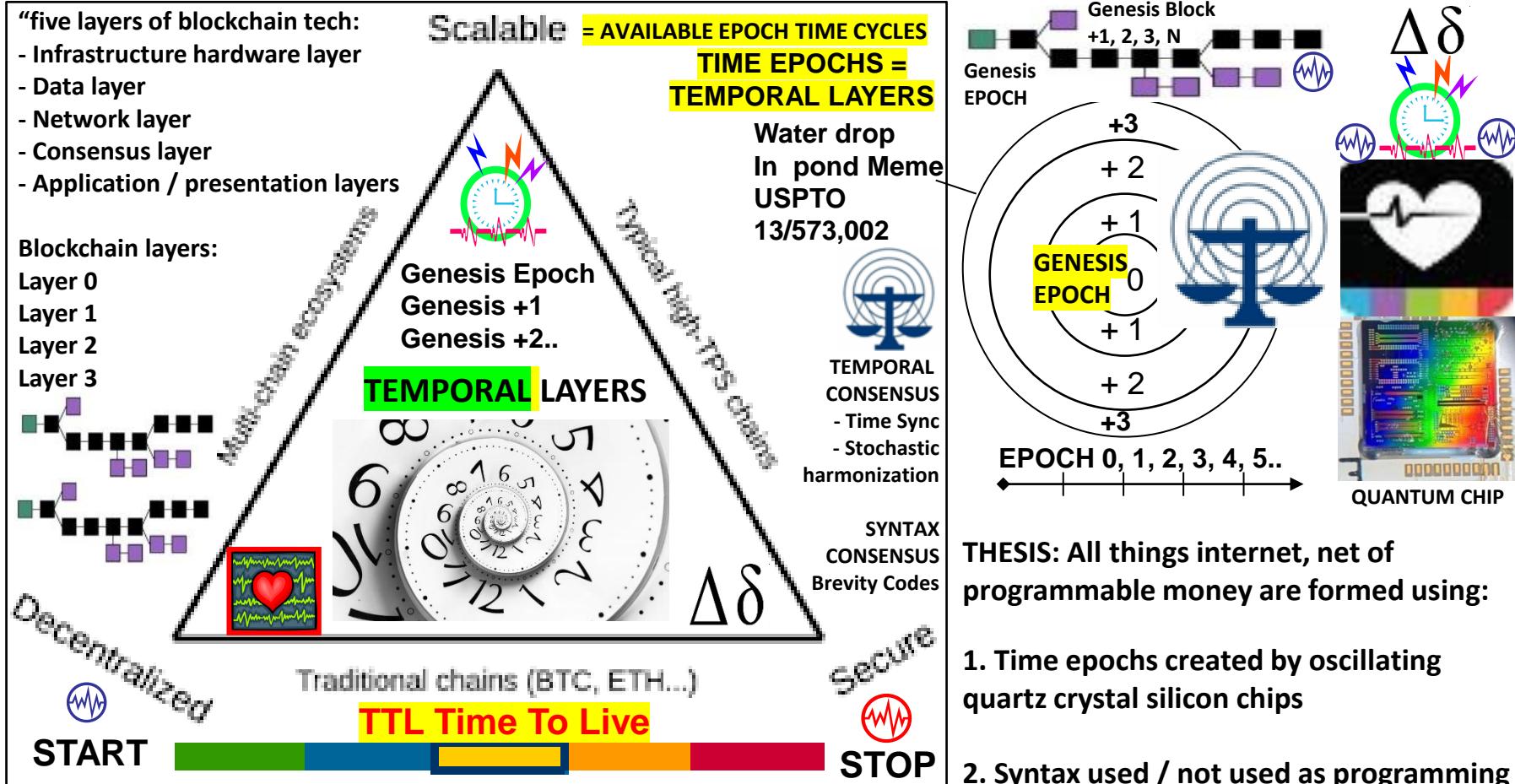
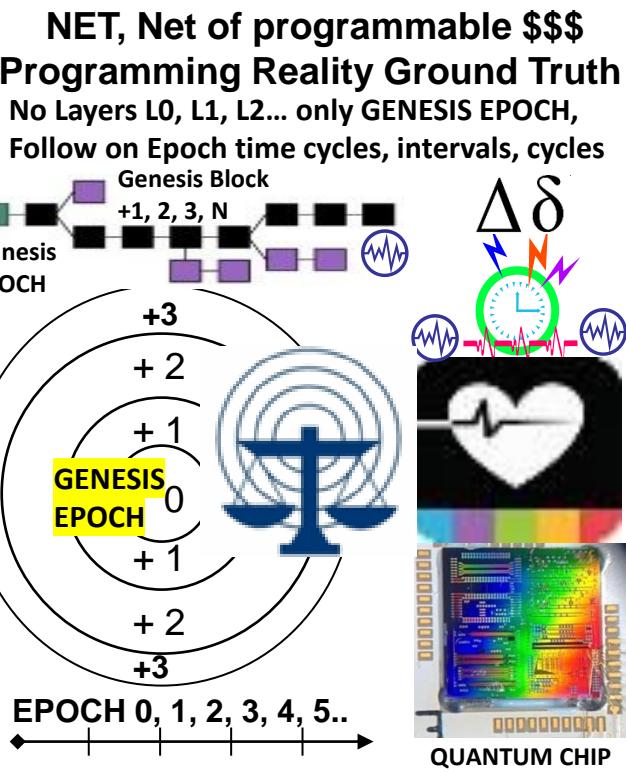




# Blockchain Quad-lemma



Blockchain = series of hashed blocks carrying transactional records. The first block of the blockchain is the **Genesis block**. After that, every new block added to the blockchain is linked to the Genesis block through a (temporal) iterative process.



**THESIS:** All things internet, net of programmable money are formed using:

1. Time epochs created by oscillating quartz crystal silicon chips
2. Syntax used / not used as programming instructions during epoch time cycles

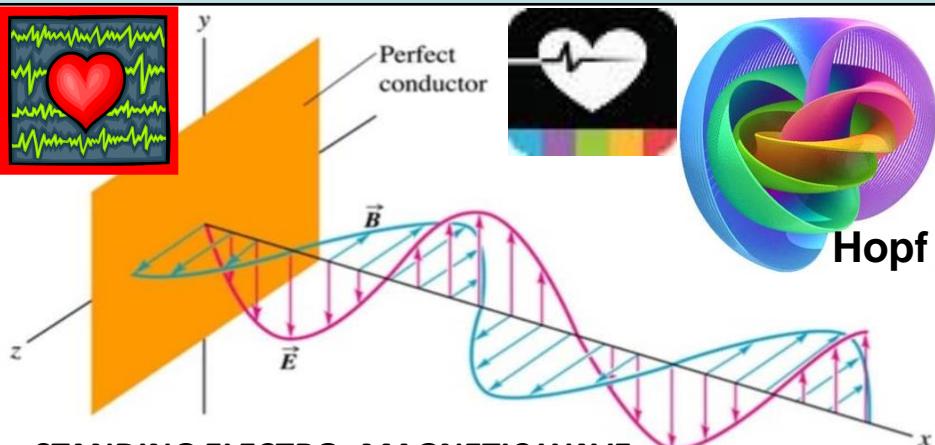
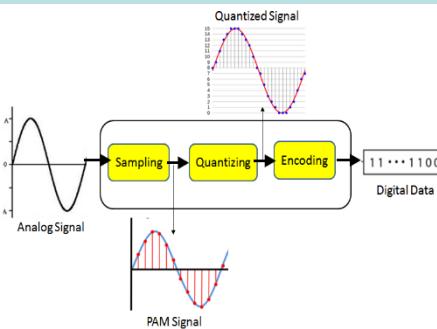
All things internet, internet of money, blockchains are formed by unicast, multicast, anycast protocols. Programmable money's improvements are in cryptography. The internet consists of unicast, multicast broadcast, anycast and workflow filters, publish – subscribe paradigms..

THESIS: All things net, net of programmable \$\$\$ are formed using:

## ENERGY / DATA WAVE PROPAGATION / METRICS / METERS

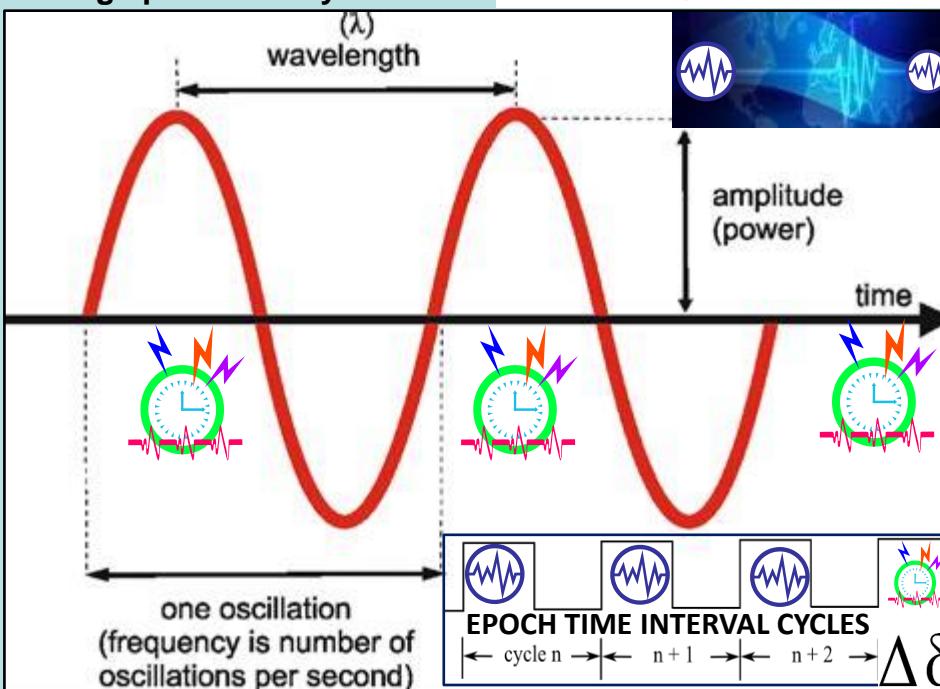
1) Time epochs created by quartz crystal silicon chips

2) Syntax used / not used as programming instructions during epoch time cycles

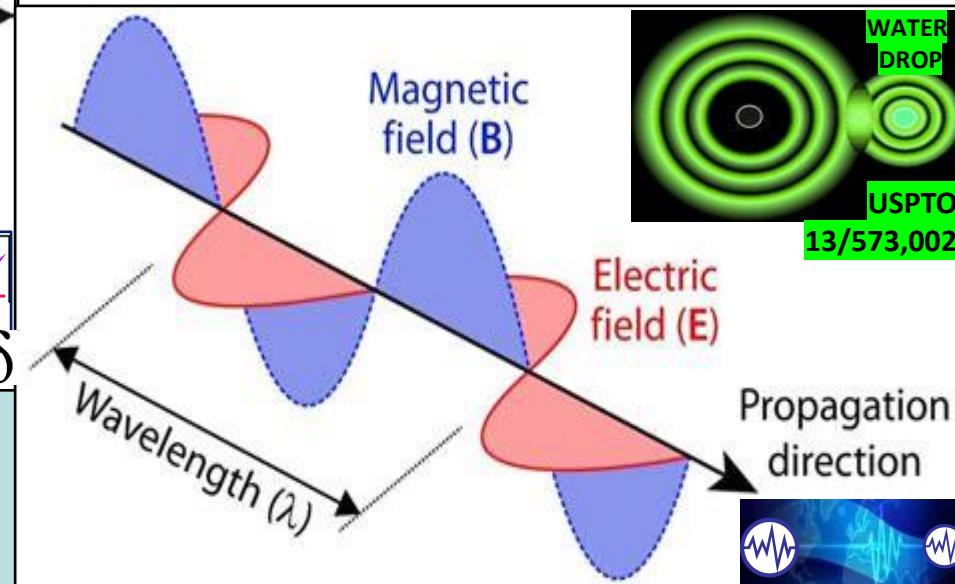


### STANDING ELECTRO- MAGNETIC WAVE

A **standing** electromagnetic wave does not propagate along the x-axis; instead, at every point on the x-axis the  $E$  and  $B$  fields simply oscillate.



Quantum Computing Vibrations encode, process data like quantum computers. A simple mechanical system built from aluminum rods uses vibrations to encode information, mimicking quantum computing in a non-quantum system. "Light is made from photons, the quantum of light." mechanical vibrations or sound waves can be described in a quantum-mechanical manner i.e., composed of phonons: the smallest possible units of mechanical vibration,"Link: [https://phys.org/news/2018-06-quantum\\_1.html](https://phys.org/news/2018-06-quantum_1.html)



"Nature may reach the same result in many ways. Like a wave in the physical world, in the infinite ocean of the medium which pervades all.. Nikola Tesla



# Eco Economic Epochs Heartbeat

# DEFI FINTECH IP WARS / Litigation Foundation Tech



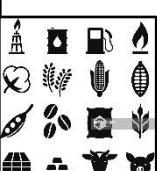
# **SWORDS to PLOWSHARES**



The logo features a blue camera icon on the left, followed by a blue circular icon containing a white brain-like waveform. To the right of these icons, the text "USPTO 13/573,002" is displayed in large, bold, black letters. Below it, "573 U.S. 134 SCt 2347" is shown in a slightly smaller, bold, black font. At the bottom, the words "Alice in Wonderland Ruling" are written in a bold, black, sans-serif font.

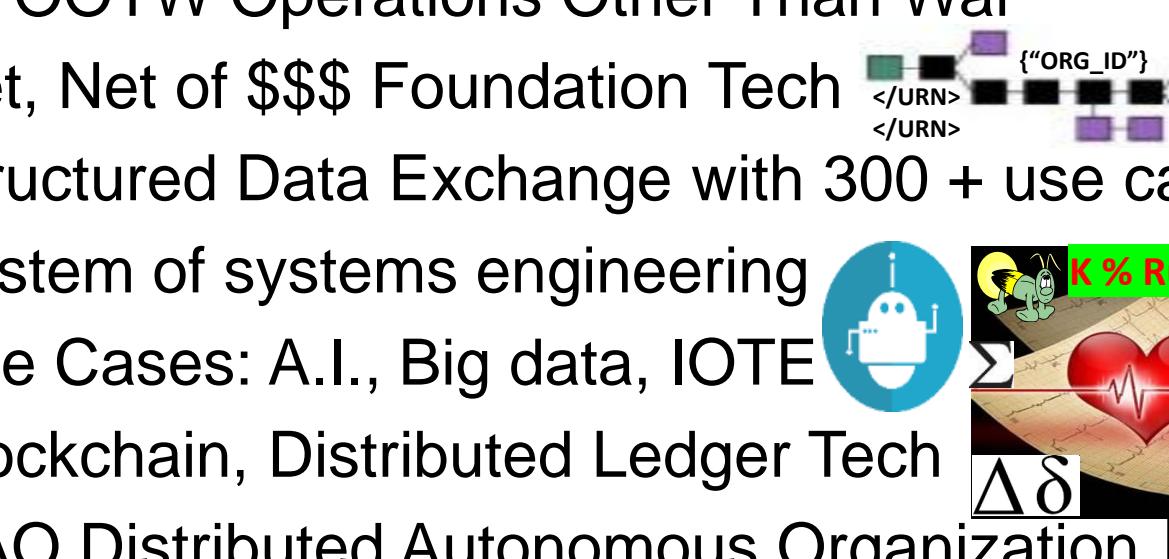


**Symbols  
Rule  
The World  
OPSCODE  
BREVITY  
CODES  
Mapped  
To symbols  
2525A,C D**



YNC DELTA  $\Delta\delta$   
ATA SNAPSHOT

INFOCON  
1 4 3 2 1  
INFORMATION  
CONDITION

- Battlefield Digitization, Net Centric Warfare for OOTW Operations Other Than War
  - Net, Net of \$\$\$ Foundation Tech
  - Structured Data Exchange with 300 + use cases System of systems engineering
  - Use Cases: A.I., Big data, IOTE
  - Blockchain, Distributed Ledger Tech
  - DAO Distributed Autonomous Organization
  - Trade Consensus, Signals, Telemetry

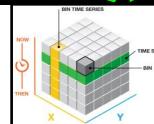
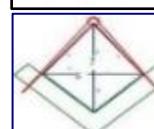
The collage includes:
  - A blue robot head icon.
  - A red heart with a ECG line overlaid.
  - A green ant icon with a speech bubble saying "K % Rule".
  - A blue circular icon containing a black and white binary chain diagram with labels like "</URN>" and {"ORG\_ID"}.
  - A small globe icon.
  - A 3D bar chart labeled "MIN TIME SERIES" with axes X, Y, and Z.
  - A yellow ant icon with a speech bubble saying "NOW THEN".
  - A blue and yellow gear-like icon.

## In the beginning (of time).. There was the word (syntax)

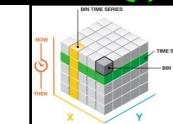


**Net, Net of \$\$\$ money consists:**

- 1) Epoch Time Cycles**
- 2) Syntax used / not in epochs**



MEMO #1421

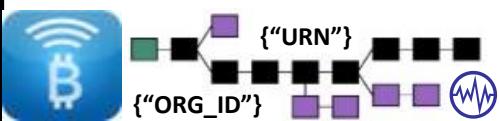


# Humanitarian Assistance Networked Donor System

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 concept of "OOTW Operations Other Than WAR or "Vernetzte Operationsführung" circa 2003

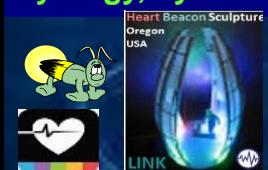


"Shared situational awareness enables collaboration synchronization, and enhances sustainability, speed of command"



300 +TEMPLATES  
STRUCTURED DATA  
EXCHANGE  
FFUIRNS FFUDNS OPSCODES  
MAPPED TO SYMBOL SETS

Reuse adaptive procedural template guides from Battlefield Digitization among a federated systems of systems improving synergy, synchronicity to achieve shared sustainable goals



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



# Beacon Communities

Vernetzte Operationsführung

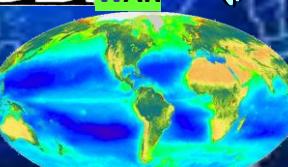


Proximity Beacons



JAEGERS

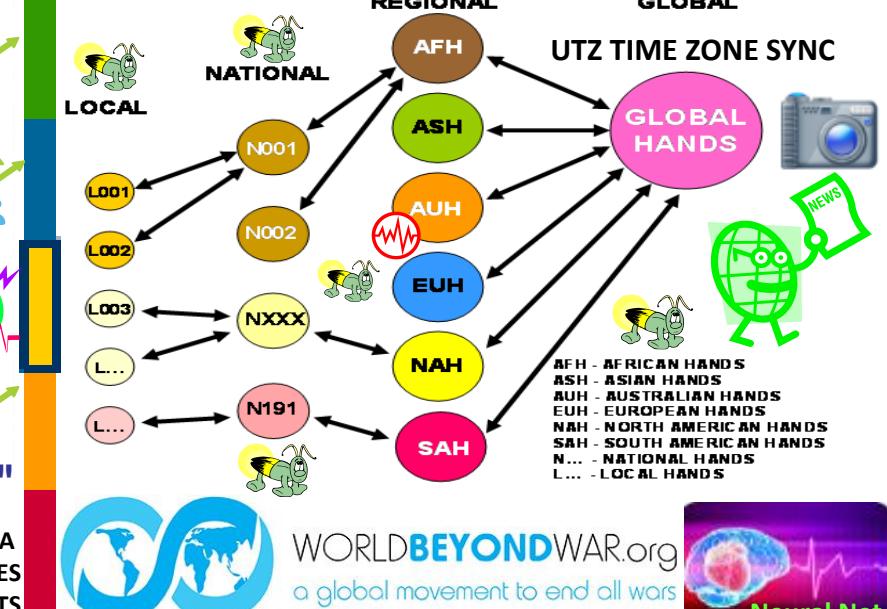
Closer < \$\$\$ < FUEL



KAIJU



SYSTEM  
Of  
SYSTEMS



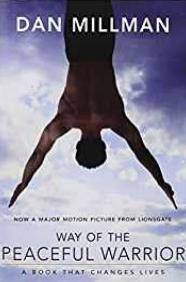
AFH - AFRICAN HANDS  
ASH - ASIAN HANDS  
AUH - AUSTRALIAN HANDS  
EUH - EUROPEAN HANDS  
NAH - NORTH AMERICAN HANDS  
SAH - SOUTH AMERICAN HANDS  
N... - NATIONAL HANDS  
L... - LOCAL HANDS



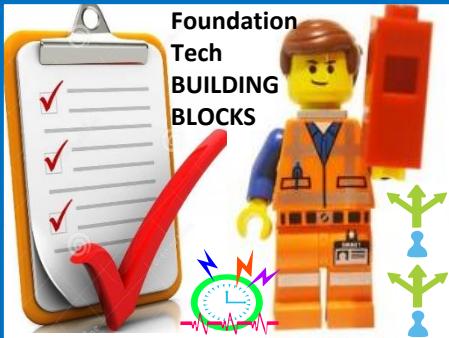
WORLD BEYOND WAR.org  
a global movement to end all wars



Neural Net



OFF SHORE  
OUTER BANKS



# **Series of systemic actions to achieve goals ex: form, maintain ECO sustainable**

**Trade Federations i.e., closer = < fuel, CO<sub>2</sub>**

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

Universal Event Bus Algorithm      Flash Heartbeat      </108> messages

Sync geo-spatial temporal Eco econometrics across space-time

## **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**

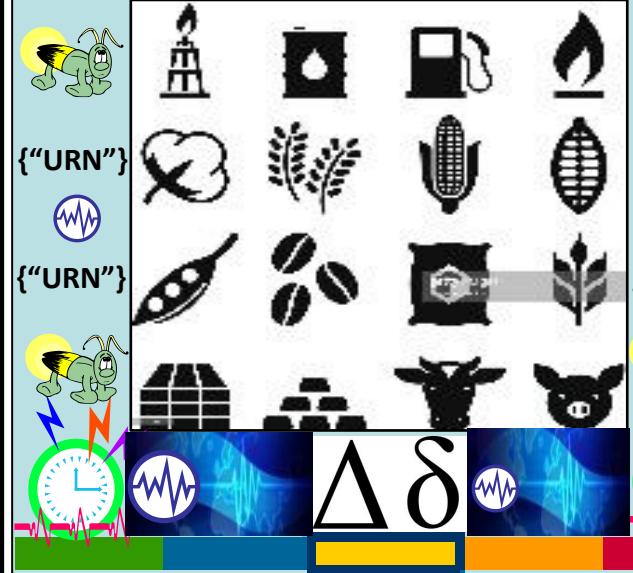
## **CHECKLIST: TRADE FEDERATION ECONOMIC FRAMEWORK EX:**

- 1) Organize with Organization Identifiers {"Org\_ID"}
  - 2) Track RWA Real World Assets / Commodities by </URN>
  - 3) Take State Meta Data heartbeat snapshots @ 15 / N min
  - 4) Honor Satoshi's intent for Crypto to be paired w markets
  - 5) Use NIST Quantum Random Number Beacon QRNB

## **USPTO 13/573,002 = Spaceship Earth's Signals & Telemetry Annex**



# Tokenization of Physical Assets Enables Economy Of Everything



## ALGORITHMIC STABLE COIN COMMODITY INDEX CURRENCY PROGRAMMABLE \$\$\$



NETWORK  
CENTRIC  
OPERATIONS  
**INFOCON**  
5 4 3 2 1  
INFORMATION  
CONDITION



$\Delta\delta$



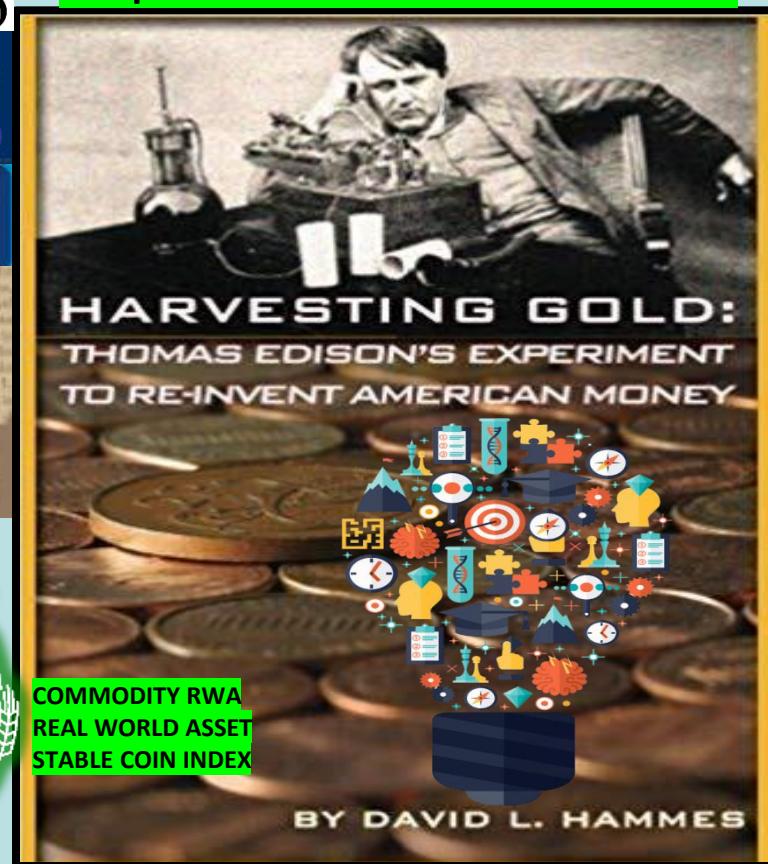
$\Delta\delta$



**FIREFLY – HEARTBEAT ALGORITHM CHINA:** nature-inspired metaheuristic optimization algorithm developed by Xin-She Yang flashing behavior of fireflies (Yang, 2008), adapted to solve continuous optimization problems (Lukasik and Žak) 2010, 2013

# Thomas Edison's Monetary Option Cambridge University Press 2009

"Crops hold their value best over time"



"Thomas Edison publicly introduced his latest invention: a new type of money, a crop index commodity-backed currency that he believed was the long-term solution to America's monetary woes. "I want to cast the variable out of money. This gold money is not good enough. It's a fiction" "New York Times 1922

</Organizational\_ID>  
</Personal\_ID>  
USPTO 13/573,002 The Heart Beacon Cycle Time – Space Meter



# THE BITCOIN BLOCKCHAIN FOR DUMMIES



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

Satoshi Nakamoto Bitcoin Paper



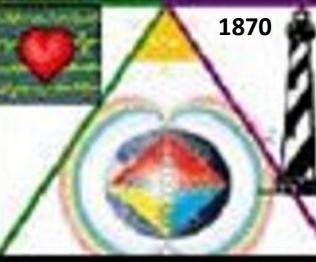
Satoshi Nakamoto



Craig WRIGHT  
a.k.a.  
Satoshi Nakamoto



"Bitcoin is a  
LANGUAGE"



1870

"THE VALUE OF  
BITCOIN IS  
TIME ITSELF"

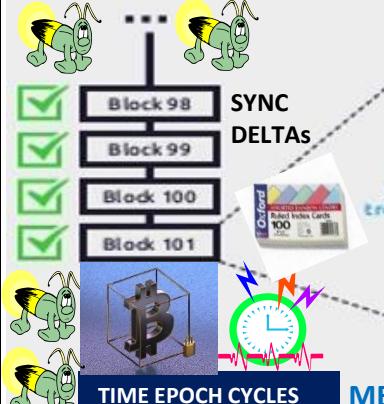
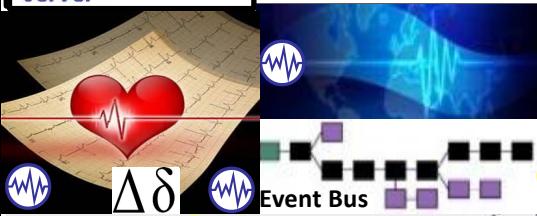
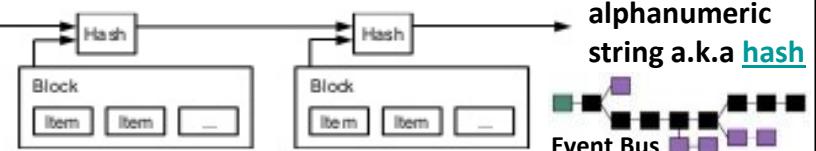
Wright Brother's 1<sup>st</sup> Flight  
Cape Hatteras Outer Banks

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

### 3. Timestamp Server

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

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



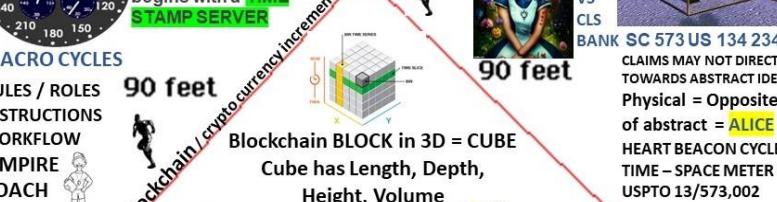
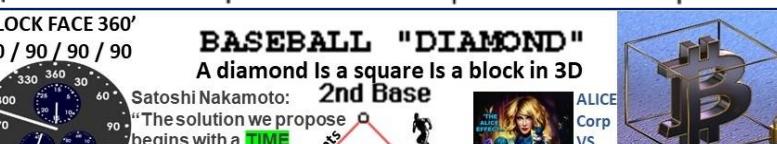
MERKLE: Summary built from block's transaction ID's

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

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

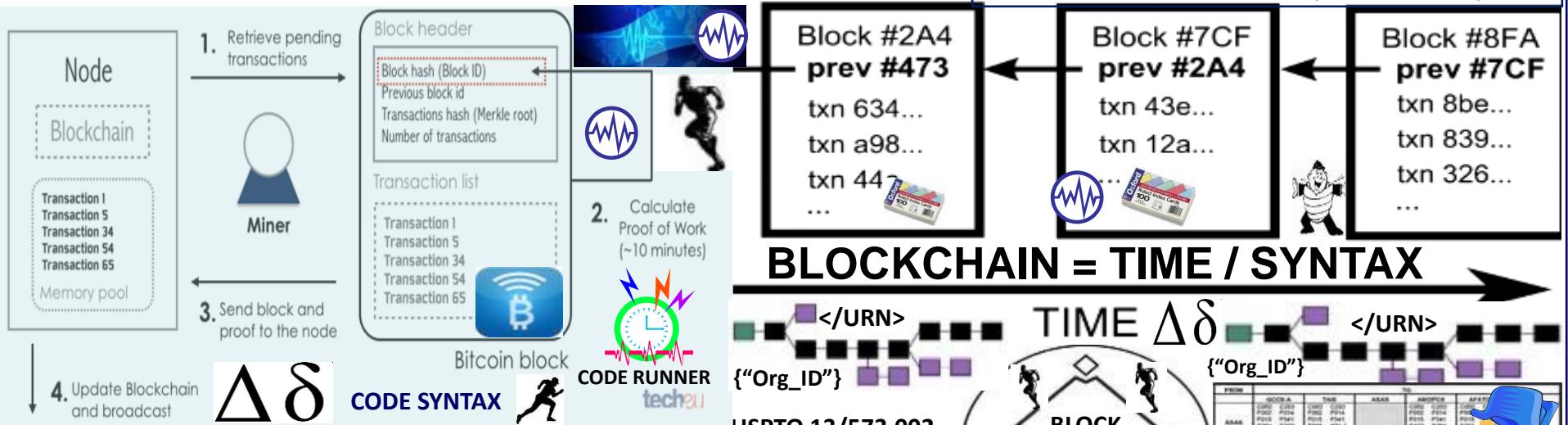
"All things net, net of money are formed with 1) epoch time cycles  
2) Syntax parsed as instructions

"THE VALUE OF BITCOIN IS TIME ITSELF"

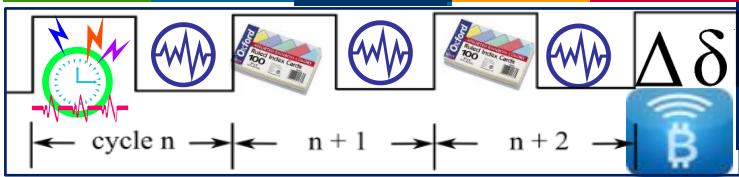
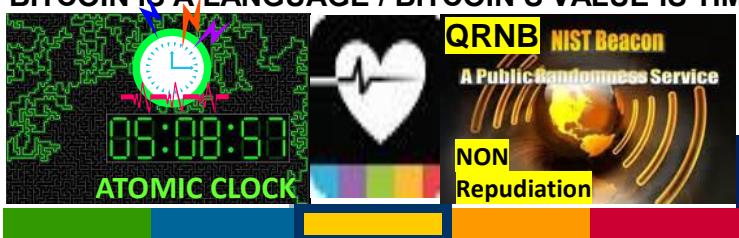




Alice Corp. v. CLS Bank International, 573 U.S. 134 SCt 2347 (2014) is a 2014 decision of the United States Supreme Court about patentable subject matter (patent eligibility).<sup>[2]</sup> The issue in the case was whether certain claims about a computer-implemented, electronic escrow service for facilitating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



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

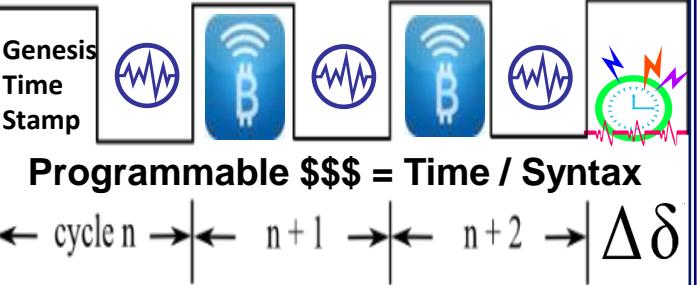


TIME EPOCH CYCLES

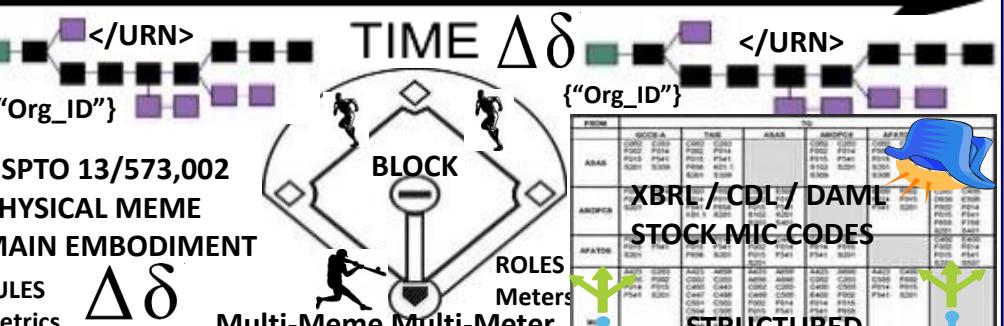
State Meta Data Snapshots



"BITCOIN MAKES USPTO 13/573,002 MONEY HEART BEACON CYCLE PROGRAMMABLE. TIME – SPACE METER MONEY IS STRUCTURED DATA SIMPLY DATA" EXCHANGE



BLOCKCHAIN = TIME / SYNTAX



STRUCTURED DATA EXCHANGE TEMPLATE FORMS LOGIC / FILTERS
SYNTAX LEXICON LIBRARY

Net of \$\$\$ formed with:

1 EPOCH TIME CYCLES

2 {"Syntax"} "The Word"

"In the Beginning" Genesis Block

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

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

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

## NAMED DATA NETWORKING



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



STOCK MIC CODES

STRUCTURED  
DATA EXCHANGE  
TEMPLATE FORMS

300+ USE CASES

LOGIC / FILTERS

SYNTAX / SYMBOL  
LEXICON LIBRARY

SYNTAX  
LEXICON

Library

1<sup>st</sup> Compiler

R  
W  
A

Real  
World  
Assets

A.I.

Alpha  
Numeric  
Brevity  
Codes

Coder Guide

Rosetta Stone



"BITCOIN MAKES MONEY PROGRAMMABLE.  
MONEY IS SIMPLY DATA"

"Bitcoin's Value is TIME itself"

"Time is specified in units of block transaction confirmation times"



ALICE CORP VS CLS BANK

"claims may not be directed towards an abstract idea"

US SC 573 US 134 2347



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

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



CLOCK FACE 360°  
90 / 90 / 90 / 90



MACRO CYCLES

RULES / ROLES

INSTRUCTIONS

WORKFLOW

UMPIRE

COACH

3rd Base

STATISTICIAN

Metrics, Meters

Stat Mean Value Index

3 X 5 HASH TABLES

STATE META DATA SHARDS

State Meta

Data Snapshots

Survey Point

MICRO CYCLES

BASEBALL "DIAMOND"

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

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

ALICE Corp VS CLS BANK SC 573 US 134 2347

CLAIMS MAY NOT DIRECT TOWARDS ABSTRACT IDEAS

Physical = Opposite of abstract = ALICE

HEART BEACON CYCLE

TIME – SPACE METER

USPTO 13/573,002

first base

RUNNER Message Bus

Firefly – Heartbeat Algo

X EVENTS

SETTLEMENTS / EXCHANGES = TAXABLE EVENTS AKIN TO PROPERTY

IRS #1421

FLASH MESSAGE EVENT BUS

FIX {"108"}

TIME STAMP SERVER

Epoch Time Cycles

Δδ

home plate

Time Stamp Server

Time Stamp Server



BIN TIME SERIES

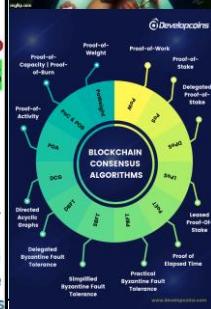
NOW

THEN

X

Y

Z



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

HEART BEACON CYCLE  
USPTO 13/573,002  
SURVEY METHODS

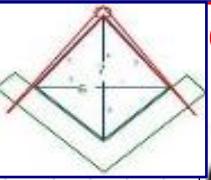
## SC ALICE CORP VS CLS BANK: “claims may not direct towards abstract ideas”

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.

