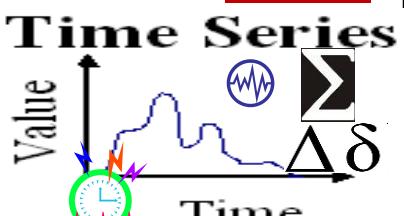
**TRIANGULATION**



**NDN INTEREST LENGTH = DISTANCE BY HOPS**

**NDN INTEREST**

**IS DATA FRESH ?**



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

Datasets and Event Notification

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



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



**MICRO-CYCLES**



NDN INTEREST LIFETIME = TTL Time To Live



HEARTBEAT STATE META DATASNAPSHOTS

# 13/573,002 HEART BEACON CYCLE

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

# The four dimensions of Big Data

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

TIME STAMP BY Org ID, URN Before FUSION CENTER

## **Position of a point in space relative to another point**





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

FINANCIAL  
NOSTRADAMUS  
REGGIE MIDDLETON



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



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



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

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

Place Order

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

NEWS EVENT BUS FIREFLY HEARTBEAT ALGO EVENT BUS

DAO Distributed Autonomous Organization SOFTWARE POOLS

All Market Orders Search

UTZ TIME SYNC Collateral Notional Expiry

Heartbeat Flash Messages Precedence Processing

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

INVESTOR POOL WORLD COMPUTER DFINITY

UTZ Stochastic Harmonization

REGGIE MIDDLETON

FINANCIAL NOSTRADAMUS

COMMODITIES EXHAUSTION

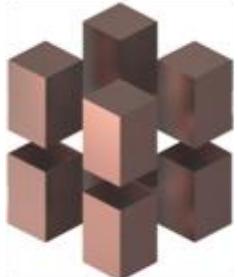
GLOBAL RESOURCES CONSUMERS

RENEWABLE ENERGY SPECTRUM DIFFERENTIABLE PRODUCERS

“Tagged\_Bitcoins”







# FOAM

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

Foamspace explored the speculative relationship between decentralized infrastructure and the production of the built environment. The installation was made entirely of factory-standard EPS geofoam blocks, which additionally served as a visual metaphor for the bitcoin blockchain.

*Imagine a decentralized architecture office that distributes equity and shares in the built environment and comprises a mesh of users: investors, clients, designers and established offices*

The Tropical Mining Station was a space produced by extracting the surplus energy from the process of mining Ethereum to produce a heated space. Custom miners were built that funneled excess heat and required airflow to inflate a pneumatic space, which became a spatialized node on the decentralized network.

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



# district0x

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

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

- |  |   |   |
|--|---|---|
| Signaling via <a href="#">CarbonVote</a> | Graphene executables:                     | <ul style="list-style-type: none"><li>● Posting and listings</li><li>● Search and filtering</li><li>● Ranking and reputation</li><li>● Payments and invoicing</li></ul> |
| Status = browser,<br>messenger, gateway  | witness_node,<br>cli_wallet, genesis_util |   |

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

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

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

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

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



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



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



### Functional Sequential Erlang

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

### SORTING ALGO'S

Ericsson Open Money  
For Society Patent App

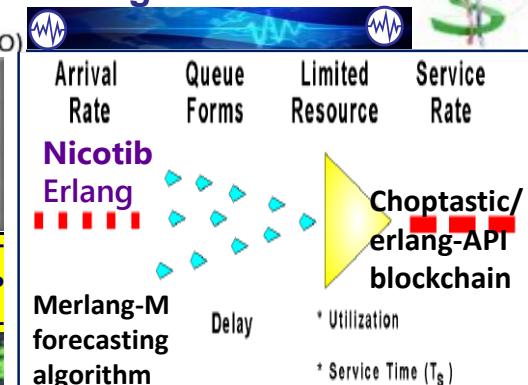


[20130166398](#) "System And Method For Implementing A Context Based Payment System."

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



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



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

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

FROM	TO/CC-A	THREE	AMAZON	AMAZON	WIKI
XBRL	/ CDL / DAML				
ALPHA	NUMERIC				
BREVITY	CODES				
AZURE	BLETCHLEY				
STRUCTURED					
MILITARY	MESSAGE				
TEMPLATE	FORMS				
LOGIC /	FILTERS				





# PROOF-OF-WORK



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



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



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

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



**GUESS stores the guess**  
**Effectively, it begins at infinity.**



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



- Hashing string
  - Hash Table

## 300+Message Templates

# LOGIC FILTERS

# LOGIC GATES

# SYNTAX LIBRARY LEXICON

## CODER'S GUIDE

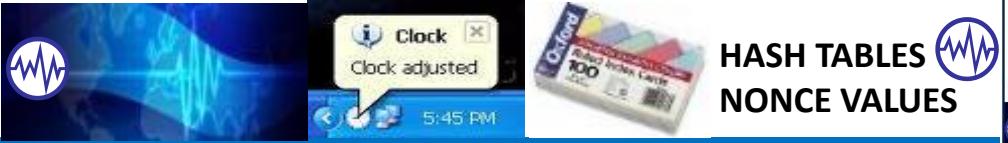
# POW PAYLOAD : COMBINATIONS OF ENCRYPTED SYNTAX **Attribute Series**



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



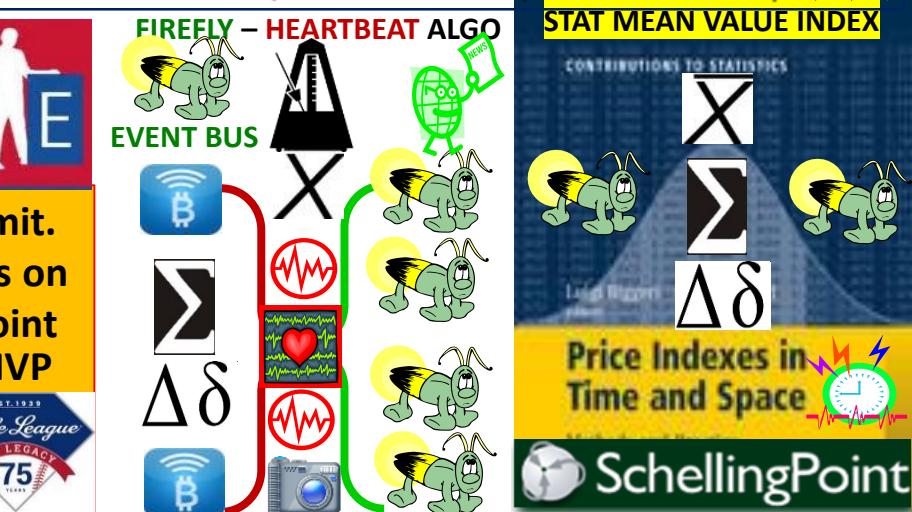
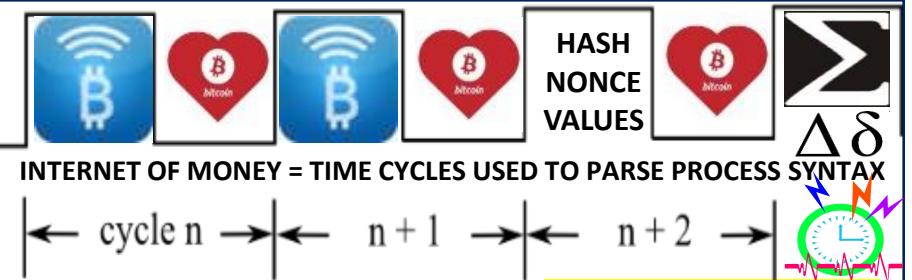
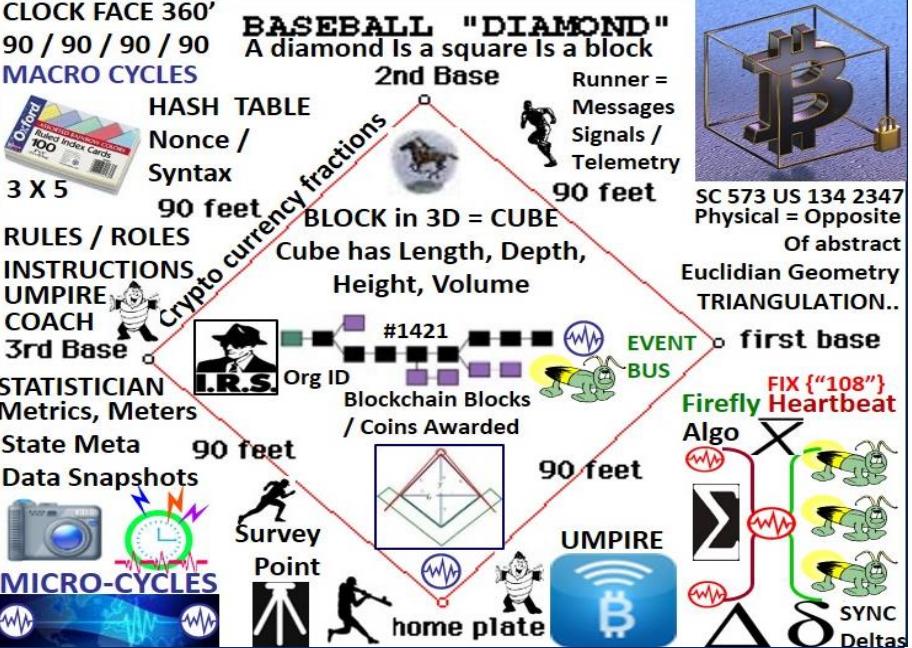
## ALL THINGS INTERNET FORMED W 1) TIME EPOCHS 2) SYNTAX



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



**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 MVP development, management of the implementation, .  
the community votes on changes.



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

AZURE: Core/Kernel/Universal Protocol

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

Unspent Transaction Output protocols UTXO

Crypto Tokenized Assets Digital Bearer Bonds  
unique identity for owned artifacts

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

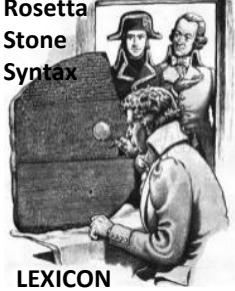
Blockchain middleware: identity and operations management, data, intelligence services like analytics and machine learning. New middleware works with existing Azure services, like Active Directory and Key Vault

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

Data Services - key data services like distributed file systems (IPFS, Storj, etc) of off-chain data referenced by public keys.

Auditing, Advanced Analytics, Machine Learning, Dashboarding services for SmartContracts, Blockchains, Consortia, Regulators

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



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

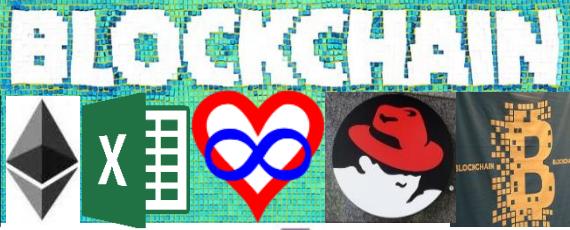


LEXICON

MULTI-MEME MULTI-METER



MYRIAD MEMES MEDIATION



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

HASH TABLE  
Nonce / Syntax  
90 feet

RULES / ROLES  
INSTRUCTIONS  
UMPIRE  
COACH

3rd Base  
STATISTICIAN Metrics, Meters  
State Meta Data Snapshots

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

EVENT BUS  
#1421 Org ID  
Blockchain Blocks / Coins Awarded

Survey Point  
MICRO-CYCLES

90 feet  
EVENT BUS  
home plate

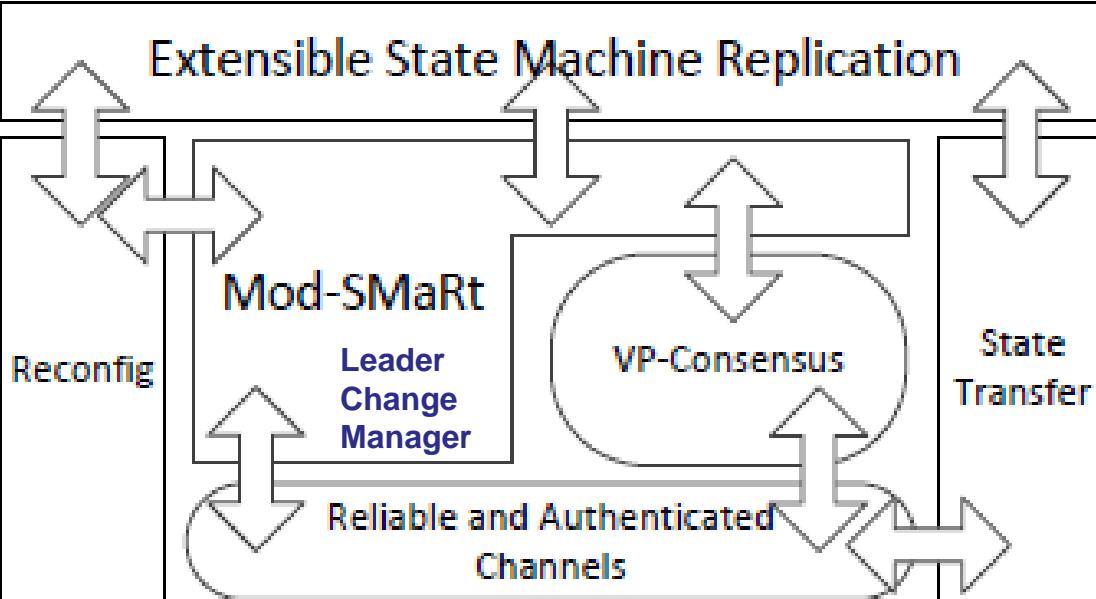
UMPIRE  
90 feet  
IOT

Microsoft Orleans  
TIME-SPACE EQUATIONS ALGORITHMS BLOCKCHAIN PARSING  
ERLANG

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

## Byzantine Fault-Tolerant State Machine Replication

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



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

**BFT-SMART needs an eventually synchronous system**

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

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

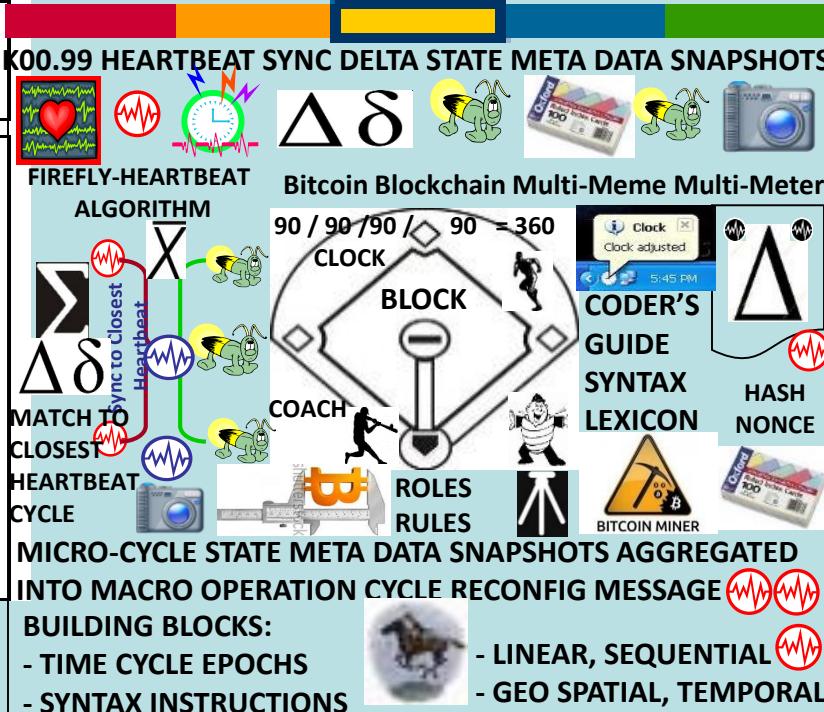
USCt ALICE CORP V CLS BANK

**PHYSICAL = OPPOSITE OF ABSTRACT**



# DERIVED FROM BATTLEFIELD DIGITIZATION DISTRIBUTED AUTONOMOUS ORGANIZATION DAO SYSTEM OF SYSTEMS

**FEDERATED ID / ORGANIZATIONAL IDENTIFIER {"ORG\_ID"}  
ADDS, JOINS, DROPS, MOVES TO / FROM DAO  
CHANGES IN STATE VIEWED IN "APPLIQUE' OVERLAY VIEWS**

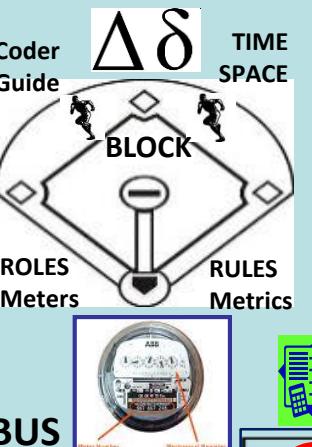
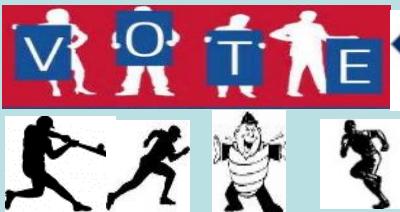