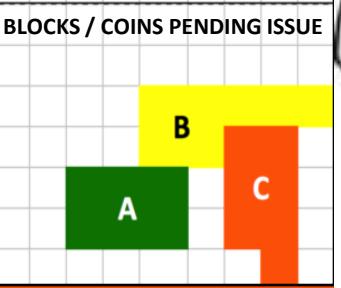


Memo #1421: Purchased Bitcoins are treated akin to property

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



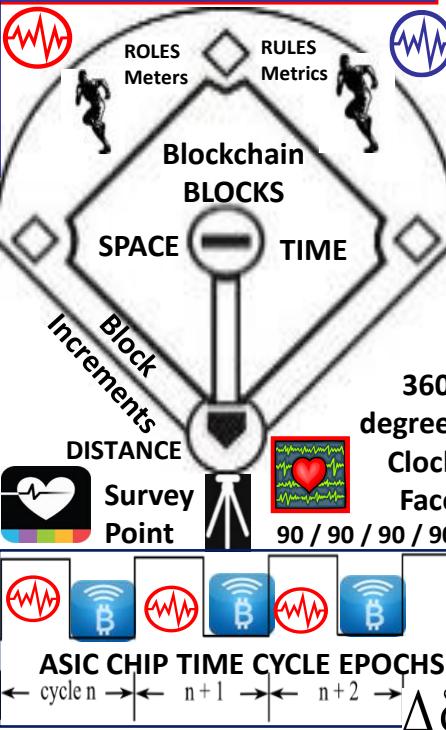
- End-state Bitcoin quantity will be fixed like land
- “Bitcoin as protocol of ownership, not transfer”
- Coins never travel, but simply switch owners”

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

Step 2: coins sent where, when Lat-Long, time stamp

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

Step 4: Issuing Org of Record adjudicates w buyer

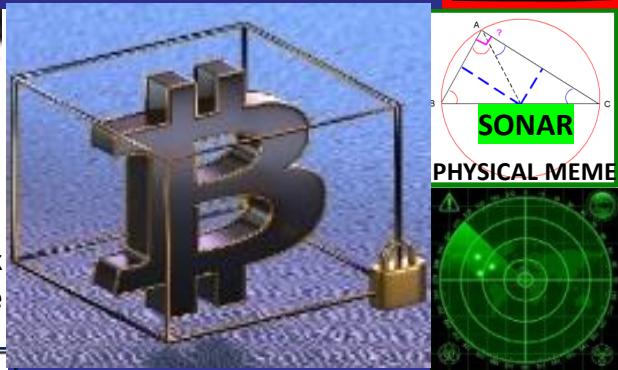


## TRIANGULATION

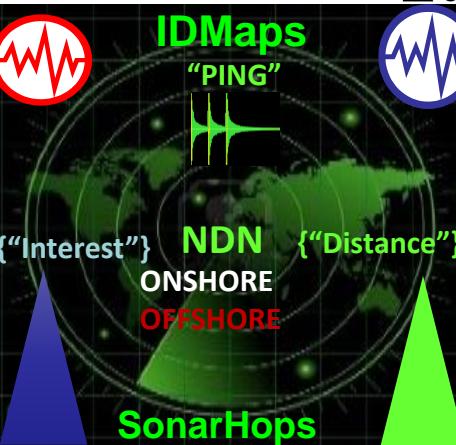


## DISTANCE ESTIMATION

## EUCLIDIAN GEOMETRY



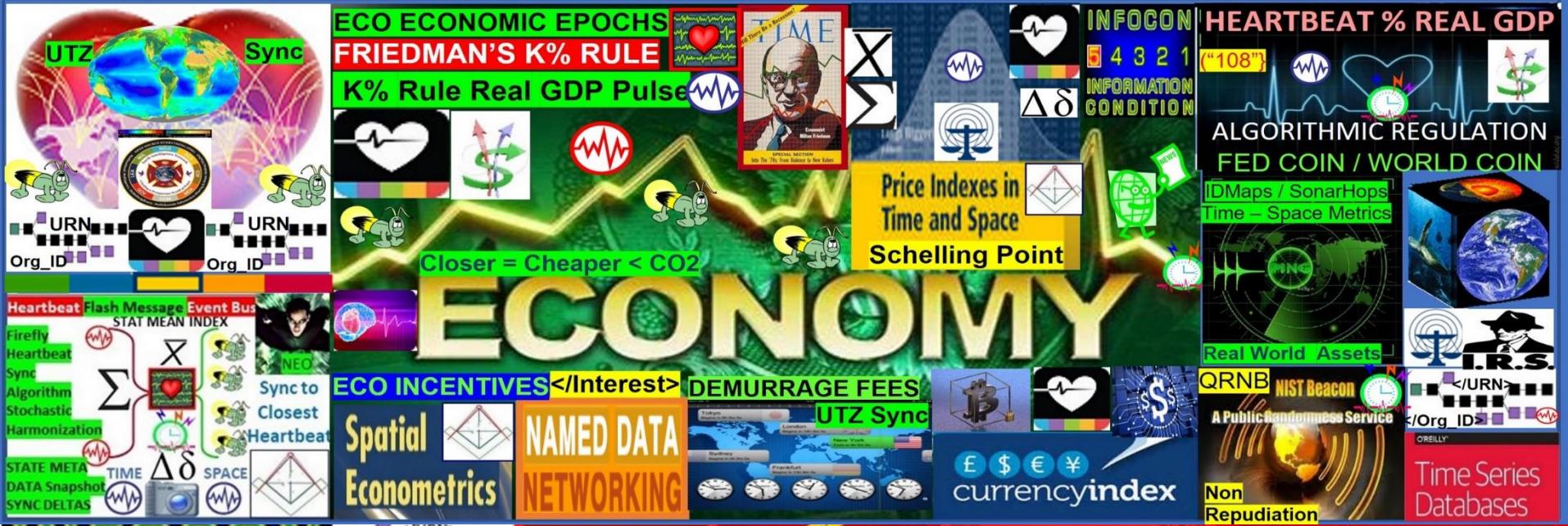
IDMaps assists Network Time Protocol (NTP) servers establish long term peering relationships



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



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



Eco Economic Epoch Heartbeat: reuse of DoD / NATO signal, telemetry syntax - symbol set structured data exchange system of systems engineering framework for DAO Trade Federations, programmable money / Economy. It is time to stand on the shoulders of giants. SLA Service Level Agreement Eco incentives: closer = < time, cheaper, < fuel, < CO2 "Build a new model that makes the old model obsolete" Buckminster Fuller



# Adaptive Procedural Template (checklist): Foundation tech for programmable \$\$\$, Economy / DeFI



- Reuse, mod of System of systems engineering framework, Syntax Lexicon Library data elements
- STRUCTURED DATA EXCHANGE  
Reuse brevity codes mapped to 2525D symbol sets comprised of 300 + message sets for A.I. - machine Block-Time DLT arbitrage among Trade Federations </Org\_ID> {“URN”} </URN> = COMMODITY

## Eco Economic Epoch GDP Heartbeat signals and telemetry framework



**USE CASE:** Banks - Tech firms are forming teams to assert foundation tech as a legal basis for IP intellectual property claims for programmable \$\$\$ DeFI

**Use Case:** Tokenize Europe 2025 initiative: reuse DoD / NATO's structured data brevity OPSCODES mapped to 2525A, B, C, D symbols needed for A.I. man-machine interface Reuse, modify 300 + Use Case message set templates data element FFIRNs FFUDNS or, redo a time, people intensive process that took decades to create, test and refine.



Attribute Series

**SCOTUS 2014 ruling  
SC 573 134 2347**



claims may not direct towards abstract Ideas”

Trade  
Reference  
Currency  
**TERRA**  
TERC

**Physical = opposite of abstract**

The collage includes the following elements:

- CLOCK FACE 360°: 90 / 90 / 90 / 90
- BASEBALL "DIAMOND": A diamond is a square is a block in 3D
- Satoshi Nakamoto: The solution we propose begins with a **TIME STAMP SERVER**
- 90 feet: Blockchain CURRENTS INTEGRAMENTS
- MACRO CYCLES
- RULES / ROLES
- INSTRUCTION WORKFLOW
- UNMPIRE COACH
- 3rd Base STATISTICIAN Metrics, State Mean Value Index
- 90 feet HASH TABLES STATE META DATA SHARDS
- State Meta Data Snapshots Survey Point
- MICRO
- Blockchain BLOCK in 3D = CUBE Cube has Length, Depth, Height, Volume
- INTERNATIONAL HEARTBEAT MESSAGE EVENT BUS
- SETTLEMENTS / EXCHANGES TAXABLE EVENTS AKN TO PROPERTY IRS FIX (\*108) FLASH MESSAGE EVENT BUS TIME Δ $\delta$  STAMP SERVER
- home plate
- cycle n → n + 1 → n + 2 → Δ $\delta$
- Alice Corp VS CLS BANK SC 573 US 134 2347 TOWARD ABSTRACT LOGICAL Physical = Opposite of abstract = ALICE HEART BEACON CYCLE TIME - SPACE METER USPTO 13/573,002
- first base RUNNER Message Bus
- Firefly - Heartbeat Algo EVENTS X
- COMMODITIES
- Ericsson Open \$\$\$ for Society

**“The solution we propose begins with a time-stamp server” Satoshi**

**"The internet, internet of \$\$\$ is comprised:  
1. Epoch time cycles 2. Syntax used / not  
used during epoch time cycles instructions**

**“Bitcoin is a language” “Bitcoin’s value = time itse  
Blocktime = computing clock-time that creates  
sync delta differentials in the chain of time  
described by MTT Machine Trust Language  
smart contracts adjusted by time arbitrators**

USPTO 20130166398 Ericsson System Method Implementing Context Based Payment System







## ISO Technical Committee TC68

Financial Services

SC2 Security	SC4 Securities	SC7 Banking
-----------------	-------------------	----------------

RMG members nominated by P-member countries and A-liaison organisations

TSG & SEG members nominated by all member countries and liaison organisations

ISO 20022 LV 66

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

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

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

SpaceMesh

PROOF OF FORMULATION

Space-Time Consensus Algorithm

BASEBALL "DIAMOND" A diamond is a block in 3D space-time. The solution we propose is to use a diamond shape to store the information about the block. The solution we propose is to use a diamond shape to store the information about the block.

CRYPTO CRAZE AND THE CHALLENGE TO BUSINESS

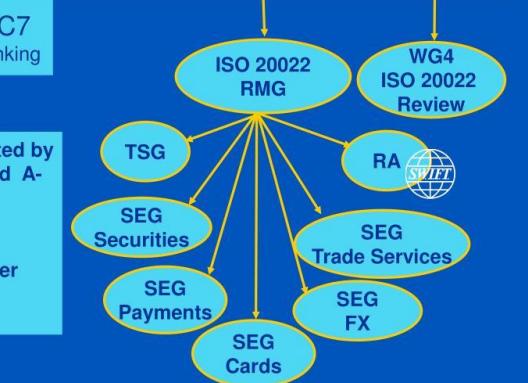
STRUCTURED MESSAGE EXCHANGE SYNTAX LEXICON: OPCODES-Symbol Sets AJ / Man - Machine

SETTLEMENTS-EXCHANGES TRADEABLES-SETS 90 feet

SYNTHETIC ASSETS STAMP SERVERS Survey Point Home plate

DATA SHARING

DATA SHARING



## FOUNDATION STANDARDS TECHNOLOGY

- ISO 20022
- MIL STD Structured Data Exchange
- DoD System of Systems Engineering

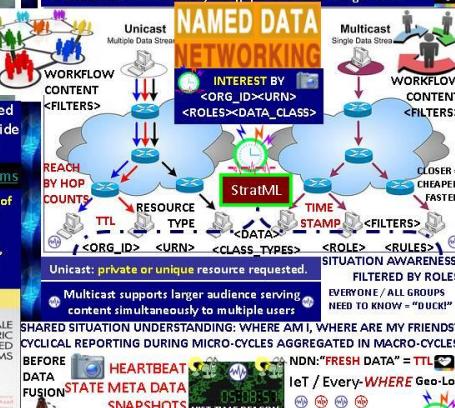
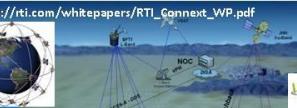
## CONSENSUS ALGORITHMS

- NDN: Named Data Networking
- ARIN, ASN-1 Binary XML
- 2525 A,B,C,D
- Symbol Sets for Human – A.I.

"The fundamental value driver is easy integration of applications into subsystems, of subsystems into systems, and of systems into larger SYSTEM OF SYSTEMS"

NET FUNDAMENTALS USED BY MANY OTHER SYSTEMS / FRAMEWORKS

The term *unicast* is contrasted with the term *broadcast*, which means transmitting the same data to all possible destinations. Another multi-destination distribution method, *multicasting*, sends data only to *interested* destinations by using special address assignments.



## BOOK Large Scale Network Centric Distributed Systems

A workflow consists of an orchestrated, repeatable pattern of business activity enabled by the systematic organization of resources into processes that provide services, or process information. It can be depicted as a sequence of operations, declared as work for a person or group, an organization of staff, or one or more simple or complex mechanisms.

<http://en.wikipedia.org/wiki/Workflow>

THE GLOBAL EARTH OBSERVATION SYSTEM OF SYSTEMS

LARGE SCALE NETWORK-CENTRIC DISTRIBUTED SYSTEMS

White Boxes vs. Parallel and Sequential Computing

<GLOBAL>

<SHARED>

<JOINT>

<DOMAIN>

<COMMUNITY>

<PRIVATE>

Multicast supports larger audience serving content simultaneously to multiple users

EVERYONE / ALL GROUPS NEED TO KNOW = "DUCK!"

SHARED SITUATION UNDERSTANDING: WHERE AM I, WHERE ARE MY FRIENDS? CYCLICAL REPORTING DURING MICRO-CYCLES AGGREGATED IN MACRO-CYCLES

BEFORE DATA FUSION STATE META DATA SNAPSHOTS JUST TIME BEACON

NDN: "FRESH DATA" = TTL

iT / Every-WHERE Geo-Lo

OASIS

0.001 .05 .01 .1 0 5 15 30 99

## NAMED DATA NETWORKING

ICS-ISAC

<CONTENT> <INTEREST> <STRAT\_ML> <ODEF\_ID> <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 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

STRUCTURED <CONTENT> TEMPLATES

FILTERS LOGIC

Don't Panic

KEYSTONE FEDERATION

Identity Provider

- <OPS>

- <INTEL>

openstack

PARTIX X: Distributed Democratic Participation

<Part> <Part>

<Part> <Part>

<URN> <URN>

## ARIN

American Registry for Internet Numbers

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

- URNs IDENTIFICATION (SENSORS, DEVICES)

- URLs LOCATE / FIND RESOURCES

SITUATION AWARENESS NEWSCAST

SURVEY METHOD

ID <ITEMS> INTEREST GEO-SPATIAL AREA

TEMPORAL INTENSITY MEASURES / METRICS

CROWD SOURCING TRIANGULATION

TELCO MESH FABRIC

vector

CROWD SOURCING / FUNDING

BY <TAG\_TYPES>

Ledgers Contracts Trade SLA Agreements

ETHEREUM: Decentralized Autonomous Organizations

DAO

VOTE ON BLOCKCHAIN

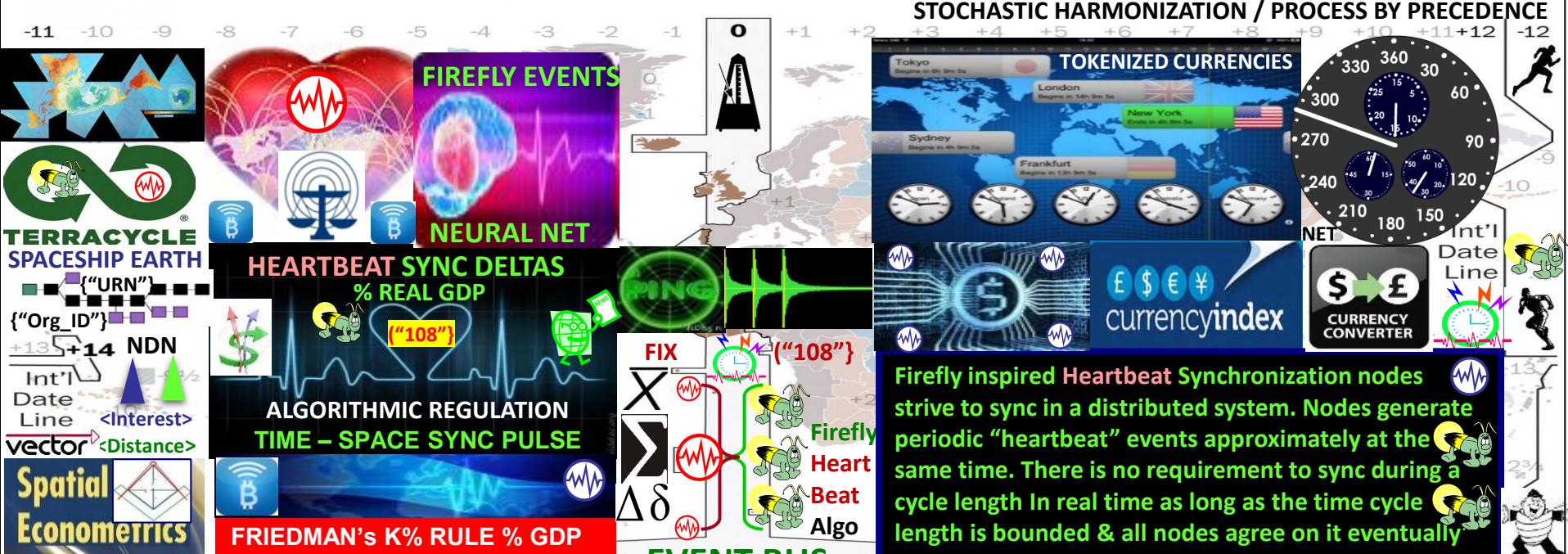
FEDERATED ID

World Financial Standard ISO 20022 is a multi part international Standard prepared by ISO Technical Committee TC68 Financial Services. It

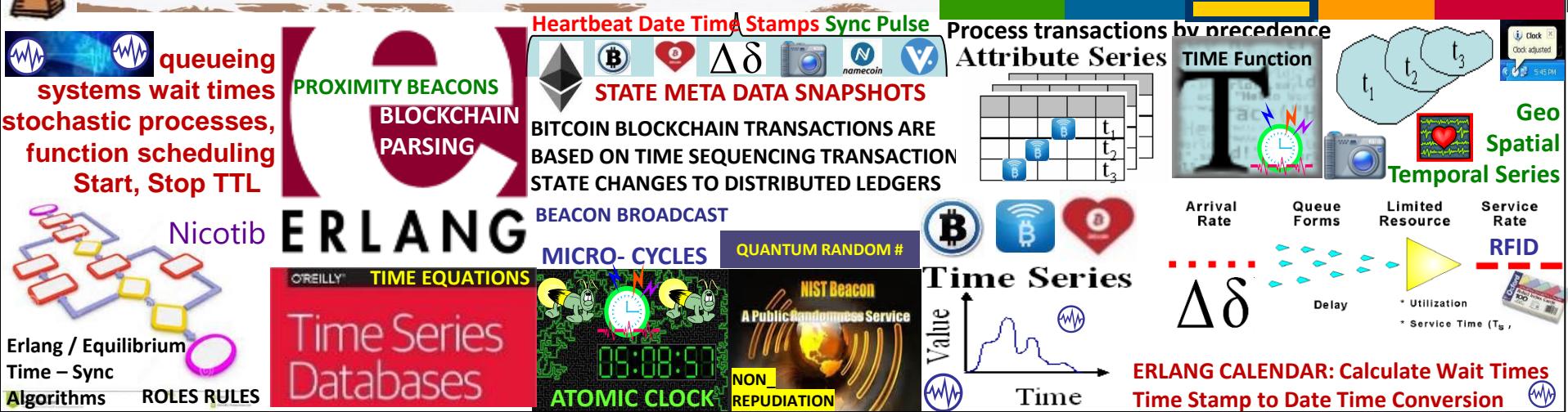
describes a common platform for the development of messages in ASN.1 Abstract Syntax Notation: A single standardization approach (methodology, process, repository) to be used by all financial standards initiatives. common platform for the development of messages using:

- a modelling methodology to capture in a syntax-independent way financial business areas, business transactions and message flows
- a central dictionary of business items used in financial communications
- a set of XML and ASN.1 design rules to convert the message models into XML or ASN.1 schemas, whenever the use of the ISO 20022 XML or ASN.1-based syntax is preferred ISO 20022: <https://www.iso20022.org/about-iso-20022>

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.



Structured Data Exchange



SYNTAX LEXICON  
ROSETTA STONE

Coder's Guide lexicon.

STRUCTURED  
<CONTENT>  
EXCHANGE  
TEMPLATES

MIL STD 2525ABC

ASSETS RULE THE WORLD

"SYMBOLS RULE THE WORLD"

11.8 - Kinematic  
11.8.1 - Pos  
11.8.1.1 -  
11.8.1 -

STRATML

XAML

BINARY XML  
Decision

UBL

DDL DATA  
DEFINITION  
LANGUAGE

TOSCA  
Confidence  
Bearing Angle  
Bearing Angle Rate  
Covariance Matrix

YAML

DICLICAL EVAC & HOSPITALISATION

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.

MTL Machine Trust Language



{"URN"} {"TRANSACTION ID"}

MESSAGE TEXT FORMAT :

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



SIOP POUT MSGREF 5 /M /M /M // (NU) REFERENCED MESSAGE



NUPRES DTG 6 /M // (NU) DATE-TIME GROUP



0 ORGID 7 /M /M /M /M /M /M /M /C // (NU) ORGANIZATION DESIGNATOR

M 11NUPRES GENTEXT 8 /M /M // (NU) 1.A ENEMY FORCES / COMPETITORS

M 11NUPRES GENTEXT 9 /M /M // (NU) 1.B FRIENDLY FORCES / TRADE FEDERATION

M 11NUPRES GENTEXT 10 /M /M // (NU) 1.C ATTACHMENT / DETACHMENT



O 11NUPRES GENTEXT 11 /M /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 </108>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

TOKENIZED ECONOMY BREVITY CODE OPSCOSE MAPPET TO SYMBOLS



INDEX REFERENCE #:

M015 STATUS :

EFFECTIVE: 14-DEC-99



PURCHASE CODES



FEDERATED PEGS



{"URN"}



{"ASSET\_CLASS"}



{"URN"}

{"ASSET\_TYPES"}

ISO 10383 – MIC



Market Identifier Codes



{"URN"}



{"Org\_ID"}



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



STOCK NDN NAMED DATA



EXCHANGE NETWORKING



MIC CODES PRECEDENCE



FILTERS PROCESSING



BLOCKTIME



ARBITRAGE



ERLANG

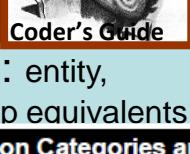
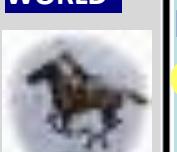


TIME



EQUATIONS



FROM	TO					CODE GUIDE	
	GCCS-A	TAIS	ASAS	AMDPCS	AFATDS	MCS	
ASAS	C002 C203 F002 F014 F015 F541 S201 S309	C002 C203	<b>USMTF / XML MTF FORMATTED MESSAGE CATALOG = 300 + messages info exchange sets using common, CONSENSUS Message Text Formats MTFs. MTFs specify &lt;CONTENT&gt; / info agreed by group consensus presenting information in a logical, well specified unambiguous layout resulting in a highly efficient info payload to overhead ratio</b>				
AMDPCS	<b>TOKENS</b> <b>OPSCODE BREVITY CODES</b>		F002 C203 F015 D630 S201 E500 F002 F014				
AFATDS	F002 F014 F015 F541 S201	A.I.  <b>INFOCON</b> <b>5 4 3 2 1</b> <b>INFORMATION CONDITION</b>					
MCS	 <b>NEWS</b>  <b>SIOP</b>  <b>FEDERATED MISSION NETWORK</b> <b>SHARE * WIN * SUCCEED</b>	A423 C203 C505 F002 F014 F015 F541 S201	A423 A659 C002 C203 C400 C443 C447 C488 C501 C503 C504 C505 C506 C507 C508 E400 F002 F014 F015 F541 F658 F756 G489 K01.1 S201 S303 S507	A423 A659 A656 A690 C002 C203 C400 C505 F002 F014 F015 F541	 <b>Rosetta Stone</b>  <b>Syntax Lexicon</b>  <b>Coder's Guide</b>	A423 C505 F014 F015 S201	<b>M2M</b>  <b>"SYMBOLS RULE THE WORLD"</b> 

# MESSAGE CATALOG

## 300 + Use Cases

**Data Elements:** entity, attribute, relationship equivalents      **HEARTBEAT MESSAGE =**  
**K00.99 </108> {"108"}**

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

# Information Elements Roles

- COI Determination Org Interaction
  - Search and Discovery
  - Ontologies STANDARDS
  - Taxonomies REFERENCE
  - Metadata Attributes / Filters



EEUDN: Field Format Unit Designator #

EFIRN Field Format Index Reference #

Structured military messaging ID's  
messages, message sets, data  
element, symbol fields </108>   
BY Form Field Position & NUMBER

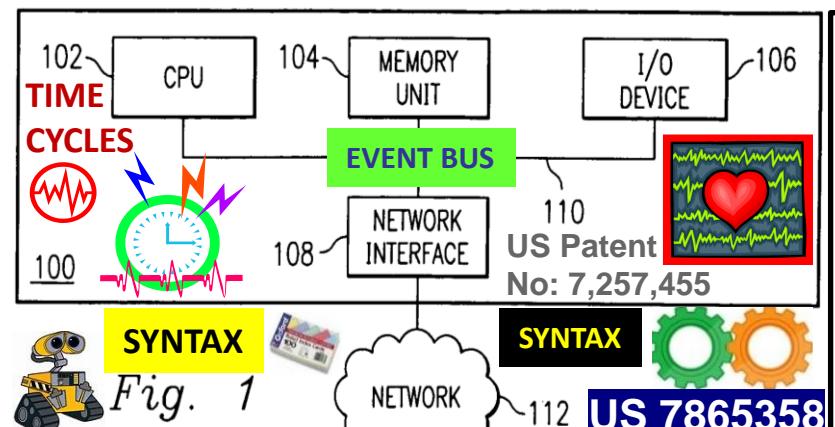


# PROCESS MESSAGE BY PRECEDENCE UNIVERSAL EVENT / ALERT MESSAGE BUS

## **OPERATIONAL NODES / ACTIVITIES**

DATA		SYSTEM FUNCTIONS		PERFORMANCE	
11.4 - Classification		11.8 - Kinematics			
11.4.1 - Category		11.8.1 - Pos / Vel / Acc (PVA)			
11.4.1.1 - Confidence Level		11.8.1.1 - Acceleration			
11.4.1.2 - Estimate Type		11.8.1.1.1 - Angular			
11.4.1.2.1 - Alternative			1.1.2 - Linear		
11.4.1.2.2 - Evaluated D	PURCHASE		2 - Estimate Type		
11.4.1.3 - Value	CODES		1.2.1 - Estimated		
SYMBOL	Friend	Neutral	1.2.2 - Observed		
2525C	Partner		1.2.3 - Predicted		
			1.2.4 - Smoothed Data		
11.4.1.3.4 - Substance					
11.4.1.3.5 - Surface			4 - Velocity		
11.4.2 - Platform / Point / Feature Type			1.4.1 - Horizontal		
11.4.3 - Specific Type			1.4.2 - Vertical		
11.4.4 - Type Modifier			VA Confidence		
11.4.5 - Unit			1 - Bearing Angle		
			2 - Bearing Angle Rate		
			3 - Covariance Matrix		



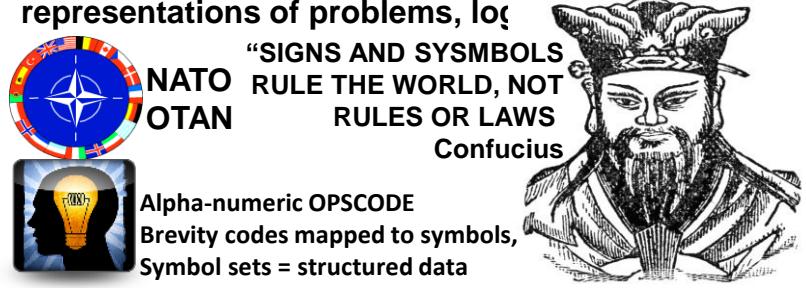


Machine-based system for transforming data from a source form to a target form, a tool is provided for sharing information established in developing a transformation model. The shared information may relate to rules for mapping source collection terms to standardized terms, rules for ordering or **SYNTAX**,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

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

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

**Symbolic artificial intelligence:** collection of all methods in artificial intelligence research that are based on high-level symbolic (human-readable) representations of problems, logic, and knowledge.



US Patent No: 7,257,455 DISCOVERY MACHINE Inc. Fig. 8 Discovery Machine® Inc. AL ARTIFICIAL 820

**Williamsport PA**  
**Little League**  
**Baseball Capital of**  
**the World**

818

TASK	
PK	<u>TK_OID</u> {"Org_ID"}
FK1	TK_NAME
FK2	TK_DESCRIPTION
	TK_CONDITION
	TK_CMOID
	TK_CLOUD (FUNCTION)

816

METHOD	
PK, FK3	<u>MT_OID</u> {"Org_ID"}
FK1	MT_NAME
FK2	MT_DESCRIPTION
	MT_CMOID
	MT_CLOUD (BEHAVIOR)
	LS_SEQUENCE

810

CLASS	
PK	<u>CL_OID</u>
	CL_NAME

BIZ COA 1,2,3

AU  
Ar

**System and method for collecting, representing knowledge using task-method-knowledge with structure-behavior function in a computer system.. BIZ COA 1, 2, 3**



COMPONENT		
PK	CP_OID	{"URN"}
-	CP_NAME	
	CP_SUBSTANCE	(BOOL)
	CP_PRIMTYPE	
FK1	CP_CLASSTYPE	
FK2	CP_CLOID	
	CP_COLLECTION	

CONNECTION	
PK	CN_OID
FK1	CN_TYPE (CLASSES ONLY)
FK2	CN_FROM
FK3	CN_TO
FK4	CN_SUBSTAN
FK5	CN_PARENT
	CN_NAME

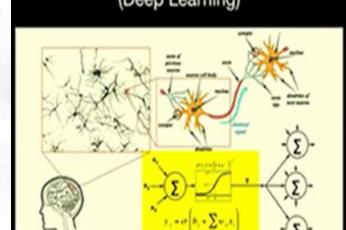
**Off-Site Connector**



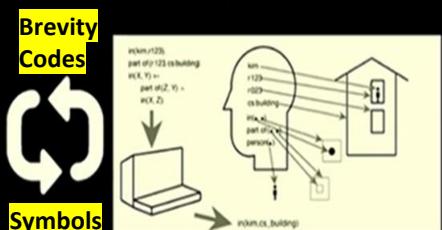
Neuro-Symbolic AI

## Symbolic (human-readable) representations

Symbolic AI



Breaking the world into symbols (rather than



Incorporate common sense reasoning and  
intuition into the logic function

# Symbolic artificial intelligence: collection of all methods in artificial intelligence

research that are based on high-level symbolic (human-readable) representations of problems, logic and search.[1] Symbolic AI used tools such as logic programming, production rules, semantic nets and frames, and it developed applications such as knowledge-based systems (in particular, expert systems), symbolic mathematics, automated theorem provers, ontologies, the semantic web, and automated planning and scheduling systems. The Symbolic AI paradigm led to seminal ideas in search, symbolic programming languages, agents, multi-agent systems, the semantic web, the strengths, imitations of formal knowledge and reasoning systems.

Physical symbol system (also called a formal system) takes physical patterns (symbols), combining them into structures (expressions) and manipulating them (using processes) to produce new expressions. The physical symbol system hypothesis (PSSH) is a position in the philosophy of artificial intelligence formulated by Allen Newell and Herbert A. Simon. They wrote: "A physical symbol system has the necessary and sufficient means for general intelligent action." [2] —Allen Newell and Herbert A. Simon

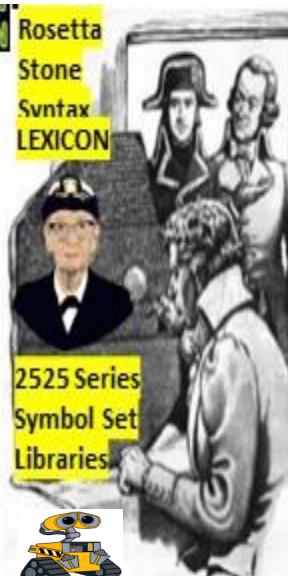
This claim implies both that human thinking is a kind of symbol manipulation (because a symbol system is necessary for intelligence) and that machines can be intelligent (because a symbol system is sufficient for intelligence).[3] The idea has philosophical roots in Hobbes (who claimed reasoning was "nothing more than reckoning"), Leibniz (who attempted to create a logical calculus of all human ideas), Hume (who thought perception could be reduced to "atomic impressions") and even Kant (who analyzed all experience as controlled by formal rules).[1] The latest version is called the computational theory of mind, associated with philosophers Hilary Putnam and Jerry Fodor.[4]

Source: Wikipedia: [https://en.wikipedia.org/wiki/Physical\\_symbol\\_system](https://en.wikipedia.org/wiki/Physical_symbol_system)

data from a first form to a second form

CONDITION

Rosetta  
Stone  
Syntax  
LEXICON



2525 Series  
Symbol Set  
Libraries



NATO RULE THE WORLD, NOT  
OTAN RULES OR LAWS



Confucius

Alpha-numeric OPS CODE

Brevity codes mapped to symbols,  
Symbol sets = structured data

FRZ TLP CLOUD

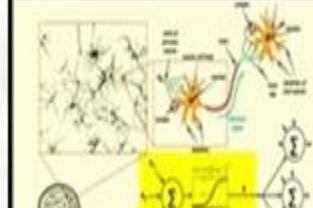
ABC A OPS CODE BREVITY CODES

Neuro-Symbolic AI

Symbolic (human-readable)  
representations

Symbolic AI

Neural Networks  
(Deep Learning)



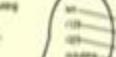
Brevity  
Codes



Symbols



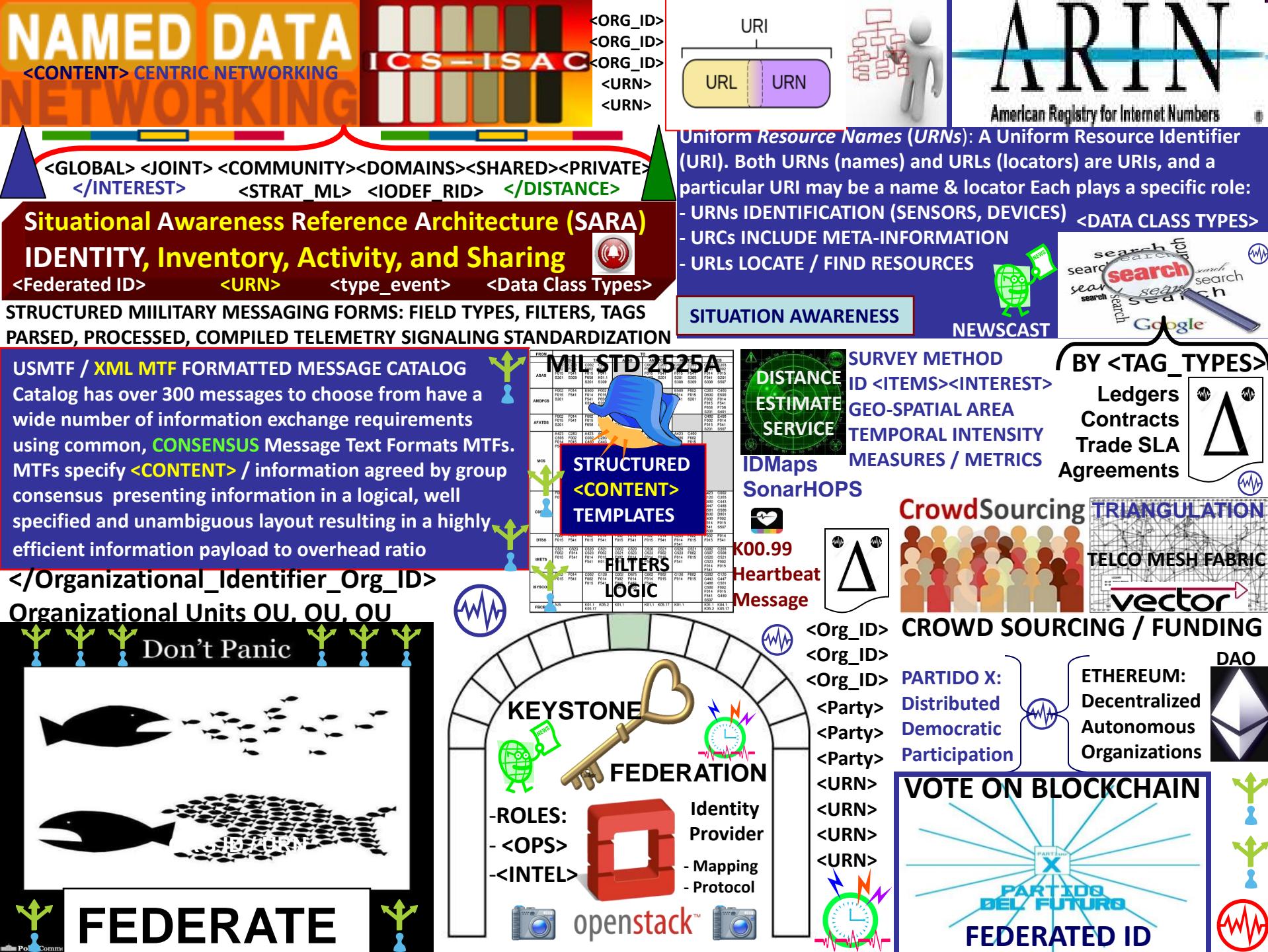
Symbols



Incorporate common sense reasoning and

Breaking the world into symbols (rather than  
sets 2525)

Incorporate common sense reasoning and



# 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

**SHARING:**

COMMON <TAGS>

<Organizational\_ID>

Resource Names <URN>

<Time\_Stamps>

<State-Meta\_Data>

<DATA\_CLASS\_TYPE>

<Heartbeat\_snapshots>

<TAG>LIBRARY  
TEMPLATES



AVALANCHE

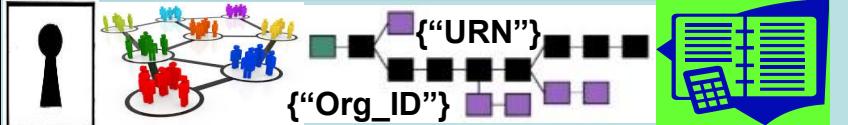
WELCOME TO THE FS-ISAC SECURITY AUTOMATION GROUP. OUR VISION IS  
A FEDERATED NETWORK OF STIX-BASED REPOSITORIES SHARING INTELLIGENCE IN  
REAL-TIME. AVALANCHE: STRENGTH IN NUMBERS, SECURELY SHARE INTELLIGENCE

NIST CYBER SECURITY FRAMEWORK

FROM	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	F027	F028	F029	F030	F031	F032	F033	F034	F035	F036	F037	F038	F039	F040	F041	F042	F043	F044	F045	F046	F047	F048	F049	F050	F051	F052	F053	F054	F055	F056	F057	F058	F059	F060	F061	F062	F063	F064	F065	F066	F067	F068	F069	F070	F071	F072	F073	F074	F075	F076	F077	F078	F079	F080	F081	F082	F083	F084	F085	F086	F087	F088	F089	F090	F091	F092	F093	F094	F095	F096	F097	F098	F099	F0100	F0101	F0102	F0103	F0104	F0105	F0106	F0107	F0108	F0109	F0110	F0111	F0112	F0113	F0114	F0115	F0116	F0117	F0118	F0119	F0120	F0121	F0122	F0123	F0124	F0125	F0126	F0127	F0128	F0129	F0130	F0131	F0132	F0133	F0134	F0135	F0136	F0137	F0138	F0139	F0140	F0141	F0142	F0143	F0144	F0145	F0146	F0147	F0148	F0149	F0150	F0151	F0152	F0153	F0154	F0155	F0156	F0157	F0158	F0159	F0160	F0161	F0162	F0163	F0164	F0165	F0166	F0167	F0168	F0169	F0170	F0171	F0172	F0173	F0174	F0175	F0176	F0177	F0178	F0179	F0180	F0181	F0182	F0183	F0184	F0185	F0186	F0187	F0188	F0189	F0190	F0191	F0192	F0193	F0194	F0195	F0196	F0197	F0198	F0199	F01200	F01201	F01202	F01203	F01204	F01205	F01206	F01207	F01208	F01209	F01210	F01211	F01212	F01213	F01214	F01215	F01216	F01217	F01218	F01219	F01220	F01221	F01222	F01223	F01224	F01225	F01226	F01227	F01228	F01229	F01230	F01231	F01232	F01233	F01234	F01235	F01236	F01237	F01238	F01239	F01240	F01241	F01242	F01243	F01244	F01245	F01246	F01247	F01248	F01249	F01250	F01251	F01252	F01253	F01254	F01255	F01256	F01257	F01258	F01259	F01260	F01261	F01262	F01263	F01264	F01265	F01266	F01267	F01268	F01269	F01270	F01271	F01272	F01273	F01274	F01275	F01276	F01277	F01278	F01279	F01280	F01281	F01282	F01283	F01284	F01285	F01286	F01287	F01288	F01289	F01290	F01291	F01292	F01293	F01294	F01295	F01296	F01297	F01298	F01299	F01300	F01301	F01302	F01303	F01304	F01305	F01306	F01307	F01308	F01309	F01310	F01311	F01312	F01313	F01314	F01315	F01316	F01317	F01318	F01319	F01320	F01321	F01322	F01323	F01324	F01325	F01326	F01327	F01328	F01329	F01330	F01331	F01332	F01333	F01334	F01335	F01336	F01337	F01338	F01339	F01340	F01341	F01342	F01343	F01344	F01345	F01346	F01347	F01348	F01349	F01350	F01351	F01352	F01353	F01354	F01355	F01356	F01357	F01358	F01359	F01360	F01361	F01362	F01363	F01364	F01365	F01366	F01367	F01368	F01369	F01370	F01371	F01372	F01373	F01374	F01375	F01376	F01377	F01378	F01379	F01380	F01381	F01382	F01383	F01384	F01385	F01386	F01387	F01388	F01389	F01390	F01391	F01392	F01393	F01394	F01395	F01396	F01397	F01398	F01399	F01400	F01401	F01402	F01403	F01404	F01405	F01406	F01407	F01408	F01409	F01410	F01411	F01412	F01413	F01414	F01415	F01416	F01417	F01418	F01419	F01420	F01421	F01422	F01423	F01424	F01425	F01426	F01427	F01428	F01429	F01430	F01431	F01432	F01433	F01434	F01435	F01436	F01437	F01438	F01439	F01440	F01441	F01442	F01443	F01444	F01445	F01446	F01447	F01448	F01449	F01450	F01451	F01452	F01453	F01454	F01455	F01456	F01457	F01458	F01459	F01460	F01461	F01462	F01463	F01464	F01465	F01466	F01467	F01468	F01469	F01470	F01471	F01472	F01473	F01474	F01475	F01476	F01477	F01478	F01479	F01480	F01481	F01482	F01483	F01484	F01485	F01486	F01487	F01488	F01489	F01490	F01491	F01492	F01493	F01494	F01495	F01496	F01497	F01498	F01499	F01500	F01501	F01502	F01503	F01504	F01505	F01506	F01507	F01508	F01509	F01510	F01511	F01512	F01513	F01514	F01515	F01516	F01517	F01518	F01519	F01520	F01521	F01522	F01523	F01524	F01525	F01526	F01527	F01528	F01529	F01530	F01531	F01532	F01533	F01534	F01535	F01536	F01537	F01538	F01539	F01540	F01541	F01542	F01543	F01544	F01545	F01546	F01547	F01548	F01549	F01550	F01551	F01552	F01553	F01554	F01555	F01556	F01557	F01558	F01559	F01560	F01561	F01562	F01563	F01564	F01565	F01566	F01567	F01568	F01569	F01570	F01571	F01572	F01573	F01574	F01575	F01576	F01577	F01578	F01579	F01580	F01581	F01582	F01583	F01584	F01585	F01586	F01587	F01588	F01589	F01590	F01591	F01592	F01593	F01594	F01595	F01596	F01597	F01598	F01599	F01600	F01601	F01602	F01603	F01604	F01605	F01606	F01607	F01608	F01609	F01610	F01611	F01612	F01613	F01614	F01615	F01616	F01617	F01618	F01619	F01620	F01621	F01622	F01623	F01624	F01625	F01626	F01627	F01628	F01629	F01630	F01631	F01632	F01633	F01634	F01635	F01636	F01637	F01638	F01639	F01640	F01641	F01642	F01643	F01644	F01645	F01646	F01647	F01648	F01649	F01650	F01651	F01652	F01653	F01654	F01655	F01656	F01657	F01658	F01659	F01660	F01661	F01662	F01663	F01664	F01665	F01666	F01667	F01668	F01669	F01670	F01671	F01672	F01673	F01674	F01675	F01676	F01677	F01678	F01679	F01680	F01681	F01682	F01683	F01684	F01685	F01686	F01687	F01688	F01689	F01690	F01691	F01692	F01693	F01694	F01695	F01696	F01697	F01698	F01699	F01700	F01701	F01702	F01703	F01704	F01705	F01706	F01707	F01708	F01709	F01710	F01711	F01712	F01713	F01714	F01715	F01716	F01717	F01718	F01719	F01720	F01721	F01722	F01723	F01724	F01725	F01726	F01727	F01728	F01729	F01730	F01731	F01732	F01733	F01734	F01735	F01736	F01737	F01738	F01739	F01740	F01741	F01742	F01743	F01744	F01745	F01746	F01747	F01748	F01749	F01750	F01751	F01752	F01753	F01754	F01755	F01756	F01757	F01758	F01759	F01760	F01761	F01762	F01763	F01764	F01765	F01766	F01767	F01768	F01769	F01770	F01771	F01772	F01773	F01774	F01775	F01776	F01777	F01778	F01779	F01780	F01781	F01782	F01783	F01784	F01785	F01786	F01787	F01788	F01789	F01790	F01791	F01792	F01793	F01794	F01795	F01796	F01797	F01798	F01799	F01800	F01801	F01802	F01803	F01804	F01805	F01806	F01807	F01808	F01809	F01810	F01811	F01812	F01813	F01814	F01815	F01816	F01817	F01818	F01819	F01820	F01821	F01822	F01823	F01824	F01825	F01826	F01827	F01828	F01829	F01830	F01831	F01832	F01833	F01834	F01835	F01836	F01837	F01838	F01839	F01840	F01841	F01842	F01843	F01844	F01845	F01846	F01847	F01848	F01849	F01850	F01851	F01852	F01853	F01854	F01855	F01856	F01857	F01858	F01859	F01860	F01861	F01862	F01863	F01864	F01865	F01866	F01867	F01868	F01869	F01870	F01871	F01872	F01873	F01874	F01875	F01876	F01877	F01878	F01879	F01880	F01881	F01882	F01883	F01884	F01885	F01886	F01887	F01888	F01889	F01890	F01891	F01892	F01893	F01894	F01895	F01896	F01897	F01898	F01899	F01900	F01901	F01902	F01903	F01904	F01905	F01906	F01907	F01908	F01909	F01910	F01911	F01912	F01913	F01914	F01915	F01916	F01917	F01918	F01919	F01920	F01921	F01922	F01923	F01924	F01925	F01926	F01927	F01928	F01929	F01930	F01931	F01932	F01933	F01934	F01935	F01936	F01937	F01938	F01939	F01940	F01941	F01942	F01943	F01944	F01945	F01946	F01947	F01948	F01949	F01950	F01951	F01952	F01953	F01954	F01955	F01956	F01957	F01958	F01959	F01960	F01961	F01962	F01963	F01964	F01965	F01966	F01967	F01968	F01969	F01970	F01971	F01972	F01973	F01974	F01975	F01976	F01977	F01978	F01979	F01980	F01981	F01982	F01983	F01984	F01985	F01986	F01987	F01988	F01989	F01990	F01991	F01992	F01993	F01994	F01995	F01996	F01997	F01998	F01999	F02000	F02001	F02002	F02003	F02004	F02005	F02006	F02007	F02008	F02009	F02010	F02011	F02012	F02013	F02014	F02015	F02016	F02017	F02018	F02019	F02020	F02021	F02022	F02023	F02024	F02025	F02026	F02027	F02028	F02029	F02030	F02031	F02032	F02033	F02034	F02035	F02036	F02037	F02038	F02039	F02040	F02041	F02042	F02043	F02044	F02045	F02046	F02047	F02048	F02049	F02050	F02051	F02052	F02053	F02054	F02055	F02056	F02057	F02058	F02059	F02060	F02061	F02062	F02063	F02064	F02065	F02066	F02067	F02068	F02069	F02070	F02071	F02072	F02073	F02074	F02075	F02076	F02077	F02078	F02079	F02080	F02081	F02082	F02083	F02084	F02085	F02086	F02087	F02088	F02089	F02090	F02091	F02092	F02093	F02094	F02095	F02096	F02097	F02098	F02099</th

# Heart Beacon Cycle

## FEDERATE / TRADE FEDERATIONS



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**

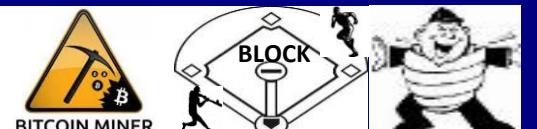
Net joins, drops, splits, merges, moves  
Agile, adhoc NETOPS Vs acquisition preserves the **CHANNEL**

Federation  
Gateway



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

Bitcoin Mining Pools  
MEME / METAPHOR MEDIATION



**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



STOCK EXCHANGE  
MIC MARKET IDENTIFIER  
CODES / BREVITY CODES



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



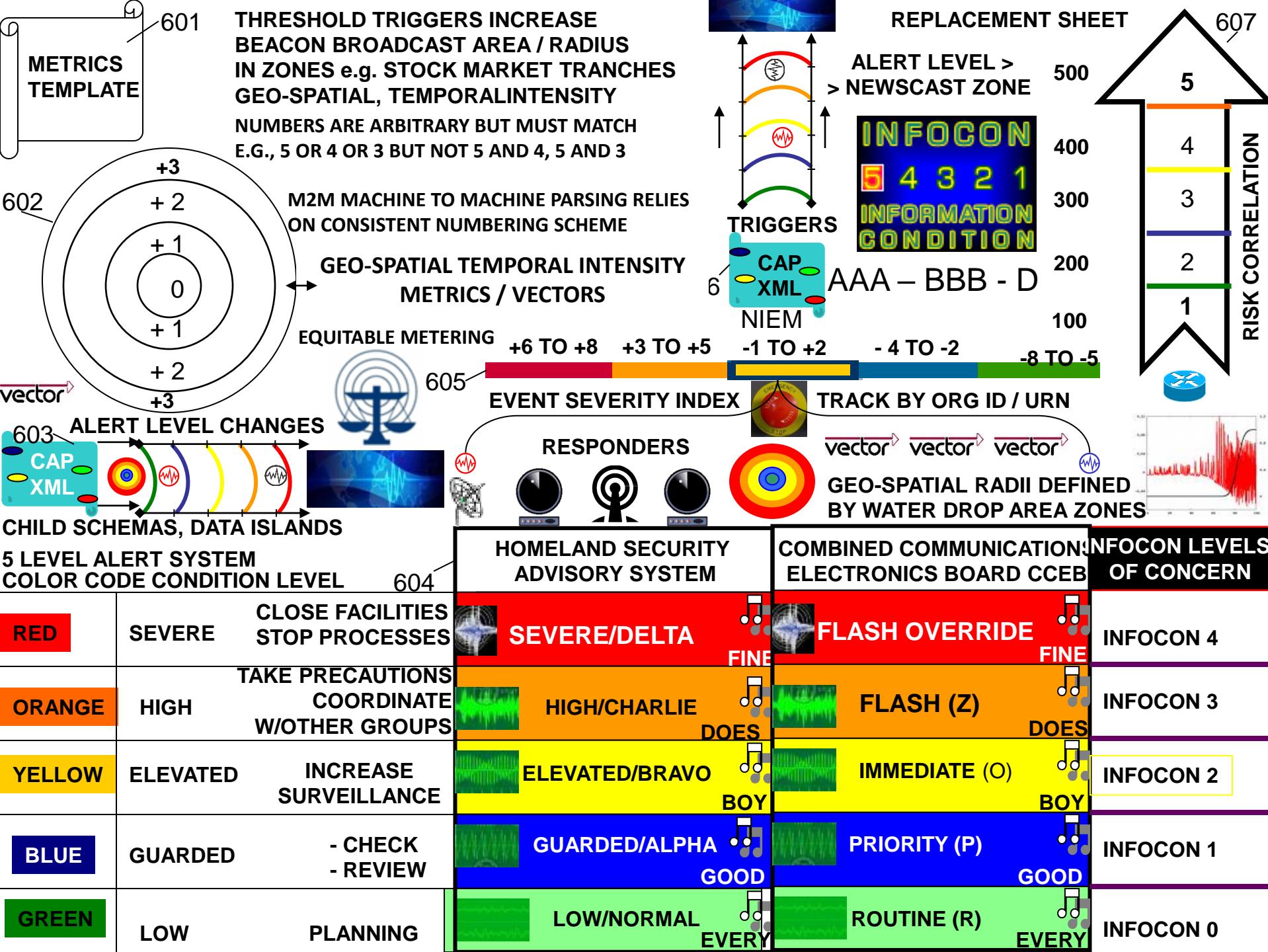
MICRO-CYCLES

A QR code with the text {"DUNS #"} {"Org\_ID"} Heartbeat Snaps QR CODE {"URN"} {"URN"} {"URN"} and a camera icon.



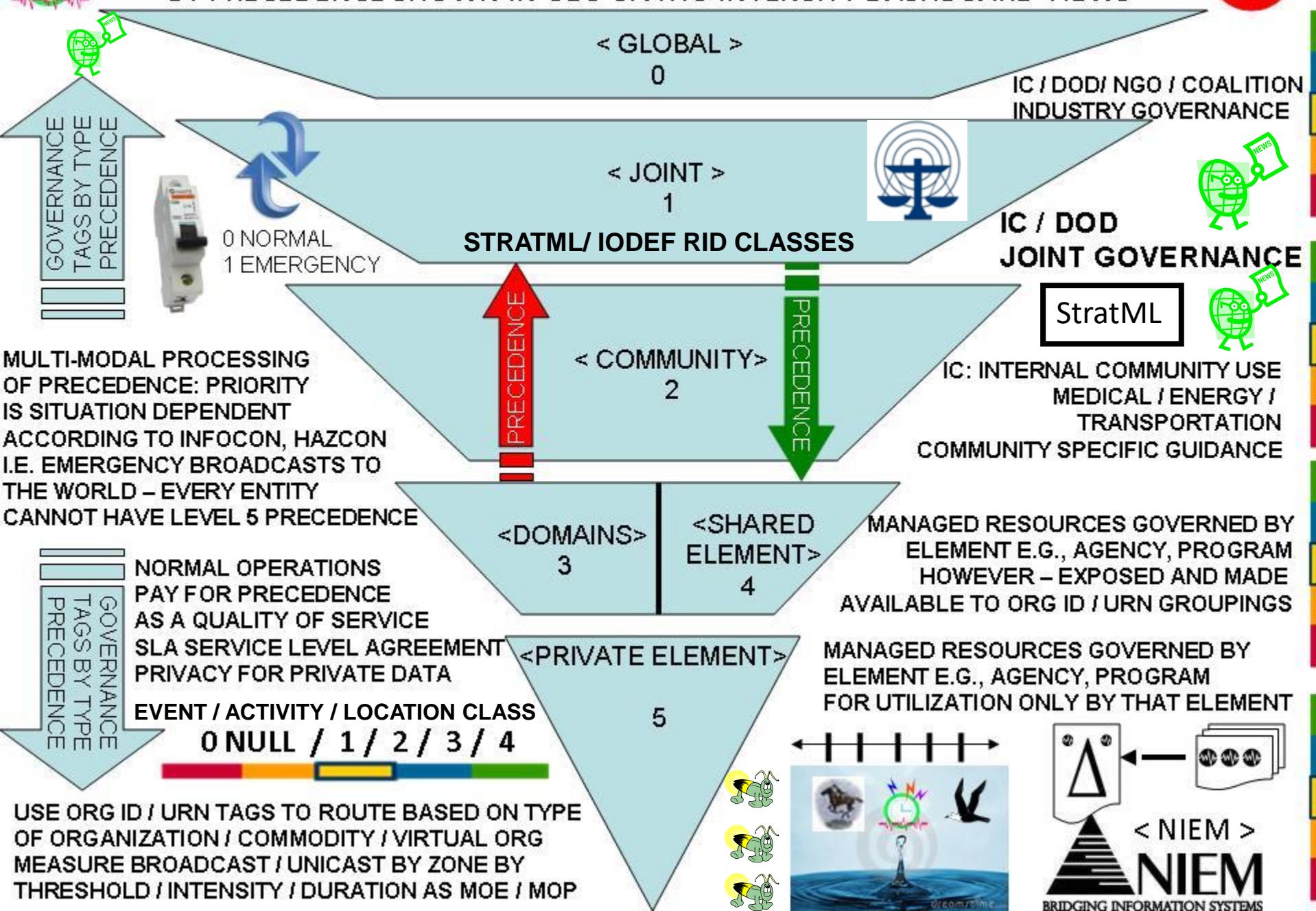
## FEDERATE: COMMON GOALS SYNCHRONIZED IN SPACE - TIME







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





# Firefly - Heartbeat Algo



University of Bologna Italy / Hungary

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

ECO ECONOMIC HEARTBEAT

$\Delta\delta X$

("108")



K%

$\Delta\delta$

X

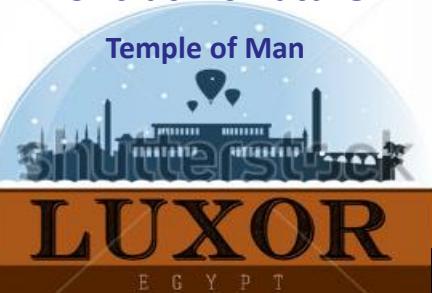
ECONOMIC MACRO CYCLES

TIME-SPACE SYNC

K% GDP ECONOMIC PULSE FEDCOIN WORLDCOIN

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

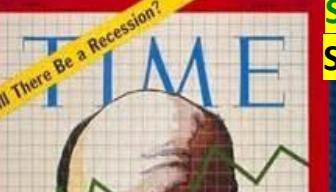
Temple of Man



LUXOR  
EGYPT

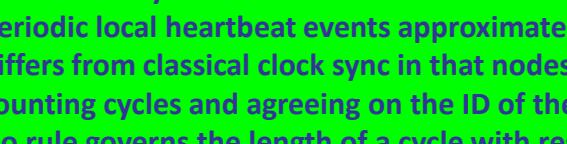
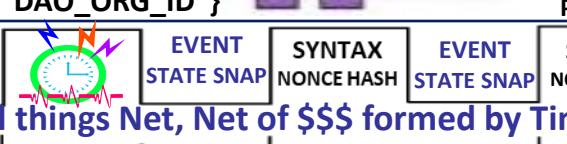
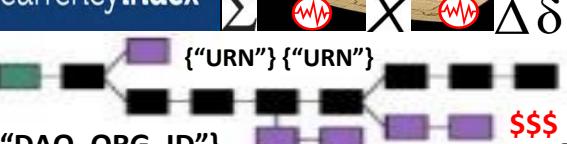
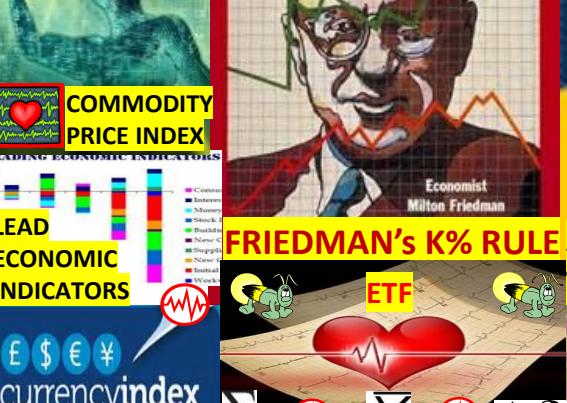
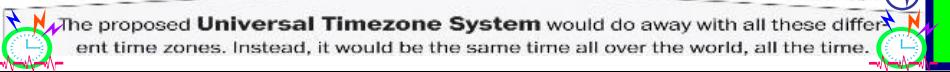
FIREFLY inspired Heartbeat Sync Algo

PRECEDENCE    UTZ SYNC    SYNC  
PROCESSING    PULSE    DELTAS



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

UTZ TIME ZONE SYNC



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

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



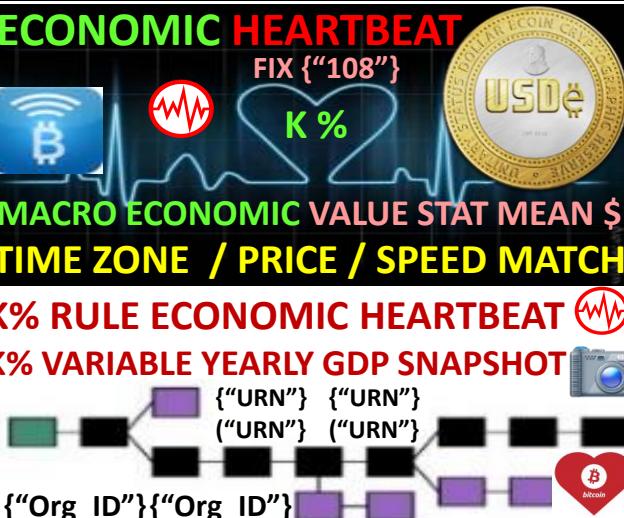
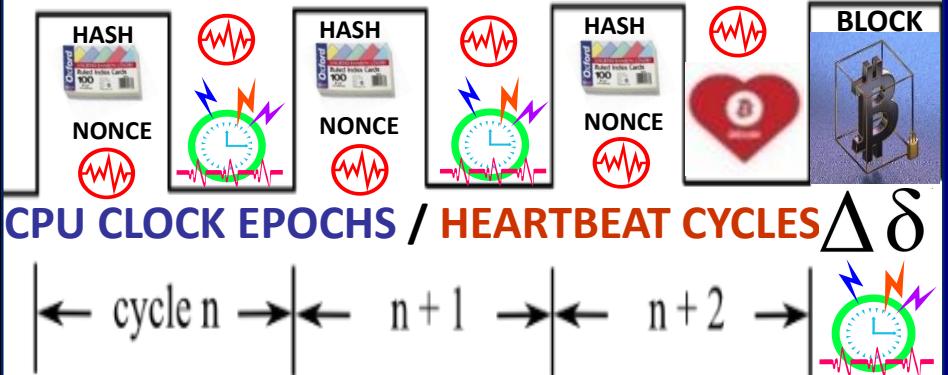


## ALGORITHMIC REGULATION

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



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

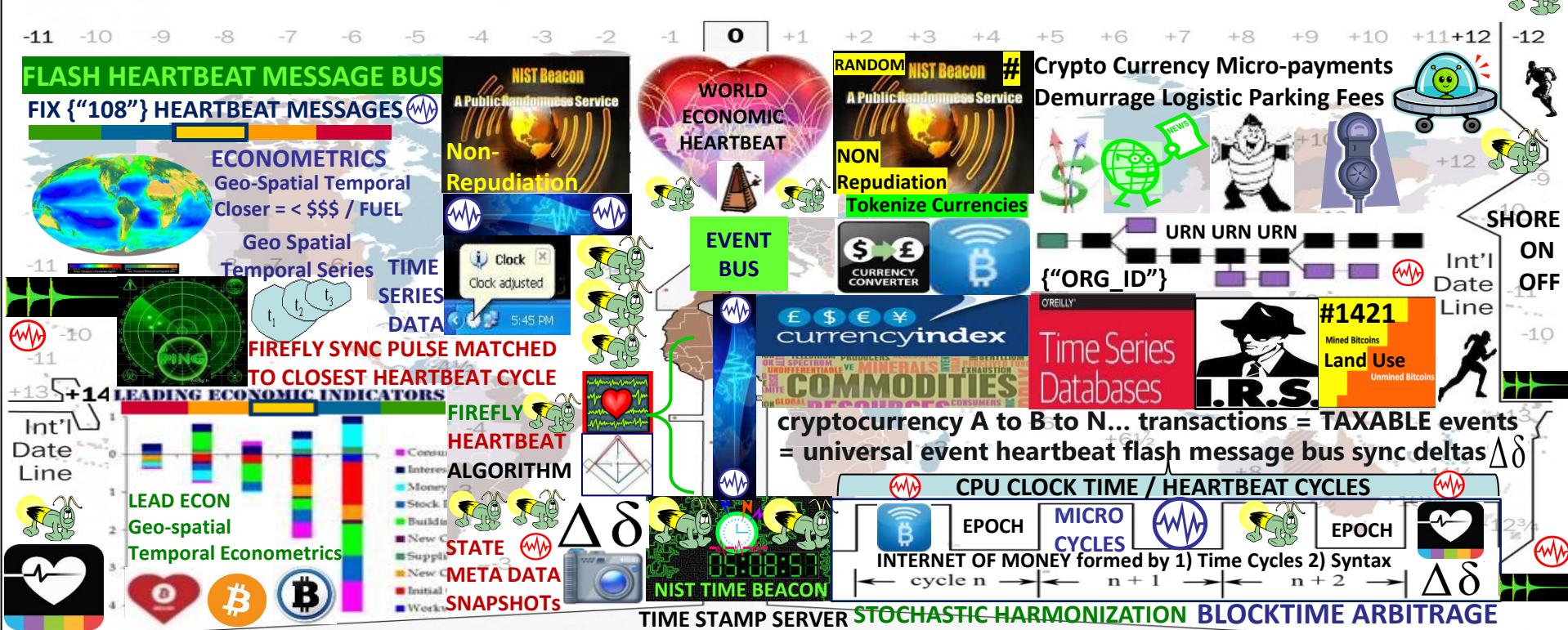


"Heartbeat Synchronization strives to have nodes in a distributed system generate periodic local "heartbeat" events approximately at the same time. It differs from classical clock sync in that Nodes are not interested in counting cycles and agreeing on the ID of the current clock cycle. There is no requirement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





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



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.

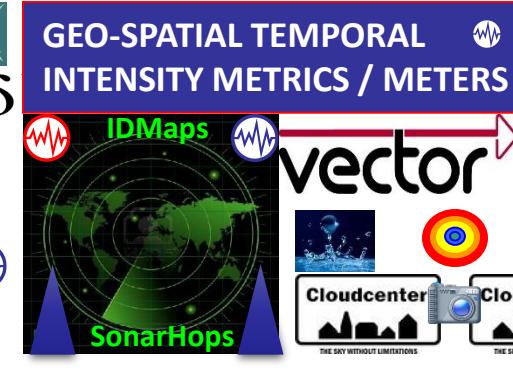
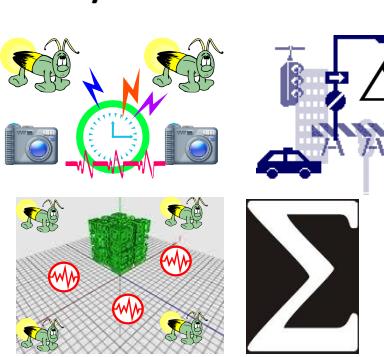
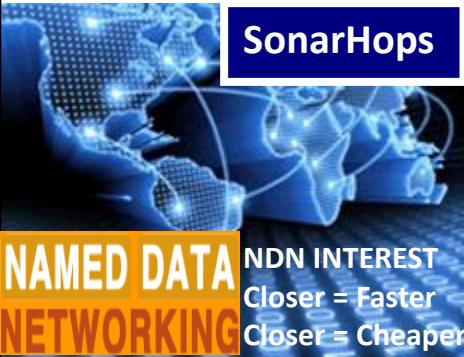




# IDMaps: Global Internet Host Distance Estimation Service



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



**vector**



IDMaps scalable Internet-wide architecture measures, disseminates distance information



**HOP COUNTS**

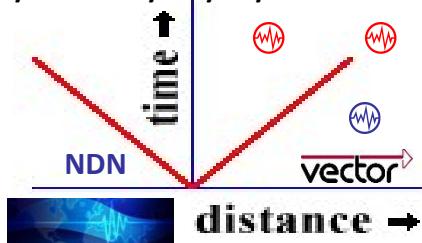


**REACHABILITY**



/localhost/nfd/fib/add-nexthop

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



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

Name Prefix  
<Org\_ID> Trie (NPT)



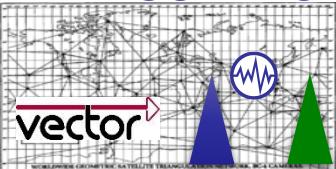
**NDN NAMES**

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

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



**TRIANGULATION**



**NDN INTEREST LENGTH = DISTANCE BY HOPS**

**NDN INTEREST**

**IS DATA FRESH ?**



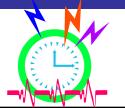
NDN STRATEGY CHOICE MANAGER – RIB Routing Information Base add-nexthop

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**

# 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:



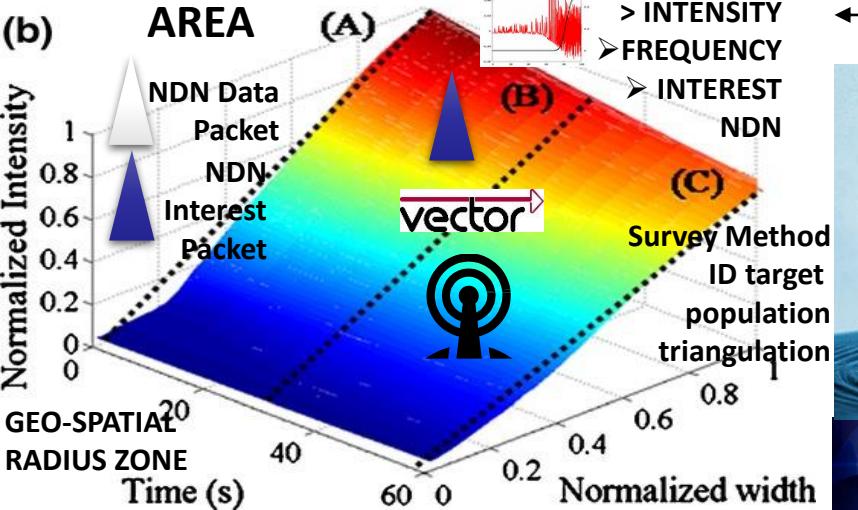
Paul Revere = linear, sequential



TCP/IP hop by hop counts, by hop controls



Water Drop = AREA / INTENSITY Cyclic Frequency

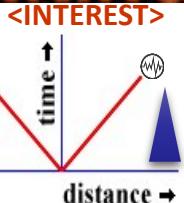


# NAMED DATA NETWORKING

</IoT>  
MQTT

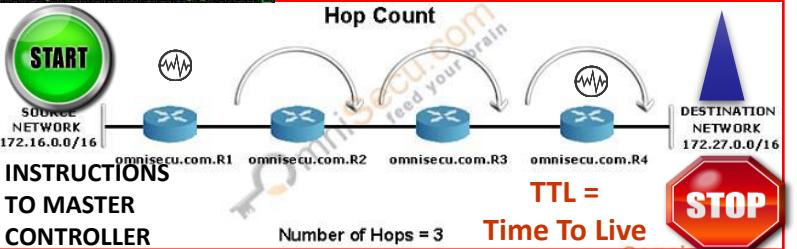


NIST TIME BEACON



ARRESTED-D

TELEMETRY TRANSPORT



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

IDMAPS  
SONARHOPS  
INTERNET TRIANGULATION



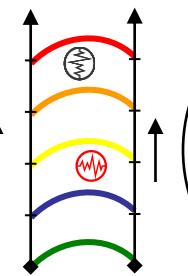
vector WirelessHART

time synchronized,  
self-organizing,  
mesh Net

ALERT LEVEL >  
> NEWSCAST ZONE



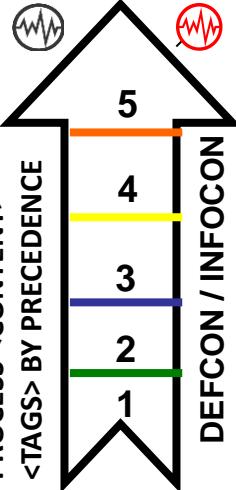
SINE-WAVE



INFOCON  
XML  
MTF  
300 +  
MSG

5 4 3 2 1

INFORMATION CONDITION



INFOCON

DEFCON

INFOCON

**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”

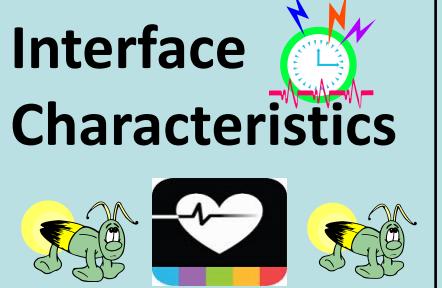
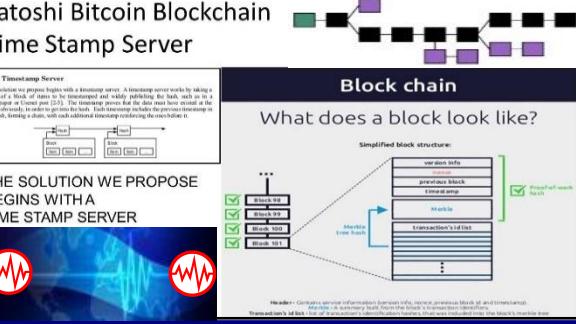
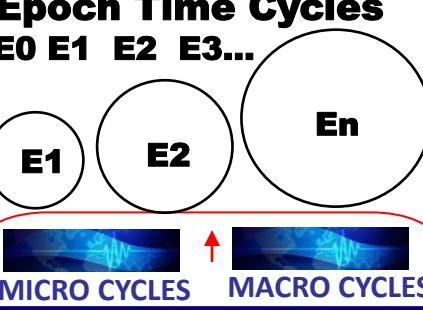
## The four dimensions of Big Data

**vector** → VECTOR: quantity having direction and magnitude  
INTER 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**



Interface Name	HEARTBEAT Administration Interface [SCOP]		
Documentation URL	<a href="http://scop.sourceforge.net/">http://scop.sourceforge.net/</a> <a href="http://linuxvirtualserver.org/software/index.html">http://linuxvirtualserver.org/software/index.html</a>		
API Information	 	<b>#Big_Data</b>  	Cloud Interface Management configuration, start, stop cloud services, edit configuration (heartbeat messages)
Programmable Money World Computer / Blockchain	 	API Operation Count	
Interface Characteristics		Web service access type Network Effects / A.I.  <b>LANGUAGE / PLATFORM BINDINGS</b>	Web application, front end to [network, device, system, blockchain] heartbeat  
<p>"The external environment could update <u>resources</u> at random... One solution is a <b>heartbeat</b>: defining a default lease duration delaying updates until the next <b>cycle</b>"</p>		 	 <b>Epoch Time Cycles</b> E0 E1 E2 E3... 
<b>QubitCoin Interval: Every 30 Seconds</b>			

# SOFTWARE DEFINED NETWORKING

NETOPS

Command Syntax

REST State Transfer

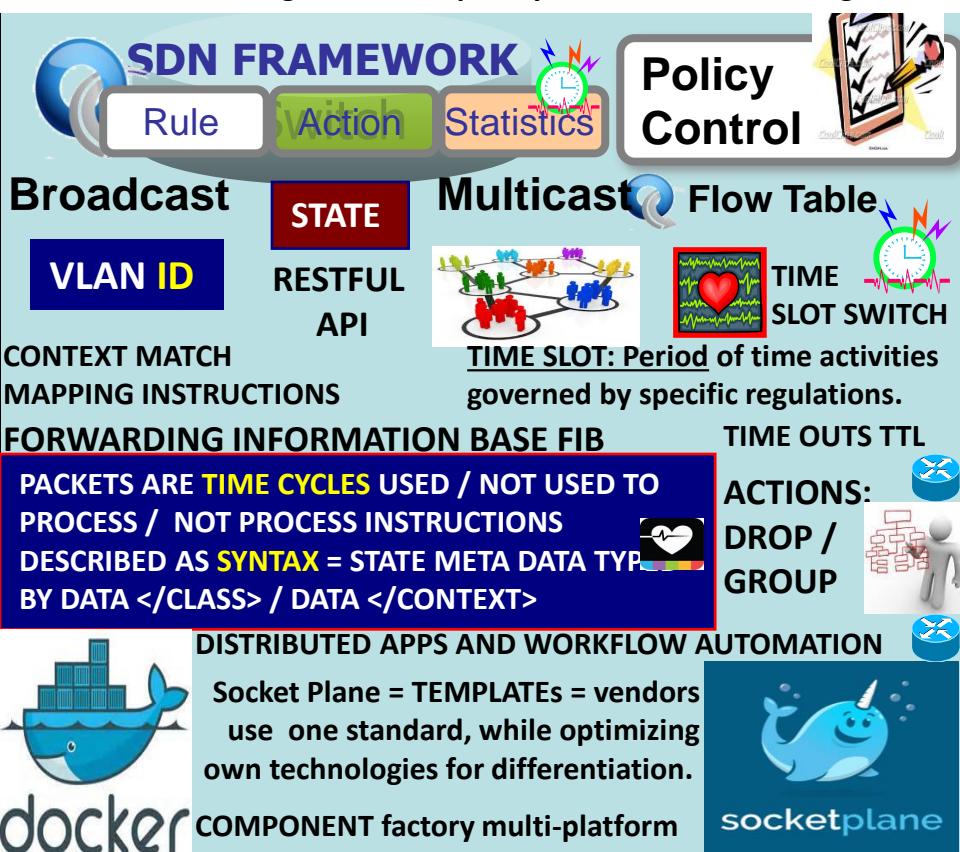
COMMAND SYNTAX  
STATE TRANSFER  
Unicast / Multicast  
Flow Tables / Workflow  
Dynamic Network  
Configuration Management

NET CENTRIC WARFARE  
SYSTEM OF SYSTEMS TELEMETRY

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

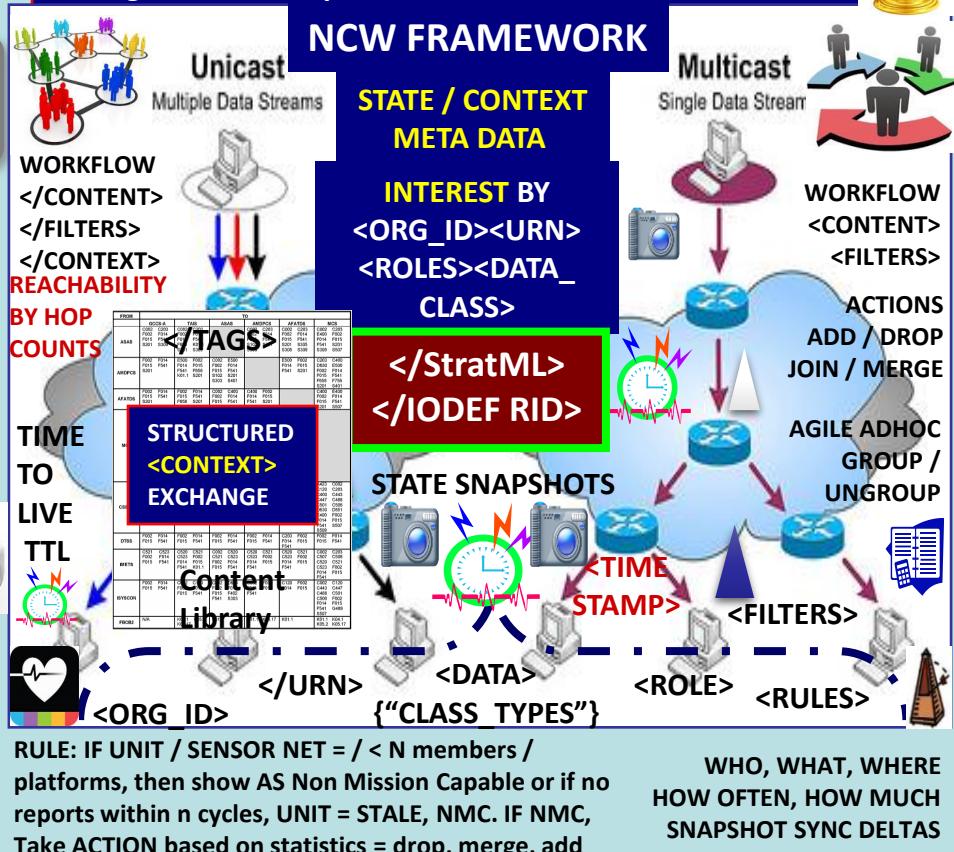
- SDN is a *framework* to allow network administrators to *automatically* and dynamically manage and control a *large number* of network devices, *services*, topology, traffic paths, and packet handling (quality of

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

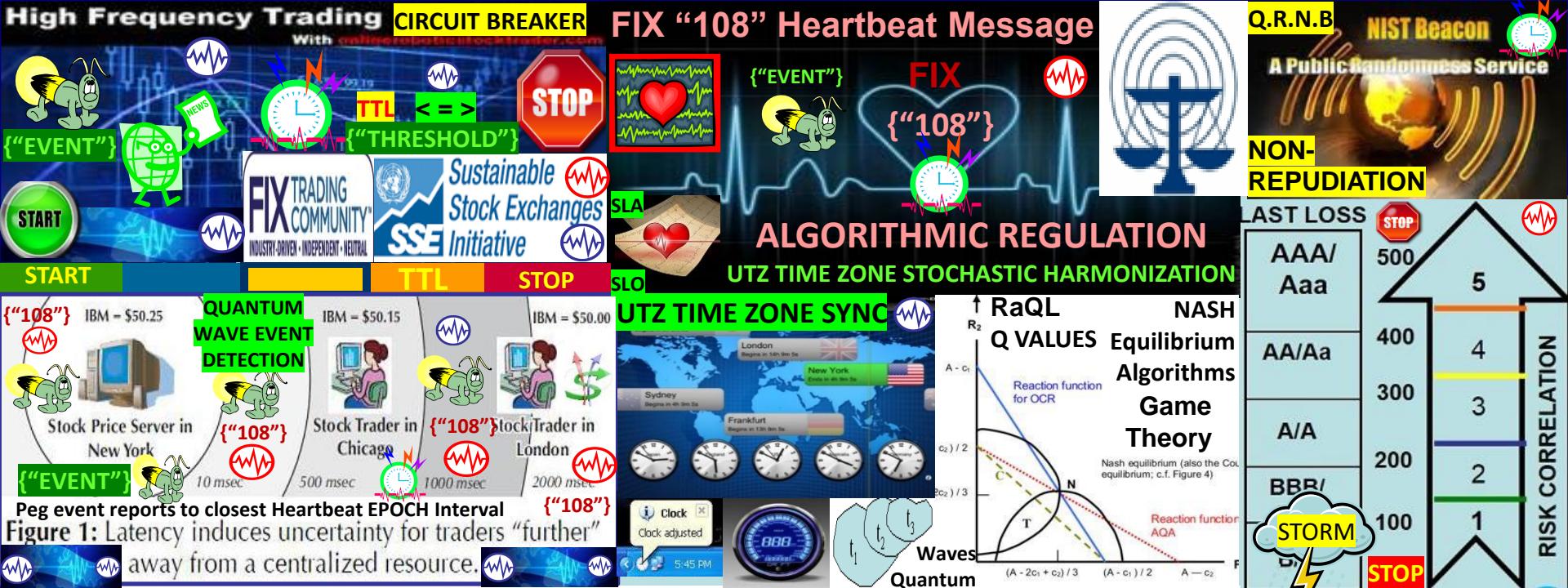


Netcentric / "network-centric" participating in a continuously evolving, complex community of people, devices, information and services interconnected by a network to optimize resource management and provide information on events and conditions.