Firefly inspired Heartbeat Synchronization nodes strive to sync in a distributed system. Nodes generate periodic “heartbeat” events approximately at the same time. It differs from classical clock sync in that nodes are not interested in counting cycles to agree on the ID of the current clock cycle. There 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”

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

## KEY BLOCKS:

- NO CONTENT = NULL
- LEADER ELECTION

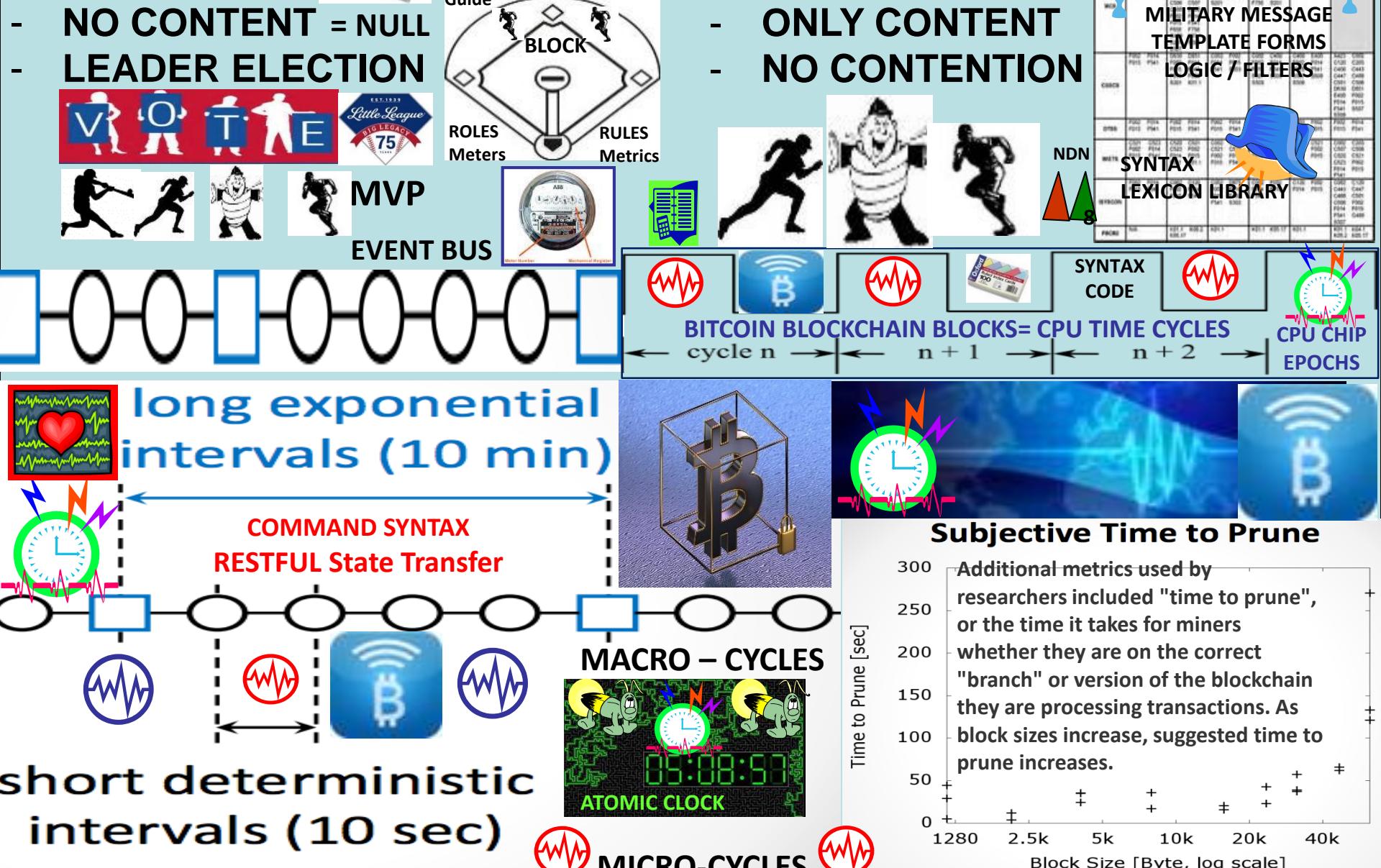


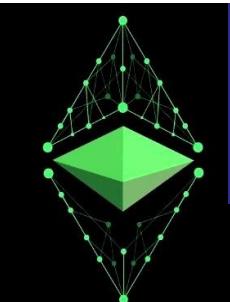
## MICRO BLOCKS:

- ONLY CONTENT
- NO CONTENTION



FROM	GCDA	TAB	ASAS	AMPCDS	AFATDR	MCR	TO
GCDA	FC001	FC002	FC003	FC004	FC005	FC006	FC007
GCDB	FC008	FC009	FC010	FC011	FC012	FC013	FC014
GCDC	FC015	FC016	FC017	FC018	FC019	FC020	FC021
GCDD	FC022	FC023	FC024	FC025	FC026	FC027	FC028
GCDE	FC029	FC030	FC031	FC032	FC033	FC034	FC035
GCDF	FC036	FC037	FC038	FC039	FC040	FC041	FC042
GCDD	FC043	FC044	FC045	FC046	FC047	FC048	FC049
GCDE	FC050	FC051	FC052	FC053	FC054	FC055	FC056
GCDF	FC057	FC058	FC059	FC060	FC061	FC062	FC063
GCDD	FC064	FC065	FC066	FC067	FC068	FC069	FC070
GCDE	FC071	FC072	FC073	FC074	FC075	FC076	FC077
GCDF	FC078	FC079	FC080	FC081	FC082	FC083	FC084
GCDD	FC085	FC086	FC087	FC088	FC089	FC090	FC091
GCDE	FC092	FC093	FC094	FC095	FC096	FC097	FC098
GCDF	FC099	FC100	FC101	FC102	FC103	FC104	FC105
GCDD	FC106	FC107	FC108	FC109	FC110	FC111	FC112
GCDE	FC113	FC114	FC115	FC116	FC117	FC118	FC119
GCDF	FC120	FC121	FC122	FC123	FC124	FC125	FC126
GCDD	FC127	FC128	FC129	FC130	FC131	FC132	FC133
GCDE	FC134	FC135	FC136	FC137	FC138	FC139	FC140
GCDF	FC141	FC142	FC143	FC144	FC145	FC146	FC147
GCDD	FC148	FC149	FC150	FC151	FC152	FC153	FC154
GCDE	FC155	FC156	FC157	FC158	FC159	FC160	FC161
GCDF	FC162	FC163	FC164	FC165	FC166	FC167	FC168
GCDD	FC169	FC170	FC171	FC172	FC173	FC174	FC175
GCDE	FC176	FC177	FC178	FC179	FC180	FC181	FC182
GCDF	FC183	FC184	FC185	FC186	FC187	FC188	FC189
GCDD	FC190	FC191	FC192	FC193	FC194	FC195	FC196
GCDE	FC197	FC198	FC199	FC200	FC201	FC202	FC203
GCDF	FC204	FC205	FC206	FC207	FC208	FC209	FC210
GCDD	FC211	FC212	FC213	FC214	FC215	FC216	FC217
GCDE	FC218	FC219	FC220	FC221	FC222	FC223	FC224
GCDF	FC225	FC226	FC227	FC228	FC229	FC230	FC231
GCDD	FC232	FC233	FC234	FC235	FC236	FC237	FC238
GCDE	FC239	FC240	FC241	FC242	FC243	FC244	FC245
GCDF	FC246	FC247	FC248	FC249	FC250	FC251	FC252
GCDD	FC253	FC254	FC255	FC256	FC257	FC258	FC259
GCDE	FC260	FC261	FC262	FC263	FC264	FC265	FC266
GCDF	FC267	FC268	FC269	FC270	FC271	FC272	FC273
GCDD	FC274	FC275	FC276	FC277	FC278	FC279	FC280
GCDE	FC281	FC282	FC283	FC284	FC285	FC286	FC287
GCDF	FC288	FC289	FC290	FC291	FC292	FC293	FC294
GCDD	FC295	FC296	FC297	FC298	FC299	FC300	FC301
GCDE	FC302	FC303	FC304	FC305	FC306	FC307	FC308
GCDF	FC309	FC310	FC311	FC312	FC313	FC314	FC315
GCDD	FC316	FC317	FC318	FC319	FC320	FC321	FC322
GCDE	FC323	FC324	FC325	FC326	FC327	FC328	FC329
GCDF	FC330	FC331	FC332	FC333	FC334	FC335	FC336
GCDD	FC337	FC338	FC339	FC340	FC341	FC342	FC343
GCDE	FC344	FC345	FC346	FC347	FC348	FC349	FC350
GCDF	FC351	FC352	FC353	FC354	FC355	FC356	FC357
GCDD	FC358	FC359	FC360	FC361	FC362	FC363	FC364
GCDE	FC365	FC366	FC367	FC368	FC369	FC370	FC371
GCDF	FC372	FC373	FC374	FC375	FC376	FC377	FC378
GCDD	FC379	FC380	FC381	FC382	FC383	FC384	FC385
GCDE	FC386	FC387	FC388	FC389	FC390	FC391	FC392
GCDF	FC393	FC394	FC395	FC396	FC397	FC398	FC399
GCDD	FC400	FC401	FC402	FC403	FC404	FC405	FC406
GCDE	FC407	FC408	FC409	FC410	FC411	FC412	FC413
GCDF	FC414	FC415	FC416	FC417	FC418	FC419	FC420
GCDD	FC421	FC422	FC423	FC424	FC425	FC426	FC427
GCDE	FC428	FC429	FC430	FC431	FC432	FC433	FC434
GCDF	FC435	FC436	FC437	FC438	FC439	FC440	FC441
GCDD	FC442	FC443	FC444	FC445	FC446	FC447	FC448
GCDE	FC449	FC450	FC451	FC452	FC453	FC454	FC455
GCDF	FC456	FC457	FC458	FC459	FC460	FC461	FC462
GCDD	FC463	FC464	FC465	FC466	FC467	FC468	FC469
GCDE	FC470	FC471	FC472	FC473	FC474	FC475	FC476
GCDF	FC477	FC478	FC479	FC480	FC481	FC482	FC483
GCDD	FC484	FC485	FC486	FC487	FC488	FC489	FC490
GCDE	FC492	FC493	FC494	FC495	FC496	FC497	FC498
GCDF	FC499	FC500	FC501	FC502	FC503	FC504	FC505
GCDD	FC506	FC507	FC508	FC509	FC510	FC511	FC512
GCDE	FC513	FC514	FC515	FC516	FC517	FC518	FC519
GCDF	FC520	FC521	FC522	FC523	FC524	FC525	FC526
GCDD	FC527	FC528	FC529	FC530	FC531	FC532	FC533
GCDE	FC534	FC535	FC536	FC537	FC538	FC539	FC540
GCDF	FC541	FC542	FC543	FC544	FC545	FC546	FC547
GCDD	FC548	FC549	FC550	FC551	FC552	FC553	FC554
GCDE	FC556	FC557	FC558	FC559	FC560	FC561	FC562
GCDF	FC563	FC564	FC565	FC566	FC567	FC568	FC569
GCDD	FC570	FC571	FC572	FC573	FC574	FC575	FC576
GCDE	FC577	FC578	FC579	FC580	FC581	FC582	FC583
GCDF	FC584	FC585	FC586	FC587	FC588	FC589	FC590
GCDD	FC592	FC593	FC594	FC595	FC596	FC597	FC598
GCDE	FC599	FC600	FC601	FC602	FC603	FC604	FC605
GCDF	FC606	FC607	FC608	FC609	FC610	FC611	FC612
GCDD	FC613	FC614	FC615	FC616	FC617	FC618	FC619
GCDE	FC620	FC621	FC622	FC623	FC624	FC625	FC626
GCDF	FC627	FC628	FC629	FC630	FC631	FC632	FC633
GCDD	FC634	FC635	FC636	FC637	FC638	FC639	FC640
GCDE	FC642	FC643	FC644	FC645	FC646	FC647	FC648
GCDF	FC649	FC650	FC651	FC652	FC653	FC654	FC655
GCDD	FC656	FC657	FC658	FC659	FC660	FC661	FC662
GCDE	FC664	FC665	FC666	FC667	FC668	FC669	FC670
GCDF	FC672	FC673	FC674	FC675	FC676	FC677	FC678
GCDD	FC679	FC680	FC681	FC682	FC683	FC684	FC685
GCDE	FC686	FC687	FC688	FC689	FC690	FC691	FC692
GCDF	FC694	FC695	FC696	FC697	FC698	FC699	FC700
GCDD	FC702	FC703	FC704	FC705	FC706	FC707	FC708
GCDE	FC709	FC710	FC711	FC712	FC713	FC714	FC715
GCDF	FC716	FC717	FC718	FC719	FC720	FC721	FC722
GCDD	FC724	FC725	FC726	FC727	FC728	FC729	FC730
GCDE	FC732	FC733	FC734	FC735	FC736	FC737	FC738
GCDF	FC740	FC741	FC742	FC743	FC744	FC745	FC746
GCDD	FC748	FC749	FC750	FC751	FC752	FC753	FC754
GCDE	FC756	FC757	FC758	FC759	FC760	FC761	FC762
GCDF	FC764	FC765	FC766	FC767	FC768	FC769	FC770
GCDD	FC772	FC773	FC774	FC775	FC776	FC777	FC778
GCDE	FC779	FC780	FC781	FC782	FC783	FC784	FC785
GCDF	FC786	FC787	FC788	FC789	FC790	FC791	FC792
GCDD	FC794	FC795	FC796	FC797	FC798	FC799	FC800
GCDE	FC802	FC803	FC804	FC805	FC806	FC807	FC808
GCDF	FC810	FC811	FC812	FC813	FC814	FC815	FC816
GCDD	FC818	FC819	FC820	FC821	FC822	FC823	FC824
GCDE	FC826	FC827	FC828	FC829	FC830	FC831	FC832
GCDF	FC834	FC835	FC836	FC837	FC838	FC839	FC840
GCDD	FC842	FC843	FC844	FC845	FC846	FC847	FC848
GCDE	FC849	FC850	FC851	FC852	FC853	FC854	FC855
GCDF	FC856	FC857	FC858	FC859	FC860	FC861	FC862
GCDD	FC864	FC865	FC866	FC867	FC868	FC869	FC870
GCDE	FC872	FC873	FC874	FC875	FC876	FC877	FC878
GCDF	FC879	FC880	FC881	FC882	FC883	FC884	FC885
GCDD	FC886	FC887	FC888	FC889	FC890	FC891	FC892
GCDE	FC894	FC895	FC896	FC897	FC898	FC899	FC900
GCDF	FC902	FC903	FC904	FC905	FC906	FC907	FC908
GCDD	FC910	FC911	FC912	FC913	FC914	FC915	FC916
GCDE	FC918	FC919	FC920	FC921	FC922	FC923	FC924
GCDF	FC926	FC927	FC928	FC929	FC930	FC931	FC932
GCDD	FC934	FC935	FC936	FC937	FC938	FC939	FC940
GCDE	FC942	FC943	FC944	FC945	FC946	FC947	FC948
GCDF	FC950	FC951	FC952	FC953	FC954	FC955	FC956
GCDD	FC958	FC959	FC960	FC961	FC962	FC963	FC964
GCDE	FC966	FC967	FC968	FC969	FC970	FC971	FC972
GCDF	FC974	FC975	FC976	FC977	FC978	FC979	FC980
GCDD	FC982	FC983	FC984	FC985	FC986	FC987	FC988
GCDE	FC990	FC991	FC992	FC993	FC994	FC995	FC996
GCDF	FC998	FC999	FC1000	FC1001	FC1002	FC1003	FC1004





## 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**

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

HASH TABLE  
Nonce /  
Syntax  
90 feet

RULES / ROLES  
INSTRUCTIONS  
UMPIRE

COACH  
3rd Base  
STATISTICIAN  
Metrics, Meters  
State Meta  
Data Snapshots

90 feet  
Survey  
Point  
MICRO-CYCLES

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

2nd Base  
Runner =  
Messages  
Signals /  
Telemetry  
90 feet  
BLOCK in 3D = CUBE  
Cube has Length, Depth,  
Height, Volume

90 feet  
Crypto currency fractions  
Blockchain Blocks /  
Coins Awarded

Org ID  
#1421  
Blockchain Blocks /  
Coins Awarded

90 feet  
home plate  
UMPIRE



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

first base  
Fix {"108"}  
Firefly Heartbeat  
Algo

$\Sigma$   
 $\Delta\delta$   
SYNC Deltas

$\Delta$   
MICRO CYCLE SAMPLING

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)