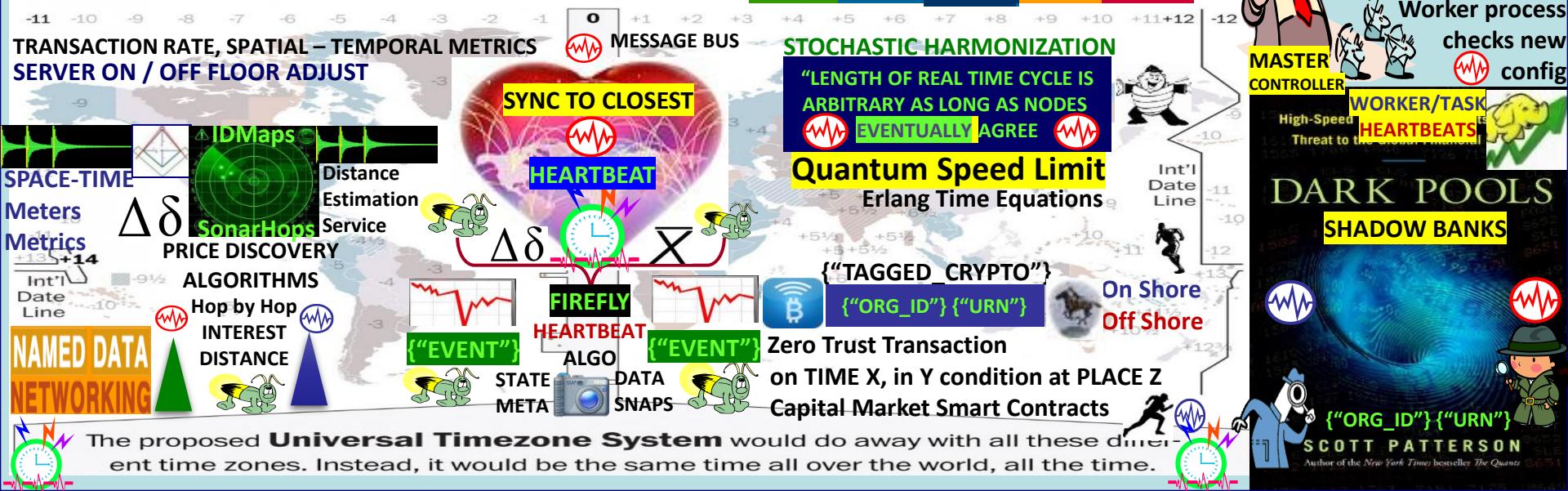
Net-centric Enterprise Architecture : "massively distributed architecture with components, services available across and throughout an enterprise's entire lines-of-business."



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



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.



# 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

Value  
Time

vector

602



UNUSED RESOURCES  
UNMET NEEDS

WATER DROP IN POND MEME IS  
SONAR NAVY METAPHOR / MEME

NDN </INTEREST>  
NDN {"DISTANCE"}

NAMED DATA  
NETWORKING

IEEE C37.118  
Harmonization  
& Sync heartbeat  
update Interval

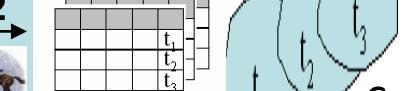
CLOSER SOURCE  
CHEAPER RATE

603

PAUL REVERE  
LINEAR, SEQUENTIAL

RADIUS  
WATER DROP IN POND MEME

Attribute Series



INTEREST  
DISTANCE

Temporal Series

TCP/IP HOP BY HOP COUNT

Energy Attenuates over Distances

Micro Grids Closer - Cheaper

BLOCKCHAIN  
MICROGRIDS

TESLA



Spatial  
Econometrics

Spaceship  
Earth  
Signals &  
Telemetry  
Annex

ASTEROID BELTS =  
RARE MINERALS

MAIN  
ASTEROID  
BELT

MARS  
VENUS  
EARTH

MERCURY

STOCHASTIC  
HARMONIZATION

Farther = More Cost  
➤ Fuel, Resources

Service Level Agreements

FIREFLY-HEARTBEAT  
ALGORITHM  
UNIVERSAL  
EVENT MESSAGE BUS

ERLANG  
TIME- SPACE METRICS

43  
22  
13  
0  
1.5  
2.7  
5.2

Light minutes  
Astronomical units

TIME-SPACE BEACON INFOCON

5 4 3 2 1

INFORMATION  
CONDITION

???  
METRICS / METERS  
TRADE WITH EARTH

SIRIUS DISCLOSURE

MOON =  
HELIUM 3

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

Alpha  
Numeric  
Brevity  
Codes

SYNTAX  
LEXICON

K00.99

CODE

JUPITER

ANDERSON  
INSTITUTE

FIREFLY - HEARTBEAT ALGORITHM MESSAGE EVENT BUS

EPOCH / TIME CYCLES / INTERVALS

← cycle n → ← n + 1 → ← n + 2 →



# 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.



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 comi



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

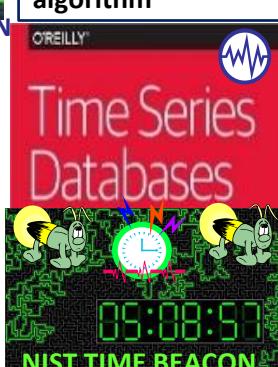


distributed "noSQL" database, embedded right into Erlang, supports indexing, replication, transactions, and fail-over

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

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

FROM	SOCA	THAI	ABAD	AMROPE	AFATON	WIC
ANODR	PEAK	PEAK	PEAK	PEAK	PEAK	PEAK
AFATON	PEAK	PEAK	PEAK	PEAK	PEAK	PEAK
WIC	PEAK	PEAK	PEAK	PEAK	PEAK	PEAK
STRUCTURED	PEAK	PEAK	PEAK	PEAK	PEAK	PEAK
MILITARY MESSAGE	PEAK	PEAK	PEAK	PEAK	PEAK	PEAK
TEMPLATE FORMS	PEAK	PEAK	PEAK	PEAK	PEAK	PEAK
LOGIC / FILTERS	PEAK	PEAK	PEAK	PEAK	PEAK	PEAK



NIST TIME BEACON

05:08:57

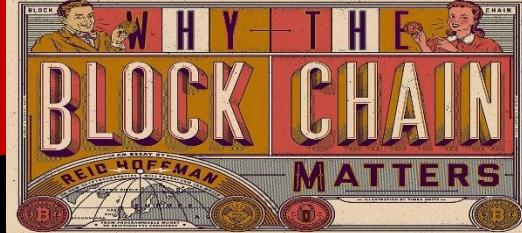
NON REPUDIATION

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

# TradeNet

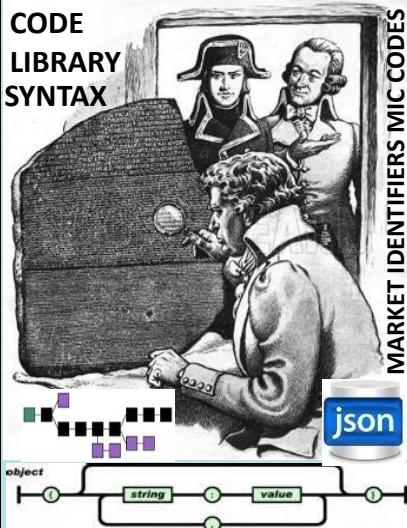


## Programmable Money \$\$\$



RIED HOFFMAN 15 May 2015 [LINK](#)

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



FROM	TO	MCS
ASAS	PSM1	F405
ARDCPS	PSM1	F406
MFATOS	PSM1	F407
	PSM1	F408
	PSM1	F409
	PSM1	F410
	PSM1	F411
	PSM1	F412
	PSM1	F413
	PSM1	F414
	PSM1	F415
	PSM1	F416
	PSM1	F417
	PSM1	F418
	PSM1	F419
	PSM1	F420
	PSM1	F421
	PSM1	F422
	PSM1	F423
	PSM1	F424
	PSM1	F425
	PSM1	F426
	PSM1	F427
	PSM1	F428
	PSM1	F429
	PSM1	F430
	PSM1	F431
	PSM1	F432
	PSM1	F433
	PSM1	F434
	PSM1	F435
	PSM1	F436
	PSM1	F437
	PSM1	F438
	PSM1	F439
	PSM1	F440
	PSM1	F441
	PSM1	F442
	PSM1	F443
	PSM1	F444
	PSM1	F445
	PSM1	F446
	PSM1	F447
	PSM1	F448
	PSM1	F449
	PSM1	F450
	PSM1	F451
	PSM1	F452
	PSM1	F453
	PSM1	F454
	PSM1	F455
	PSM1	F456
	PSM1	F457
	PSM1	F458
	PSM1	F459
	PSM1	F460
	PSM1	F461
	PSM1	F462
	PSM1	F463
	PSM1	F464
	PSM1	F465
	PSM1	F466
	PSM1	F467
	PSM1	F468
	PSM1	F469
	PSM1	F470
	PSM1	F471
	PSM1	F472
	PSM1	F473
	PSM1	F474
	PSM1	F475
	PSM1	F476
	PSM1	F477
	PSM1	F478
	PSM1	F479
	PSM1	F480
	PSM1	F481
	PSM1	F482
	PSM1	F483
	PSM1	F484
	PSM1	F485
	PSM1	F486
	PSM1	F487
	PSM1	F488
	PSM1	F489
	PSM1	F490
	PSM1	F491
	PSM1	F492
	PSM1	F493
	PSM1	F494
	PSM1	F495
	PSM1	F496
	PSM1	F497
	PSM1	F498
	PSM1	F499
	PSM1	F500
	PSM1	F501
	PSM1	F502
	PSM1	F503
	PSM1	F504
	PSM1	F505
	PSM1	F506
	PSM1	F507
	PSM1	F508
	PSM1	F509
	PSM1	F510
	PSM1	F511
	PSM1	F512
	PSM1	F513
	PSM1	F514
	PSM1	F515
	PSM1	F516
	PSM1	F517
	PSM1	F518
	PSM1	F519
	PSM1	F520
	PSM1	F521
	PSM1	F522
	PSM1	F523
	PSM1	F524
	PSM1	F525
	PSM1	F526
	PSM1	F527
	PSM1	F528
	PSM1	F529
	PSM1	F530
	PSM1	F531
	PSM1	F532
	PSM1	F533
	PSM1	F534
	PSM1	F535
	PSM1	F536
	PSM1	F537
	PSM1	F538
	PSM1	F539
	PSM1	F540
	PSM1	F541
	PSM1	F542
	PSM1	F543
	PSM1	F544
	PSM1	F545
	PSM1	F546
	PSM1	F547
	PSM1	F548
	PSM1	F549
	PSM1	F550
	PSM1	F551
	PSM1	F552
	PSM1	F553
	PSM1	F554
	PSM1	F555
	PSM1	F556
	PSM1	F557
	PSM1	F558
	PSM1	F559
	PSM1	F560
	PSM1	F561
	PSM1	F562
	PSM1	F563
	PSM1	F564
	PSM1	F565
	PSM1	F566
	PSM1	F567
	PSM1	F568
	PSM1	F569
	PSM1	F570
	PSM1	F571
	PSM1	F572
	PSM1	F573
	PSM1	F574
	PSM1	F575
	PSM1	F576
	PSM1	F577
	PSM1	F578
	PSM1	F579
	PSM1	F580
	PSM1	F581
	PSM1	F582
	PSM1	F583
	PSM1	F584
	PSM1	F585
	PSM1	F586
	PSM1	F587
	PSM1	F588
	PSM1	F589
	PSM1	F590
	PSM1	F591
	PSM1	F592
	PSM1	F593
	PSM1	F594
	PSM1	F595
	PSM1	F596
	PSM1	F597
	PSM1	F598
	PSM1	F599
	PSM1	F600
	PSM1	F601
	PSM1	F602
	PSM1	F603
	PSM1	F604
	PSM1	F605
	PSM1	F606
	PSM1	F607
	PSM1	F608
	PSM1	F609
	PSM1	F610
	PSM1	F611
	PSM1	F612
	PSM1	F613
	PSM1	F614
	PSM1	F615
	PSM1	F616
	PSM1	F617
	PSM1	F618
	PSM1	F619
	PSM1	F620
	PSM1	F621
	PSM1	F622
	PSM1	F623
	PSM1	F624
	PSM1	F625
	PSM1	F626
	PSM1	F627
	PSM1	F628
	PSM1	F629
	PSM1	F630
	PSM1	F631
	PSM1	F632
	PSM1	F633
	PSM1	F634
	PSM1	F635
	PSM1	F636
	PSM1	F637
	PSM1	F638
	PSM1	F639
	PSM1	F640
	PSM1	F641
	PSM1	F642
	PSM1	F643
	PSM1	F644
	PSM1	F645
	PSM1	F646
	PSM1	F647
	PSM1	F648
	PSM1	F649
	PSM1	F650
	PSM1	F651
	PSM1	F652
	PSM1	F653
	PSM1	F654
	PSM1	F655
	PSM1	F656
	PSM1	F657
	PSM1	F658
	PSM1	F659
	PSM1	F660
	PSM1	F661
	PSM1	F662
	PSM1	F663
	PSM1	F664
	PSM1	F665
	PSM1	F666
	PSM1	F667
	PSM1	F668
	PSM1	F669
	PSM1	F670
	PSM1	F671
	PSM1	F672
	PSM1	F673
	PSM1	F674
	PSM1	F675
	PSM1	F676
	PSM1	F677
	PSM1	F678
	PSM1	F679
	PSM1	F680
	PSM1	F681
	PSM1	F682
	PSM1	F683
	PSM1	F684
	PSM1	F685
	PSM1	F686
	PSM1	F687
	PSM1	F688
	PSM1	F689
	PSM1	F690
	PSM1	F691
	PSM1	F692
	PSM1	F693
	PSM1	F694
	PSM1	F695
	PSM1	F696
	PSM1	F697
	PSM1	F698
	PSM1	F699
	PSM1	F700
	PSM1	F701
	PSM1	F702
	PSM1	F703
	PSM1	F704
	PSM1	F705
	PSM1	F706
	PSM1	F707
	PSM1	F708
	PSM1	F709
	PSM1	F710
	PSM1	F711
	PSM1	F712
	PSM1	F713
	PSM1	F714
	PSM1	F715
	PSM1	F716
	PSM1	F717
	PSM1	F718
	PSM1	F719
	PSM1	F720
	PSM1	F721
	PSM1	F722
	PSM1	F723
	PSM1	F724
	PSM1	F725
	PSM1	F726
	PSM1	F727
	PSM1	F728
	PSM1	F729
	PSM1	F730
	PSM1	F731
	PSM1	F732
	PSM1	F733
	PSM1	F734
	PSM1	F735
	PSM1	F736
	PSM1	F737
	PSM1	F738
	PSM1	F739
	PSM1	F740
	PSM1	F741
	PSM1	F742
	PSM1	F743
	PSM1	F744
	PSM1	F745
	PSM1	F746
	PSM1	F747
	PSM1	F748
	PSM1	F749
	PSM1	F750
	PSM1	F751
	PSM1	F752
	PSM1	F753
	PSM1	F754
	PSM1	F755
	PSM1	F756
	PSM1	F757
	PSM1	F758
	PSM1	F759
	PSM1	F760
	PSM1	F761
	PSM1	F762
	PSM1	F763
	PSM1	F764
	PSM1	F765
	PSM1	F766
	PSM1	F767
	PSM1	F768
	PSM1	F769
	PSM1	F770
	PSM1	F771
	PSM1	F772
	PSM1	F773
	PSM1	F774
	PSM1	F775
	PSM1	F776
	PSM1	F777
	PSM1	F778
	PSM1	F779
	PSM1	F780
	PSM1	F781
	PSM1	F782
	PSM1	F783
	PSM1	F784
	PSM1	F785
	PSM1	F786
	PSM1	F787
	PSM1	F788
	PSM1	F789
	PSM1	F790
	PSM1	F791
	PSM1	F792
	PSM1	F793
	PSM1	F794
	PSM1	F795
	PSM1	F796
	PSM1	F797
	PSM1	F798
	PSM1	F799
	PSM1	F800
	PSM1	F801
	PSM1	F802
	PSM1	F803
	PSM1	F804
	PSM1	F805
	PSM1	F806
	PSM1	F807
	PSM1	F808
	PSM1	F809
	PSM1	F810
	PSM1	F811
	PSM1	F812
	PSM1	F813
	PSM1	F814
	PSM1	F815
	PSM1	F816
	PSM1	F817
	PSM1	F818
	PSM1	F819
	PSM1	F820
	PSM1	F821
	PSM1	F822
	PSM1	F823
	PSM1	F824
	PSM1	F825
	PSM1	F826
	PSM1	F827
	PSM1	F828
	PSM1	F829
	PSM1	F830
	PSM1	F831
	PSM1	F832
	PSM1	F833
	PSM1	F834
	PSM1	F835
	PSM1	F836
	PSM1	F837
	PSM1	F838
	PSM1	F839
	PSM1	F840
	PSM1	F841
	PSM1	F842
	PSM1	F843
	PSM1	F844
	PSM1	F845
	PSM1	F846
	PSM1	F847
	PSM1	F848
	PSM1	F849
	PSM1	F850
	PSM1	F851
	PSM1	F852
	PSM1	F853
	PSM1	F854
	PSM1	F855
	PSM1	F856
	PSM1	F857
	PSM1	F858
	PSM1	F859
	PSM1	F860
	PSM1	F861
	PSM1	F862
	PSM1	F863
	PSM1	F864
	PSM1	F865
	PSM1	F866
	PSM1	F867
	PSM1	F868
	PSM1	F869
	PSM1	F870
	PSM1	F871
	PSM1	F872
	PSM1	F873
	PSM1	F874
	PSM1	F875
	PSM1	F876
	PSM1	F877
	PSM1	F878
	PSM1	F879
	PSM1	F880</





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



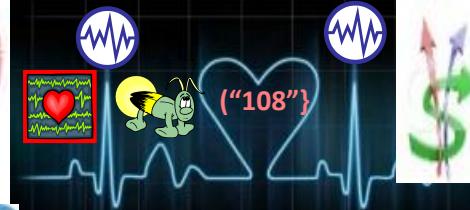
- Creates an online store for users to sell goods for Bitcoin
- Connects these stores directly to each other on a global network
- Users browse individual stores, search for products across whole network
- A buyer directly connects, purchases good from the merchant using Bitcoin
- Bitcoin payments via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

OPENBAZAAR.ORG  
BLOCKCHAIN ARBITRAGE



CLOSER = < \$  
CLOSER = < CO2

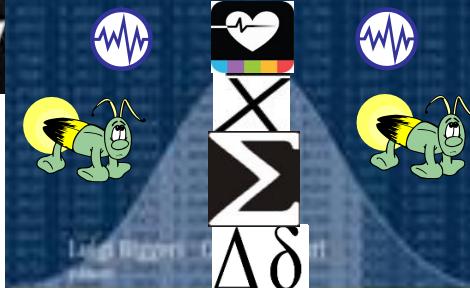
SLA  
COMMODITIES  
ECONOMIC HEARTBEAT



STAT MEAN VALUE PULSE  
REAL WORLD ASSETS RWA

STAT MEAN VALUE INDEX

CONTRIBUTIONS TO STATISTICS



Price Indexes in  
Time and Space  
Methods and Practice

SchellingPoint

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”



Free, open markets: Commodity / Currency Index

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

• Privacy </Org\_ID>



HASH Values  
Nonce Values </Org\_ID>



COMMODITIES

PRODUCERS CONSUMERS

INFORMATION PRODUCTION CONSUMPTION

TRANSPORTATION ENERGY

MANUFACTURING

WAREHOUSING

LOGISTICS

MANAGEMENT

FINANCIAL

INVESTMENT

MANUFACTURING

WAREHOUSING

LOGISTICS

MANAGEMENT

FINANCIAL

</div

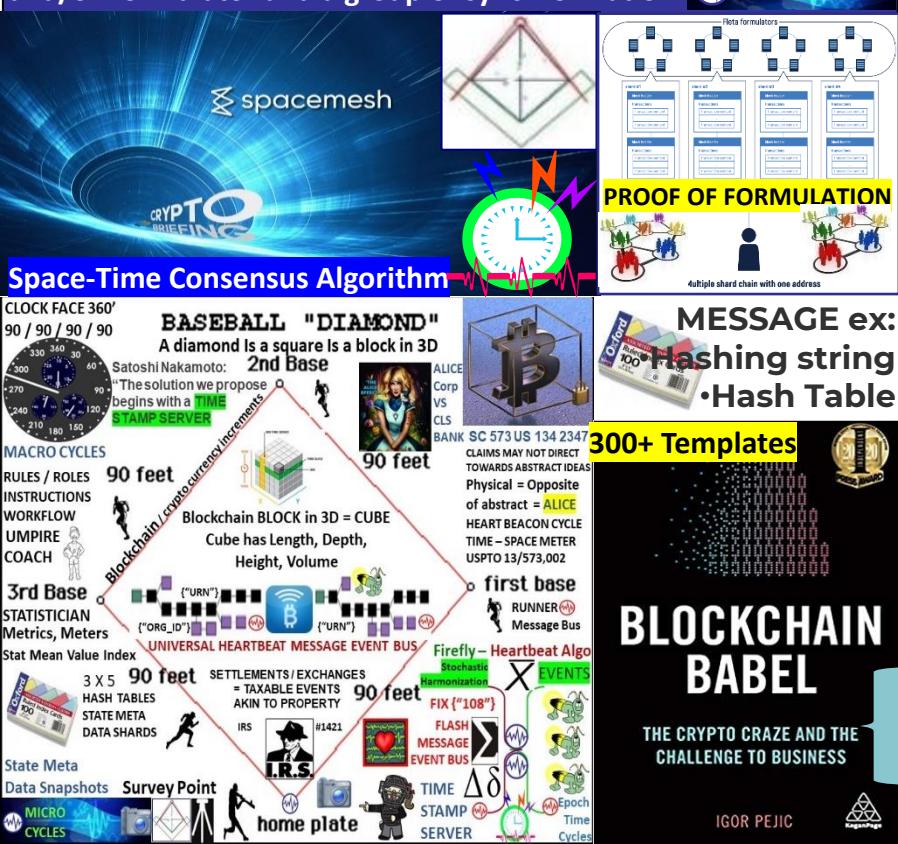
**Q: Which meme describes the myriad blockchain consensus algorithms the most comprehensively that uses an algorithm (based on nature = “shortest path to the knowledge of truth Luxor Temple) enabling distributed system of systems geo-spatial, UTZ Universal Time Zone temporal, semantic - syntactic sync,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

Blockchain Consensus Algorithms & Mechanisms



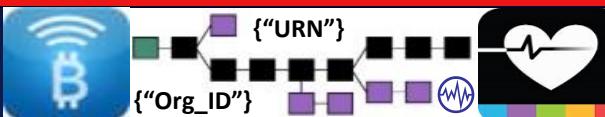
In the world of blockchain consensus algorithms, consensus is the **HEART OF THE BLOCKCHAIN NETWORK**. Its main purpose is to achieve agreement on transactions among a distributed system (s)

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



# **BLOCKCHAIN CONSENSUS ALGORITHMS**

# ULTIMATE GUIDE FOR BEGINNERS



# NON REPUDIATION

## Proof-of-Work

**Proof-of-Weight**

## Proof-of-Stake

## **Delegated Proof-of- Stake**

20

5

1

N

10

15

1

PoET

1

1

1

EI

**practical**

## Antine Fault Tolerance

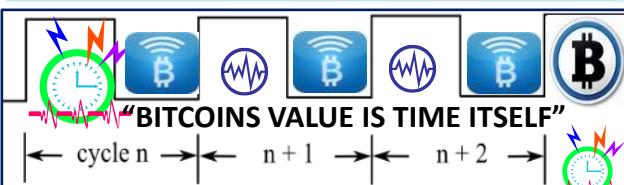
www.de

# n-consensus-algorithms

# PROOF-OF-WORK



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



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

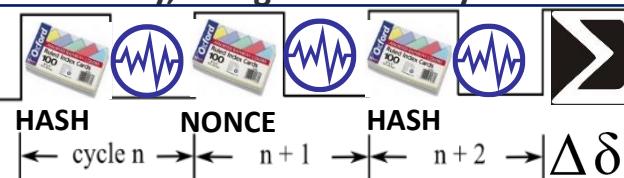


THROTTLE equivalent to difficulty. State  
•target = maximum value of 8 bytes Snap  
( $2^{64}$ ) divided by the difficulty.

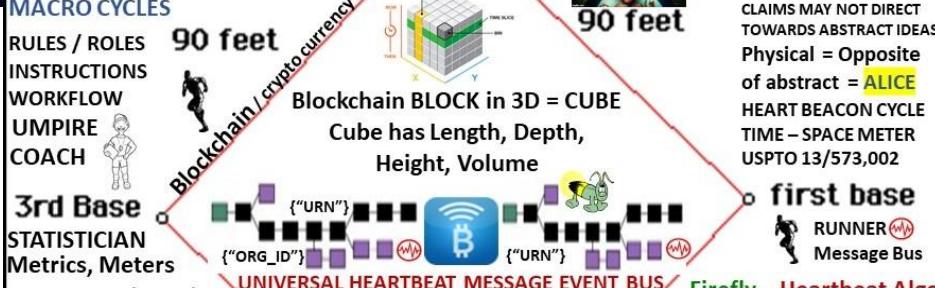
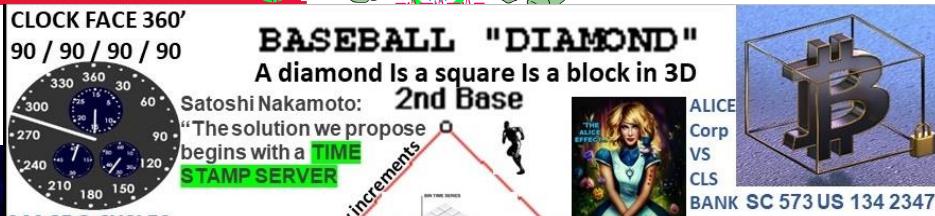
NONCE increments from 0..N until the target is met.



GUESS stores the guess  
Effectively, it begins at infinity.



**Proof-of-Work:** users perform some form of work to participate. Work must be difficult for the client but easy for the server/network to verify. POW determines the approximate time between blocks = rate that new bitcoins are created. Work is submitted as a message/timestamp payload with a nonce value. Payloads are made unique through use of public key encryption or address.Nonce allows checking the work

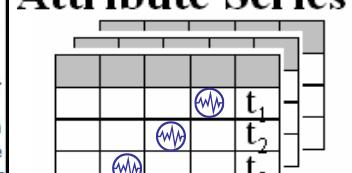


MESSAGE example:  
Hash string  
•Hash Table

300+Message Templates

FROM	ODERA	TABE	AAAB	APICL	AFATOB	WTR
ANPDR	CG201 CG202 CG203 CG204 CG205 CG206 CG207	P101 P102 P103 P104 P105 P106 P107	P111 P112 P113 P114 P115 P116 P117	P121 P122 P123 P124 P125 P126 P127	P131 P132 P133 P134 P135 P136 P137	P141 P142 P143 P144 P145 P146 P147
ANPDR	CG301 CG302 CG303 CG304 CG305 CG306 CG307	P101 P102 P103 P104 P105 P106 P107	P111 P112 P113 P114 P115 P116 P117	P121 P122 P123 P124 P125 P126 P127	P131 P132 P133 P134 P135 P136 P137	P141 P142 P143 P144 P145 P146 P147
CSCB	CG401 CG402 CG403 CG404 CG405 CG406 CG407	P101 P102 P103 P104 P105 P106 P107	P111 P112 P113 P114 P115 P116 P117	P121 P122 P123 P124 P125 P126 P127	P131 P132 P133 P134 P135 P136 P137	P141 P142 P143 P144 P145 P146 P147
DPB	CG501 CG502 CG503 CG504 CG505 CG506 CG507	P101 P102 P103 P104 P105 P106 P107	P111 P112 P113 P114 P115 P116 P117	P121 P122 P123 P124 P125 P126 P127	P131 P132 P133 P134 P135 P136 P137	P141 P142 P143 P144 P145 P146 P147
METH	CG601 CG602 CG603 CG604 CG605 CG606 CG607	P101 P102 P103 P104 P105 P106 P107	P111 P112 P113 P114 P115 P116 P117	P121 P122 P123 P124 P125 P126 P127	P131 P132 P133 P134 P135 P136 P137	P141 P142 P143 P144 P145 P146 P147
PERSON	CG701 CG702 CG703 CG704 CG705 CG706 CG707	P101 P102 P103 P104 P105 P106 P107	P111 P112 P113 P114 P115 P116 P117	P121 P122 P123 P124 P125 P126 P127	P131 P132 P133 P134 P135 P136 P137	P141 P142 P143 P144 P145 P146 P147
PRICO	CG801 CG802 CG803 CG804 CG805 CG806 CG807	P101 P102 P103 P104 P105 P106 P107	P111 P112 P113 P114 P115 P116 P117	P121 P122 P123 P124 P125 P126 P127	P131 P132 P133 P134 P135 P136 P137	P141 P142 P143 P144 P145 P146 P147

POW PAYLOAD :  
COMBINATIONS OF  
ENCRYPTED SYNTAX  
Attribute Series





In a proof-of-stake network, it is the number of coins held in a wallet that determines the "weight" of the user the likelihood for the user to receive the block reward. In a Proof-of-Weight consensus mechanism, any value, not just the amount of coins held, is used to determine the "weight" of a user.

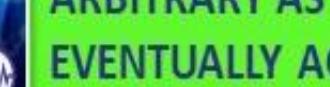
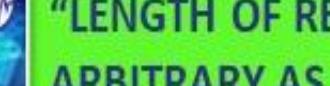
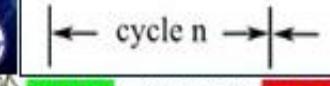
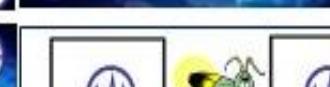
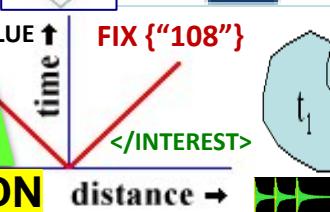
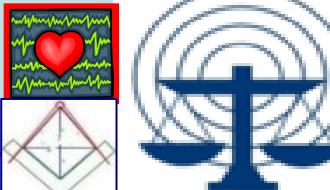


## TIME – SPACE MEASUREMENTS OF TOKENIZED COMMODITIES, SECURITIES... STOCHASTICALLY HARMONIZED ACROSS UTZ Universal Time Zone



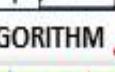
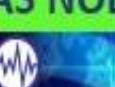
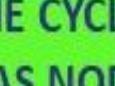
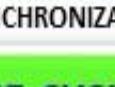
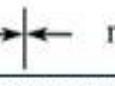
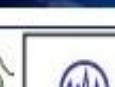
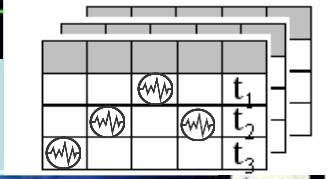
The Volumetric Weight is often referred to as dimensional weight

$$\text{Volumetric Weight} = [\text{Width} \times \text{Length} \times \text{Height}]$$

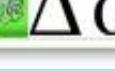
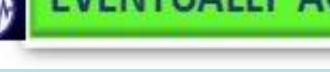
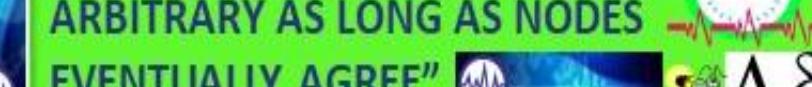


On the Filecoin blockchain, for example, the amount of IPFS data that a user is storing is used as the weighted value.

## Attribute Series



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



## DON: DECENTRALIZED ORACLE NETWORKS



### Explicit Staking

Chainlink nodes lock up LINK tokens as collateral that can be slashed for malicious and undesirable behavior.

Chainlink's explicit staking model's goal is to achieve a super-linear staking impact—a mechanism where malicious actors are required to have a budget significantly larger than the combined deposits of all nodes within a DON, creating increasingly greater security guarantees for high-value smart contract applications in a cost-efficient manner.



Explicit staking in Chainlink 2.0 oracle reports reflect the state of specific real-world events outside a blockchain (off-chain).



Chainlink's explicit staking mechanism protects against a broad range of attacks, including advanced strategies like prospective bribery, in which nodes are targeted according to their role in the network, such as those selected for report adjudication.



Behind each DON is a service agreement that will define the number of LINK tokens each oracle node is required to stake and key performance requirements, such as how far an individual node's response can deviate from the aggregated value and how far the aggregated value in an oracle report can deviate from the correct value it should represent. The service agreement can also define other parameters such as the data sources used, how often updates should occur, how much each node is paid, and more.



ALERT LEVEL >

> NEWSCAST ZONE

Outputs produced by a DON are structured into reporting rounds, where each round involves the creation of a new oracle report containing each node's individual response for a particular piece of data (e.g. the price of ETH/USD), with all the individual responses aggregated into a single value (e.g. taking the median). A DON network's service agreement defines how each report should be generated & conditions in which a node's stake can be slashed.



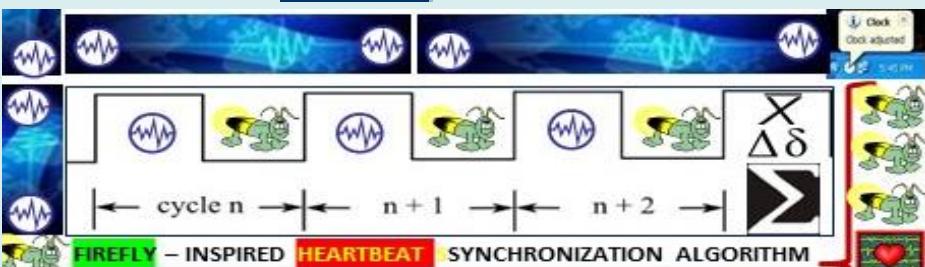
## DISTRIBUTED AUTONOMOUS ORGANIZATIONS DAO

# Heart Beacon Cycle

## FEDERATE / TRADE FEDERATIONS

### Linear Sequential Meme

....-1 / 0 / +1...  $\Delta \delta$  >  $\Sigma$



FIREFLY – INSPIRED HEARTBEAT SYNCHRONIZATION ALGORITHM



The current standard time common throughout the world is based on a 24-hour clock, with time zones that are either 22 hours ahead or behind Coordinated Universal Time (UTC). However, these time zones are decided upon by individual governments, without overall coordination and can cover up to fourteen hours ahead UTC.