UNIVERSAL EVENT BUS

STATISTICAL MEAN SAMPLING

STOCHASTIC HARMONIZATION



HEARTBEAT FLASH MESSAGES

BLOCKCHAIN HASH TABLES



STAT MEAN VALUE INDEX

SUM, ADD, AGGREGATE

MACRO ECONOMIC CYCLES

STATE META-DATA

HEARTBEAT SNAPSHOTS

MICRO CYCLE SAMPLING

STATE META-DATA

HEARTBEAT SNAPSHOTS</p

**D F I N I T Y**






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

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

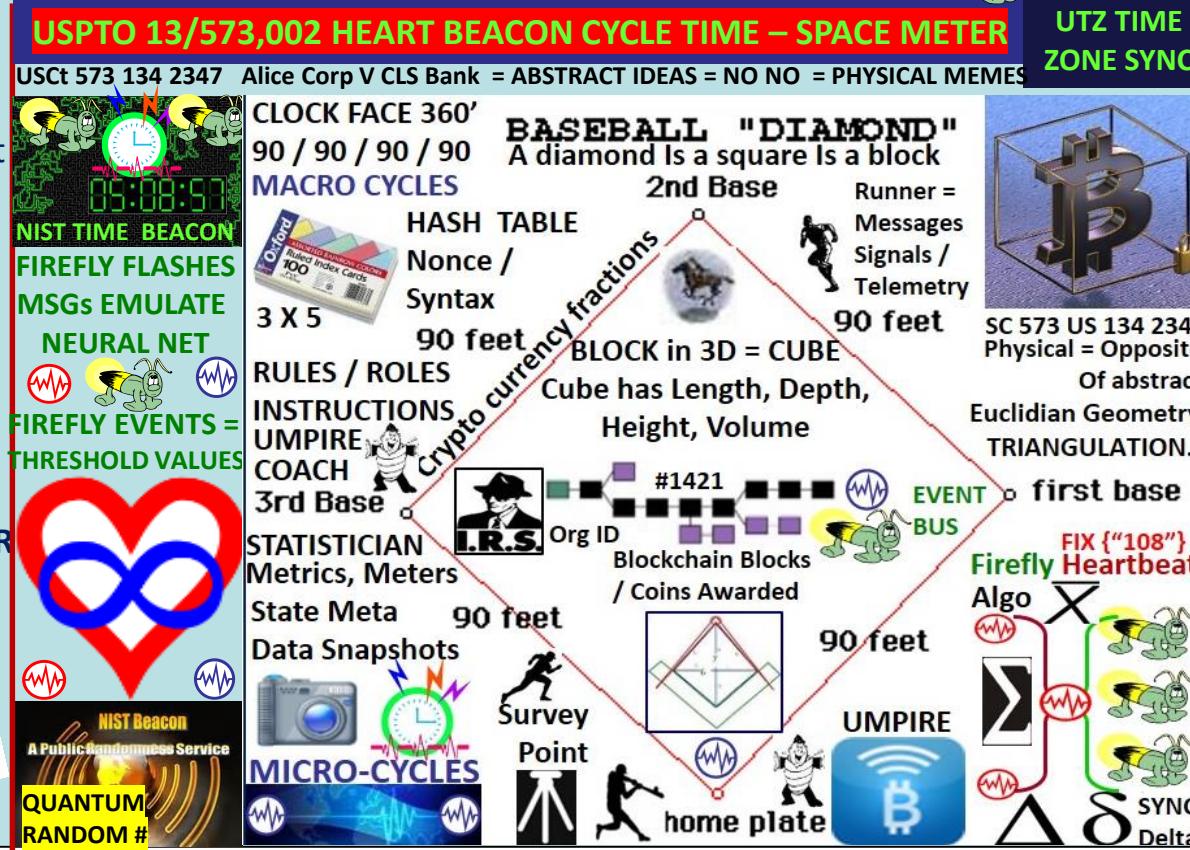


**GROUP Signature is random number**

- Number selects next group {"Org\_ID"} {"Org\_ID"}
- Next group use previous no. as message
- Verifiable Random Function
- Numbers verifiable using group public key
- New values produced in threshold agreement
- Random members** {"Org\_ID"} {"Org\_ID"}
- Each process is a member of multiple groups
- Groups intersect, have +/- 400 members
- BLS signature scheme**
- Math magic... If 51% of group members broadcast "signature shares" on a message, these are combined to create the group's threshold signature.

**HYPER GEOMETRIC PROBABILITY CALCULATOR**

**CONSENSUS / RANDOM BEACON**  
Threshold relay chain generates randomness, records network metadata & validation tree "state root". State and updates to state stored on shards... State transitions passed to Validation Tree

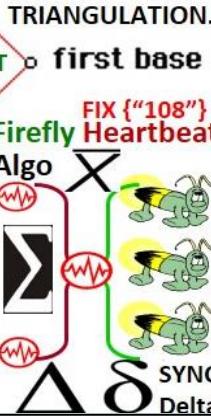


**Each process has mining identity**

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









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

**ERLANG API FOR BLOCKCHAIN**



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

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

**CROSS – CHAIN ATOMIC SWAPS**

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



Aeons: energy for applications implemented on the platform.

**ACCOUNTS & IDENTITY:** æternity's accounts are

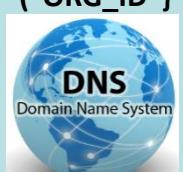
permission-less, but allow customization via schema.org's semantic web scheme. Create & own (**federated group**) / individual identities on the æternity network

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



(“ORG\_ID”)

(“ORG\_ID”)



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

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



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

**TOKENS REPRESENT REAL WORLD VALUE URN RESOURCES**

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



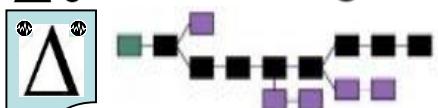
HBC's PRIMARY USE CASE IS TO ORGANIZE INDIVIDUALS IN TRADE FEDERATION GROUPS RE-USING BATTLEFIELD DIGITIZATION / ARIN Organizational Identifier Org\_ID for Ecosphere friendly trade



# HYPER LEDGER OPEN SOURCE BLOCKCHAIN

Core APIs, & SDKs

$\Delta\delta$  Shared Ledger



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

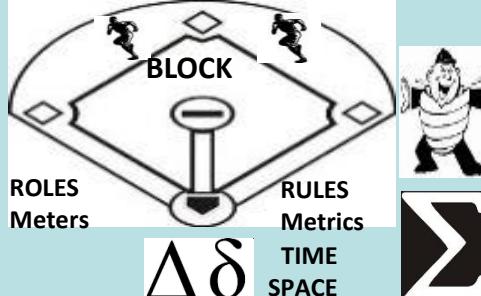
FEDERATION  
**Federation Gateway**

METRICS ("Organization ID")  
METERS

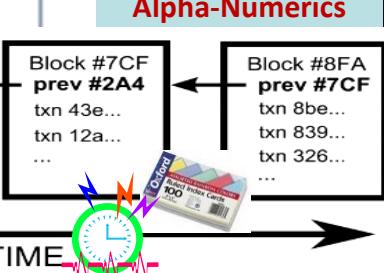
RESTFUL SYNC DELTA  
CHANGE MANAGEMENT  
MICRO-MACRO CYCLE



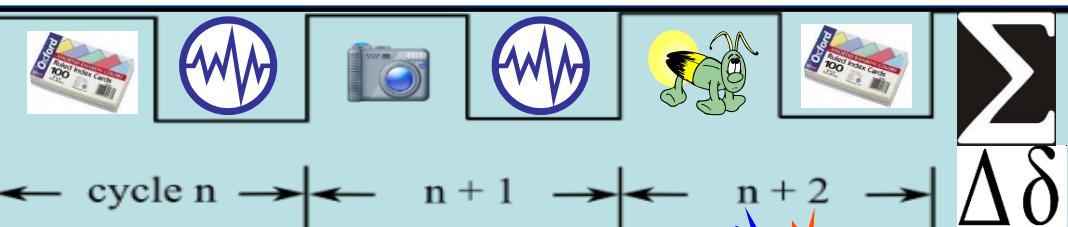
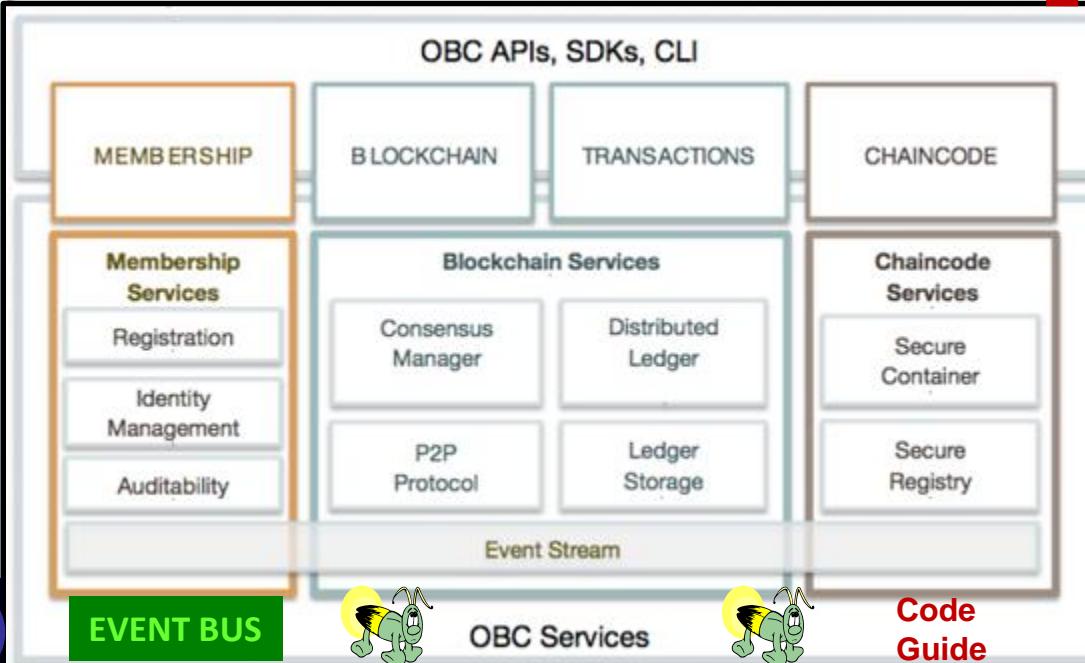
BLOCKTIME ARBITRAGE



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



Alpha-Numerics



MICRO-MACRO CYCLE SCHEDULE

ROSETTA STONE

FORM	SOCIAL	TIME	MAS	MOBILE	API	DATA	BLOCK
ABAB	SOCA	TMAS	MAAS	MOB	API	DAT	BLCK
AMPERE	POSA	FTIM	FTMAS	FTMOB	FTAPI	FTDAT	FTBLCK
AFATOS	POSH	FTPA	FTPS	FTPH	FTPI	FTPD	FTBLPH
CISCO	CGSA	CTIM	CTMAS	CTMOB	CTAPI	CTDAT	CTBLCK
OPEN	FOPO	FTPO	FTPM	FTPM	FTPI	FTPD	FTBLPO
MEITS	FOPT	FTPT	FTPT	FTPT	FTPT	FTPT	FTBLPT
HYPER	FOPO	FTPO	FTPM	FTPM	FTPI	FTPD	FTBLPO
PRIMO	FOPO	FTPO	FTPM	FTPM	FTPI	FTPD	FTBLPO

XBR / CDL / DAML  
STOCK MIC CODES

STRUCTURED  
MILITARY MESSAGE  
TEMPLATE FORMS  
LOGIC / FILTERS

SYNTAX  
SYMBOL LIBRARY

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

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

FFIRNS  
FFUDNS

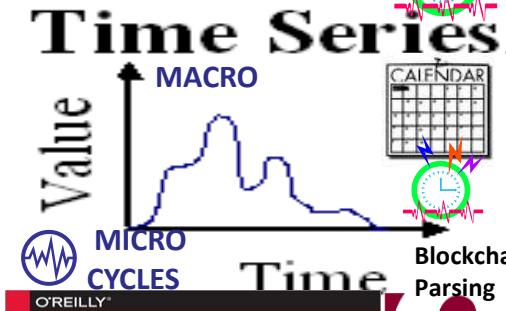
# SAWTOOTH LAKE POETIC CONSENSUS PROOF OF ELAPSED TIME: POET

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



"BITCOIN IS A LANGUAGE"

PROOF OF ELAPSED TIME



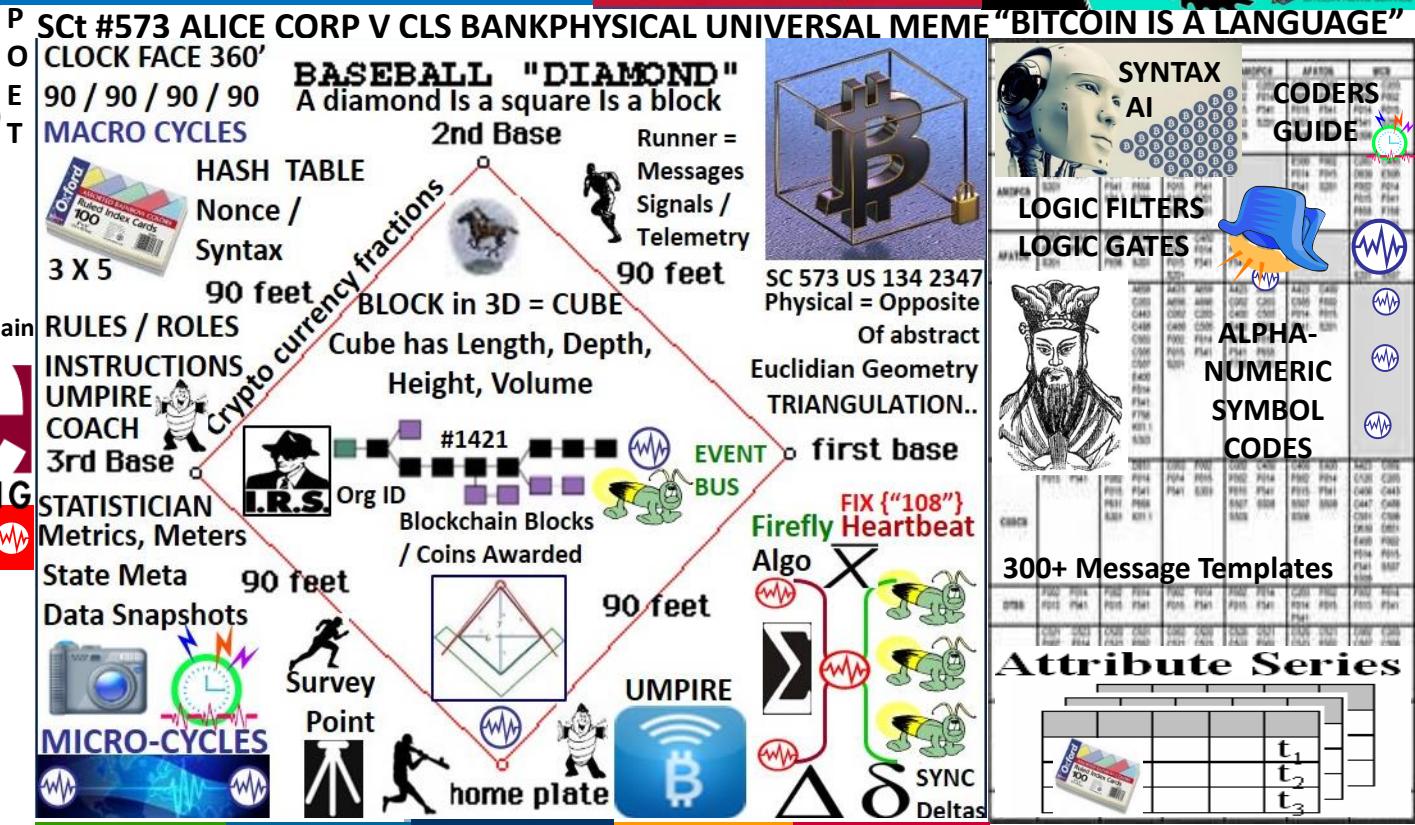
Voting Based Selection: stake size & block generators selected by votes

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



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

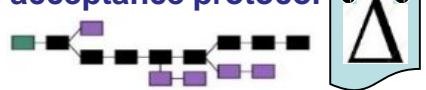
TOURNAMENT LEAGUE BOARD



FIREFLY-HEARTBEAT FLASH MESSAGES UNIVERSAL EVENT BUS



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



# DASH



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

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

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

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

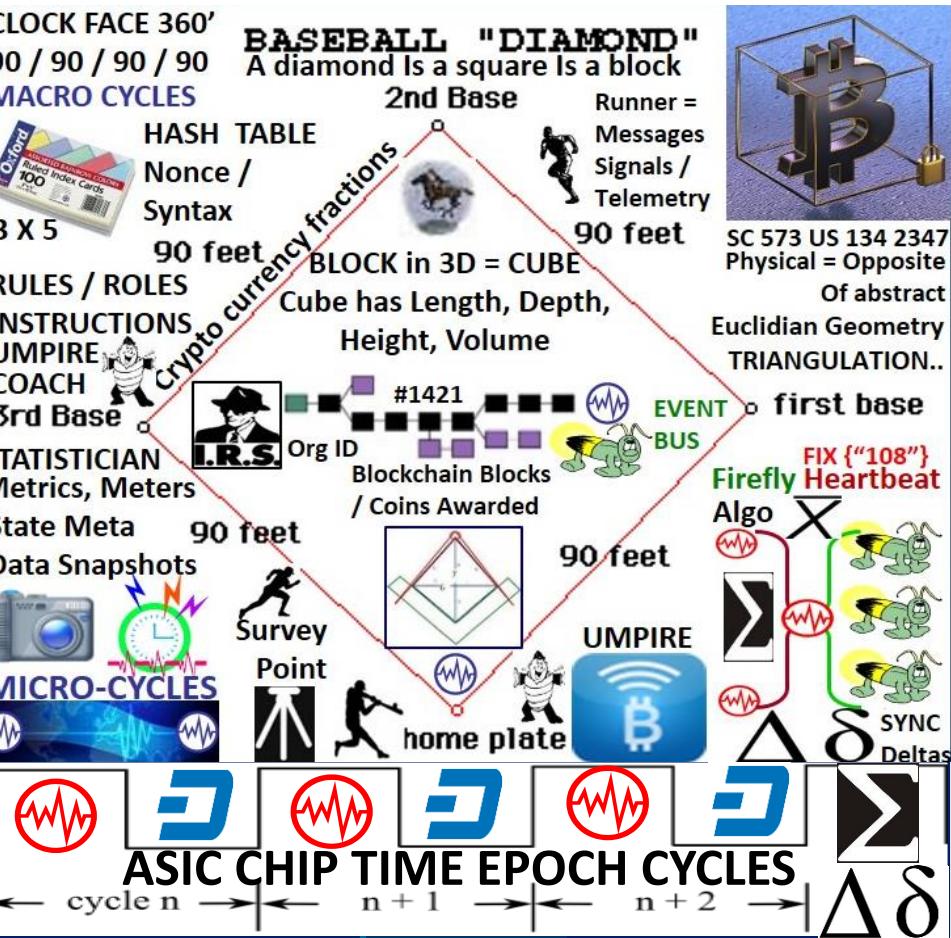
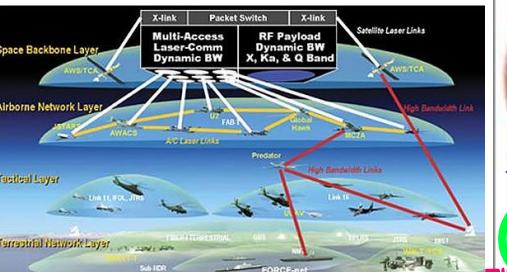
"Its makeup is thus: the block reward is divvied up in three parts. The first 45 percent goes to [Dash's miners](#). Another 45 percent goes to its Masternodes. And 10 percent is set aside to fund whatever other jobs or expenditures the Dash network deems necessary"

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

Masternodes receive payments for their service to the network.

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

NETWORK CENTRIC WARFARE  
Developing and Leveraging Information Superiority



STOCHASTIC HARMONIZATION FIREFLY-HEARTBEAT EVENT BUS

HEART BEACON CYCLE = IMPROVEMENT TO NETWORK CENTRIC WARFARE



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



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

## STATE CHANNELS: blockchain interactions

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



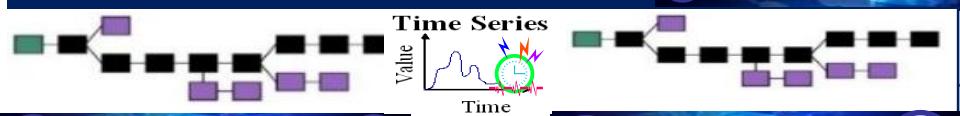
**1. Part of the blockchain state is locked** via multisignature or some sort of smart contract, so that a specific set of participants must completely agree with each other to update it.



**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.

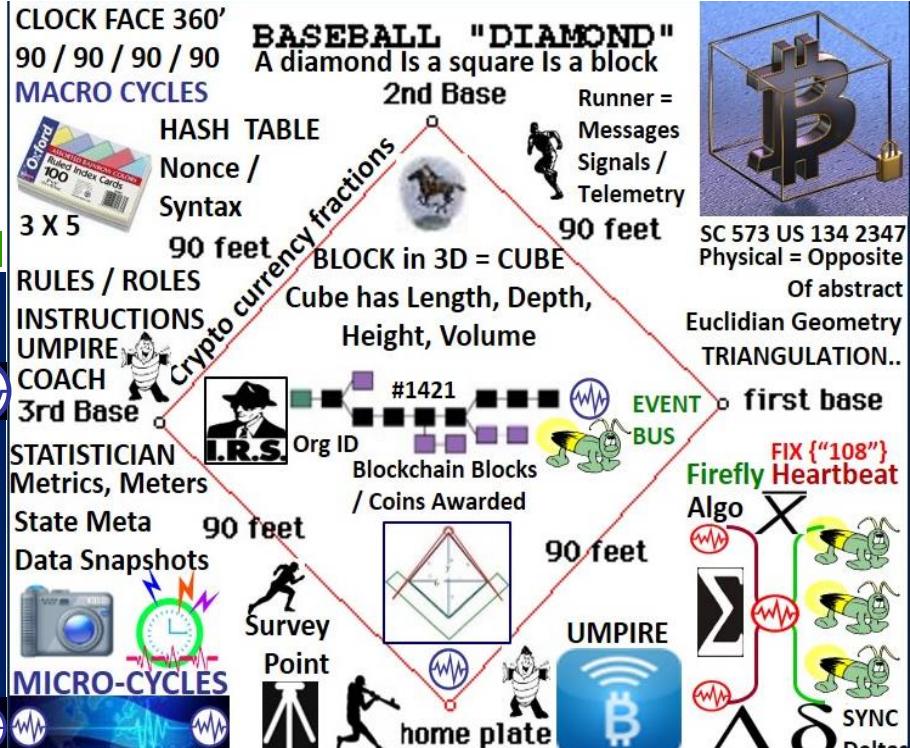


3. Finally, **participants submit the state back to the blockchain**, which closes the state channel and unlocks the state again (usually in a different configuration than it started with)  



**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/>



## FLASH HEARTBEAT MESSAGES

## HEARTBEAT STATE META-DATA

## **SNAPSHOTS EVERY**

## **10, N MIN MICRO TO MACRO ECON CYCLE**

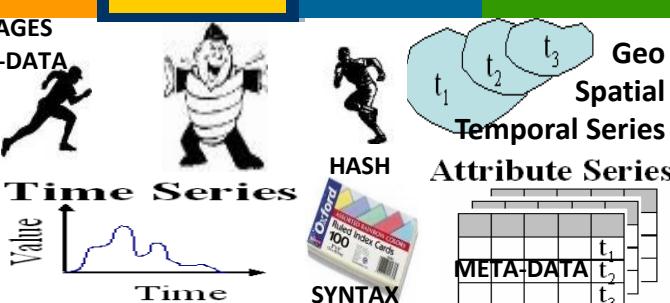
HASH TABLES

**STATE**

**SNAPS**  

www.pwms.org

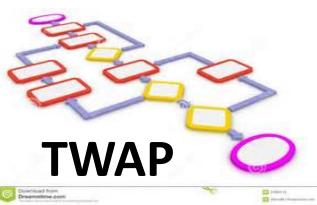
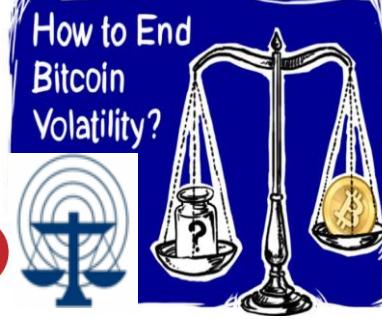
A cartoon character with a large head and a small body, wearing a green shirt, holds a large green clock. The clock has black numbers and hands. There are colorful streamers or flags around the clock.



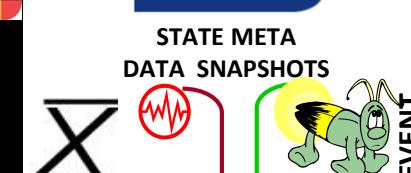
**Firefly - Heartbeat synchronization:** nodes in a distributed system generate periodic, local “heartbeat” events approximately at the same time with a goal of all nodes starting / ending cycles at the same time eventually = HB CYCLE

# TWAP Algorithm Manages Bitcoin Price Volatility Algorithm

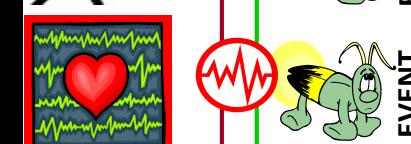
## TWAP GOAL: provide a Time Weighted Average Price Benchmark



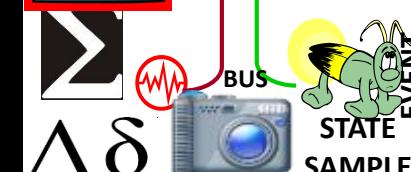
FIREFLY HEARTBEAT ALGO  
STAT MEAN VALUE INDEX



STATE META  
DATA SNAPSHOTS



EVENT



BUS

STATE SAMPLE

**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..



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

#### Key Features:

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



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

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

All rates time-stamped in UTC.

Ability to look up by time-stamp.

Ability to look up by block-height.

Asset Classes: Digital Currencies

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

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

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

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

**BRAVE NEW COIN.**  
Digital Currency Insights

“Blocks are a measure of time”: The Bitcoin Blockchain ‘B-WAP’





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

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



OPENBAZAAR.ORG  
BLOCKCHAIN ARBITRAGE



NETOPS  
NEO  
ECONOMIC HEARTBEAT



STAT MEAN VALUE PULSE  
MACRO CYCLE AGGREGATE



STAT MEAN VALUE INDEX  
CONTRIBUTIONS TO STATISTICS



Price Indexes in  
Time and Space  
Methods and Practice



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

## PROJECT PHILOSOPHY: *MAKE TRADE FREE*

Mission: *shift trade to a decentralized platform*



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



Free and open markets:

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

## •VALUES:



HASH Values  
Nonce Values

SCT Alice V Cls Bank



Federation  
Gateway

ORG ID



PING



$\Sigma$



$\Delta\delta$



SchellingPoint

Bitcoin: OpenBazaar transactional currency

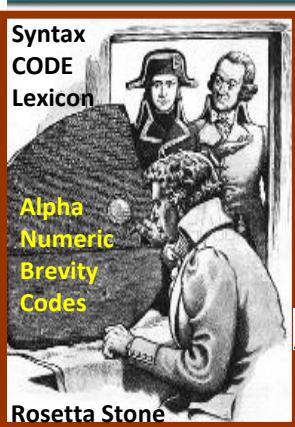
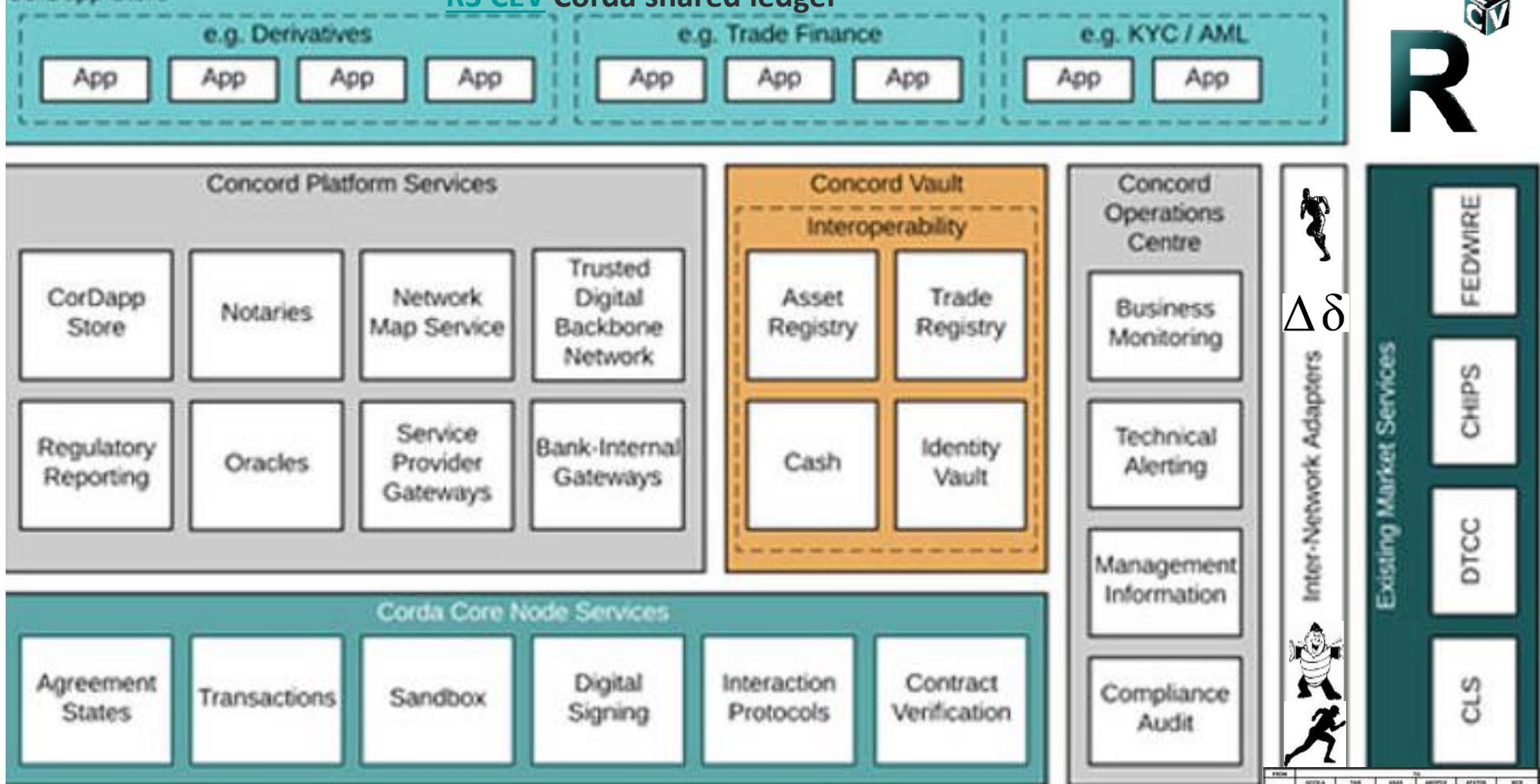


NIST Beacon  
A Public Randomness Service

## Cryptographic Security

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

Non-  
Repudiation



### 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

11.8 - Kinematics									
11.8.1 - Acceleration									
11.8.2 - Angular									
11.8.3 - Linear									
11.8.4 - Estimated									
11.8.5 - Estimated									
11.8.6 - Smoothed									
11.8.7 - Predicted									
11.8.8 - Location									
11.8.9 - 2D Horizontal									
11.8.10 - Vertical									
11.8.11 - Horizontal									
11.8.12 - Vertical									
11.8.13 - Bearing Angle									
11.8.14 - Distance									
11.8.15 - Covariance Matrix									

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



XBRL / CDE / DAML  
STOCK MIC CODES



STRUCTURED  
MILITARY MESSAGE  
TEMPLATE FORMS

LOGIC / FILTERS



300+  
Use Case Templates

Federation  
Gateway

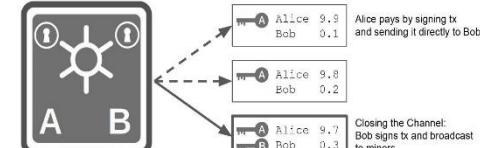
# PROJECT LIGHTING



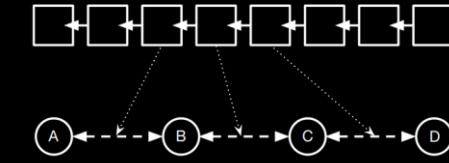
transactions sent over / off chain  
micropayment channels

Micropayment Channels

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



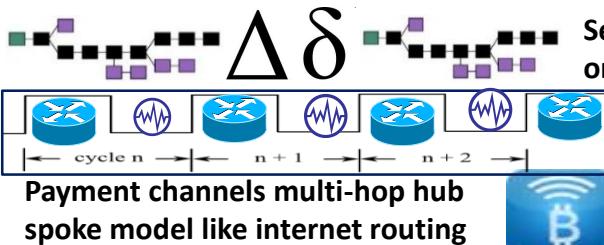
## LIGHTNING



Millions of Transactions. Milliseconds of Delay.