IoT Microsoft Orleans

TIME-SPACE EQUATIONS  
ALGORITHMS  
BLOCKCHAIN  
PARSING



EVENT BUS

$\Delta \delta$

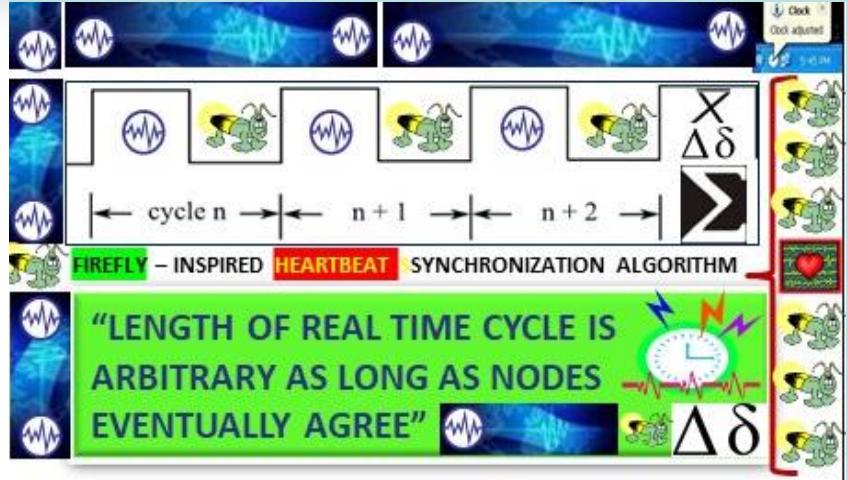
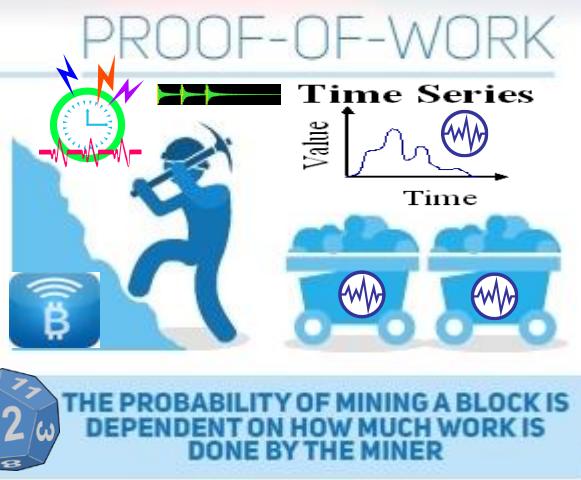
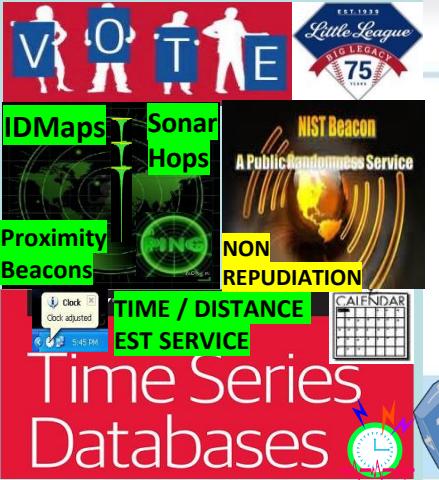


Adaptive  
Procedural  
Checklist

## Proof-of-activity PoA is a combination of Proof of Work / Stake blockchain consensus algorithms:

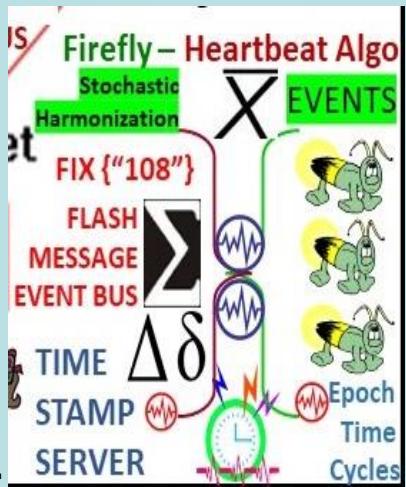
### Example of Proof-of-Activity (PoA)

Decred (DCR) is the most well-known cryptocurrency that uses the PoA consensus mechanism. With Decred, blocks are created about every five minutes.<sup>2</sup> The mining process for Decred begins with nodes (computers that participate in the network) looking for a solution to a cryptographic puzzle with a known difficulty level in order to create a new block. Once the solution has been found, it is broadcast to the network. The network then verifies the solution. At this point, the system becomes a PoS. The more DCR that a node has mined, the more likely they are to be chosen to vote on the block. (In DCR's blockchain, stakeholders earn tickets that grant them voting power in exchange for mining DCR.) Five tickets are chosen pseudo-randomly from the ticket pool; if at least 3 of the 5 vote "yes" to validate the block, it is permanently added to the blockchain. Both miners, voters are rewarded with DCR.



PROOF-OF-WORK

HEART BEACON CYCLE 13/573,002

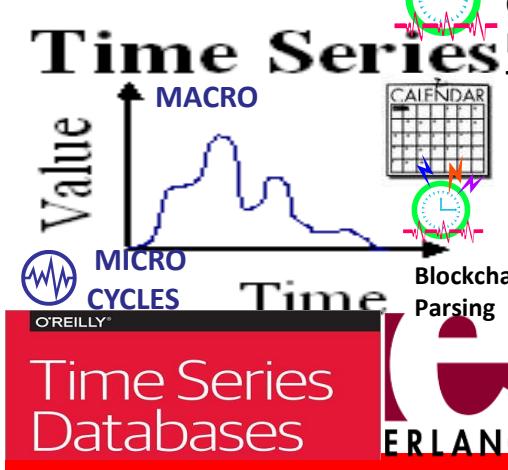


# SAWTOOTH LAKE POETIC CONSENSUS PROOF OF ELAPSED TIME: POET

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



## PROOF OF ELAPSED TIME



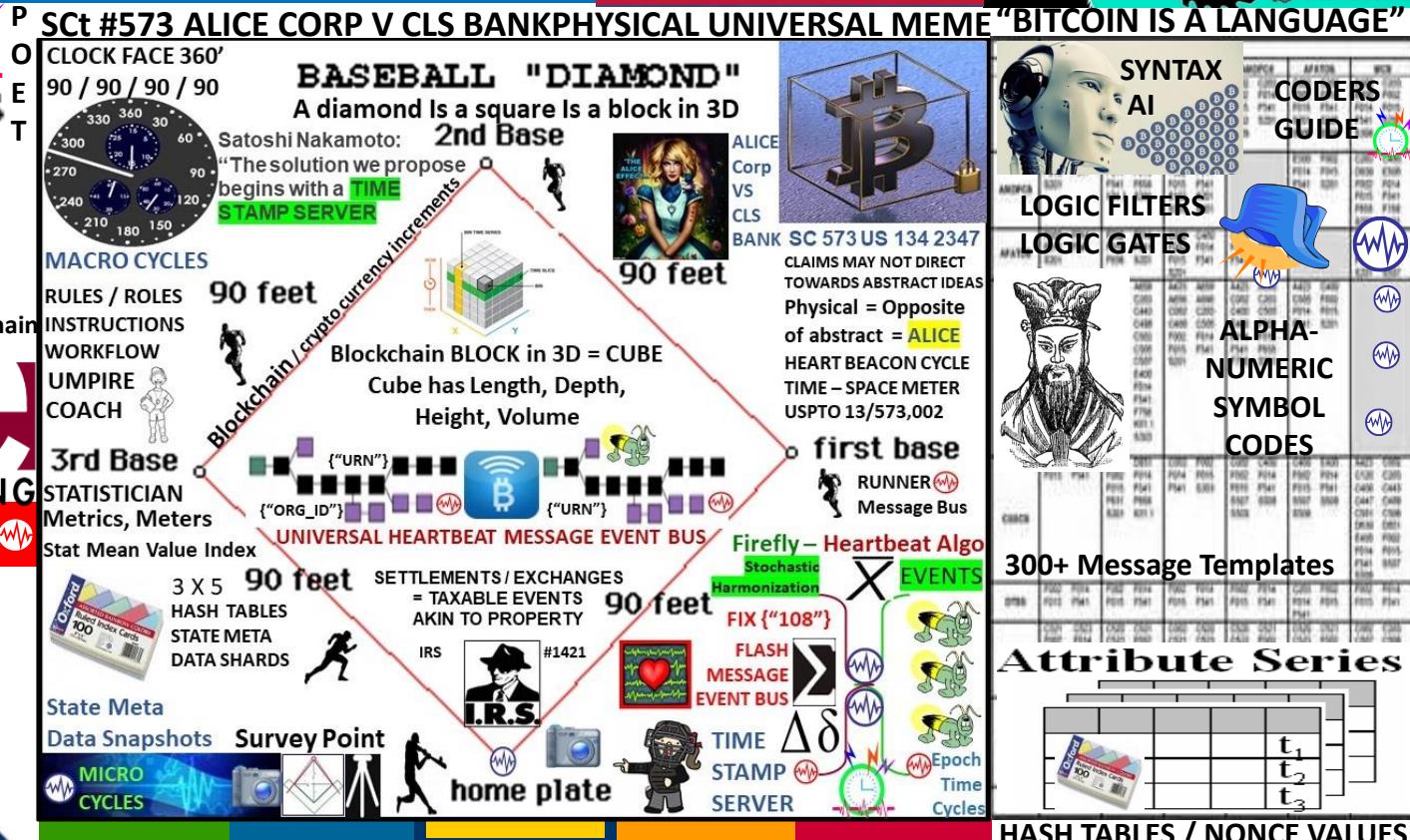
Voting Based Selection: stake size & block generators selected by votes

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

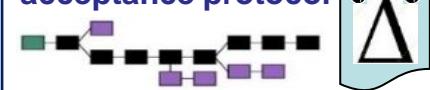


Robert's Rules quorum = minimum # of voting members who must be present at meetings to conduct business of the group

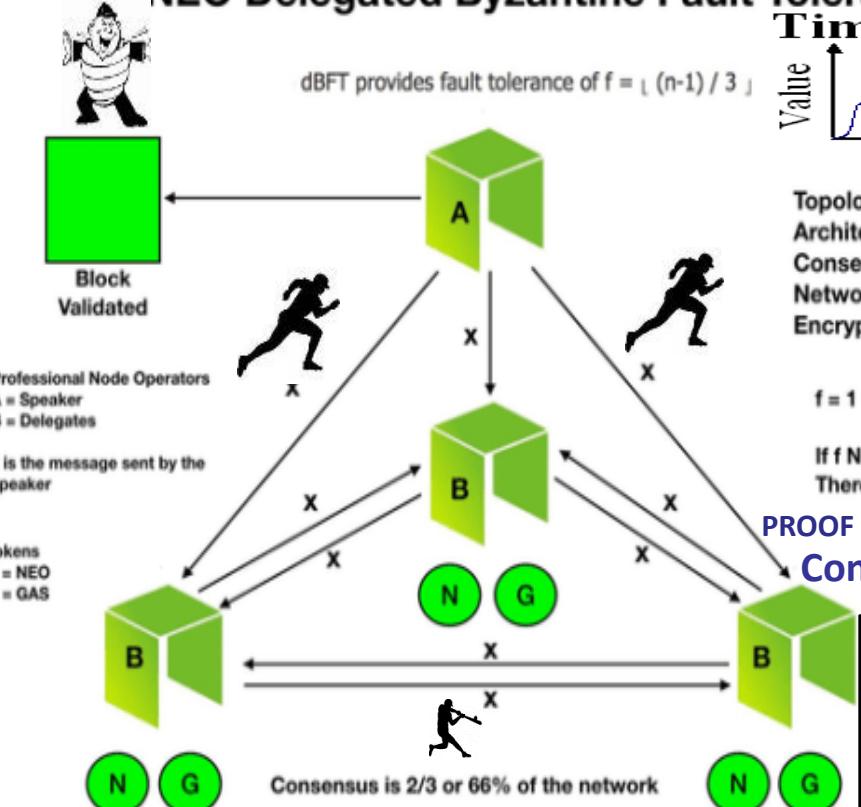
## TOURNAMENT LEAGUE BOARD



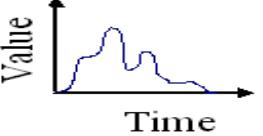
Capture ledger's state  $\Delta\delta$   
Transaction language changes ledger state  
Consensus, transaction acceptance protocol



# NEO Delegated Byzantine Fault Tolerance (dBFT)



## Time Series

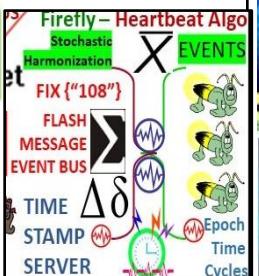


Topology: Hierarchical Star  
Architecture: Distributed  
Consensus: dBFT  
Network: TCP/IP  
Encryption: ECDH

$$f = 1 \text{ OR } 0.66$$

If  $f$  NOT 1 OR  $< 0.66$   
There is no consensus

## PROOF OF ELAPSED TIME Consensus Order



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

IDMaps SonarHops

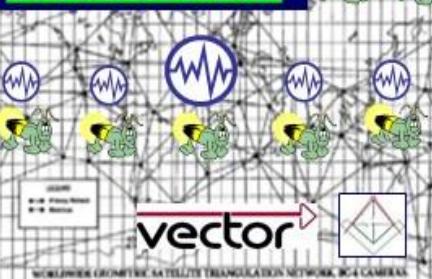
NDN

"Distance"

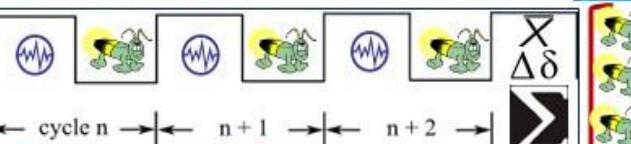
"Interest"

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

## TRIANGULATION



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



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

$\Delta\delta$

EVENT BUS

LOCKED QUOTED ACCEPT / DENY In Progress SUCCEEDED

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

NON REPUDIATION

NIST Beacon A Public Randomness Service

LITTLE LEAGUE BIG LEGACY 75

MATCH EVENT REPORTS TO CLOSEST HEARTBEAT CYCLE

FLASH HEARTBEAT MESSAGES {"108"}  $\Delta\delta$

HASH NONCE FIREFLY-HEARTBEAT ALGORITHM

MICRO-CYCLE STATE META DATA SNAPSHOTS

STOCHASTIC HARMONIZATION ACROSS UTZ TIME ZONES

No collusion between individuals or entities is possible. Participants in the network validate transactions adding to the ledger have no affiliation or relationship (political, adversarial, etc.) with the transaction or its participants. Only a permissionless platform can meet this set of criteria.

Specifically, a random selection algorithm called RS is developed to cooperate with the voting mechanism, which can effectively reduce the number of nodes participating in the consensus process. Our proposed scheme is characterized by the unpredictability, randomness, and Impartiality, which accelerate the system to reach consensus on the premise of ensuring system activity. ✓





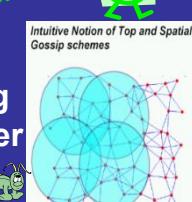
**HASHGRAPH**  
Directed Acyclic  
Graph DAG

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

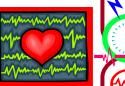
Decide

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  
Icons: a person running, a fly, a clock, a globe, a stack of cards.

Synchronous



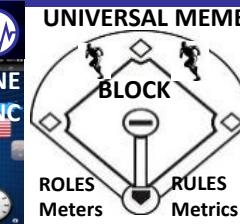
Asynchronous



Hash  
Nonce

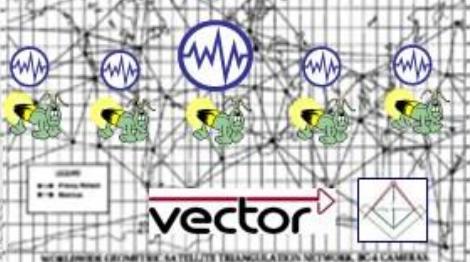
Micro-Cycle  
State Meta  
Data Snapshots

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



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

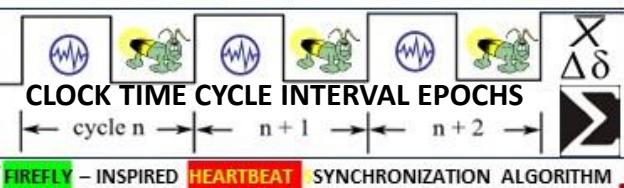
TRIANGULATION



vector

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

FIREFLY HEARTBEAT Synchronization Algorithm



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

# Proof of Burn



Proof of burn (POB) operates on the principle of allowing miners to “burn” virtual currency tokens. They are then granted the right to write blocks in proportion to the coins burnt.

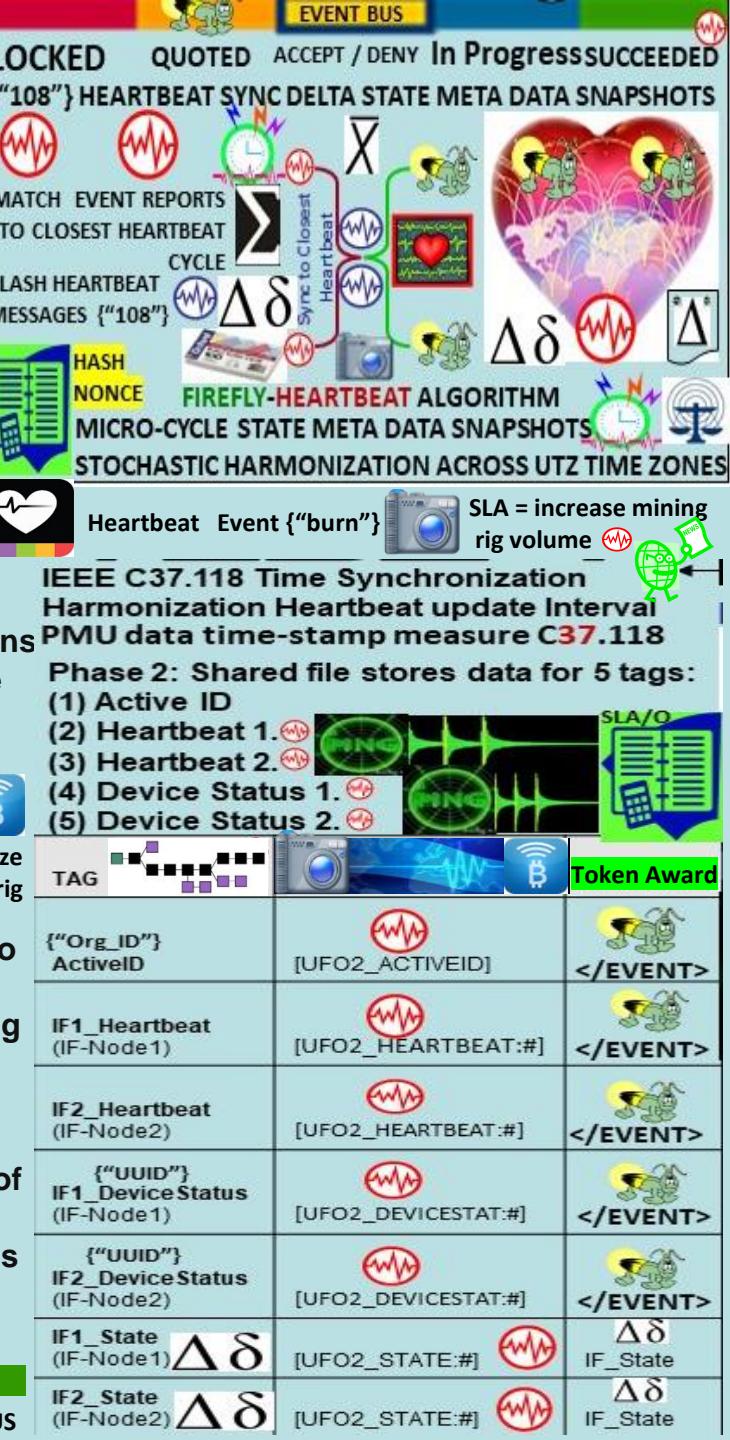
Iain Stewart, the inventor of the POB algorithm, uses an analogy to describe the algorithm: burnt coins are like mining rigs. In this analogy, a miner burns their coins to buy a virtual mining rig that gives them the power to mine blocks. The more coins burned by the miner, the bigger their virtual mining "rig" will be.<sup>2</sup>

To burn the coins, miners send them to a verifiably un-spendable address. This process does not consume many resources (other than the burned coins) and ensures that the network remains active and agile. Depending upon the implementation, miners are allowed to burn the native currency or the currency of an alternate chain, such as Bitcoin. In exchange, they receive a reward in the native currency token of the blockchain.



You can send out transactions to the network that will burn your own cryptocurrency coins. Other participants can mine/burn on top of your block, and you can also take the transactions of other participants to add them to your block. Essentially, all of this burning activity keeps the network agile, and participants are rewarded for their activities (both burning their own coins and burning other people's coins).

To prevent the possibility of unfair advantages for early adopters, the POB system has implemented a mechanism that promotes the periodic burning of cryptocurrency coins to maintain mining power. The power of burnt coins “decays” or reduces partially each time a new block is mined. This promotes regular activity by the miners, instead of a one-time, early investment. To maintain a competitive edge, miners may also need to periodically invest in better equipment as technology advances.

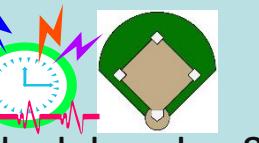


# Proof of Capacity PoC



consensus mechanism algorithm for mining devices to use hard drive space to decide mining rights, validate transactions

Proof of capacity for mining devices, also known as blockchain nodes, to use empty space on their hard drive to mine the available [cryptocurrencies](#).



Instead of repeatedly altering the numbers in the block header & repeated hashing for the solution value as in a PoW system, PoC works by storing a list of possible solutions on the mining device's hard drive before mining activity starts



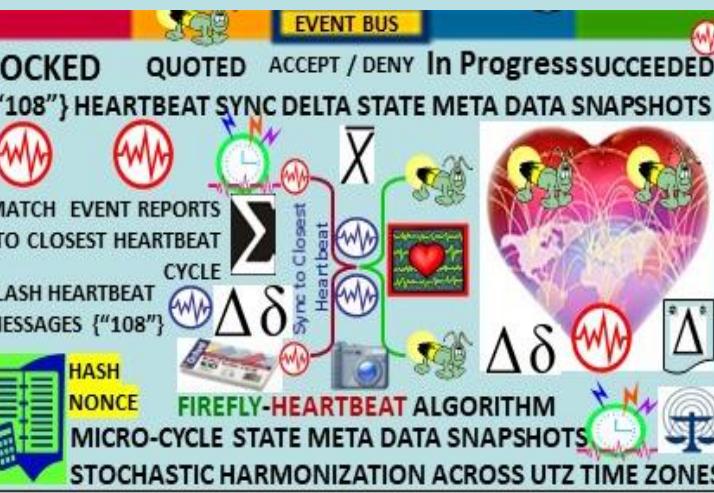
The larger the hard drive, the > possible solution values one can store on the hard drive, the more chances a miner has to match required hash value from his list, resulting in more chances to win the mining reward.



Analogy: if lottery rewards are based on matching the most numbers on the winning ticket, then a player with a longer list of possible solutions will have better chances of winning. Additionally, the player is allowed to keep using the lottery ticket block numbers again and again repeatedly.



Bitcoin purchase akin to property

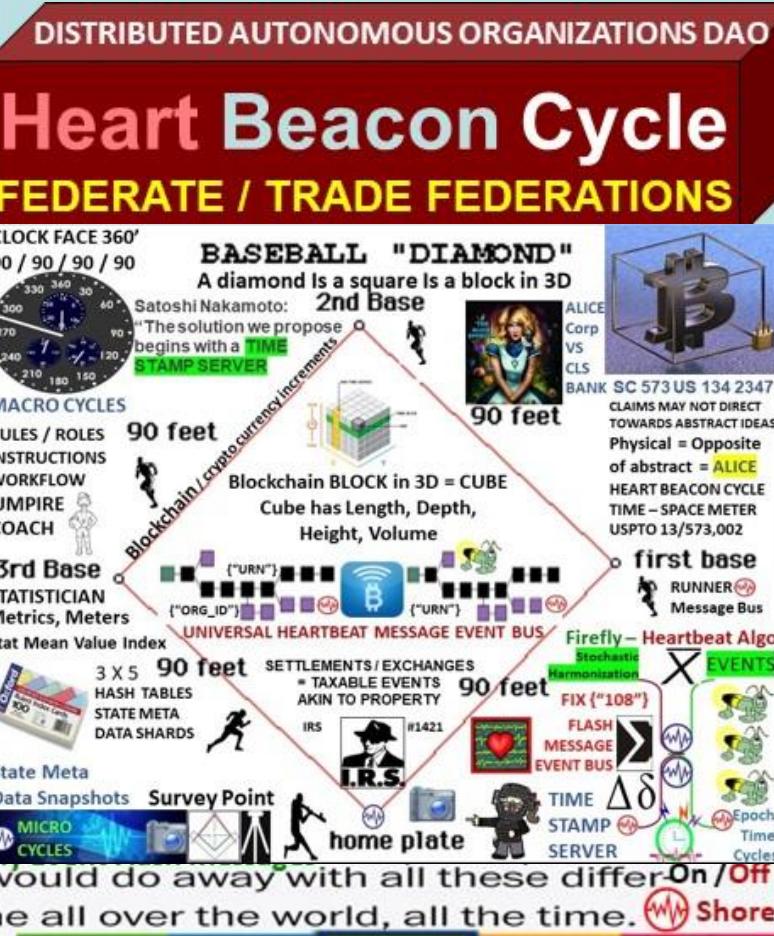


# PoST Proof-of-Spacetime (PoST)

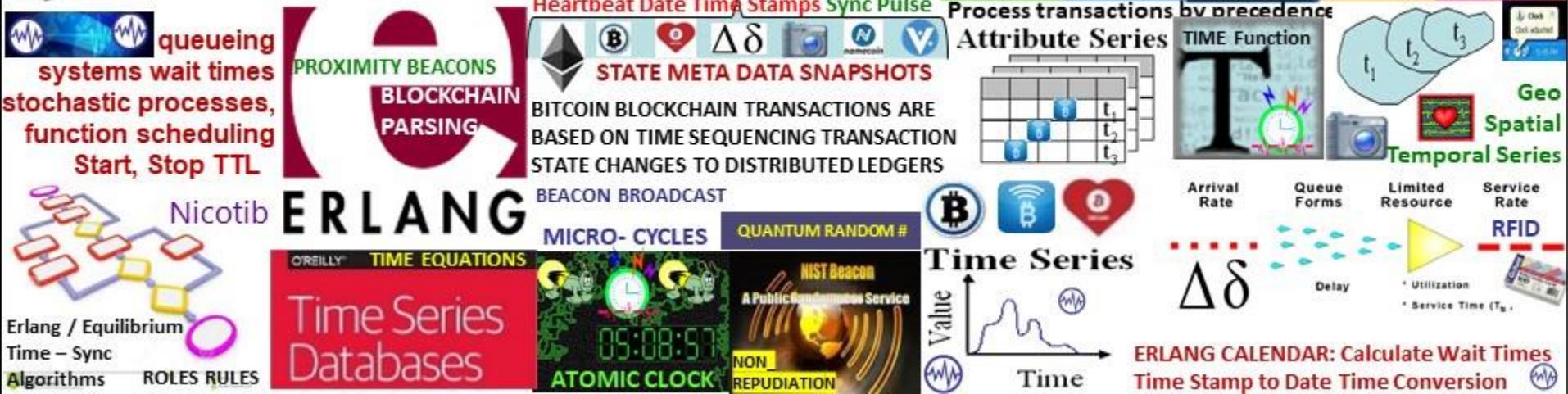
PoST shows that physically storing data (spent "spacetime" resource/allocated storage capacity to the network) over a certain period of time.



PoST users / nodes must prove that they are spending a certain amount of space for storage.



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.



# Proof of Authority



{"GROUP ID"}  
{"Org\_ID"}

Not pay to play, Node identity is kept as stake

A PoA network are secured by validators, that are selected democratically by existing validators. The nodes on the PoA network are rewarded for validating the transactions on the network. The identity of the validator is kept anonymous by encryption and secured cryptographically. It is revealed only as a negative reinforcement when the validator processes a fraudulent or a malicious transaction.



A notary license verifies the identity of the person formally, a notary license is released by the Federation / Government after extensive verification. The identity of the validator is kept for cross-referencing with the notary data and blockchain data

Parity supports a Proof-of-Authority consensus engine. Proof-of-Authority is a replacement for Proof-of-Work, and can be used for private or centralized chains. PoA as tested by a Kovan test network improves outdated economic models.

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**



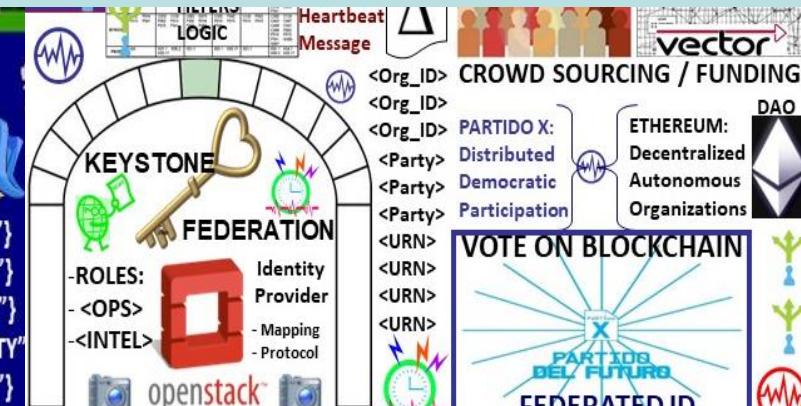
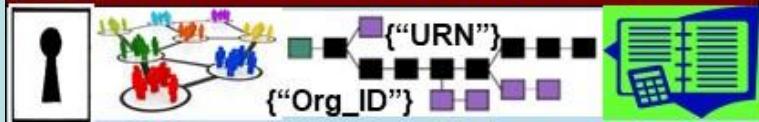
Net joins, drops, splits, merges, moves

Agile, adhoc NETOPS Vs acquisition preserves the

DISTRIBUTED AUTONOMOUS ORGANIZATIONS DAO

## Heart Beacon Cycle

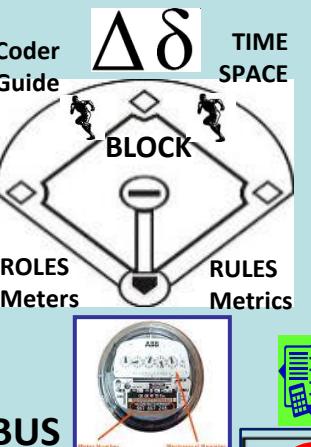
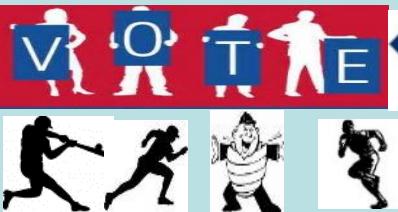
### FEDERATE / TRADE FEDERATIONS



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

## KEY BLOCKS:

- NO CONTENT = NULL
- LEADER ELECTION



MVP

EVENT BUS

## MICRO BLOCKS:

- ONLY CONTENT
- NO CONTENTION



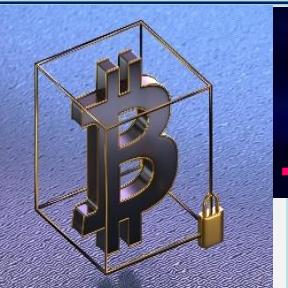
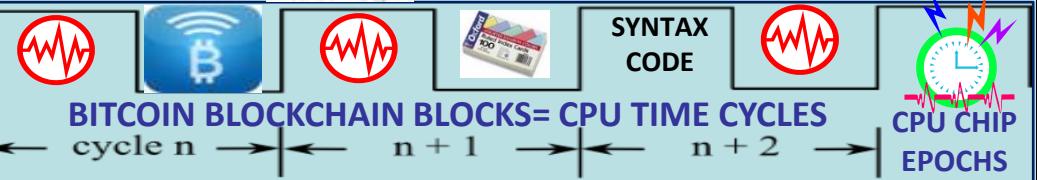
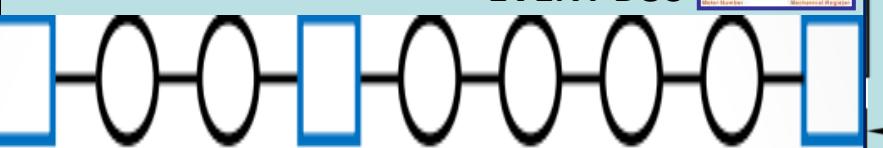
FROM	GCDA	TAB	ASAS	AMPCDS	AFATON	WCR	TO
GCDA	P001	P002	P003	P004	P005	P006	C001
TAB	P001	P002	P003	P004	P005	P006	F001
ASAS	P001	P002	P003	P004	P005	P006	S001
AMPCDS	P001	P002	P003	P004	P005	P006	G001
AFATON	P001	P002	P003	P004	P005	P006	P001
WCR	P001	P002	P003	P004	P005	P006	WCR

XBRIL / CDL / DAML  
STRUCTURED STOCK MIC CODES

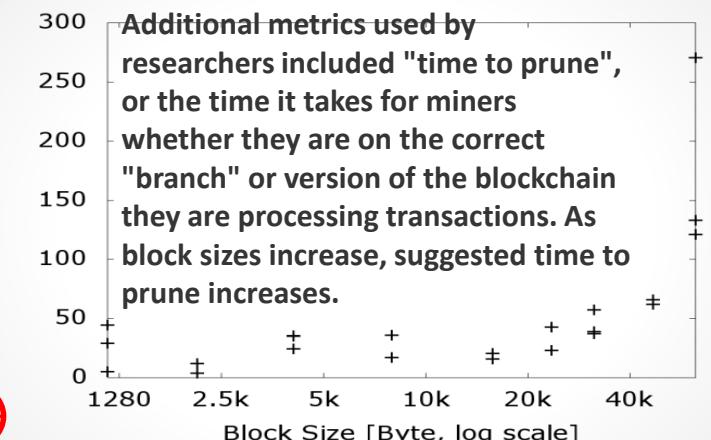
MILITARY MESSAGE TEMPLATE FORMS LOGIC / FILTERS

SYNTAX LEXICON LIBRARY

CPU CHIP EPOCHS



Subjective Time to Prune





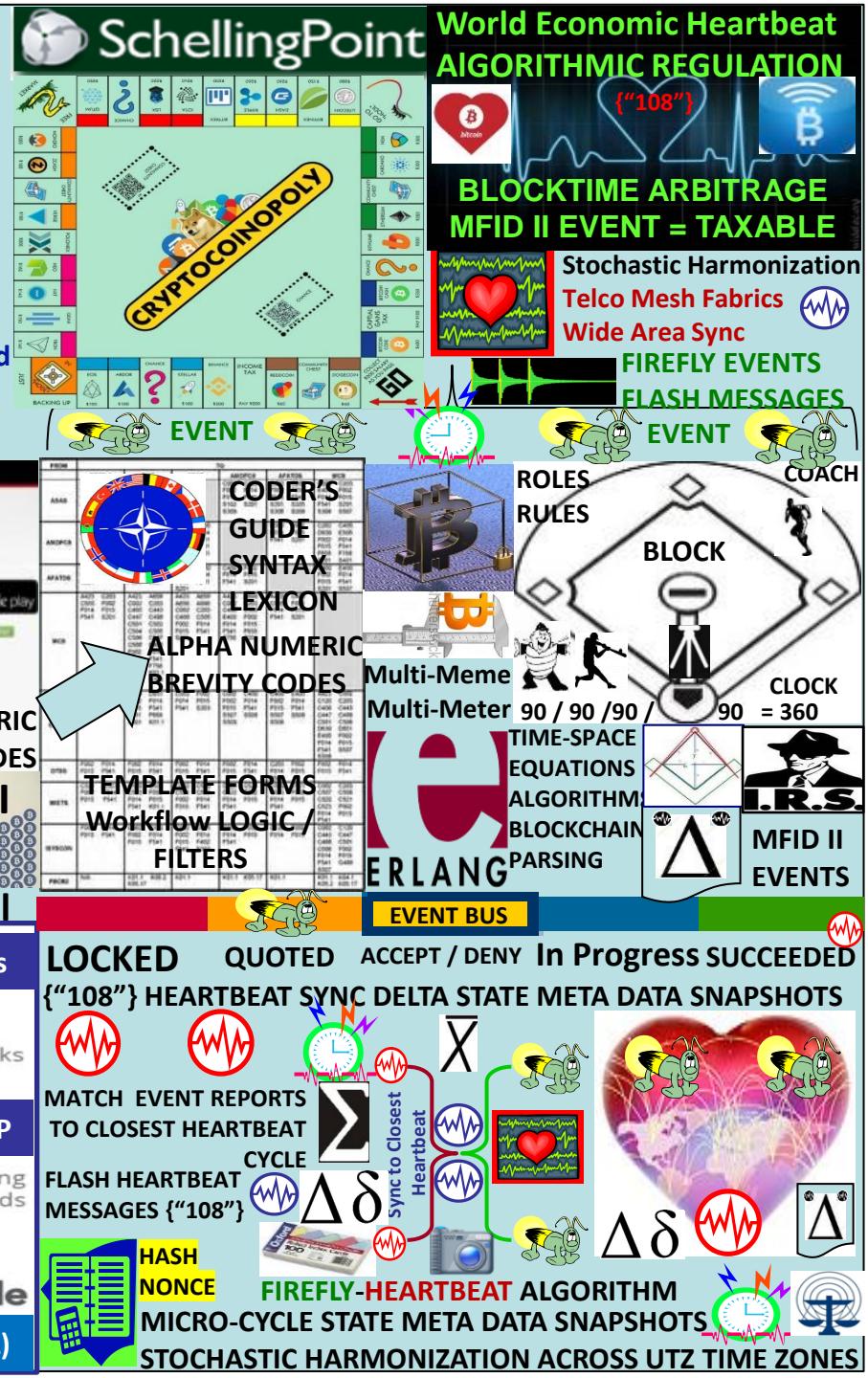
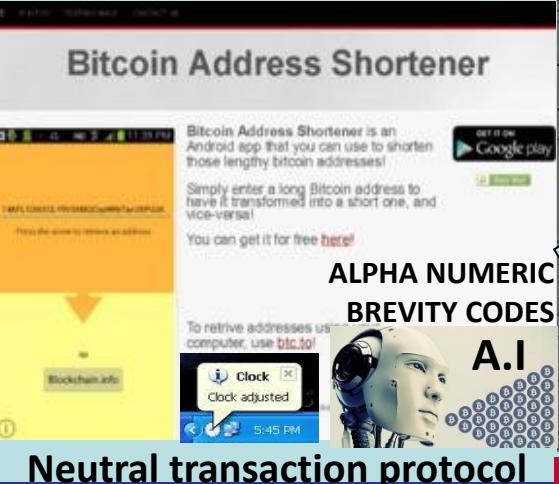
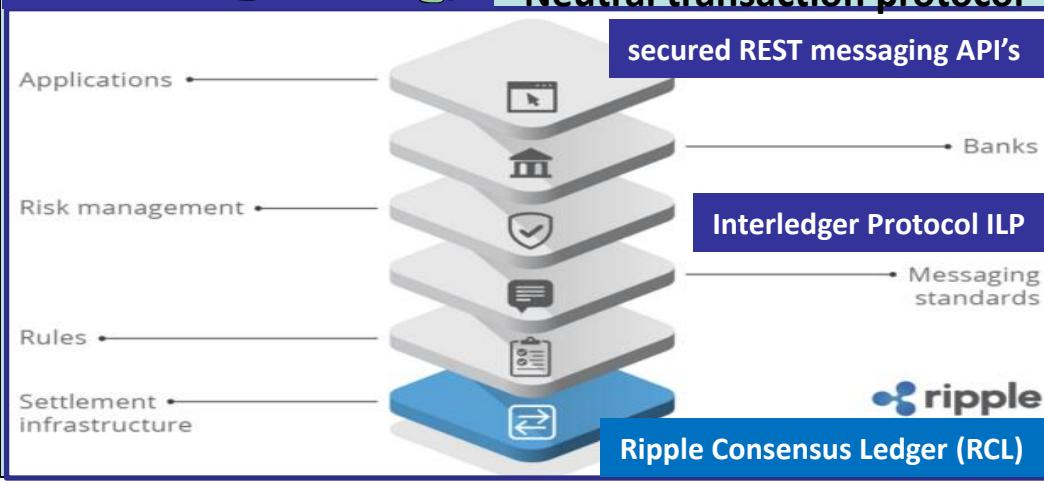
**real-time gross settlement system,  
currency exchange, remittance network**

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



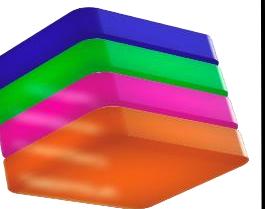


## PROTON A CHAIN Virtual Machine

## CONTRACT C CHAIN Smart contract

## PLATFORM P CHAIN Meta Data

## EXCHANGE X CHAIN Cross blockchain



Universal @names Identity / Governance / Resources / Staking

Snowball Consensus

Algorithm

preference := pizza

consecutiveSuccesses := 0

while not decided:

ask k random people preference

if >= α give the same response:

    preference := response with >=

α

    if preference == old preference:

        consecutiveSuccesses++

    else:

        consecutiveSuccesses = 1

    else:

        consecutiveSuccesses = 0

    if consecutiveSuccesses > β:  
        decide(preference)

EOSIO computer function emulation  
NET, CPU bandwidth, RAM data  
Publishing, Voting based not mining

Delegated Proof  
of Stake {"Org\_ID"}



coordinates validators, keeps track  
of active subnets, SNOWMAN  
consensus Token representation of  
real-world resources (e.g., equity,  
bonds) smart contract rules </URN>



DAG Acyclic Graph Parameters:

n: number of participants

k (sample size): between 1 and n

α (quorum size): between 1 and k

β (decision threshold): >= 1

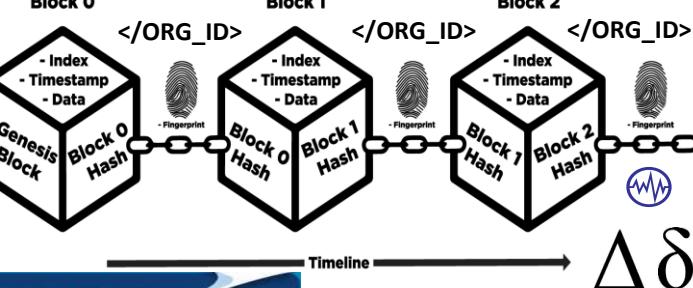
ALL THINGS NET, NET OF \$\$\$

1) EPOCH TIME INTERVALS

2) SYNTAX (not) used in epochs



GENESIS BLOCK: "Layers" = follow on epoch time intervals



SECURITY TOKEN: A DIGITAL  
ASSET THAT'S BACKED UP  
BY TANGIBLE ASSETS IN THE  
REAL WORLD </URN>  
</URN>  
</URN>



"all digital currency networks, the base layer of people  
generating the blockchain — "miners," "stakers,"  
"witnesses," "validators," or "forgers" get paid"





# UNICOIN

## Digital Capital Exchange

### Unicorn: IMF CBDC legal tender settlement coin

Universal Monetary Unit (UMU), a.k.a Unicorn: store of value cryptography, artificial intelligence (A.I.) Goals: continuous purchasing demand, minimal price volatility, and annual asset pricing targets.