Hashed TIME LOCK contracts component for global consensus

OP\_CHECKLOCKTIMEVERIFY During Macro Cycle w/Random # BEACON



Payment channels multi-hop hub  
spoke model like internet routing

## FIREFLY – HEARTBEAT ALGORITHM



### FIREFLY – HEARTBEAT



EVENT REPORTING ACROSS TIME-SPACE



### MESSAGE EVENT BUS

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



HASH TABLE

Nonce /  
Syntax  
3 X 5

RULES / ROLES

INSTRUCTIONS

UMPIRE

COACH

3rd Base

STATISTICIAN

Metrics, Meters

State Meta

Data Snapshots

MICRO-CYCLES

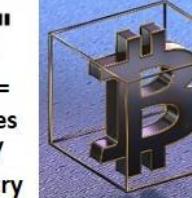
90 feet

Survey Point

home plate

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  
Euclidian Geometry  
TRIANGULATION..

first base

Fix {"108"}  
Firefly Heartbeat  
Algo

X

Σ Sync Deltas

Sync Delta

State Meta  
Data Snaps

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

Org ID  
Blockchain Blocks  
/ Coins Awarded

EVENT BUS

UMPIRE

Sync Delta

State Meta  
Data Snaps

Sync Delta

Sync Delta  
State Meta  
Data Snaps

## SEG WIT



## SEGREGATED WITNESS



HASH TABLES

MESSAGES

NONCE

SYNTAX / SYMBOL TAGS

Digital Signature

OUT OF BAND / CHANNEL

Segregated witness = Separated signatures

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



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

GIZMAG: New NASA network poised to bring internet to entire solar system

SCt 573 ALICE CORP VS CLS BANK PHYSICAL MEMES

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



TIME / DISTANCE SERVICE LEVEL  
AGREEMENT SLA / O Operations

IEEE 802.15.4 OASIS MQTT

TELEMETRY TRANSPORT

IEEE 802.1AG HOP BY HOP  
DETECTION

IEEE 802.11  
HOP BY HOP CONTROL



Unused Resources / Unmet Needs

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

DISTANCE  
INFO SERVICE

Time Series

RISK

Value

Time

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

HEART BEACON CYCLE  
USPTO 13/573,002  
SURVEY METHODS

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

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

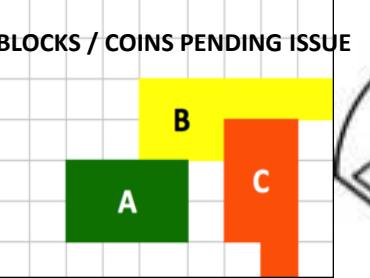


Memo #1421: Purchased Bitcoins are treated akin to property

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



## Mined Bitcoins



$$\Delta\delta$$

## Unmined Bitcoins



Un-mined coins -- think of them as parcels of land on "Bitcoin Island" not yet released:

IDMaps-SONARHOPS distance estimation query-reply service

- End-state Bitcoin quantity will be fixed like land

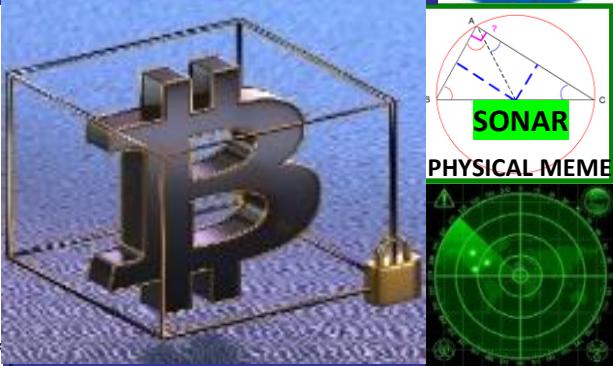
"Bitcoin as protocol of ownership, not transfer"

Coin never travel, but simply switch owners"

## TRIANGULATION



## EUCLIDIAN GEOMETRY



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



## IDMaps

"PING"



NDN

"Interest"

ONSHORE

OFFSHORE

SonarHops

"Distance"

vector

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

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



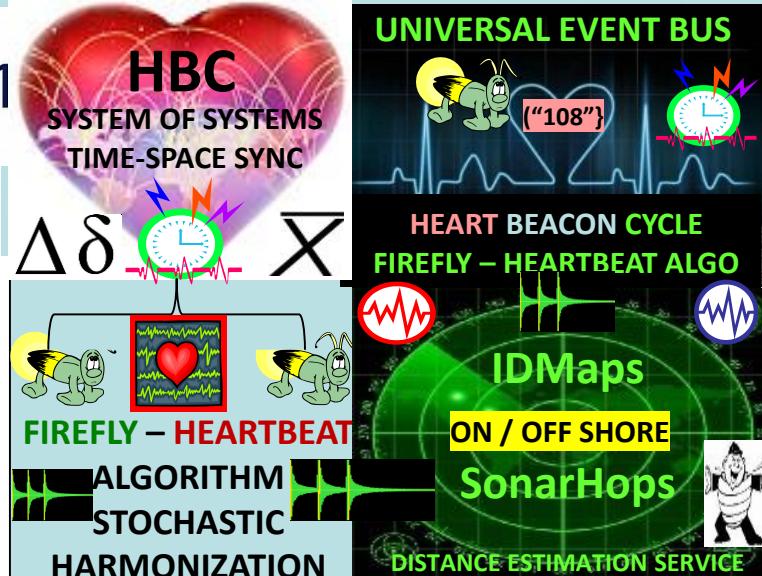
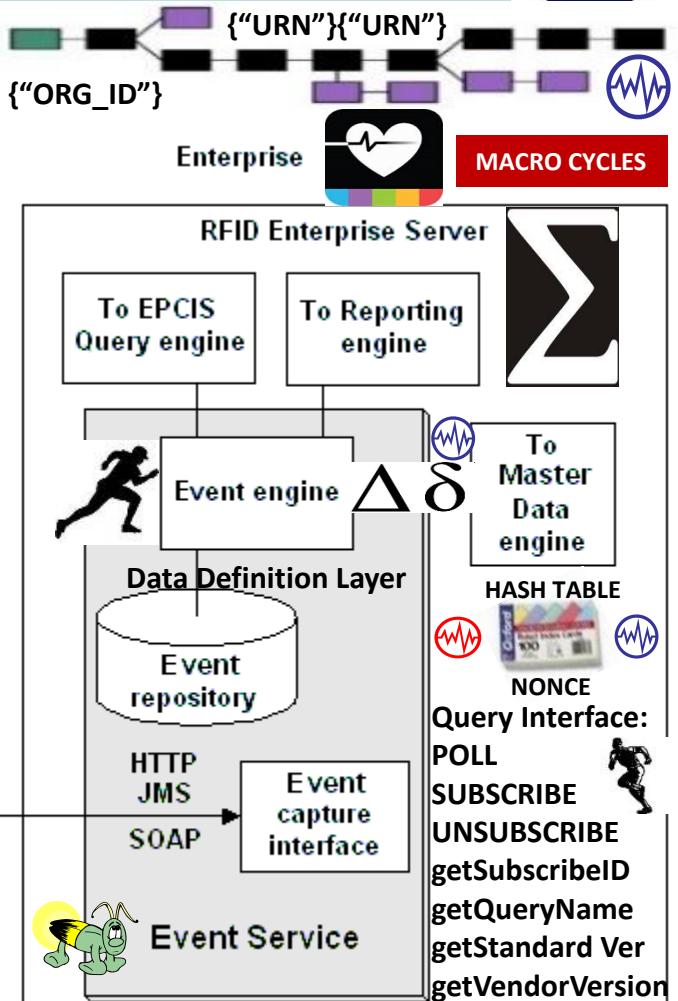


**Electronic Product Code Information Services (EPCIS)**

## GS1 Standard for creating, sharing visibility event data



**HBC**  
SYSTEM OF SYSTEMS  
TIME-SPACE SYNC



**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**

## 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**

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



**CLOSER IS CHEAPER  
CLOSER IS FASTER**



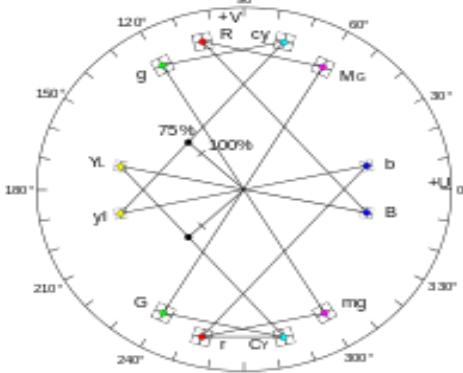
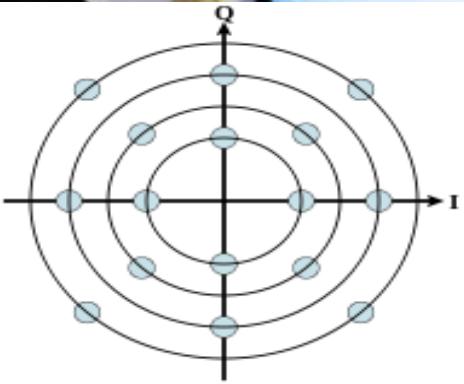
MICRO CYCLES

# !st Compiler DESIGN Still the **BEST**





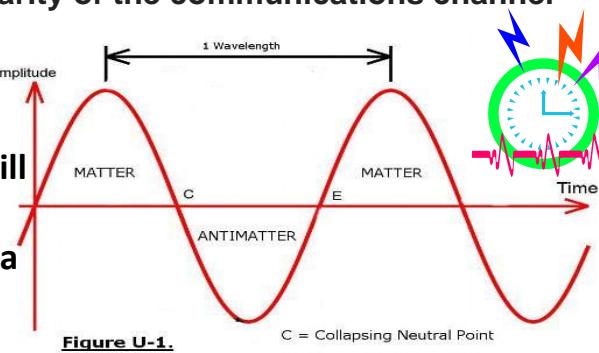
[www.RLighthouse.com](http://www.RLighthouse.com)



# Quadrature amplitude modulation

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

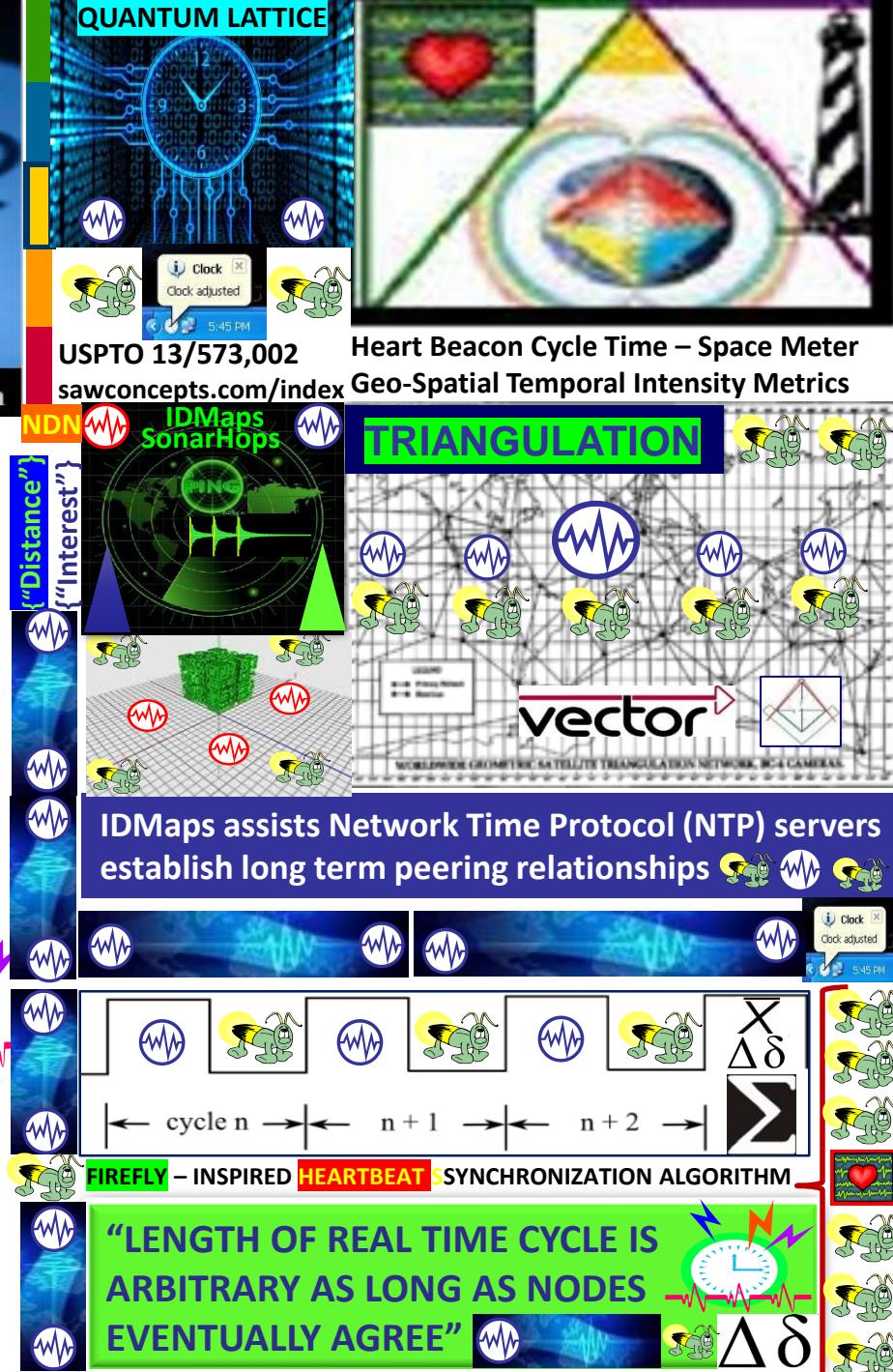
“Similarly, the electromagnetic force will also be found to vary continuously and retain a TIME-AVERAGED value”



### **Figure U-1.**

E = Expanding Neutral Point

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





# SOFTWARE DEFINED NETWORKING

NETOPS

Command Syntax

REST State Transfer

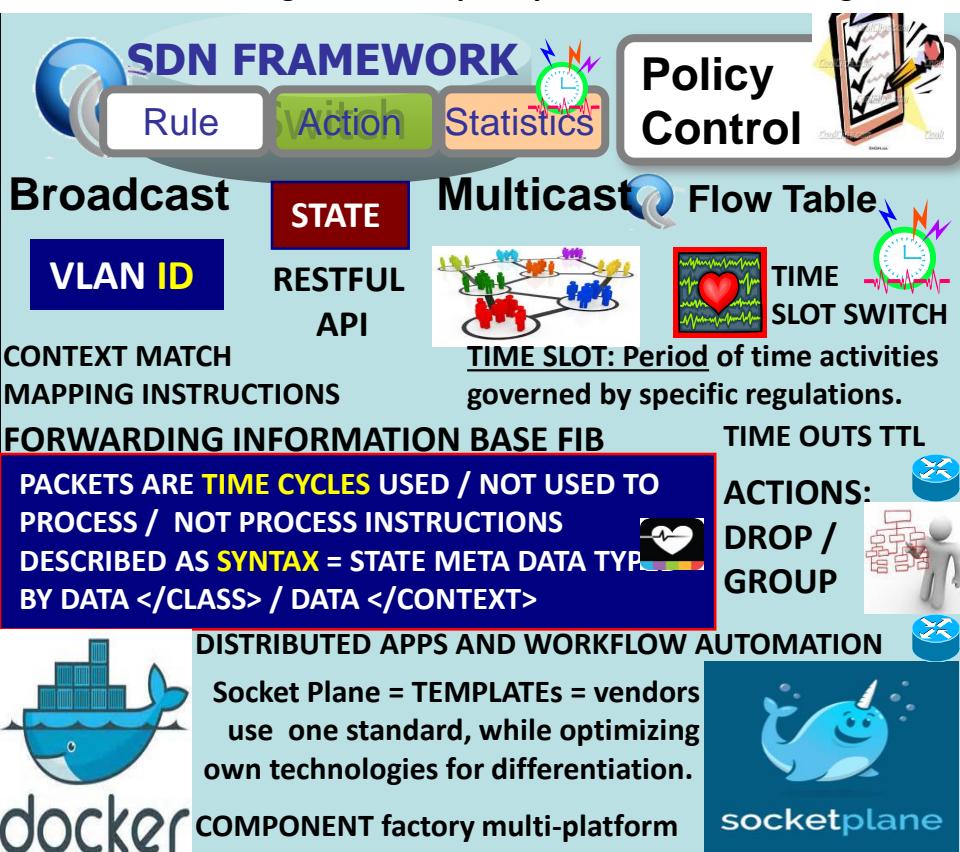
COMMAND SYNTAX  
STATE TRANSFER  
Unicast / Multicast  
Flow Tables / Workflow  
Dynamic Network  
Configuration Management

NET CENTRIC WARFARE  
SYSTEM OF SYSTEMS TELEMETRY

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

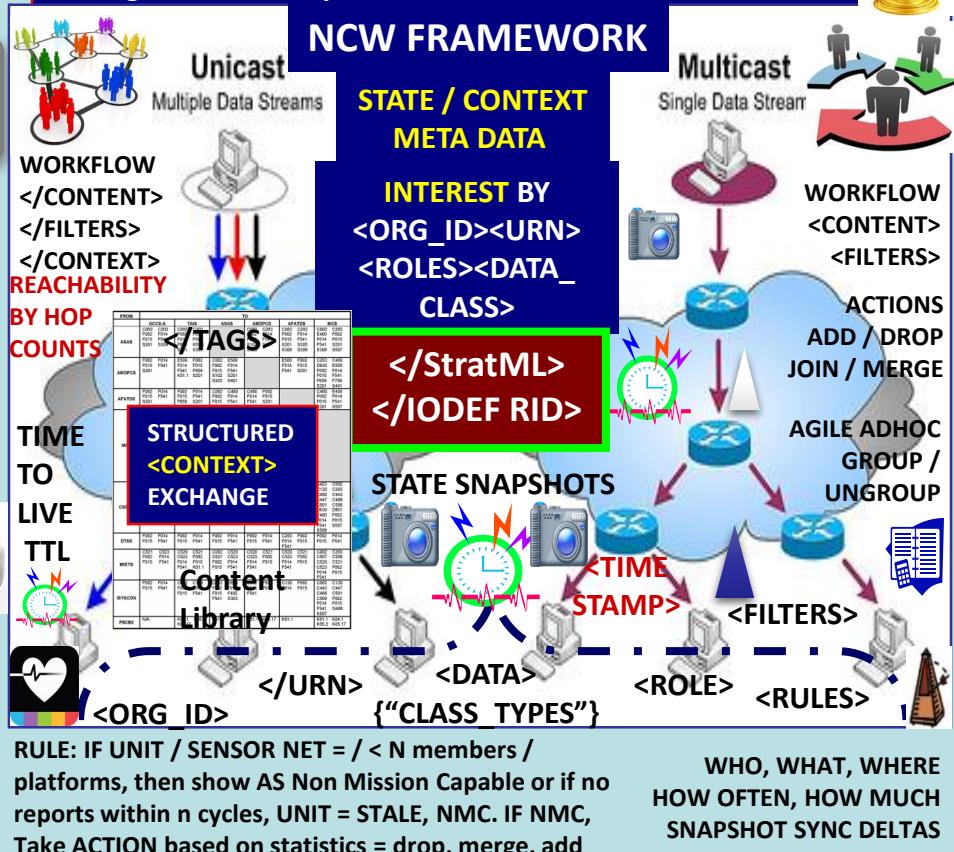
- SDN is a *framework* to allow network administrators to *automatically* and dynamically manage and control a *large number* of network devices, *services*, topology, traffic paths, and packet handling (quality of

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



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

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

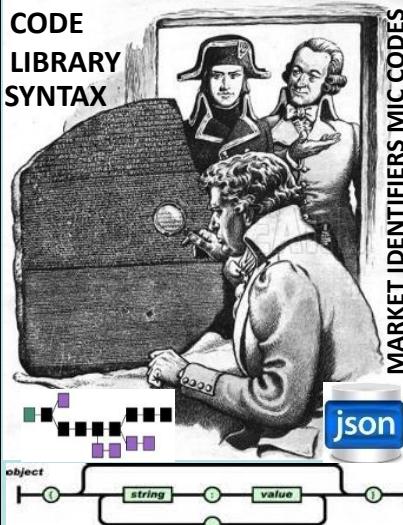


WHO, WHAT, WHERE  
HOW OFTEN, HOW MUCH  
SNAPSHOT SYNC DELTAS

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



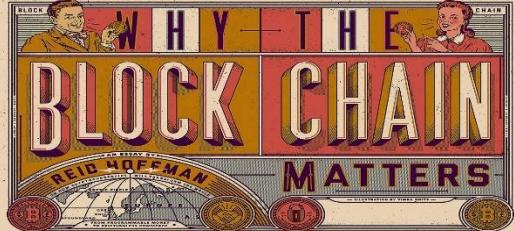
**“The CODE that secures Bitcoin could also power an alternate Internet** [LINK](#)



# TradeNet



## Programmable Money \$\$\$



RIED HOFFMAN 15 May 2015 [LINK](#)

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

WIRE



BREVITY CODES  
MARKET ID CODES

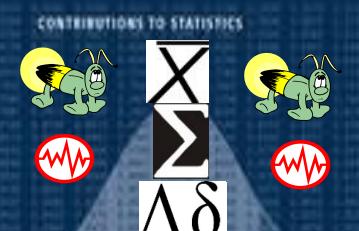
NATO



OTAN



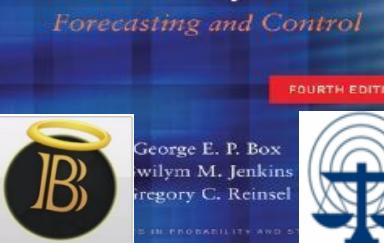
MONEYBALL ECONOMICS



Price Indexes in Time and Space

Methods and Practice

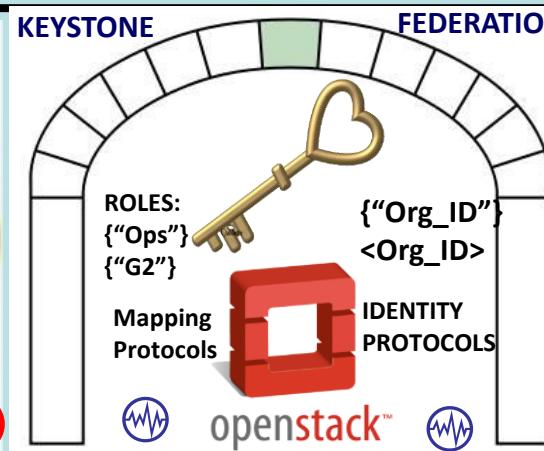
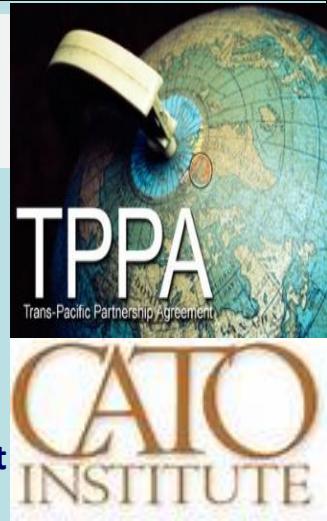
SLA SLA-O





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

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





# Blockchain

BLUEPRINT FOR A NEW ECONOMY



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



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

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



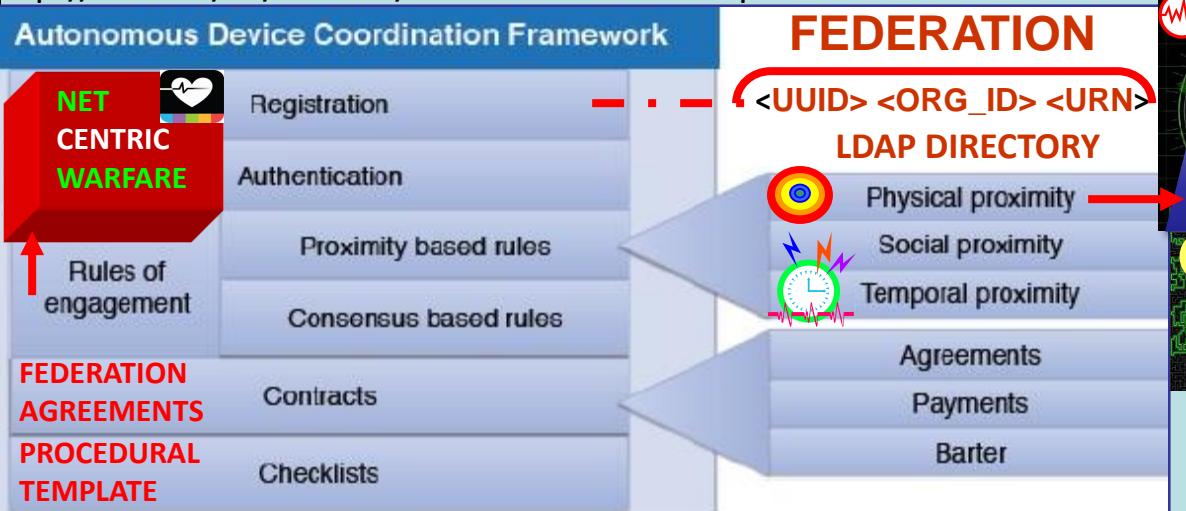
The proposed **Universal Timezone System** would do away with all these different time zones. Instead, it would be the same time all over the world, all the time.



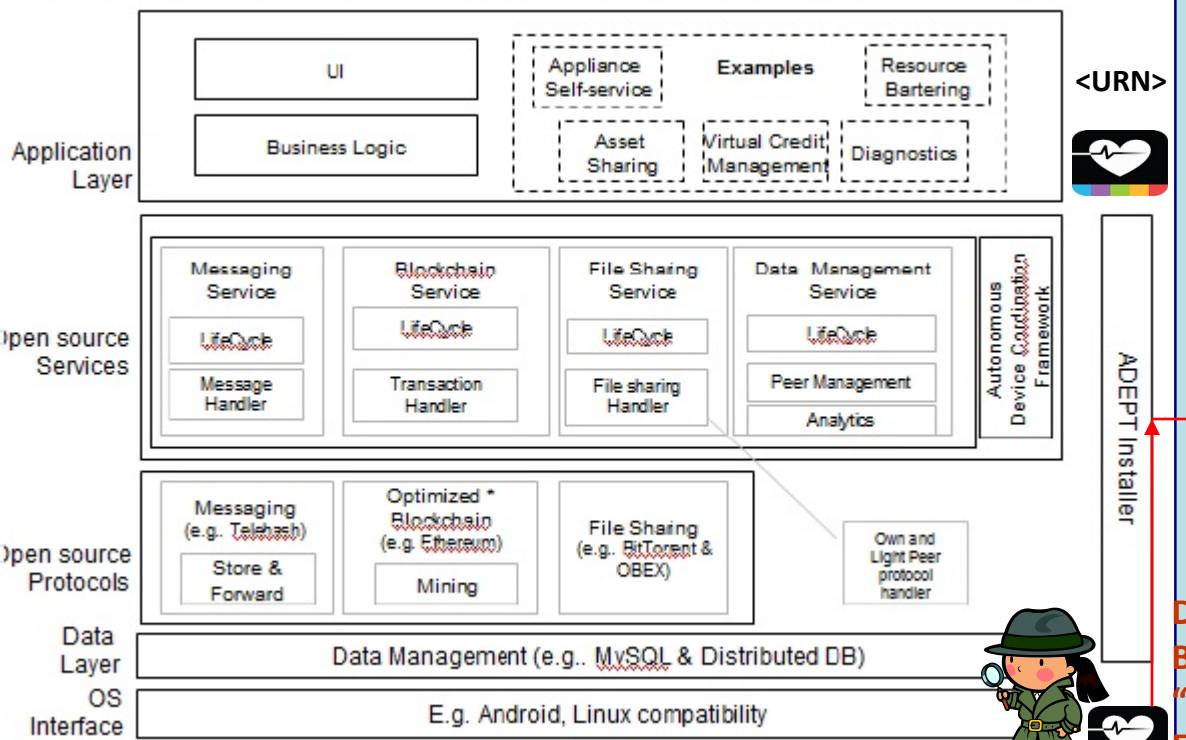
A decentralized exchange called BitSquare has [launched a campaign](#) on the decentralized crowd funding app [Lighthouse](#). Its campaign is simultaneously an example of how powerful decentralized crowd funding is, and how difficult running a successful campaign is... segue to the MESH ECONOMY

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.

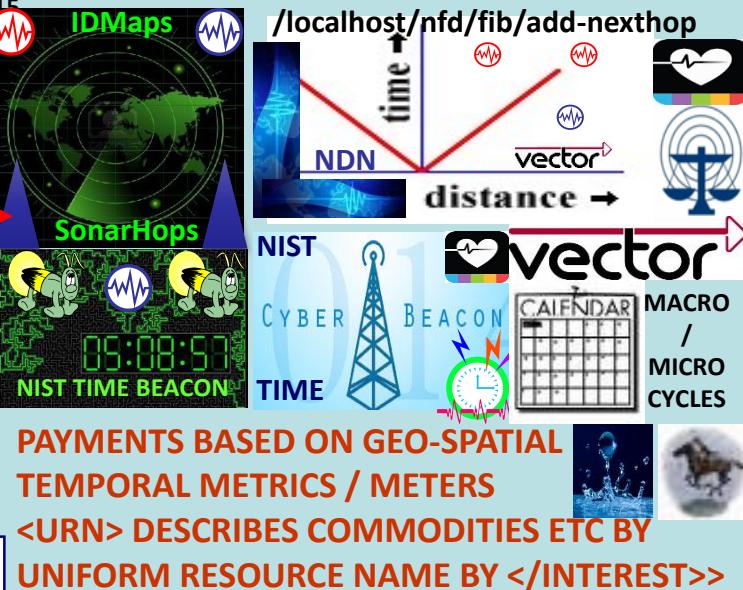




ADEPT Standard Peer Architecture – Logical View



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



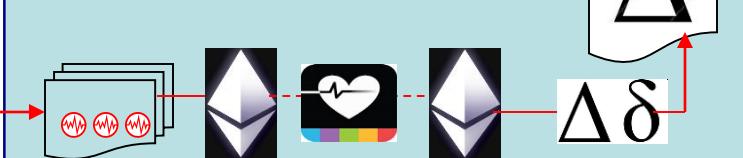
•  •

 © 2013 Pearson Education, Inc.