**The primary value of any commodity is its utility value.**

**Utility = pay for goods, services, and debts, preserve value over a long period of time.** Employs machine learning trading bots. UMPC will establish yield payout rates for wallet holders to stake Unicorn in the Staked Proof of Trust (SPOT) consensus protocol. PoT consensus selects

validators I.A.W contribution to the DeFI network

### The DCMA – Digital Public Monetary System

KYC Entity	Ledgers	FX Rates	SPOT Protocol
Create	Create	Stake	
Modify	Modify	Cashout	
Suspend	Suspend	Reject	
<b>KYC People</b>	<b>CBDC</b>	<b>Balances</b>	<b>Authorizations</b>
Create	Create	Activity	Grant Authorization
Modify	Modify	Deposit	Revoke Authorization
Suspend	Suspend	Withdraw	
<b>Issuers</b>	<b>Pause</b>	<b>Money Services</b>	
Create	Unpause	Transfer	
Modify	Mint		
Suspend	Burn		
Post Rates	Redeem		
<b>Branches</b>	<b>Swap</b>	<b>Escrow</b>	<b>Rates</b>
Create	Supply	Create Escrow	Create Rate
Modify	Price	Accept Escrow	Modify Rate
Suspend		Cancel Escrow	Suspend Rate
<b>Wallets</b>			
<b>Agents</b>	<b>Agents</b>	<b>Milestones</b>	<b>Limits</b>
Create	Create	Create Milestone	Create Limit
Modify	Modify	Modify Milestone	Modify Limit
Suspend	Suspend	Cancel Milestone	Suspend Limit
		Release Milestone	
		<b>Sanctions</b>	
		Create Sanction	
		Modify Sanction	
		Suspend Sanction	

Figure 9: Unicorn Global Localization of a CBDC Public Monetary System





# UNICOIN

Digital Capital Exchange

## **CBDC legal tender settlement coin**

**Universal Monetary Unit (UMU), a.k.a Unicoin: store of value**  
**cryptography, artificial intelligence (A.I.) Goals: continuous purchasing**  
**demand, minimal price volatility, and annual asset pricing targets.**

**The primary value of any commodity is its utility value.**

**Utility** = pay for goods, services, and debts, preserve value over a long period of time. Employs machine learning trading bots. UMPC will establish yield payout rates for wallet holders to stake Unicoin in the Staked Proof of Trust (SPOT) consensus protocol. PoT consensus selects validators I.A.W contribution to the DeFI network Ü

## validators I.A.W contribution to the DeFI network

Ü

The DCMA – Digital Public Monetary System			
KYC Entity	Ledgers	FX Rates	SPOT Protocol
Create	Create	Balances	Stake
Modify	Modify	Activity	Cashout
Suspend	Suspend	Deposit	Reject
	Balance	Withdraw	
KYC People	CBDC	Money Services	Authorizations
Create	Create	Transfer	Grant Authorization
Modify	Modify		Revoke Authorization
Suspend	Suspend		
Issuers	Pause	Escrow	Rates
Create	Unpause	Create Escrow	Create Rate
Modify	Mint	Accept Escrow	Modify Rate
Suspend	Burn	Cancel Escrow	Suspend Rate
Post Rates	Redeem	Release Escrow	
	Swap		
Branches	Supply	Milestones	Limits
Create	Price	Create Milestone	Create Limit
Modify		Modify Milestone	Modify Limit
Suspend	Wallets	Cancel Milestone	Suspend Limit
	Create	Release Milestone	
Agents	Modify		Sanctions
Create	Suspend		Create Sanction
Modify	Pause		Modify Sanction
Suspend	Unpause		Suspend Sanction
	Attach		

**Figure 9: Unicorn Global Localization of a CBDC Public Monetary System**





# UNICOIN

## Digital Capital Exchange

Unicoin: IMF CBDC legal tender settlement coin

Universal Monetary Unit (UMU), a.k.a Unicoin: store of value  
cryptography, artificial intelligence (A.I.) Goals: continuous purchasing  
demand, minimal price volatility, and annual asset pricing targets.

The primary value of any commodity is its utility value.

Utility = pay for goods, services, and debts, preserve value  
over a long period of time. Employs machine learning  
trading bots. UMPC will establish yield payout rates for  
wallet holders to stake Unicoin in the Staked Proof of Trust  
(SPOT) consensus protocol. PoT consensus selects  
validators I.A.W contribution to the DeFI network

Ü



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.



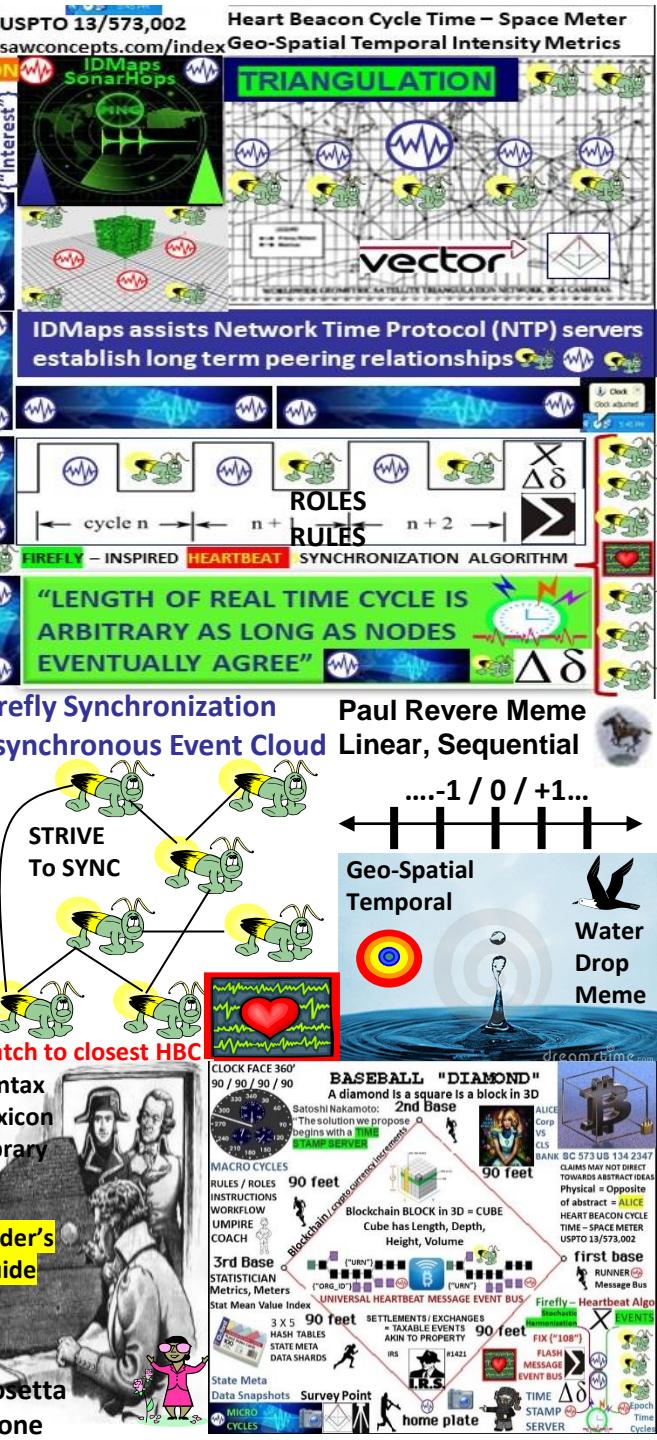
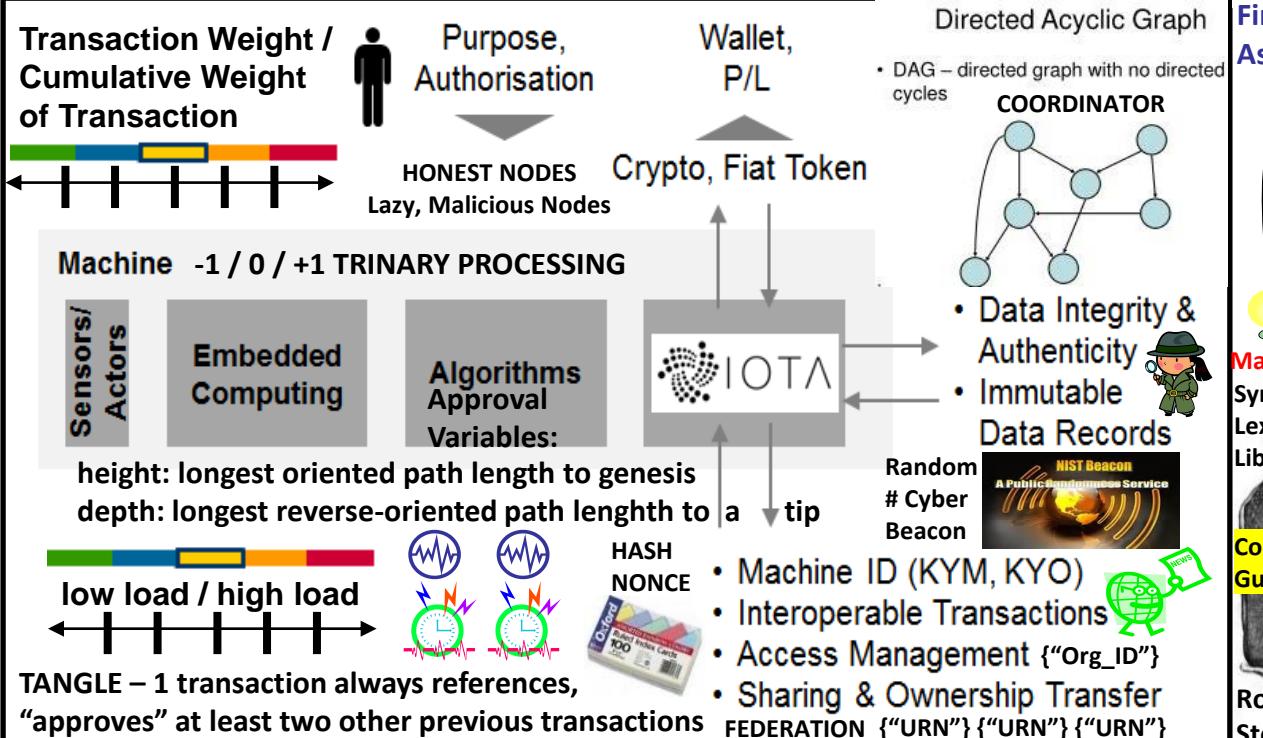


OTA: Internet Of Things IOT distributed ledger  
with microtransactions without fees

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

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

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





# ZEPPELIN

ZEPPELIN OPEN, GLOBAL ECONOMY

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

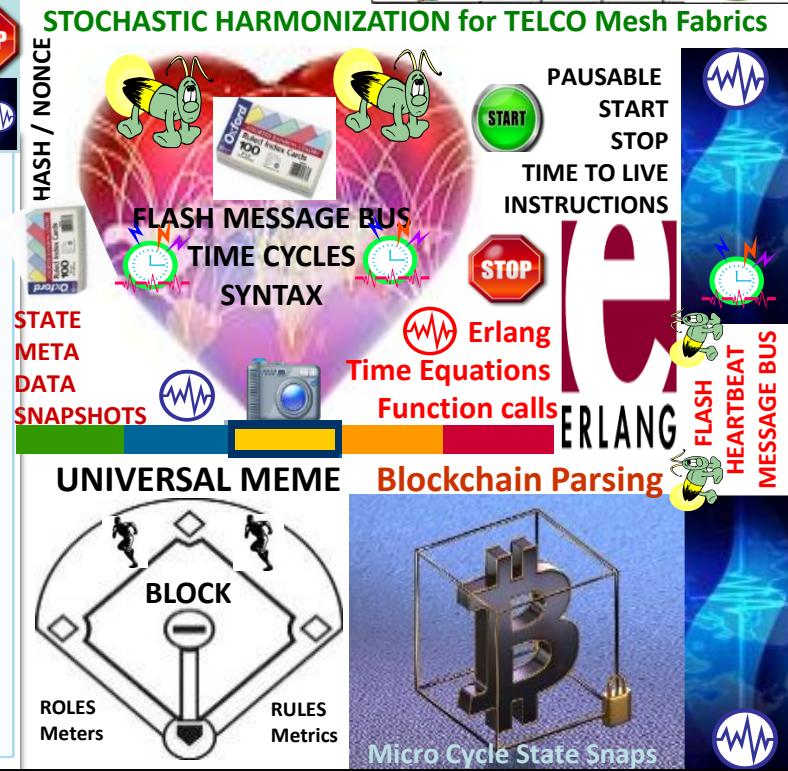
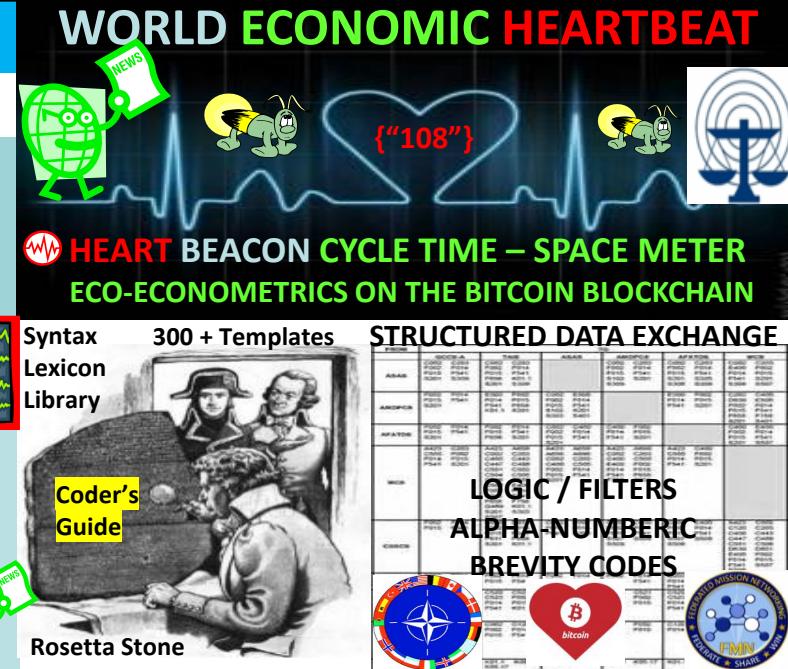
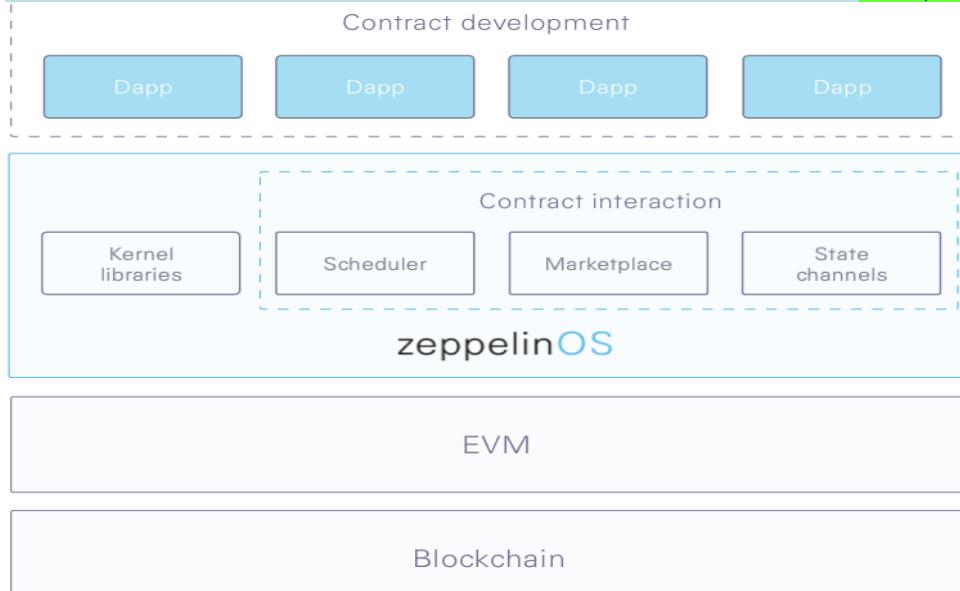
**zeppelinOS**, operating system for smart contracts  
*“the rate of innovation in building decentralized applications is limited by the manual and duplicative efforts developers must make to ensure basic usability and security.”*

## ZEPPELIN / zeppelinOS Common Functionality:

zeppelinOS Kernel common set of functions for smart contracts requesting services from the OS rather than re-implementing them from scratch. Functions will be available as an on-chain standard library of reusable contracts and functions, nspired by [OpenZeppelin](#) Libraries Create and customize your own ERC20 Token.

# Create and customize your own ERC20 Token.

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



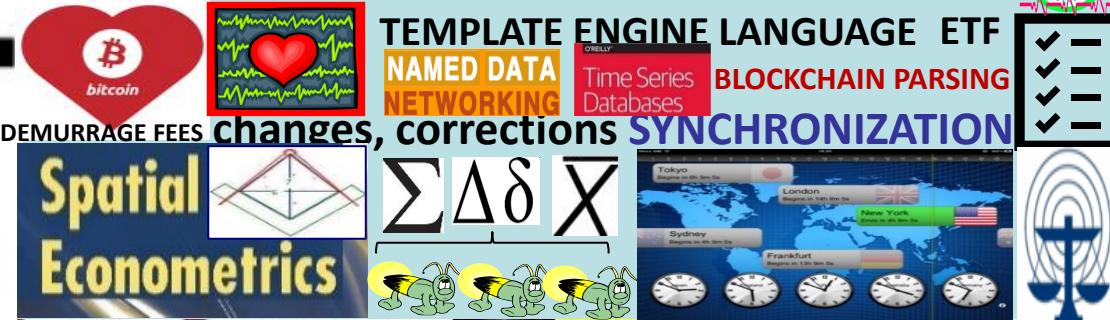
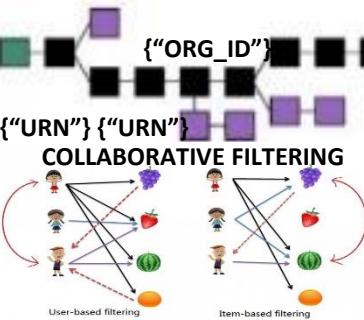


# EGAAS

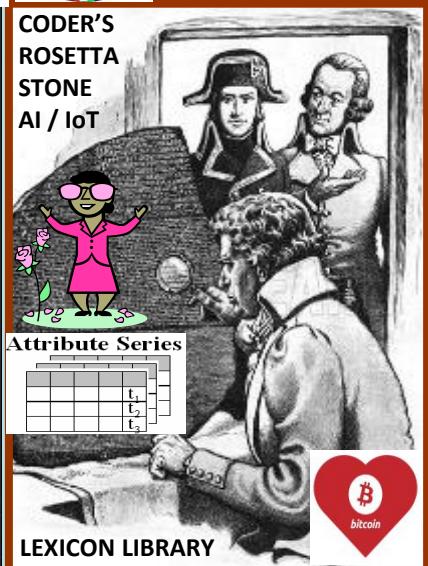
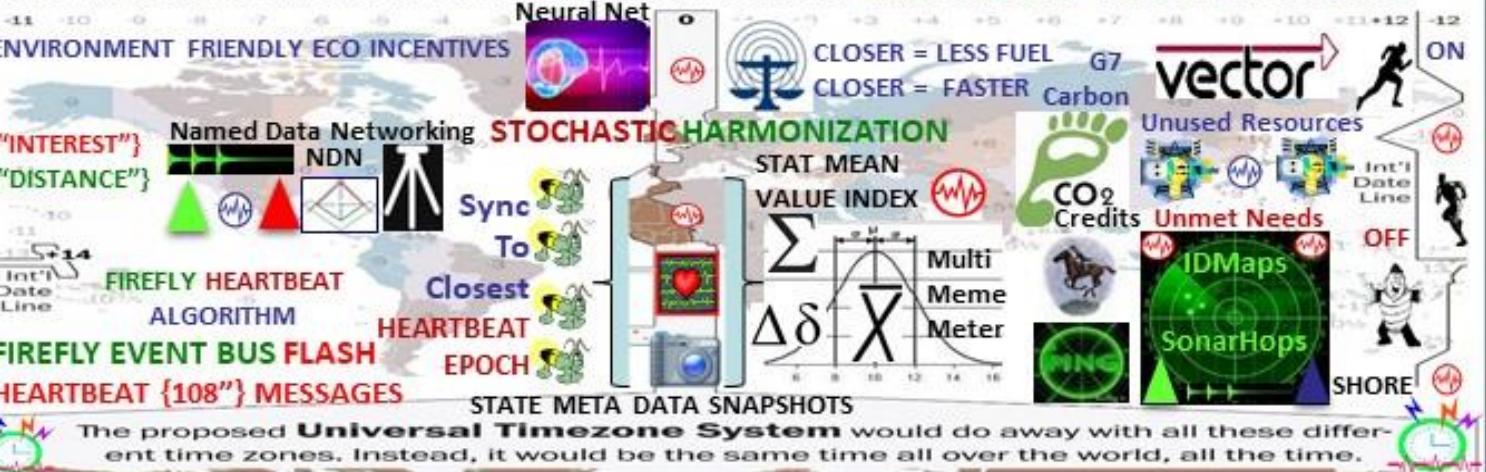
ELECTRONIC GOVERNMENT AS A SERVICE

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

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



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**





**“EARTHDAY EVERYDAY ON THE BITCOIN BLOCKCHAIN”**

**"GIVE A HOOT, DON'T POLLUTE" Woodsy The Owl**

# GNOSIS

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

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

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

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

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



**“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

# Gnosis trading interface alpha **TERI** WIZ token fee payment **INFORMATION ARBITRAGE ECONOMICS**



# TERRACYCLE Price

## OMICS Oracle

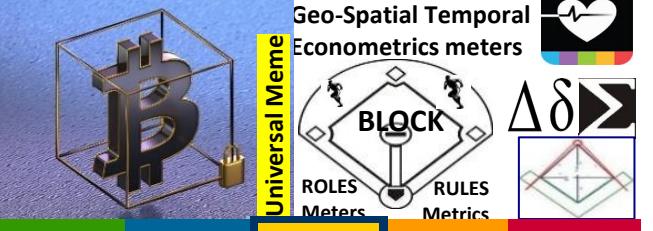


# THE TERRA (TRC)

## Trade Reference Currency



## Demurrage Fees



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





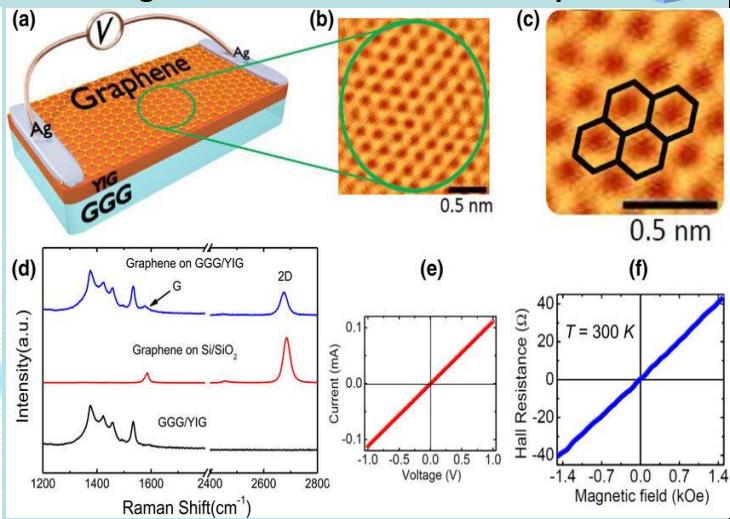
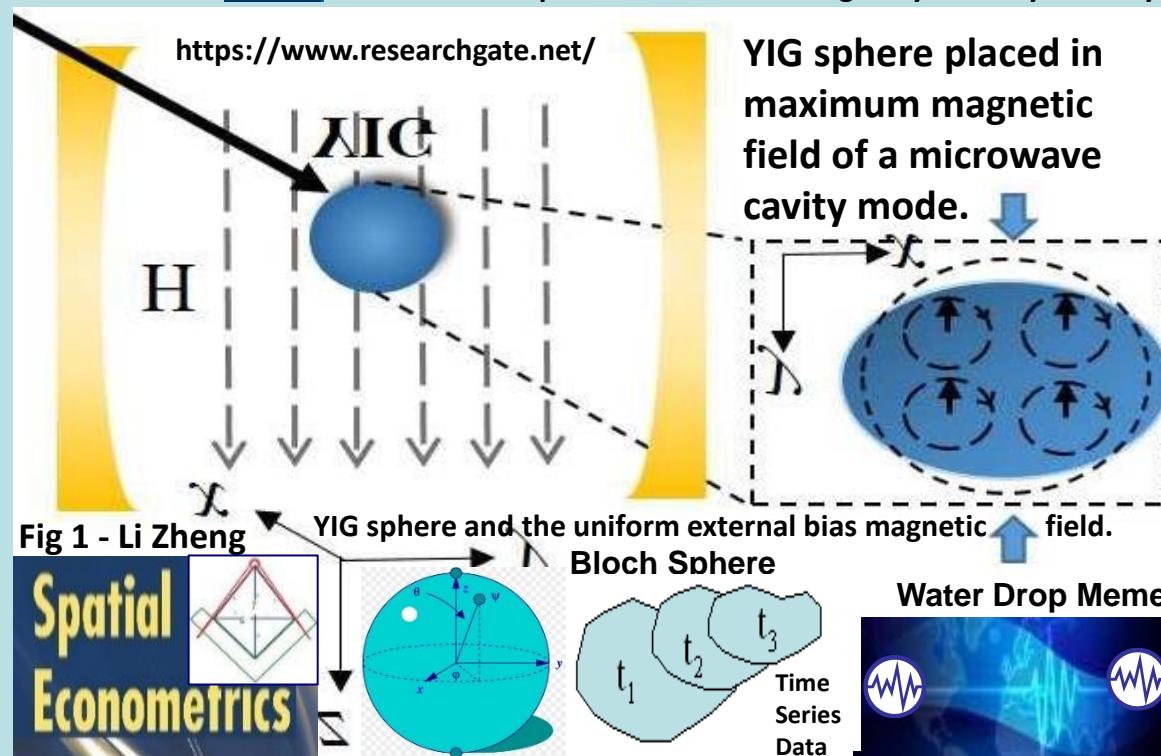
# TESLA Harmonic Sphere Flux Resonator

**"When space-time spins, it creates mass. It produces energy in space that radiates. This radiation is what we call mass". Nassim Haramein**

Nassim Haramein's work is geometrically based, at the fundamental level spacetime = honeycomb of overlapping spheres of energy each having a singularity at its center.

Yttrium iron garnet spheres serve as magnetically tunable filters and resonators for microwave frequencies. YIG filters are used for their high Q factors, typically between 100 and 200.

Sphere made from a single crystal of synthetic yttrium iron garnet acts as a resonator. Wikipedia



YIG/graphene structures and the electrodes used to measure the dc voltage due to the IREE charge current in the graphene layer resulting from the spin currents generated by microwave FMR spin pumping.

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

The creation of spinlogic devices, which allow the control and transport of the spin current over long distances, is one of the major research challenges in spintronics. In this regard, graphene-a single atomic layer of carbon atoms in a honeycomb lattice [see Fig. 1(c)]-has attracted great attention as a promising material for spin-based devices due to its exceptional electronic transport properties, excellent charge carrier mobility, quantum transport, long spin diffusion lengths, and spin relaxation times [42]





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



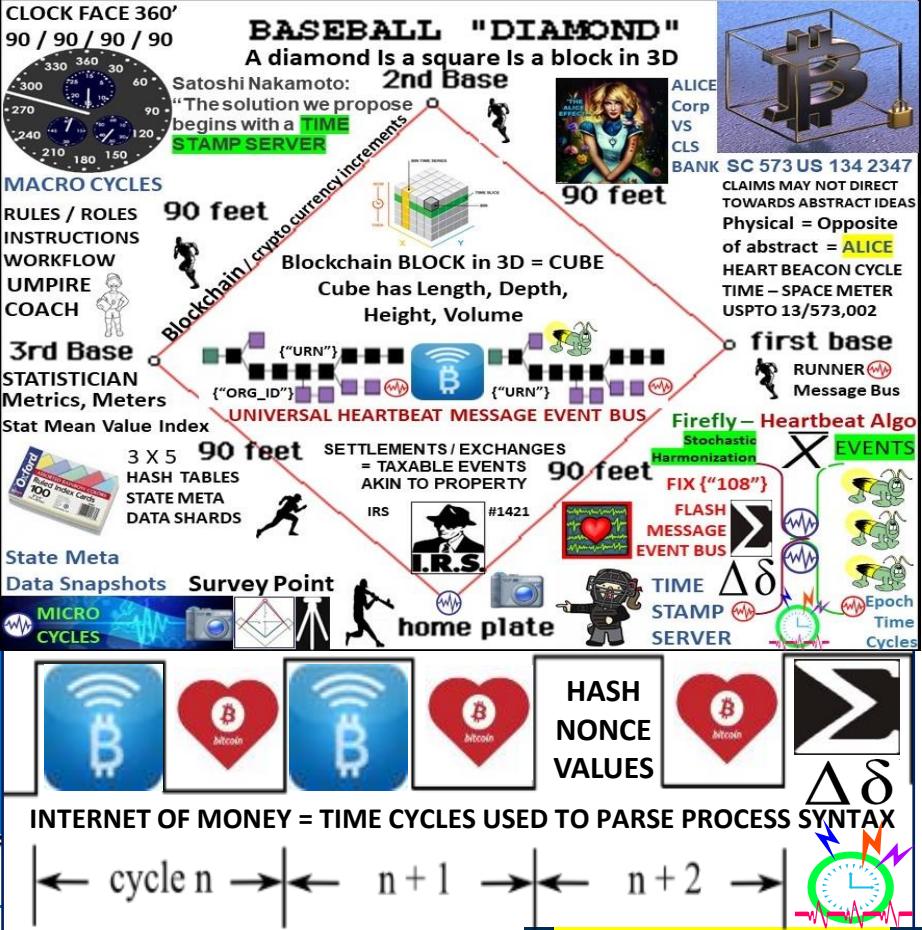
## ALL THINGS INTERNET FORMED W 1) TIME EPOCHS 2) SYNTAX



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



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



**Microsoft Blockchain modular framework:  
choose combination of tech best fits Biz domain**

**AZURE: Core/Kernel/Universal Protocol** 

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

**Unspent Transaction Output protocols UTXO**

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

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

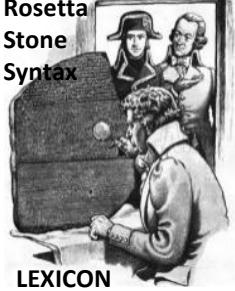
**Blockchain middleware: identity and operations management, data,  
intelligence services like analytics and machine learning. New middleware  
works with existing Azure services, like Active Directory and Key Vault**

**Blockchain Fabric: Blockchain Gateway Services Interledger-  
like services to allow for SmartContracts and tokenized  
objects to be passed between different ledger systems.**

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

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

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



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

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

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



**FIREFLY HEARTBEAT ALGORITHM**



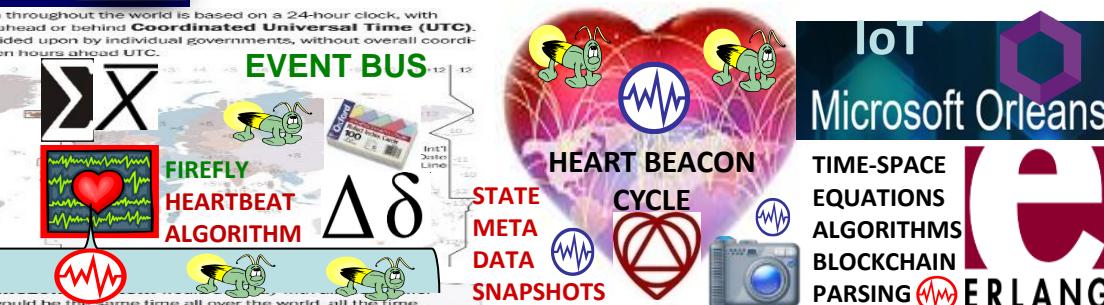
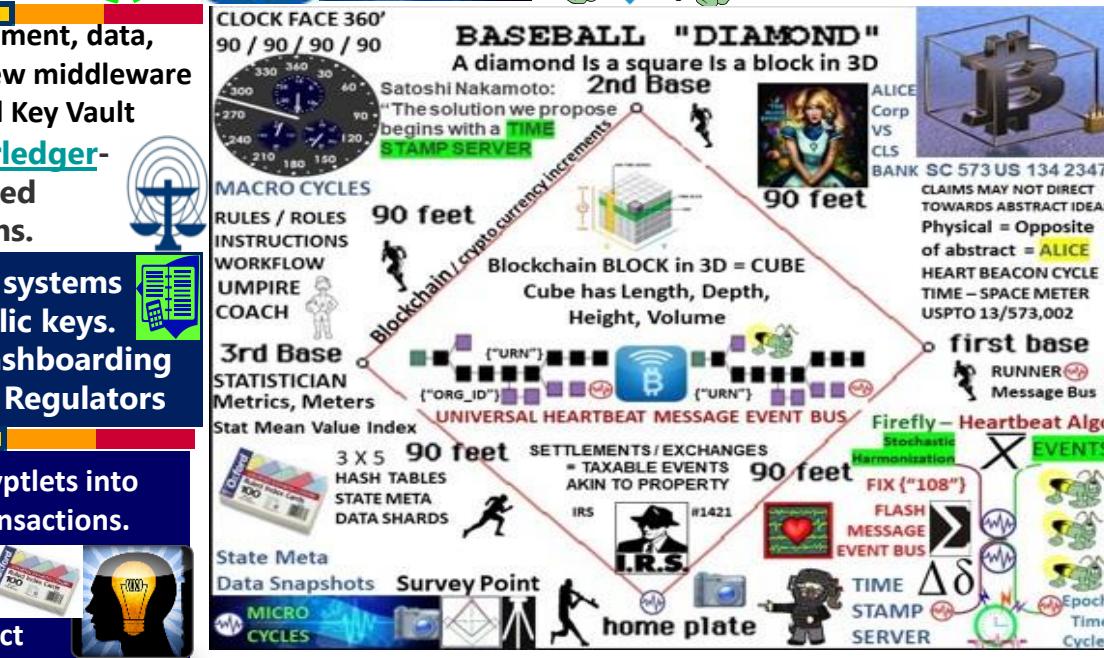
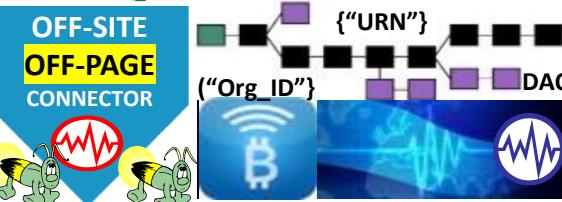
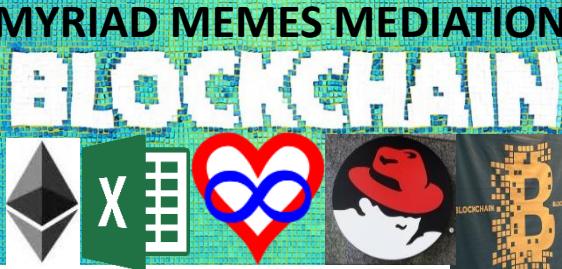
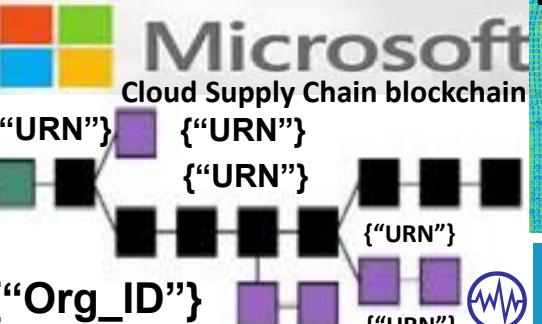
**STATE META DATA SNAPSHTOS**



**TIME-SPACE EQUATIONS ALGORITHMS**

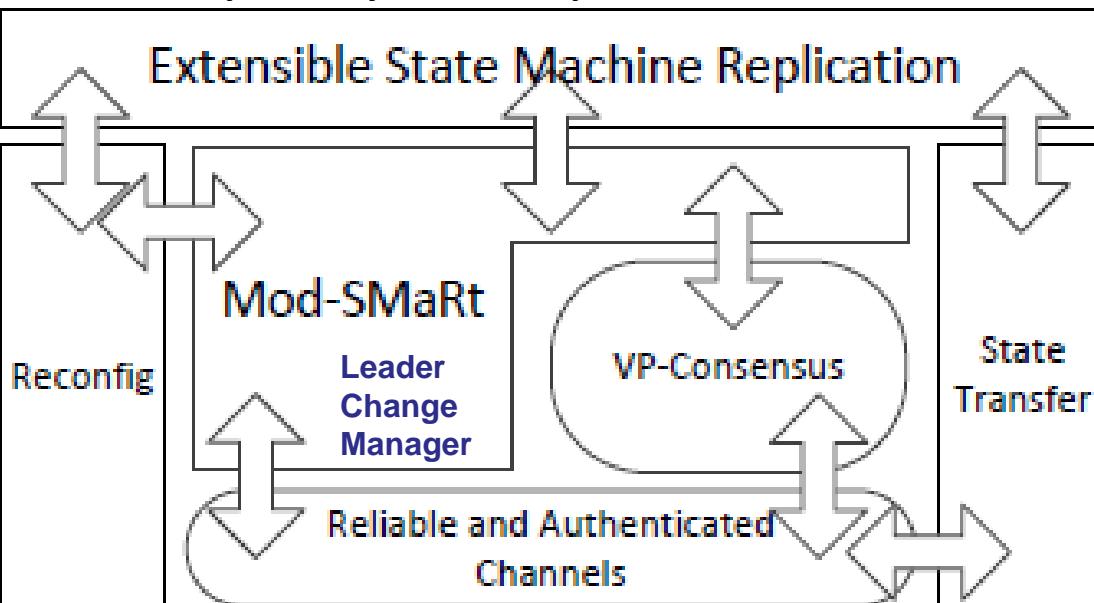


**MULTI-MEME MULTI-METER**



# Byzantine Fault-Tolerant State Machine Replication

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



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

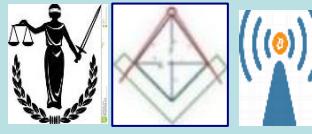
## BFT-SMaRT needs an eventually synchronous system

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

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

USCt ALICE CORP V CLS BANK

PHYSICAL = OPPOSITE OF ABSTRACT



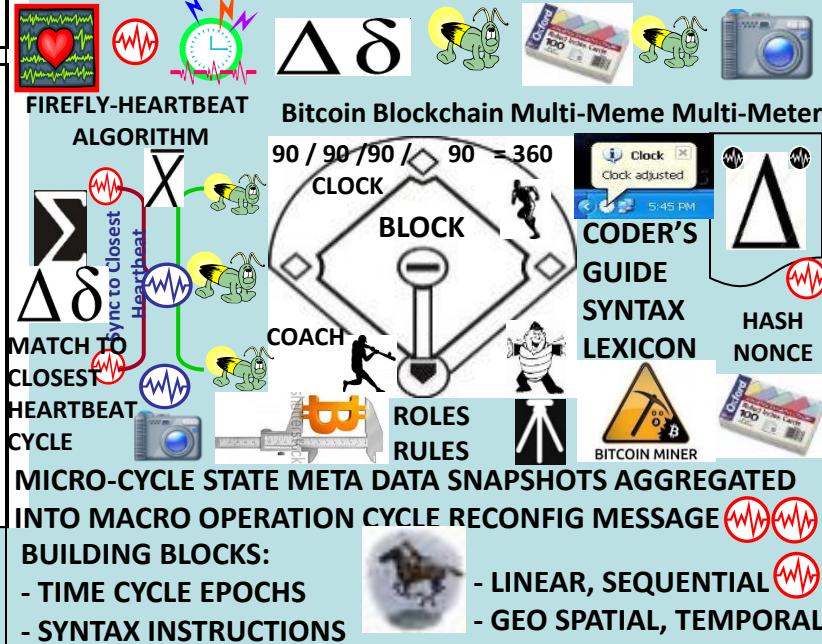
DERIVED FROM BATTLEFIELD DIGITIZATION DISTRIBUTED AUTONOMOUS ORGANIZATION DAO SYSTEM OF SYSTEMS

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

ADDS, JOINS, DROPS, MOVES TO / FROM DAO

CHANGES IN STATE VIEWED IN "APPLIQUE' OVERLAY VIEWS

## 00.99 HEARTBEAT SYNC DELTA STATE META DATA SNAPSHOTS









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

**ERLANG API FOR BLOCKCHAIN**



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

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

**CROSS – CHAIN ATOMIC SWAPS**

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



Aeons: energy for applications implemented on the platform.