## ASSET SHARING WITHIN FEDERATION

**BUSINESS LOGIC = WORKFLOW <XML\_Wf>**

# 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 WRANGLED PRIOR TO FUSION CENTER  
ENHANCED ANALYTICS / PROTECTS BANDWIDTH**

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



## NIST QUANTUM ENCRYPTION RANDOMIZATION BEACON

UNPREDICTABLE SAMPLING

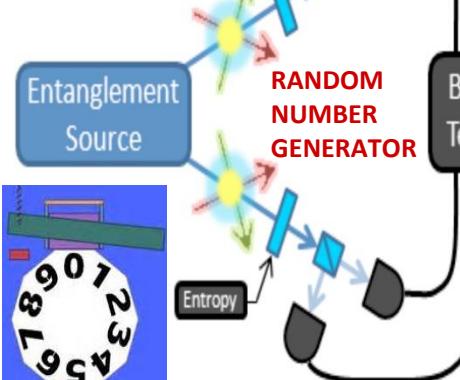
SECURE AUTHENTICATION

SECURE MULTI

PARTY /

AUTHENTICATION

Entropy



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

Time / Distance Metrics



PROXIMITY

OFFSHORE BEACONS ONSHORE

ACCOUNT BELONGS TO </Org\_ID>

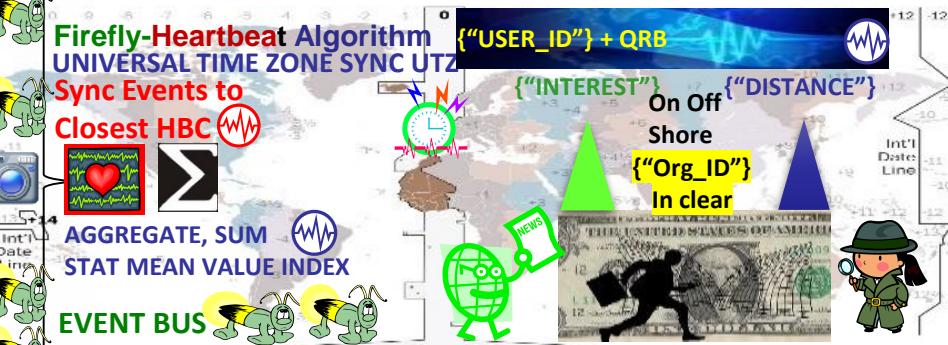
RESOURCE TYPE: <URN><URN><URN>

DEVICE / SENSORS <UUID><UUID>

Higher-level services collect distance data to build virtual distance map State Snap Shots

NDN  
</interest></distance>

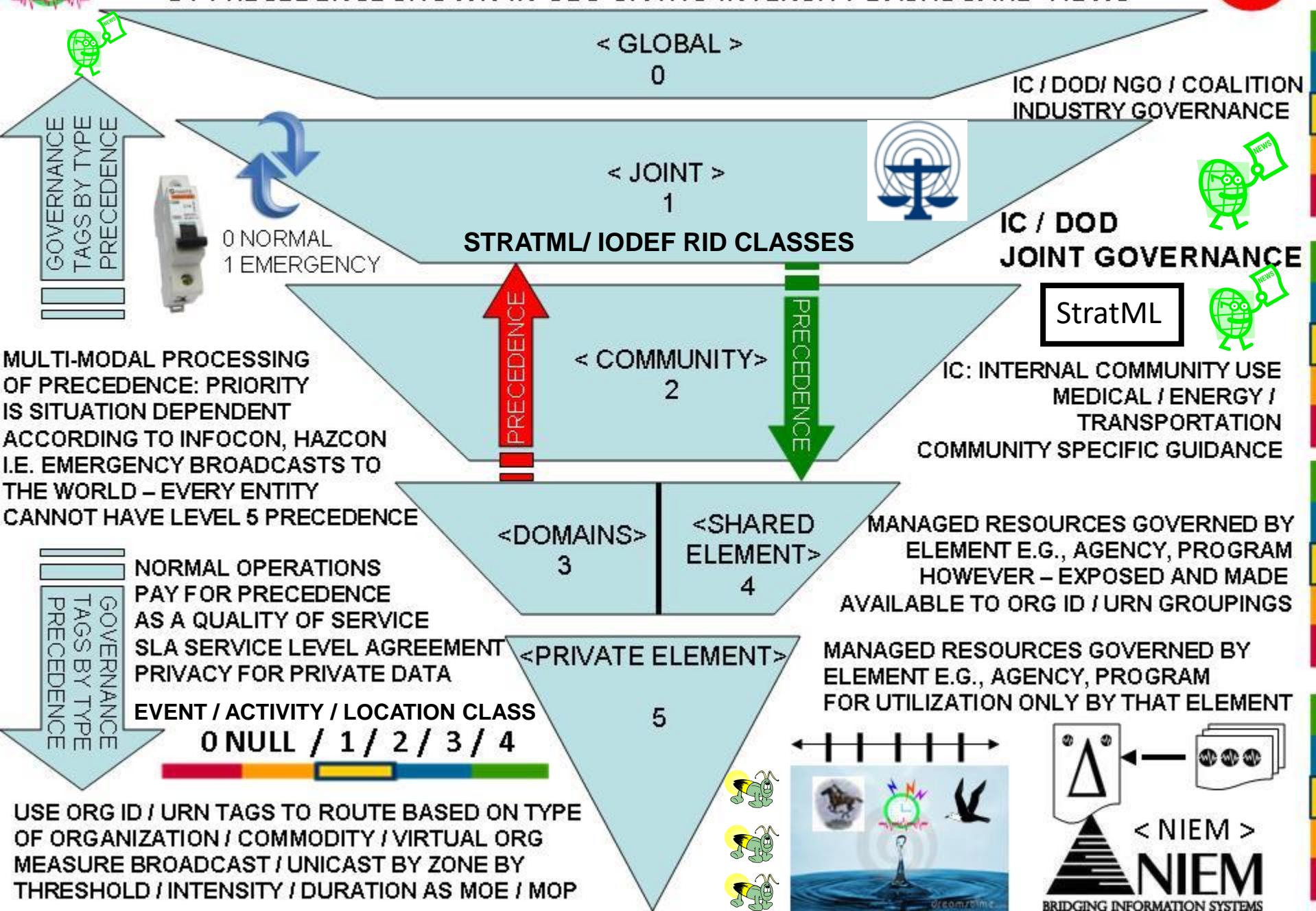
The current standard time common throughout the world is based on a 24-hour clock, with zones that are either 12 hours ahead or behind Coordinated Universal Time (UTC). However, these time zones are decided upon by individual governments, without overall coordination and can even extend fourteen hours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



The proposed Universal Timezone System would do away with all these different time zones.



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



# Situational Awareness Reference Architecture (SARA)

Identity, Inventory, Activity, and Sharing

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



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

## <ELEMENTS>

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

STRATEGIC MARKUP

StratML

LANGUAGE

Industrial Control System Information Sharing and Analysis Center

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

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

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

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

CONTENT LEXICON  
ROSETTA STONE

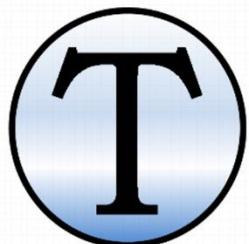


AVALANCHE

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

FIRM	GCOB-A	TAB	ASAB	AMPCB	AFATOB	MGB
ASAB	C0201	C0201	C0201	C0201	C0201	C0201
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## Three ideas combined

HOW TRUTHCOIN WORKS:

### 1) Tradable Reputation

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

### 2) SVD Cross-Validation

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



### 3) Strategic Use of TIME

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

## 2. A kind of ‘Future Wikipedia’

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

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

## 3. A software protocol

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

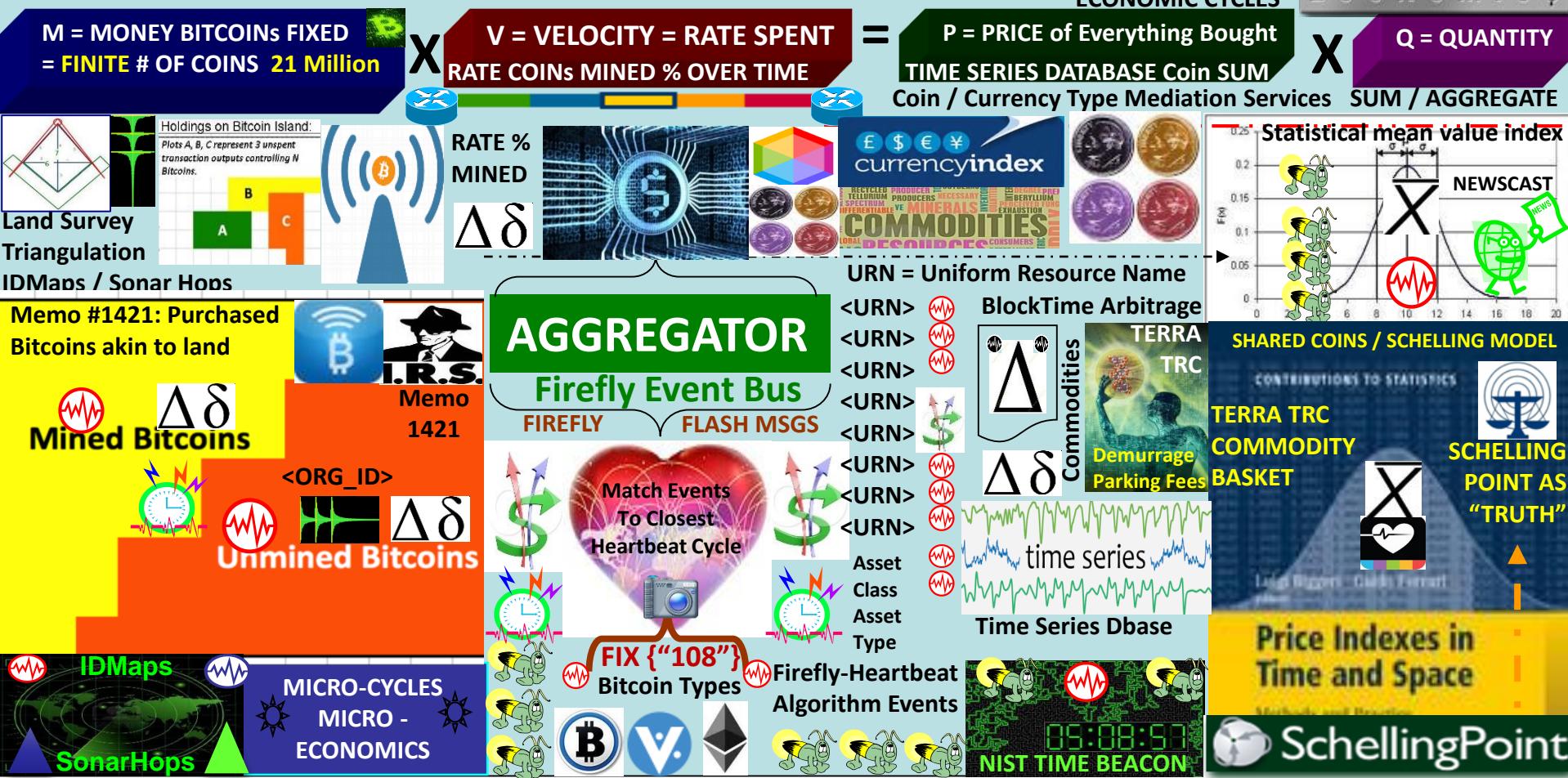


Protocol (Decentralized)	Centralized Non-Protocol
Spoken English	Shakespeare’s Globe Theatre, The Library of Alexandria, MLA Citation Format, Walt Whitman, J.K. Rowling.
Rules to American Football	The NFL, ESPN, The Buffalo Bills.
Bluetooth	A Set of Stereo Speakers, The iPhone 6, A Car Radio Equipped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

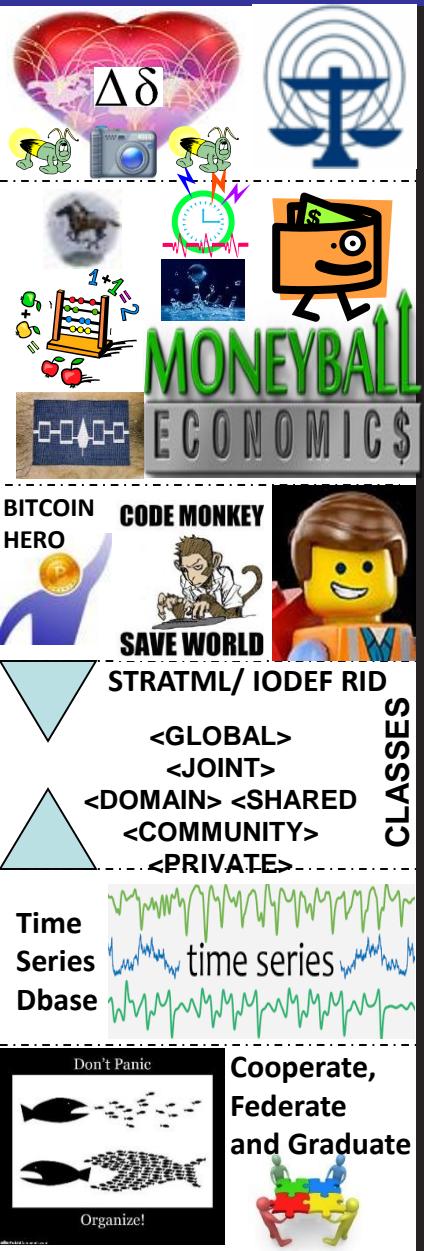
# How 'Bitbanks' Could Solve Bitcoin's Volatility Problem

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

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



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



## HOW GAMIFICATION WORKS:

### 5 COMMON MECHANICS

#### POINTS

Measure a user's achievements in relation to others  
Can double as currency to exchange for rewards

#### BADGES

Reward achievements visually

#### LEVELS

Encourage users to progress and unlock new rewards

#### LEADERBOARDS

Organise players by rank

#### CHALLENGES

Encourage engagement by offering specific tasks to complete

### 4 MAIN WAYS TO DRIVE ENGAGEMENT

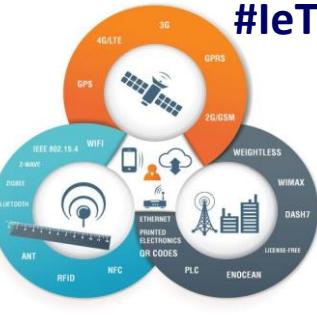
#### ACCELERATED FEEDBACK CYCLES

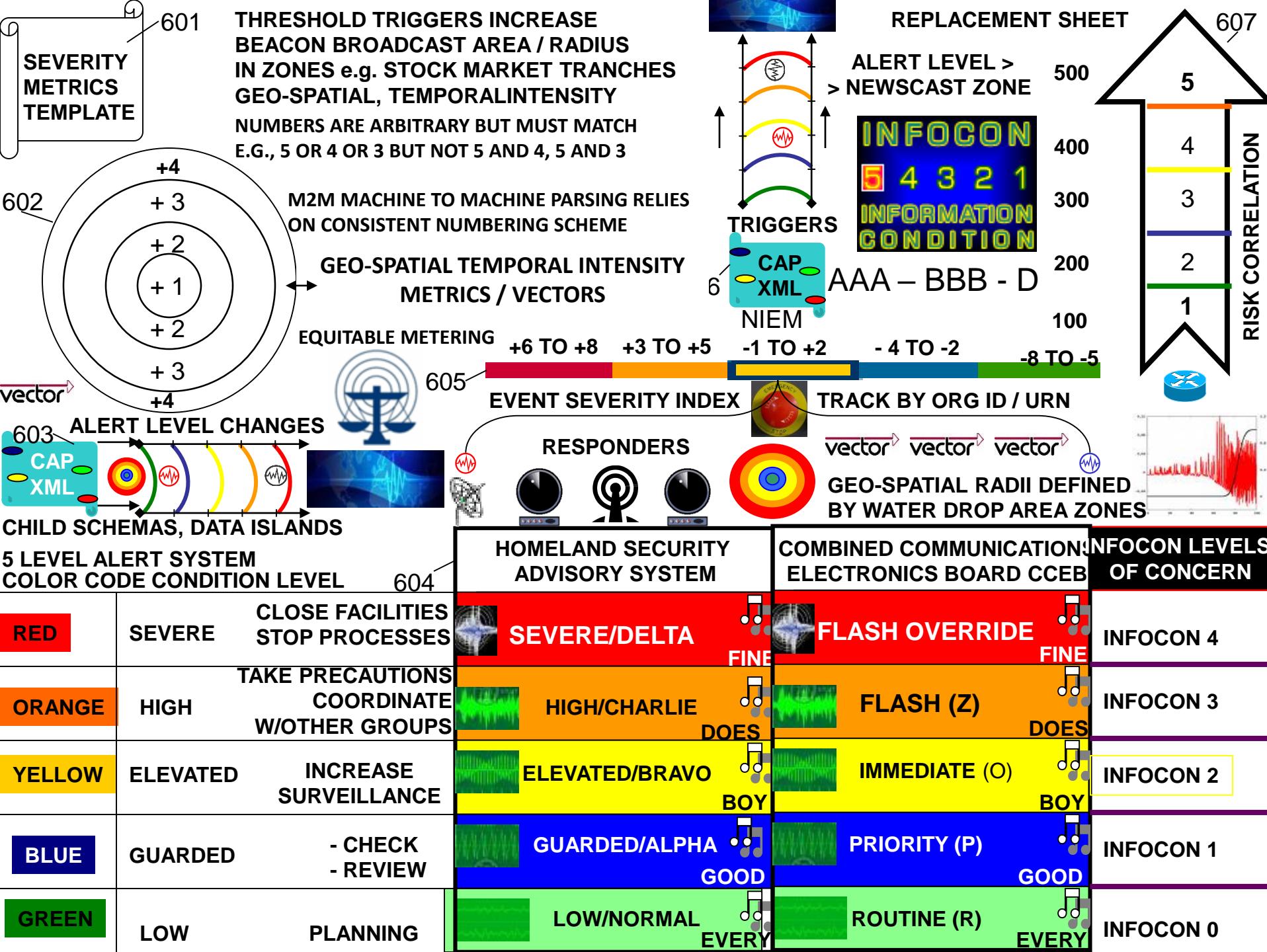
#### CLEAR GOALS AND RULES OF PLAY

#### A COMPELLING NARRATIVE

#### CHALLENGING BUT ACHIEVABLE TASKS



Interface Name	<b>HEARTBEAT Administration Interface [SCOP]</b>					
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>					
<b>API Information</b>  	<b>Functionality Areas</b>  	<b>Cloud Interface Management</b> , configuration, start, stop cloud services, edit configuration (heartbeat messages)				
	<b>API Operation Count</b>					
	<b>Web service access type</b>	<b>Web application, front end to [network, device, system] heartbeat]</b>				
	<b>LANGUAGE / PLATFORM BINDINGS</b>	<b>PHP</b>	  			
	<b>Interface Characteristics</b>					
	<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>					
<p>"The external environment could update <u>resources</u> at random... One solution is a <b>heartbeat</b>: defining a default lease duration and delaying updates until the next <b>cycle</b>"</p>						
   						