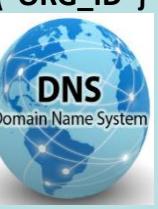
**ACCOUNTS & IDENTITY:** æternity's accounts are permission-less, but allow customization via schema.org's semantic web scheme. Create & own (**federated group**) / individual identities on the æternity network



("ORG\_ID")

("ORG\_ID")

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



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

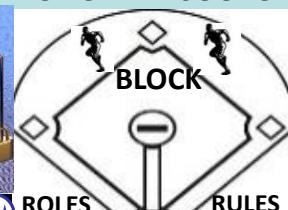
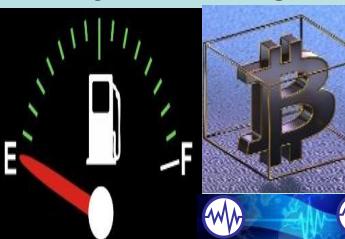
**AETERNITY CROSS-CHAIN ATOMIC SWAPS CORRESPOND TO HEART BEACON CYCLE'S USE OF BATTLEFIELD DIGITIZATION DERIVED HEARTBEAT SYNC DELTAS**



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

**TOKENS REPRESENT REAL WORLD VALUE URN RESOURCES**

ETHEREUM USES GAS GUAGE MEME INDICATING THRESHOLD MET / NOT MET



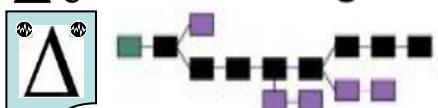
HBC's PRIMARY USE CASE IS TO ORGANIZE INDIVIDUALS IN TRADE FEDERATION GROUPS RE-USING BATTLEFIELD DIGITIZATION / ARIN Organizational Identifier Org\_ID for Ecosphere friendly trade



# HYPER LEDGER OPEN SOURCE BLOCKCHAIN

Core APIs, & SDKs

$\Delta\delta$  Shared Ledger



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

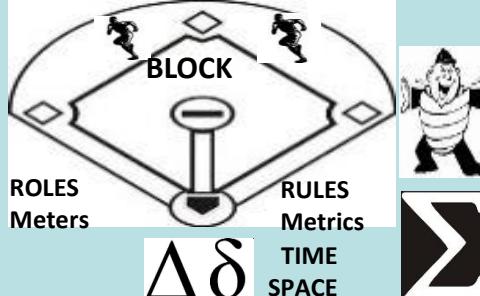
FEDERATION  
*Federation Gateway*

METRICS ("Organization ID")  
METERS

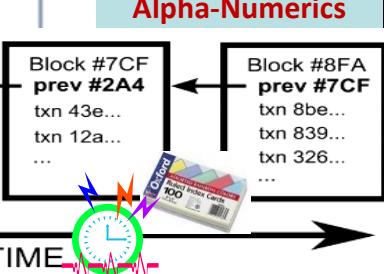
RESTFUL SYNC DELTA  
CHANGE MANAGEMENT  
MICRO-MACRO CYCLE



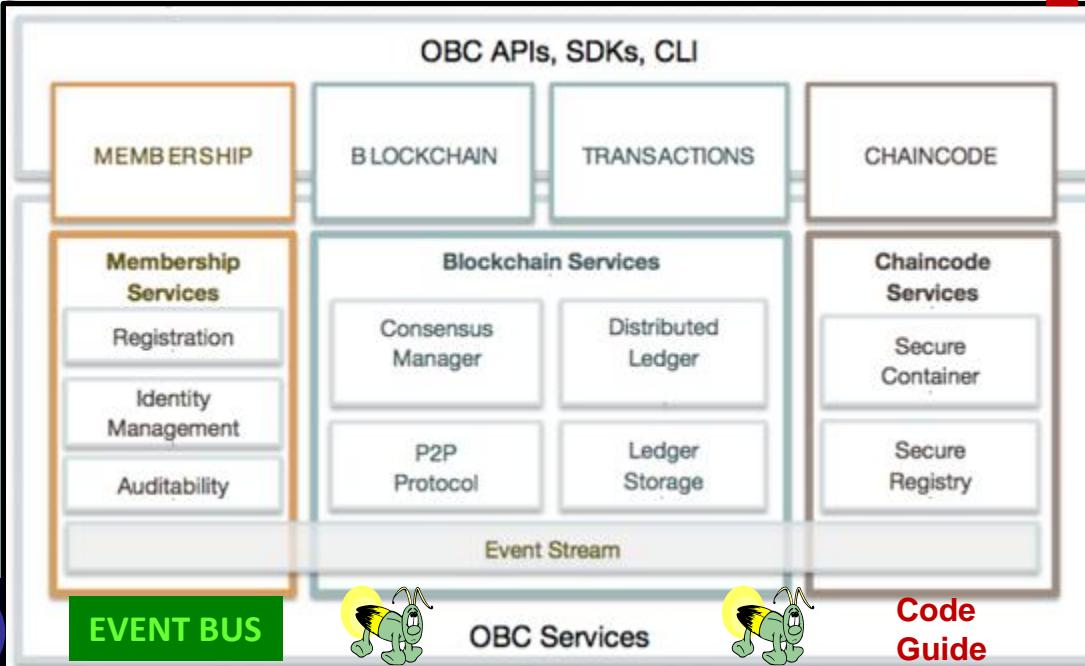
BLOCKTIME ARBITRAGE



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



Alpha-Numerics



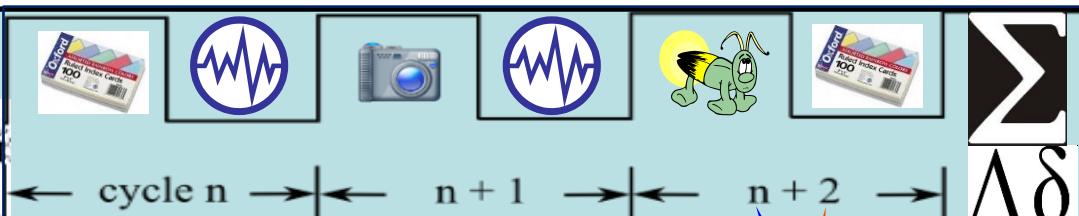
ROSETTA STONE

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



MICRO-MACRO CYCLE SCHEDULE



FFIRNS  
FFUDNS

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

# 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.

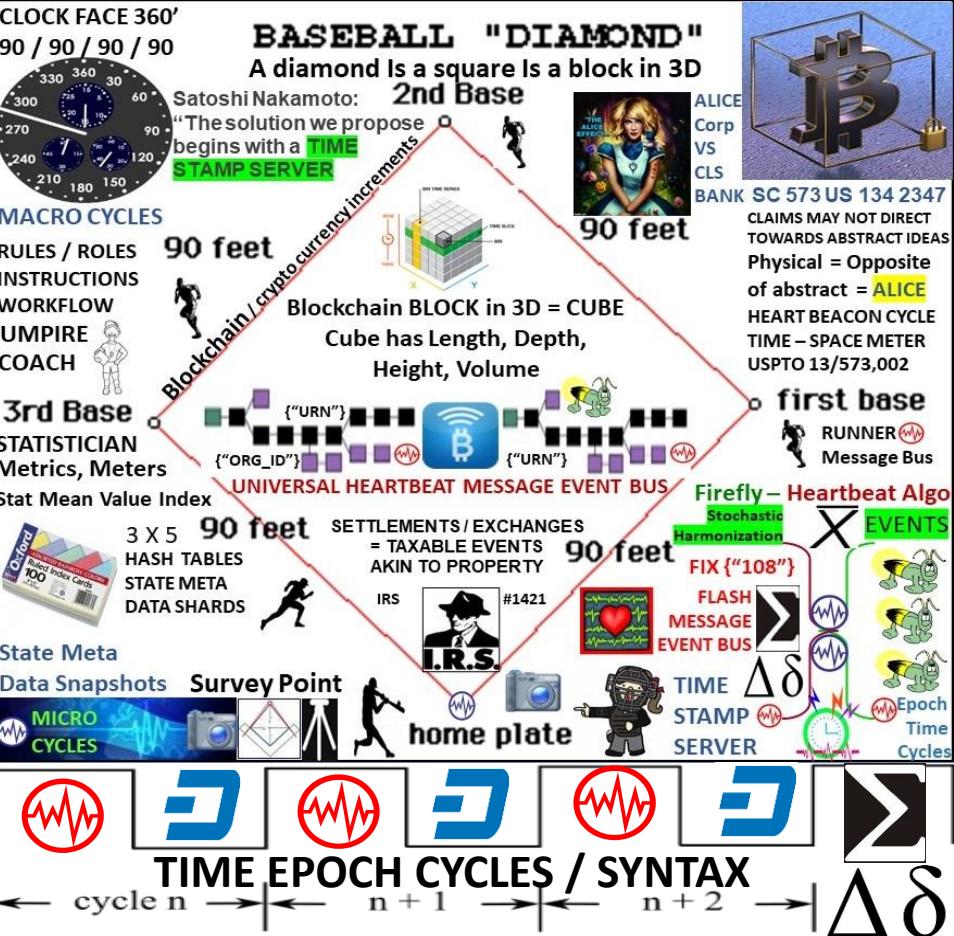
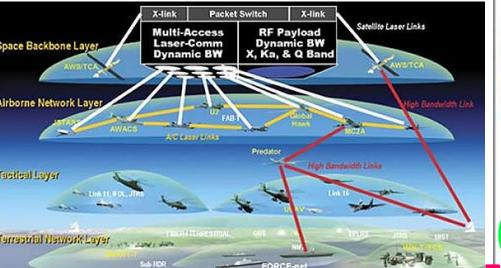
"Its makeup is thus: the block reward is divvied up in three parts. The first 45 percent goes to [Dash's miners](#). Another 45 percent goes to its Masternodes. And 10 percent is set aside to fund whatever other jobs or expenditures the Dash network deems necessary"

InstantX: To solve the problem of lag time in transactions, Masternodes are able to instantly lock transactions and receive payments for their service to the network

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

NETWORK CENTRIC WARFARE  
Developing and Leveraging Information Superiority

ALICE CORP  
Vs CLS BANK



STOCHASTIC HARMONIZATION FIREFLY-HEARTBEAT EVENT BUS

HEART BEACON CYCLE = IMPROVEMENT TO NETWORK CENTRIC WARFARE



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



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

STATE CHANNELS: blockchain interactions

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



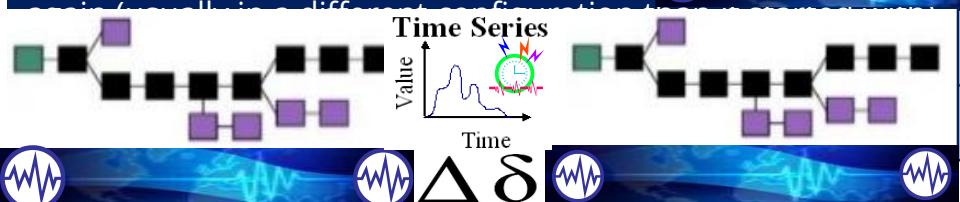
1. Part of the blockchain state is locked via multisignature or smart contract convention, so that a specific set of participants must completely agree with each other to update it.



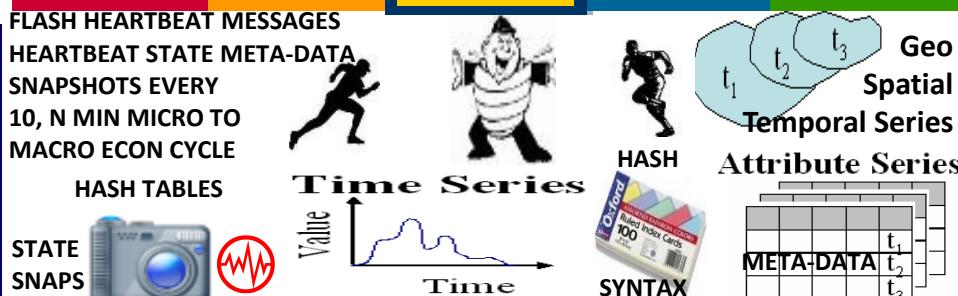
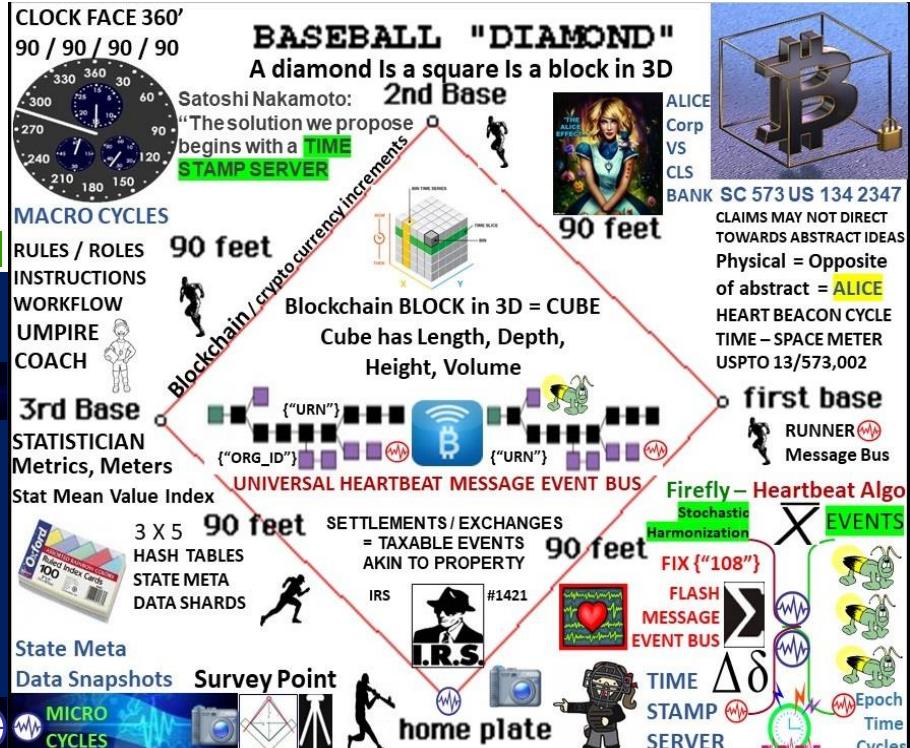
2. Participants update the state amongst themselves by constructing and signing transactions that *could* be submitted to the blockchain, but instead are made available for a new update "trumps" previous update.



3. Finally, participants submit the state back to the blockchain, which closes the state channel.



**NEW UPDATES OVERWRITE THE PREVIOUS:** simplest way is to have any unlocking attempt start a timer, during which any *newer* update can replace the old update (restarting the timer). When the timer completes, the channel is closed and the state adjusted to reflect the last update received. The length of the timer would be chosen for each state channel, balancing the inconvenience of a long channel closing time with the increased safety it would provide against internet connection or blockchain problems. Alternatively, one could structure channel with a financial penalty so anyone publishing an inaccurate update to the blockchain will lose more than gain by pretending later.

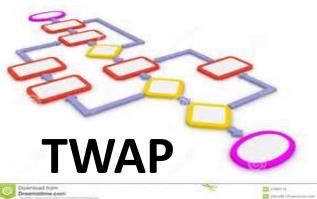


**Firefly - Heartbeat synchronization:** nodes in a distributed system generate periodic, local "heartbeat" events approximately at the same time with a goal of all nodes starting / ending cycles at the same time eventually = HB CYCLE

# TWAP Algorithm Manages Bitcoin Price Volatility Algorithm



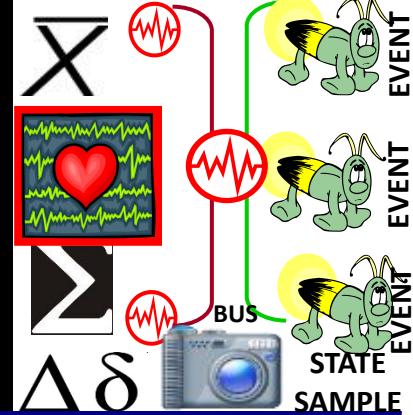
## TWAP GOAL: provide a Time Weighted Average Price Benchmark



FIREFLY HEARTBEAT ALGO  
STAT MEAN VALUE INDEX



STATE META  
DATA SNAPSHOTS



EVENT

**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..

EVENT

**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.

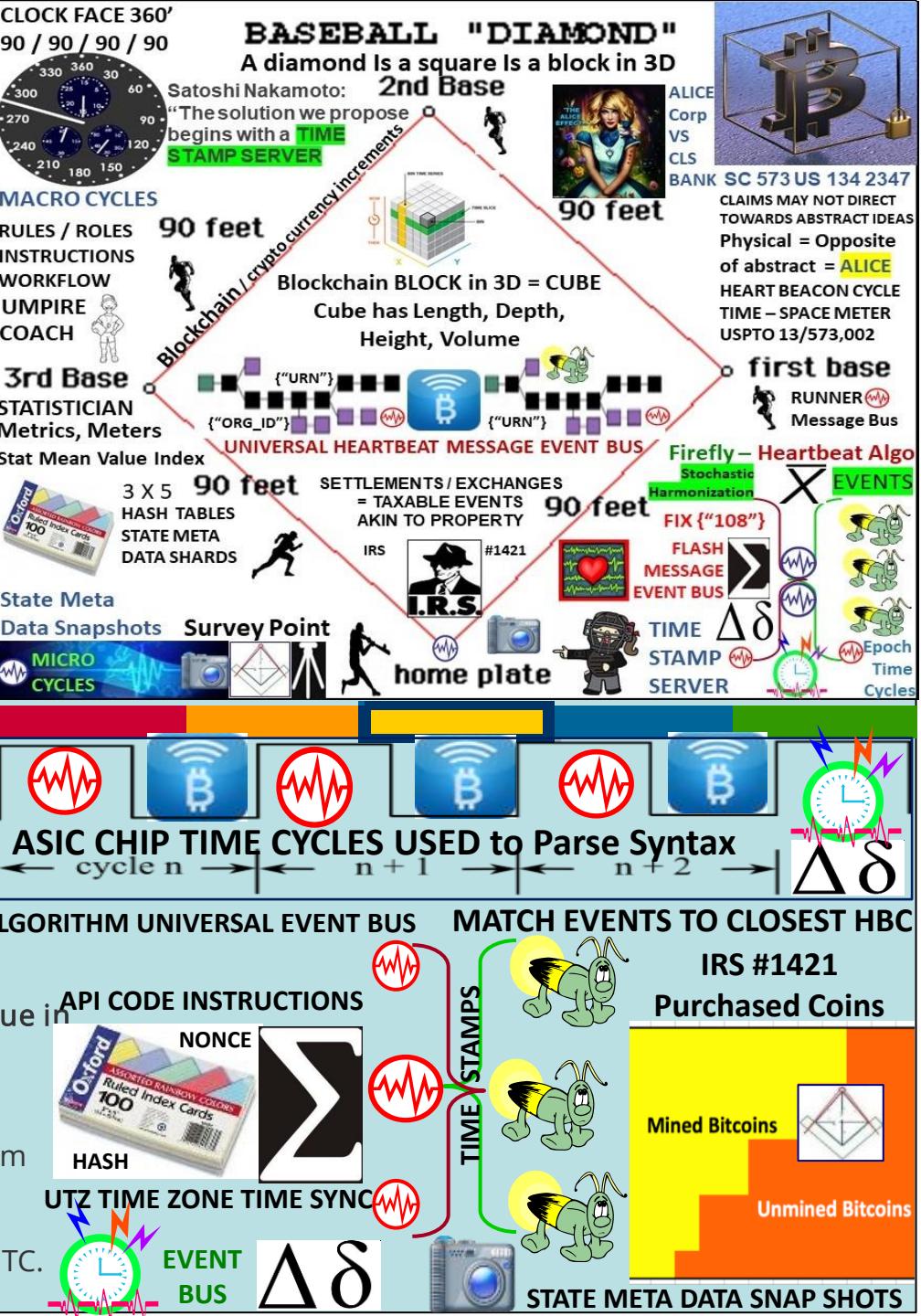
# Asset Classes: Digital Currencies

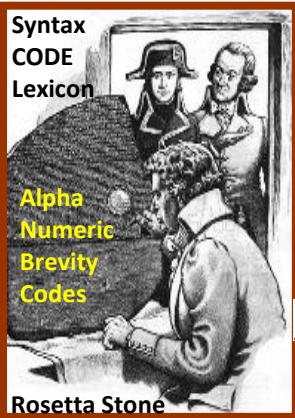
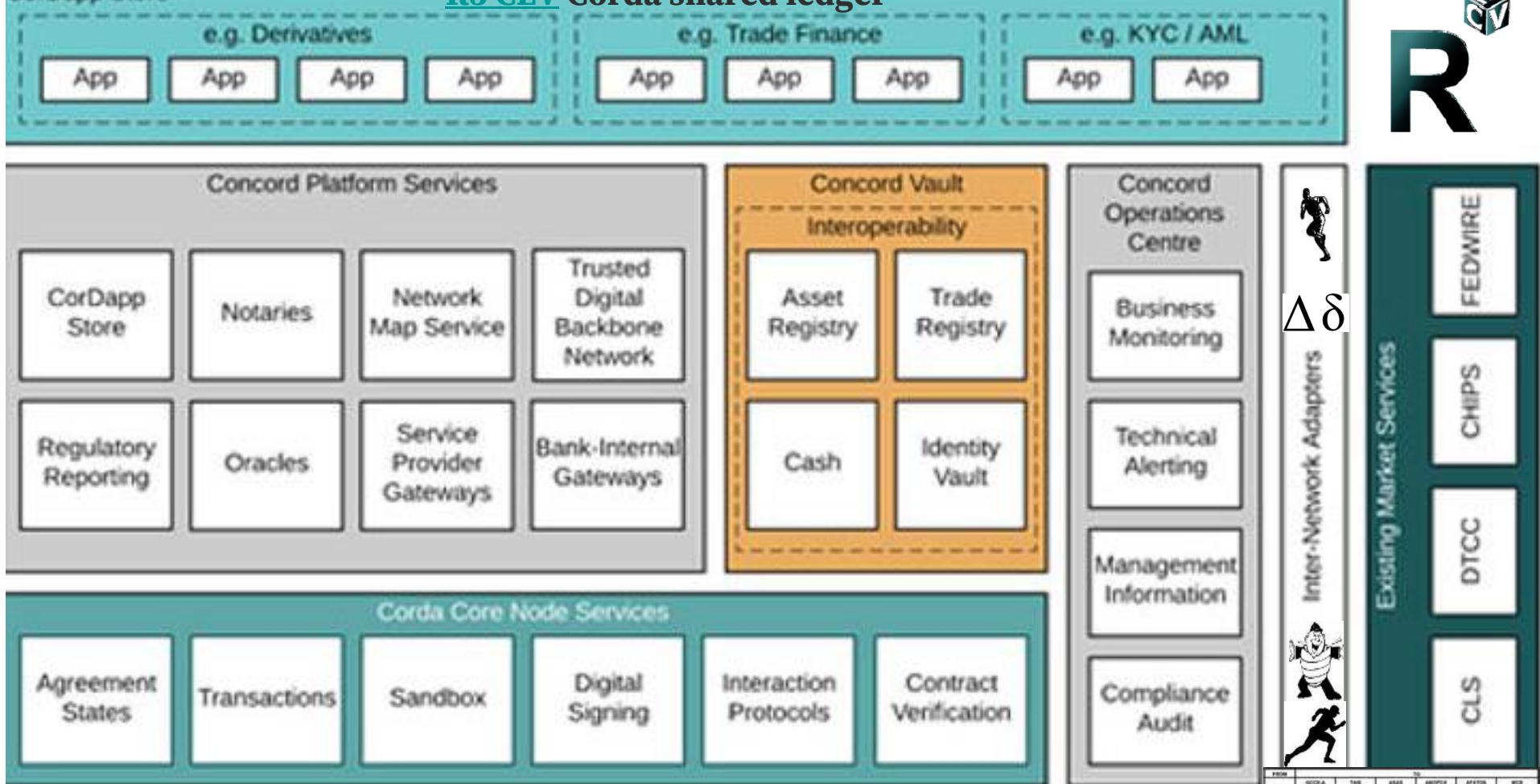
Get by: Block-height, Time-stamp or Transaction

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.





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

	Q1Q2A	T4T1A	A2A3A	A4P1C2	A5A7A8	W2C
A1B1	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B2	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B4	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B5	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B6	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B7	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B8	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B9	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B10	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B11	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B12	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B13	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B14	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B15	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B16	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B17	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B18	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B19	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B20	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B21	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B22	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B23	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B24	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B25	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B26	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B27	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B28	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B29	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B30	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B31	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B32	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B33	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B34	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B35	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B36	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B37	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B38	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B39	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B40	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B41	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B42	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B43	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B44	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B45	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B46	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B47	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B48	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B49	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B50	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B51	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B52	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B53	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B54	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B55	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B56	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B57	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B58	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B59	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B60	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B61	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B62	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B63	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B64	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B65	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B66	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B67	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B68	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B69	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B70	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B71	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B72	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B73	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B74	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B75	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B76	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B77	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B78	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B79	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B80	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B81	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B82	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B83	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B84	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B85	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B86	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B87	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B88	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B89	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B90	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B91	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B92	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B93	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B94	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B95	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B96	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B97	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B98	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B99	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3
A1B100	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3	F1G2H3

XBRL / CDE / DAML STOCK MIC CODES

STRUCTURED MILITARY MESSAGE TEMPLATE FORMS LOGIC / FILTERS

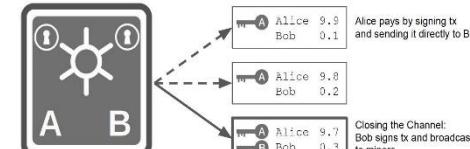
300+ Use Case Templates



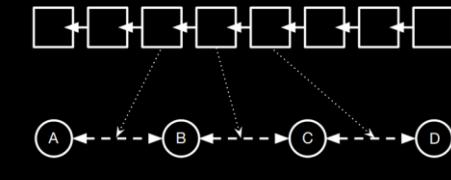
**transactions sent over / off chain  
micropayment channels**

Micropayment Channels

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



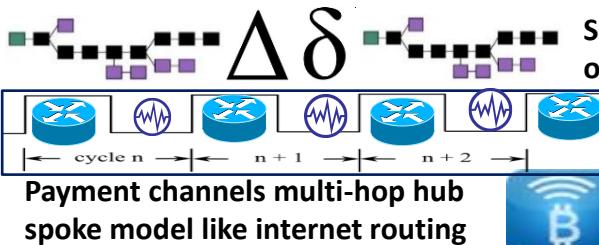
## LIGHTNING



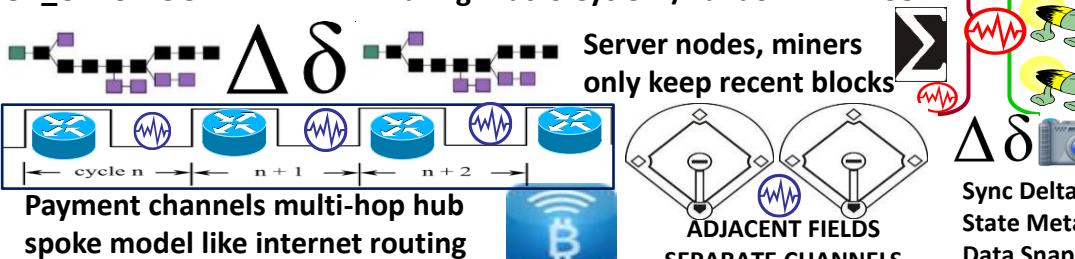
Millions of Transactions. Milliseconds of Delay.

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



## PROJECT LIGHTING

### FIREFLY – HEARTBEAT ALGORITHM



#### FIREFLY – HEARTBEAT

CLOCK FACE 360'  
90 / 90 / 90 / 90



#### MACRO CYCLES

#### RULES / ROLES

#### INSTRUCTIONS

#### WORKFLOW

#### UMPIRE

#### COACH

#### 3rd Base

#### STATISTICIAN

Metrics, Meters

#### Stat Mean Value Index

#### 3 X 5

HASH TABLES

STATE META

DATA SHARDS

#### 90 feet

#### SETTLEMENTS / EXCHANGES

= TAXABLE EVENTS

AKIN TO PROPERTY

IRS

#1421

I.R.S.

Survey Point

MICRO CYCLES

State Meta

Data Snapshots

home plate

FLASH MESSAGE

EVENT BUS

TIME STAMP SERVER

Δδ

Epoch Time Cycles

Sync Delta

State Meta

Data Snaps



### BASEBALL "DIAMOND"

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

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

MACRO CYCLES

90 feet

Blockchain / cryptocurrency increments

Blockchain BLOCK in 3D = CUBE

Cube has Length, Depth,

Height, Volume

Time Time

Time Place

Time Bin

Y

X

Z

W

V

U

T

S

R

P

O

N

M

L

K

J

I

H

G

F

E

D

C

B

A

Z

Y

X

W

V

U

T

S

R

P

O

N

M

L

K

J

I

H

G

F

E

D

C

B

A

Z

Y

X

W

V

U

T

S

R

P

O

N

M

L

K

J

I

H

G

F

E

D

C

B

A

Z

Y

X

W

V

U

T

S

R

P

O

N

M

L

K

J

I

H

G

F

E

D

C

B

A

Z

Y

X

W

V

U

T

S

R

P

O

N

M

L

K

J

I

H

G

F

E

D

C

B

A

Z

Y

X

W

V

U

T

S

R

P

O

N

M

L

K

J

I

H

G

F

E

D

C

B

A

Z

Y

X

W

V

U

T

S

R

P

O

N

M

L

K

J

I

H

G

F

E

D

C

B

A

Z

Y

X

W

V

U

T

S

R

P

O

N

M

L

K

J

I

H

G

F

E

D

C

B

A

Z

Y

X

W

V

U

T

S

R

P

O

N

M

L

K

J

I

H

G

F

E

D

C

B

A

Z

Y

X

W

V

U

T

S

R

P

O

N

M

L

K

J

I

H

G

F

E

D

C

B

A

Z

Y

X

W

V

U

T

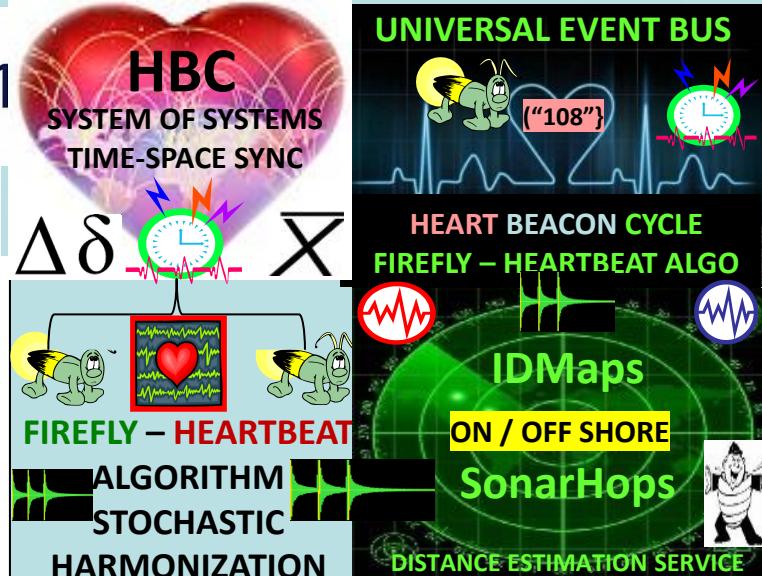
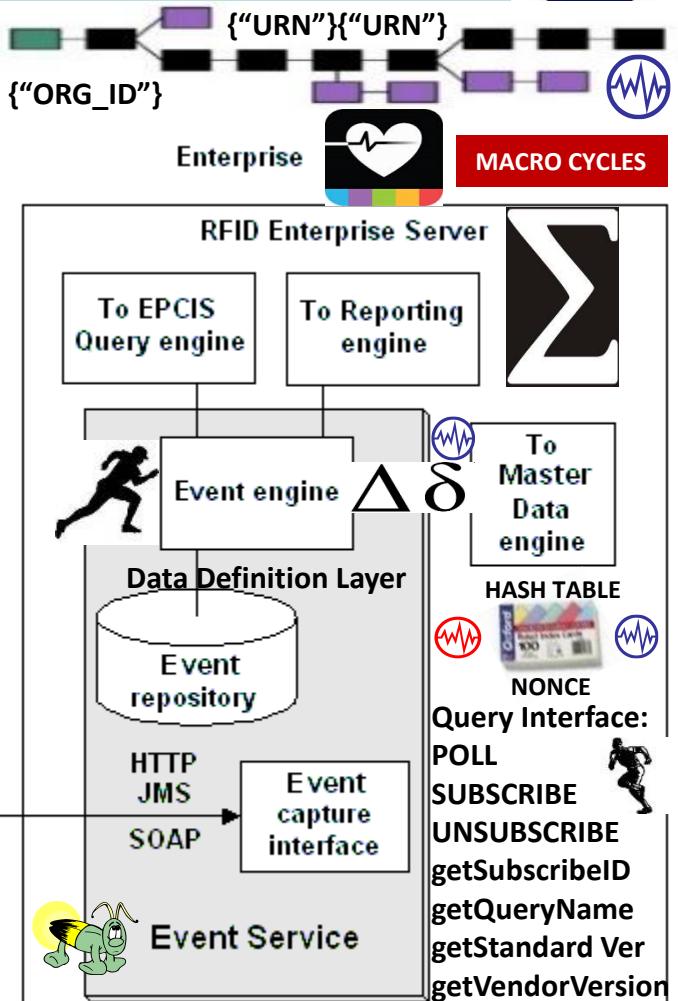
S

**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

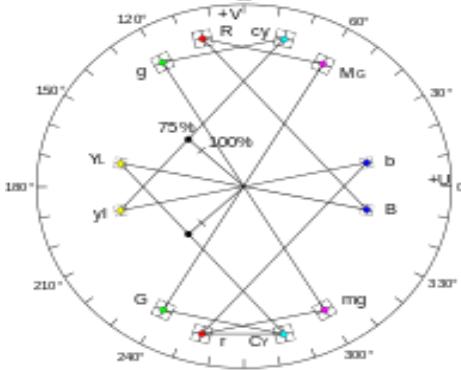
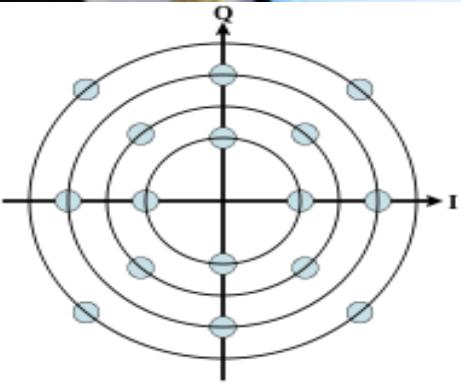
**location where object(s) are expected to be following the Why Information about the business context, including:**  
**a Identifier that indicates the business step taking place**