<b>QubitCoin Interval: Every 30 Seconds</b>						



# GEO-SPATIAL TEMPORAL INTENSITY METRICS, METERS, VECTORS



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



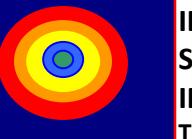
## Geo-Spatial Temporal Intensity NOVEL METRICS / METERS:



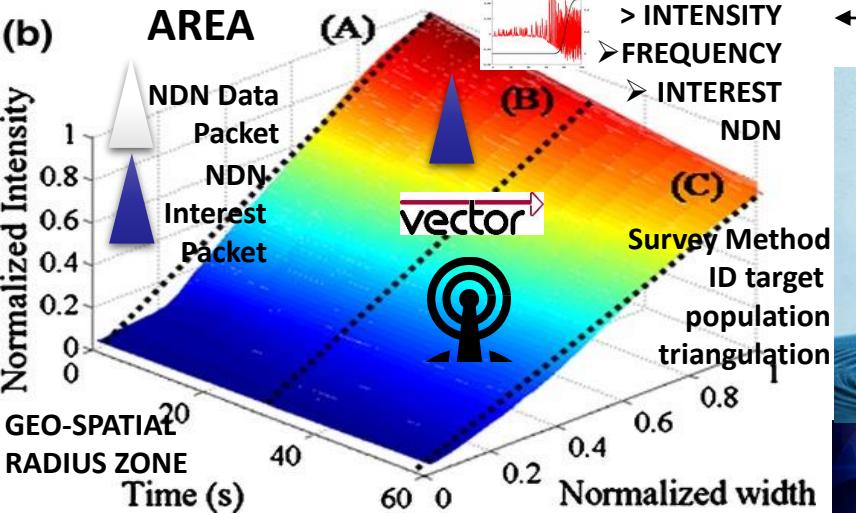
Paul Revere = linear, sequential



TCP/IP hop by hop counts, by hop controls



Water Drop = AREA / INTENSITY Cyclic Frequency



# NAMED DATA NETWORKING

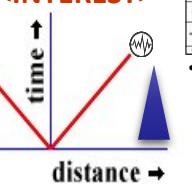
</IoT>  
MQTT



NIST TIME BEACON

05:08:50

<INTEREST>



ARRESTED-D

Hop Count



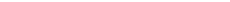
Number of Hops = 3

TTL = Time To Live

Stop

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

IDMAPS  
SONARHOPS  
INTERNET  
TRIANGULATION



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

0.0001 .05 .01 .1 0 5 15 30 99

vector WirelessHART

time synchronized, self-organizing, mesh Net

ALERT LEVEL > NEWSCAST ZONE



SINE-WAVE

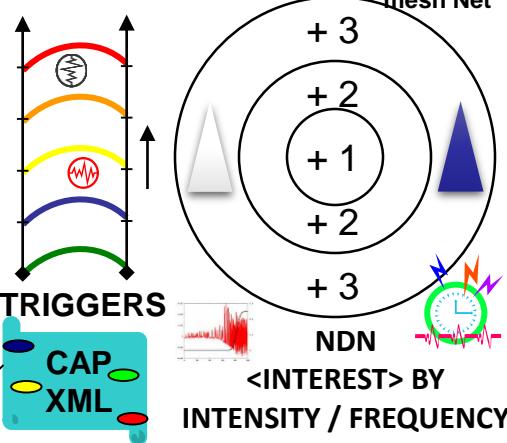
TRIGGERS

CAP XML

NDN

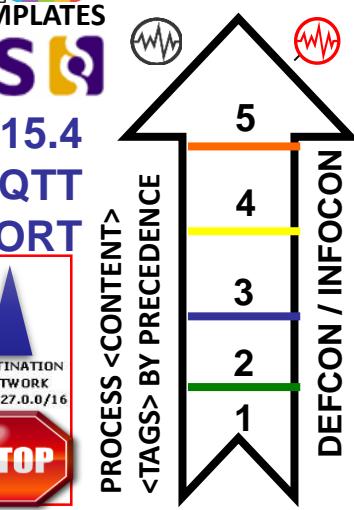
<INTEREST> BY

INTENSITY / FREQUENCY

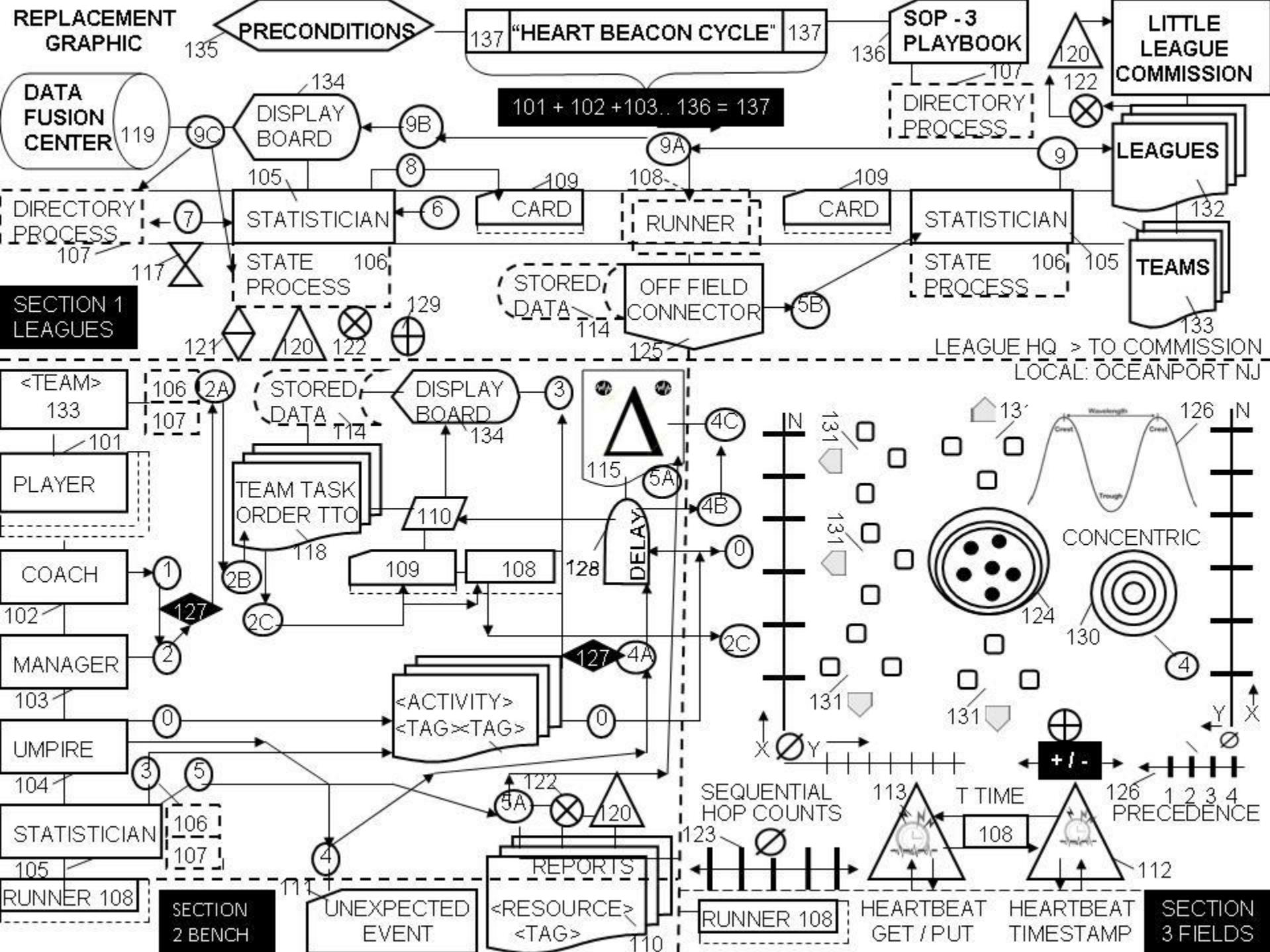


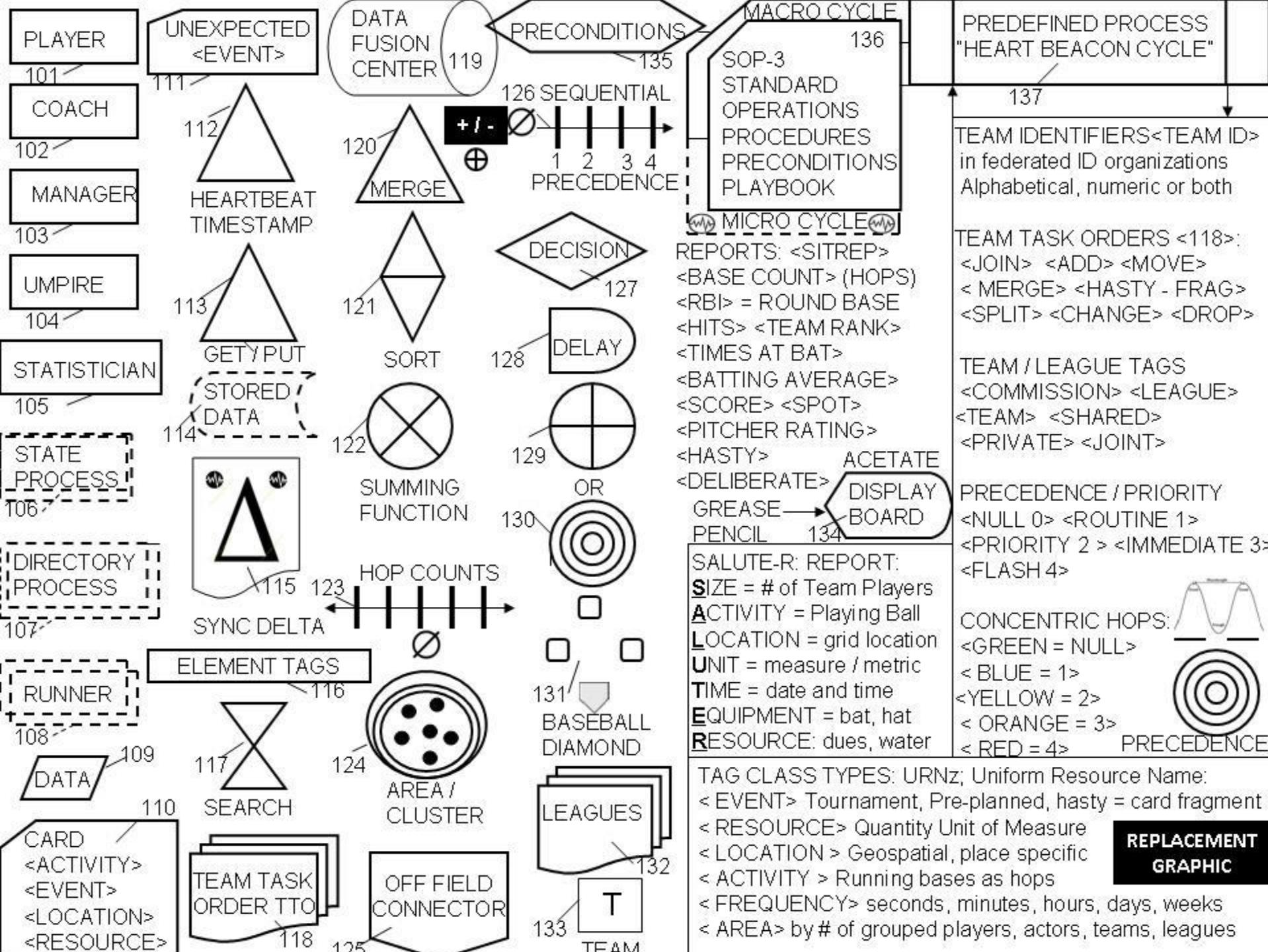
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XML  
MTF  
300 +  
MSG

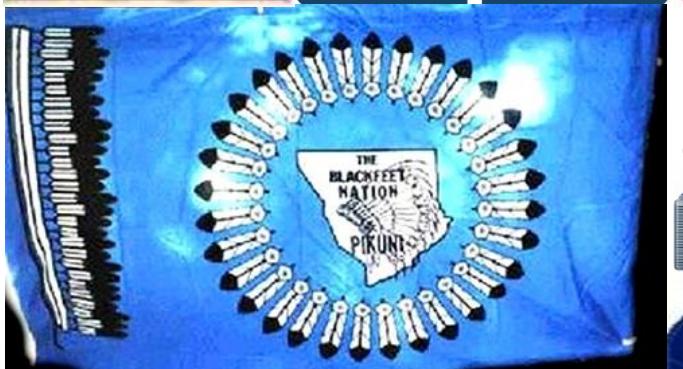
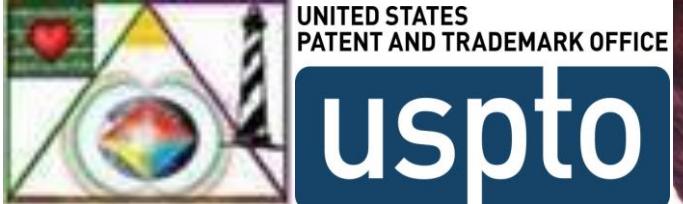
5 4 3 2 1  
INFORMATION CONDITION



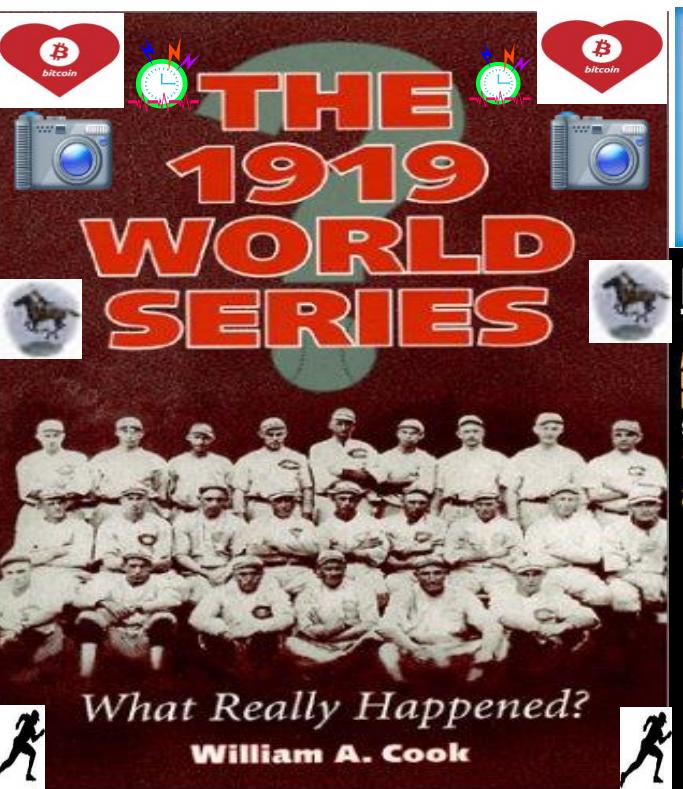
DEFCON / INFOCON







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”

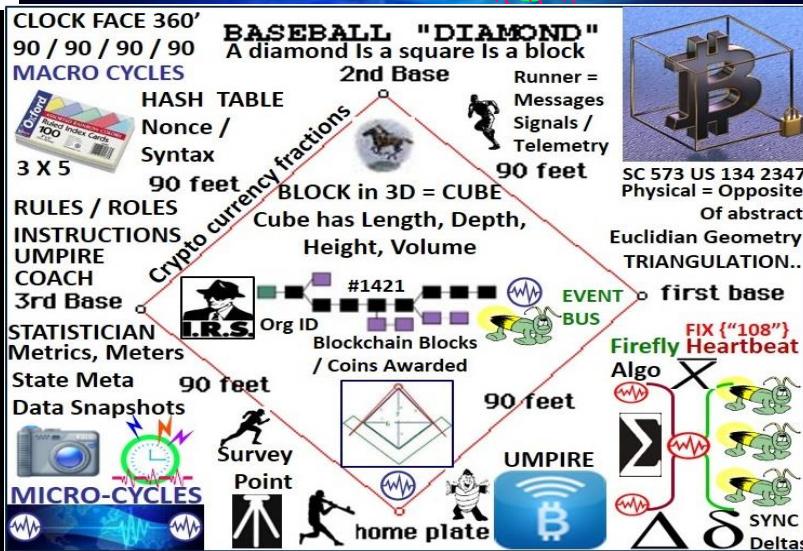


13/573,002



## 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







Telemetry  
ANNEX

the world famous  
inventor of the  
geodesic dome

# r. buckminster fuller operating manual for spaceship earth

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



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



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







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