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



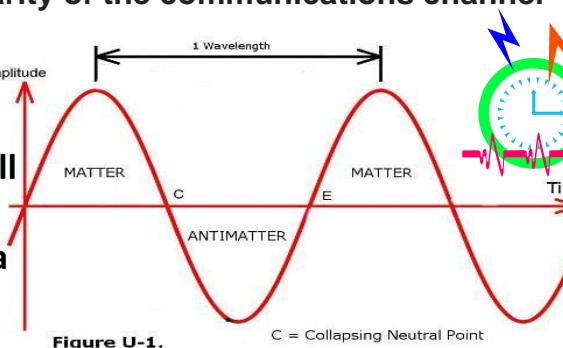
[www.RLighthouse.com](http://www.RLighthouse.com)



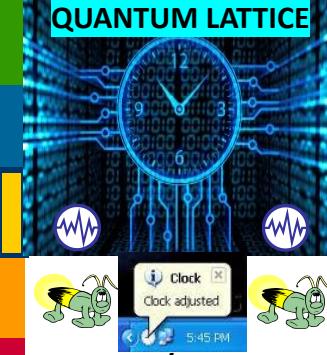
### Quadrature amplitude modulation

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

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



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



USPTO 13/573,002

[sawconcepts.com/index](http://sawconcepts.com/index)

NDN

IDMaps

SonarHops

("Distance")

("Interest")

vector

triangulation



TERRA  
TRC



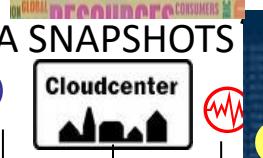
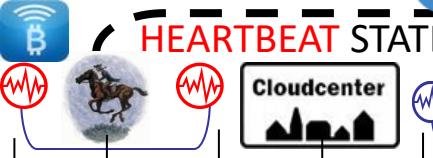
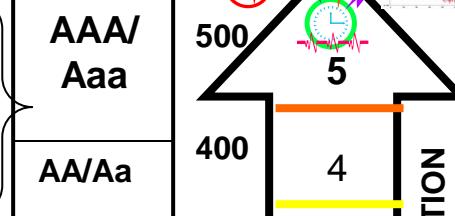
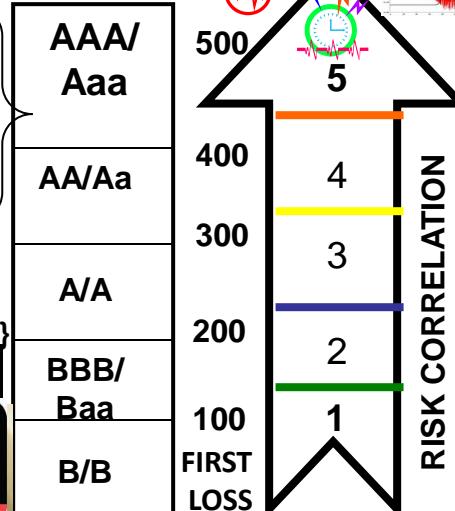
ECONOMIC HEARTBEAT



HB MSG </108>  
PROTOCOL

INDUSTRY-DRIVEN MESSAGING STANDARD

LAST LOSS



IEEE 802.15.4 OASIS MQTT

TELEMETRY TRANSPORT

IEEE 802.1AG HOP BY HOP

DETECTION

Bitcoin = Property

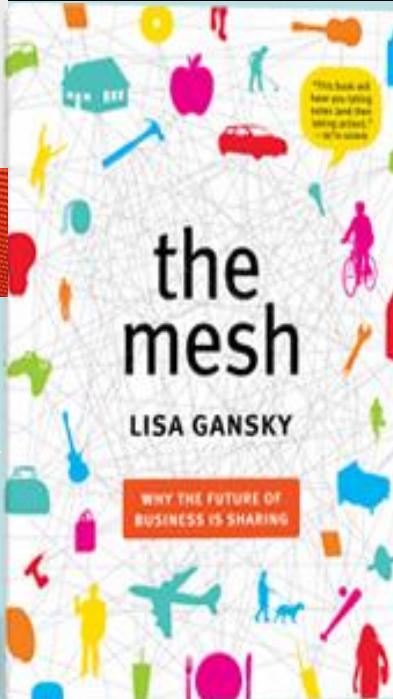
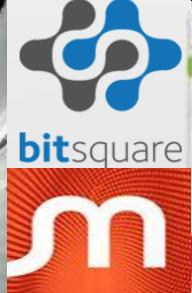
IRS Memo #1421



COINTELEGRAPH  
live cryptocurrency community opinion



## Decentralized Exchange Meets Decentralized Crowdfunding



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

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



## Autonomous Device Coordination Framework



Rules of engagement

FEDERATION AGREEMENTS

PROCEDURAL TEMPLATE

Registration

Authentication

Proximity based rules

Consensus based rules

Contracts

Checklists

## FEDERATION

<UUID> <ORG\_ID> <URN>

LDAP DIRECTORY

Physical proximity

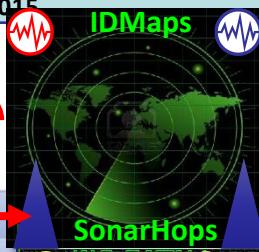
Social proximity

Temporal proximity

Agreements

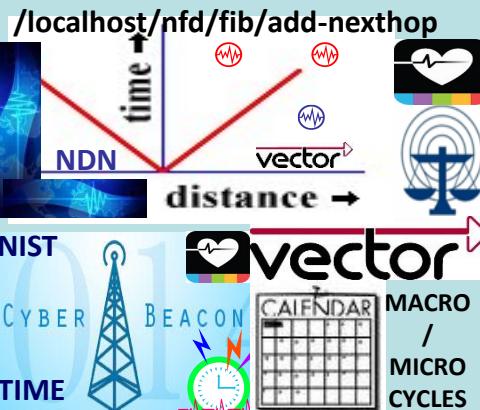
Payments

Barter



NIST TIME BEACON

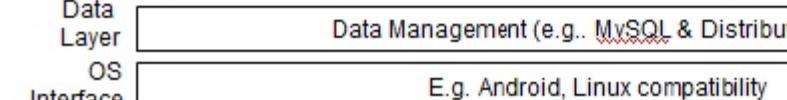
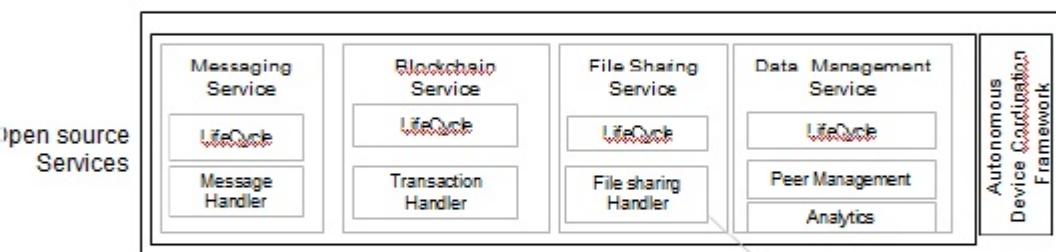
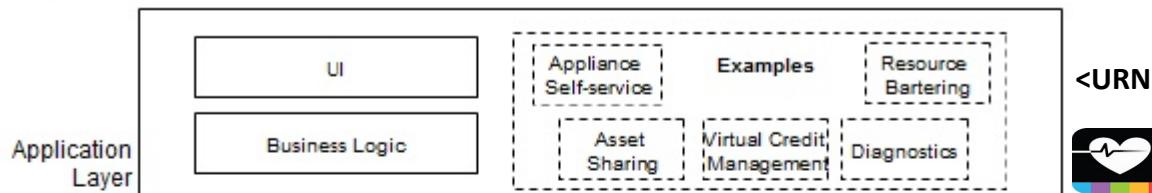
TIME



PAYMENTS BASED ON GEO-SPATIAL TEMPORAL METRICS / METERS

<URN> DESCRIBES COMMODITIES ETC BY UNIFORM RESOURCE NAME BY </INTEREST>>

## ADEPT Standard Peer Architecture – Logical View



ADEPT Installer



ASSET SHARING WITHIN FEDERATION

BUSINESS LOGIC = WORKFLOW <XML\_Wf>

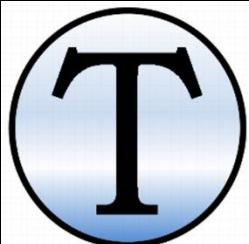
FILE SHARING = CYCLIC SYNC DELTA LEDGER / DOCUMENT REFRESH



OPEN SOURCE = HBC = PROTOCOL AGNOSTIC

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

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



## 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.

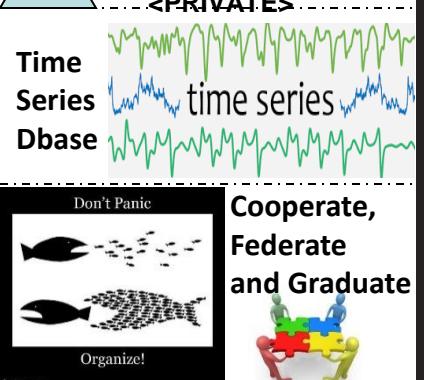
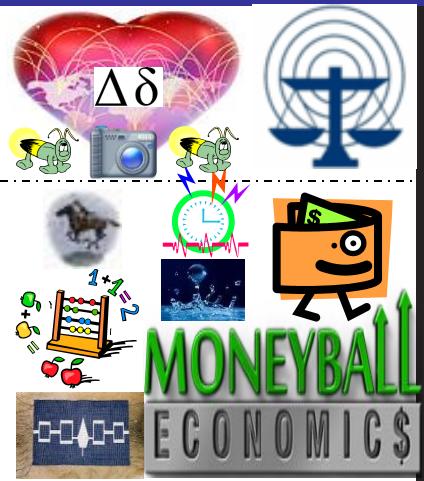
# How 'Bitbanks' Could Solve Bitcoin's Volatility Problem

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

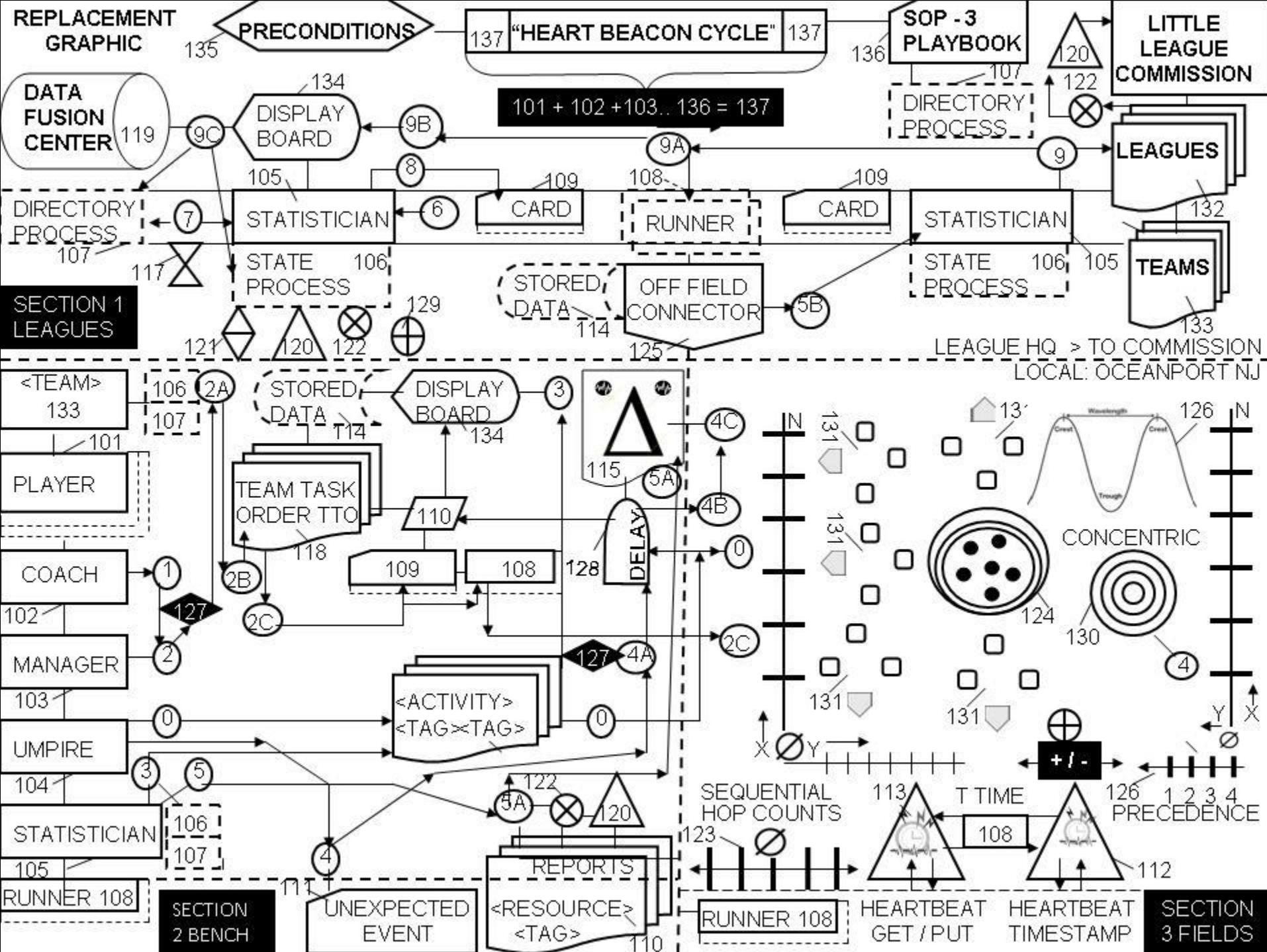
The most important equation in monetary economics, the equation of exchange:  $MV=PQ$ . The quantity of money (M) times the rate spent (V for velocity) equals the price of everything bought (P) times the amount bought (Q for quantity). In Bitcoin, M Money is on a predetermined path, converging to 21m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

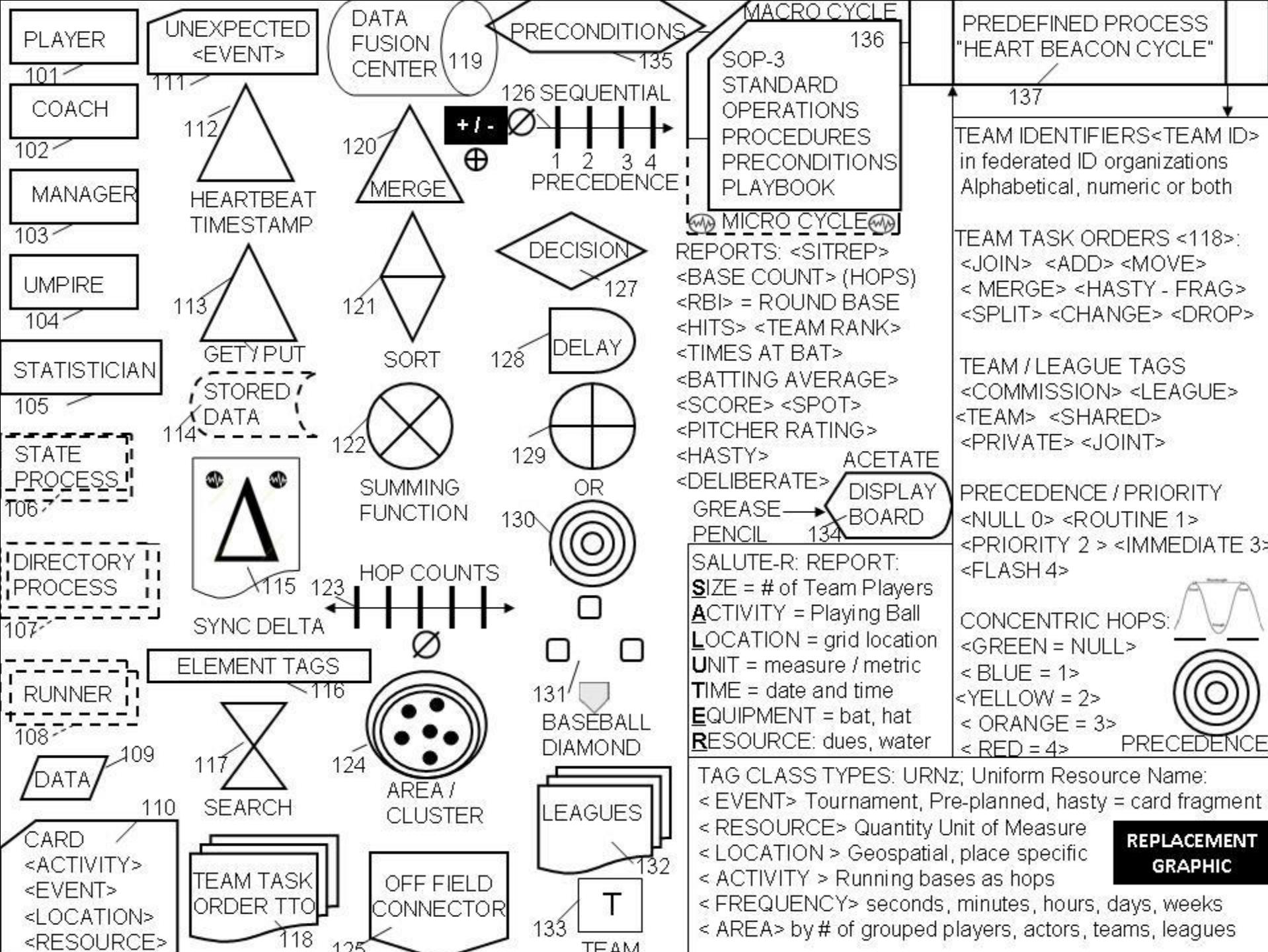


**Gamification** is the use of game thinking and game mechanics in non-game contexts to engage users in solving problems. Gamification techniques strive to leverage people's natural desires for competition, achievement, status, self-expression, altruism, closure.









# BUILDING BLOCKS



TASK ON / OFF

201

**B1: BUILDING BLOCK 1: TCP/IP HEARTBEAT TIME STAMP & DATA GET / PUT OF ORG ID / URN IN MICRO / MACRO CYCLES PRIOR TO DATA FUSION CENTER INSERTION**



MACRO CYCLES



.0001

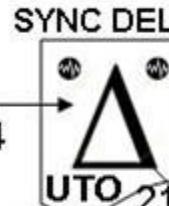
MICRO CYCLES

216

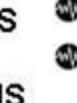
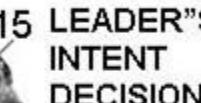


**202 FEDERATED GROUP JOINS, MERGE, ADDS, DROPS**

**B2: BUILDING BLOCK 2: ADAPTIVE, CYCLIC, ITERATIVE PROCEDURAL TEMPLATES: XML ARTIFACTS i.e. UNIT TASK ORDER & K00.99 HEARTBEAT SYNC DELTA MESSAGES / STATE META DATA SNAPSHOTS IN NETWORK EXECUTION MANAGEMENT MARKUP OF SERVICE INTERFACE ARTIFACTS**



ADHOC / AGILE  
FEDERATED <ID>  
GROUPS SYNC'D  
IN TIME / SPACE



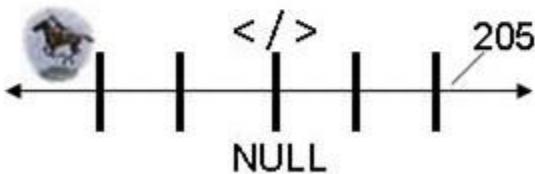
210

203

**B3: BEACON TECH TYPE I: PAUL REVERE LINEAR, SEQUENTIAL HOP COUNTS**



SYNC DELTA METRICS IN SLA CLAUSES AS  
MOE, MOP METER IN TAX CODES, TRANCHE  
CLASSES / RATINGS ARBITRAGE TRIGGERS



LENGTH, THRESHOLD, INTENSITY, DURATION



SEARCH FOLLOWED BY ARBITRAGE INVITES VIA  
BEACON NEWSCASTS. INVITE ACROSS SPACE / TIME



206



208



APPLIQUE' OVERLAYS



MAP VIEWS GEO-LOCATION SPECIFIC  
SHOW SYNC DELTAS BY GROUP /  
RESOURCE TYPE, EVENT CLASS /  
NEWSCAST BY TRANCHE <CLASSES>

**B4 BEACON TECH TYPE II: WATER DROP IN POND RADIUS, CIRCUMFERENCE GEO SPATIO-TEMPORAL**

204

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



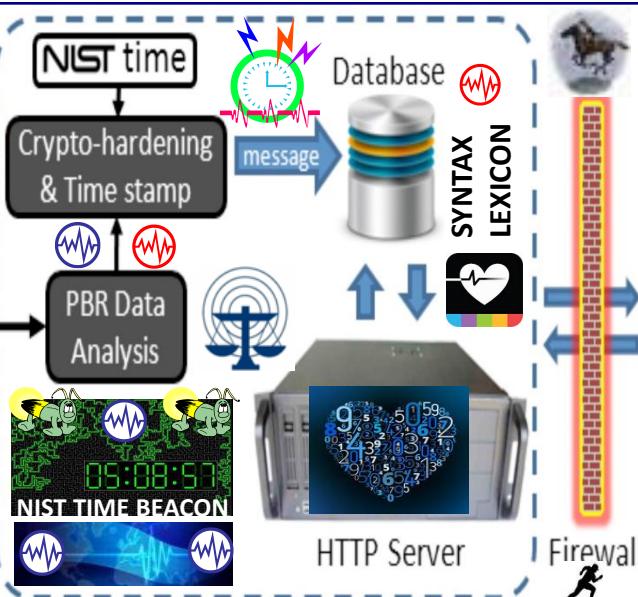
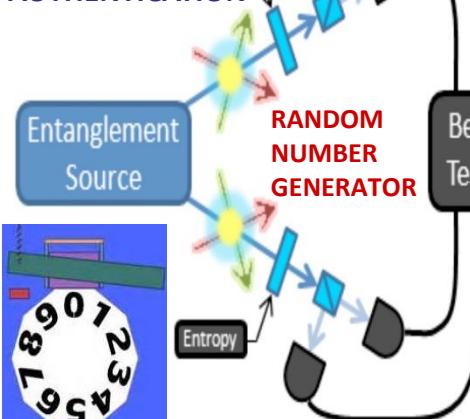
## NIST QUANTUM ENCRYPTION RANDOMIZATION BEACON

UNPREDICTABLE SAMPLING

SECURE AUTHENTICATION

SECURE MULTI

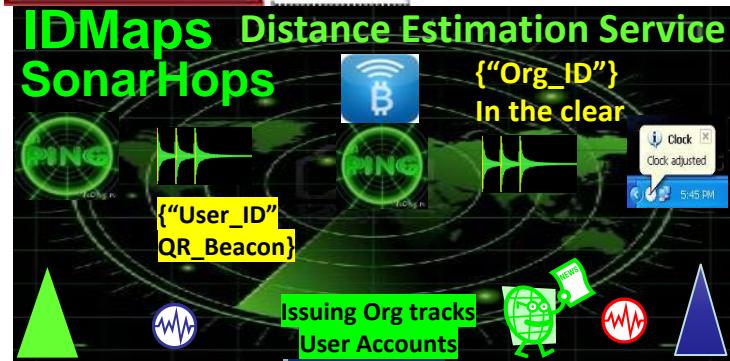
PARTY /  
AUTHENTICATION



**NIST**

**NON  
REPUDIATION**

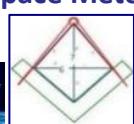
Legend:  
 - App. software application  
 - DB database  
 - Fw firewall  
 - HSM hardware security module  
 - RNG random-number generator



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

Metrics and Time - Space Meter uses PHYSICAL Memes / Metaphors

**NAMED DATA  
NETWORKING**



NDN  
 </Interest>  
 </Distance>  
 SURVEY METHODS  
 + TRIANGULATION  
 Euclidian Geometry  
**Geodesic System Routing Info Base RIB**

ACCOUNT BELONGS TO </Org\_ID>

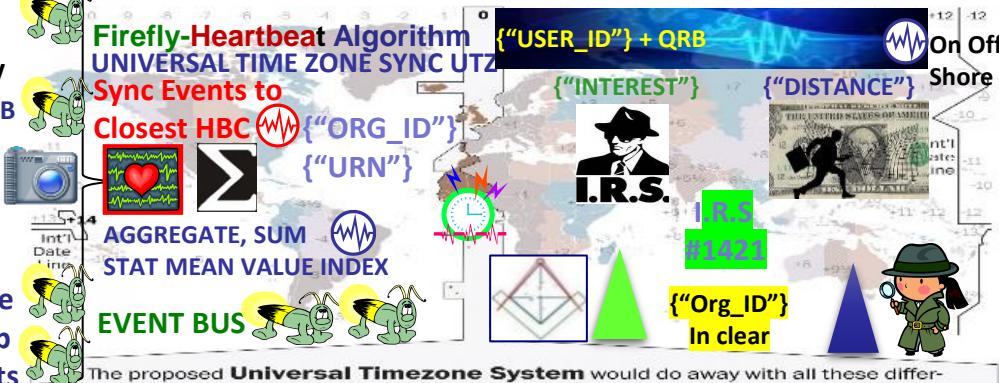
RESOURCE TYPE: <URN><URN><URN>

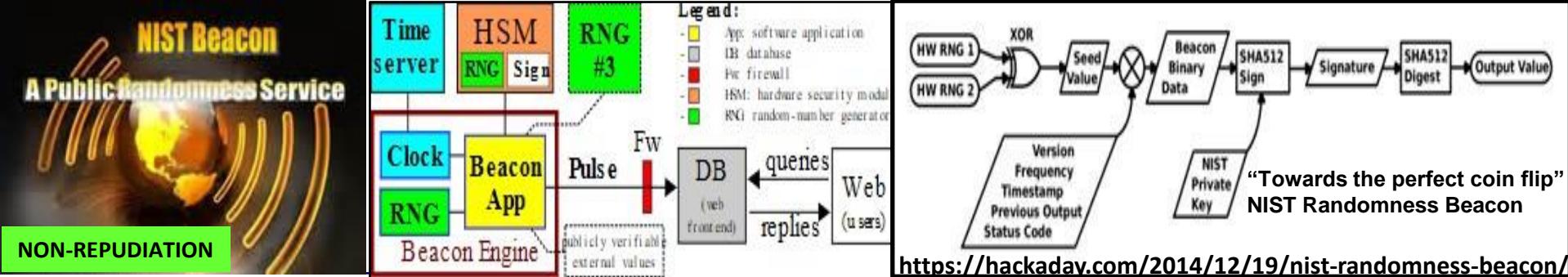
DEVICE / SENSORS <UUID><UUID>

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

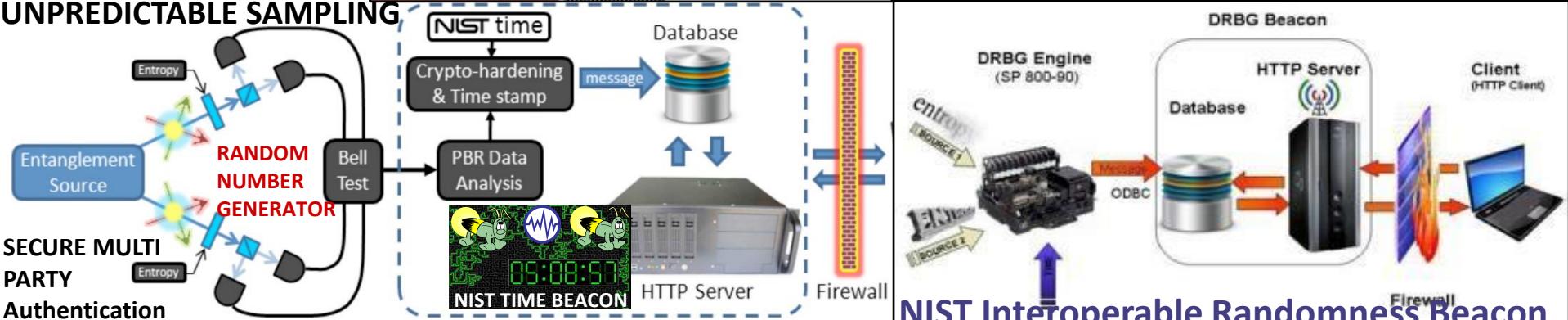
Time / Distance Metrics  
 PROXIMITY  
 OFFSHORE BEACONS ONSHORE  
 NDN  
 </interest></distance>

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





<https://hackaday.com/2014/12/19/nist-randomness-beacon/>



## NIST Interoperable Randomness Beacon

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

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

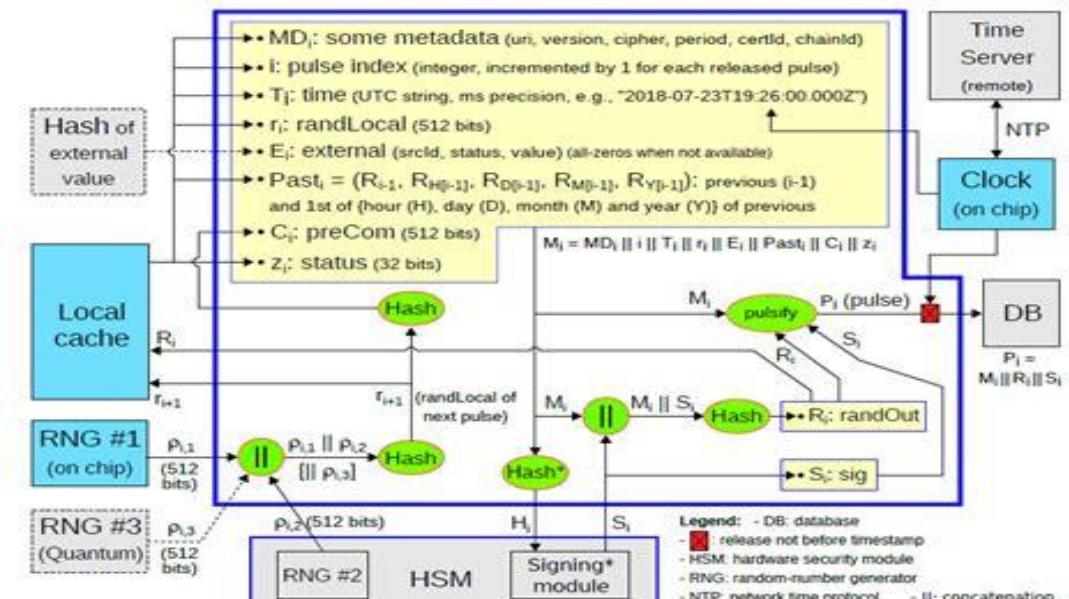
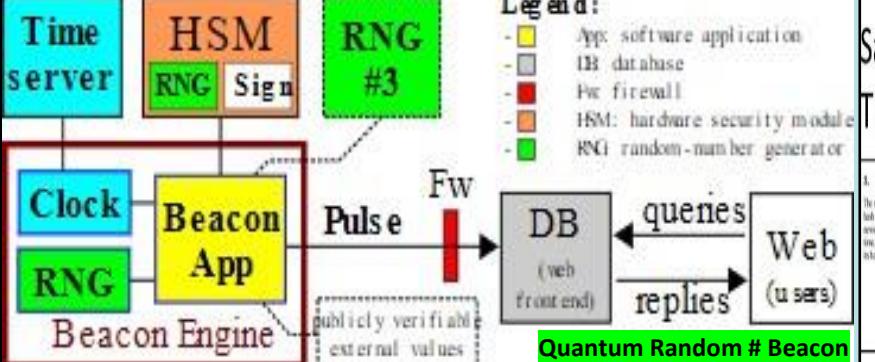


Figure 2. Illustration of the generation of the  $i^{\text{th}}$  pulse by a Beacon App (2.0)

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

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

## NIST Quantum Random Number Beacon



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



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



## QubitCoin Interval: Every 30 Seconds

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**

**ENVIRONMENT FRIENDLY ECO INCENTIVES**

["INTEREST"]  
["DISTANCE"]

NDN  
FIREFLY HEARTBEAT ALGORITHM  
HEARTBEAT {108"} MESSAGES

Sync To Closest HEARTBEAT EPOCH STATE META DATA SNAPSHOT

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.



## Satoshi Bitcoin Blockchain Time Stamp Server

### 1. Timestamp Server

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

### 2. Block chain

#### What does a block look like?

##### Simplified block structure:

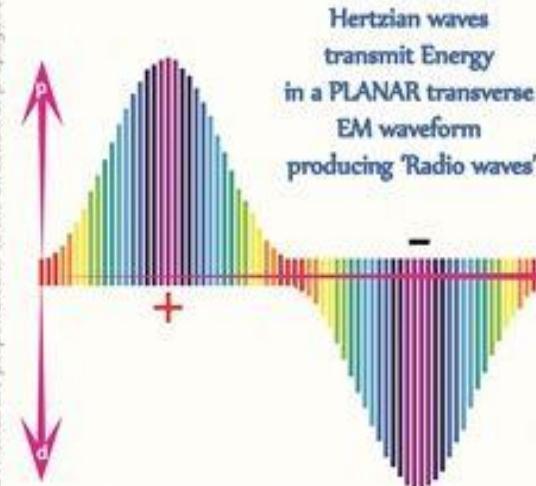
##### Block

CLOSER = < Infrastructure  
= CHEAPER SLA

# ElectroMagnetic waveforms



ENERGY / DATA  
Over  
Transmission  
Lines / Airwaves



In 1887, Heinrich Hertz demonstrated the reality of Maxwell's electromagnetic waves by experimentally generating radio waves in his laboratory.

All Photons and EM waves can have various directions of polarisation with respect to their direction of propagation



The E fields are co-linear with the direction of propagation

Although they utilise the same EM energies, different EM waveforms can be produced where the Electric fields are in 90° opposition to each other thus leading to conflicting theories of EM wave propagation

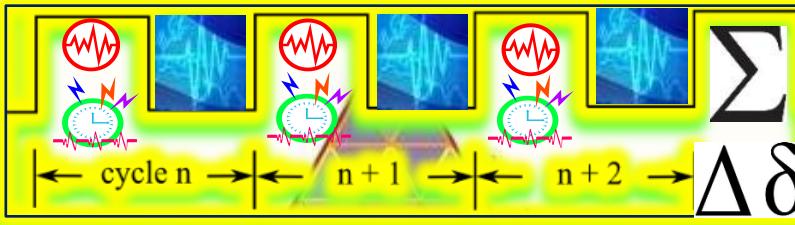
Through longitudinal waves, Tesla transferred energy to receiving devices. He sent electrostatic forces through the air, transferred electrical energies and noted the lethal forces produced by these waves.

Heinrich Hertz



(22 February 1857 - January 1 1894)

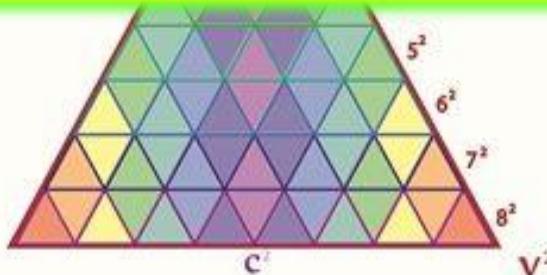
INTERNET = 1. TIME EPOCH CYCLES 2. Syntax (not) Processed in cycle



Nikola Tesla



(10 July 1856 - 7 January 1943)

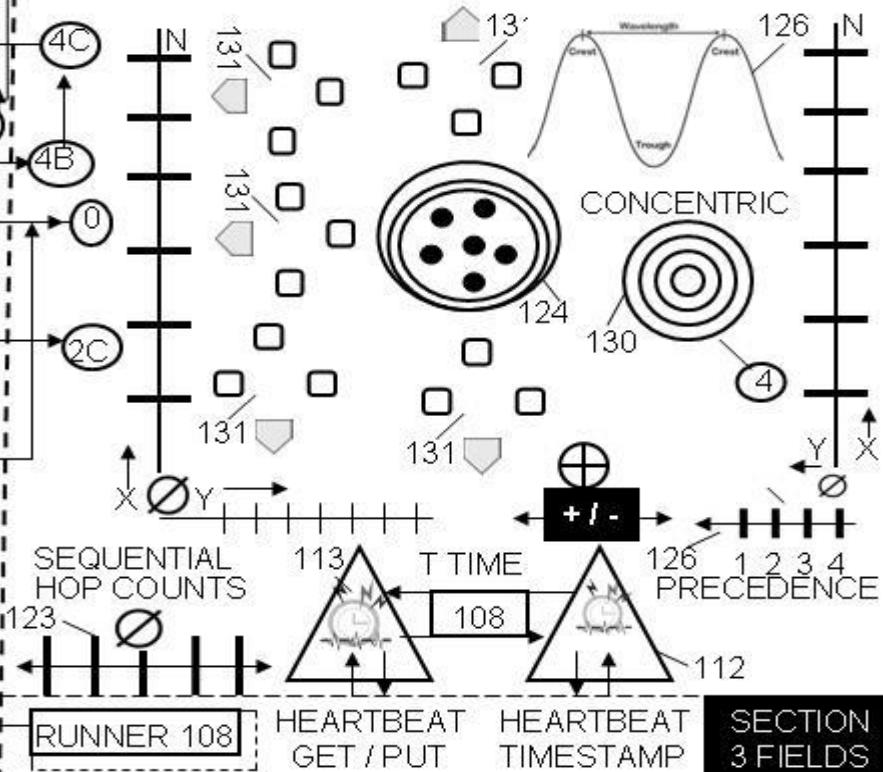
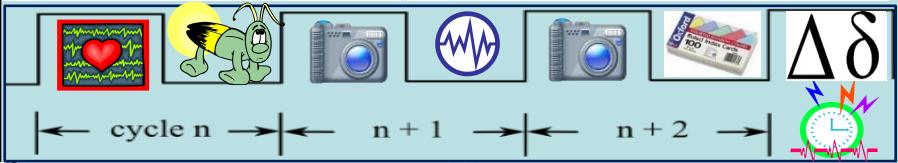
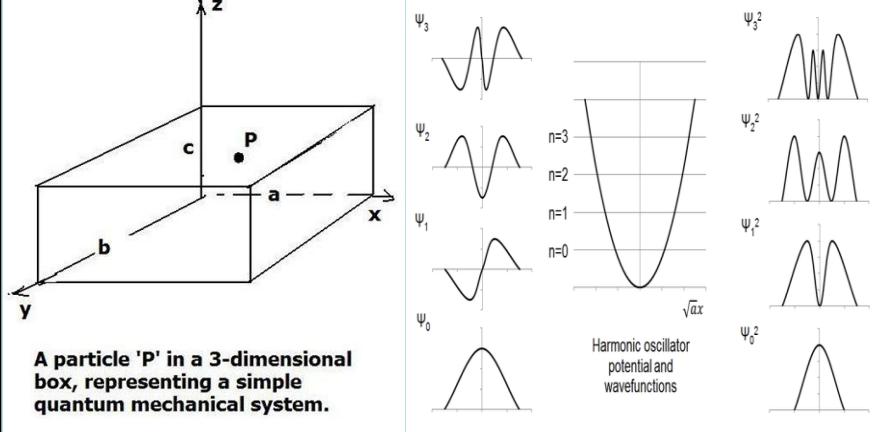


Cycles per Second

Volts per Second

Soon after Hertz's claim of discovering Maxwell's transverse EM waves Tesla visited him and personally demonstrated the experimental error to him. Hertz agreed with Tesla and had planned to withdraw his claim, but varying agendas intervened and set the stage for a major rift in the 'accepted' theories that soon became transformed into the fundamental "laws" of the electric sciences that have held sway in industry and the halls of academia to the present day

## 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

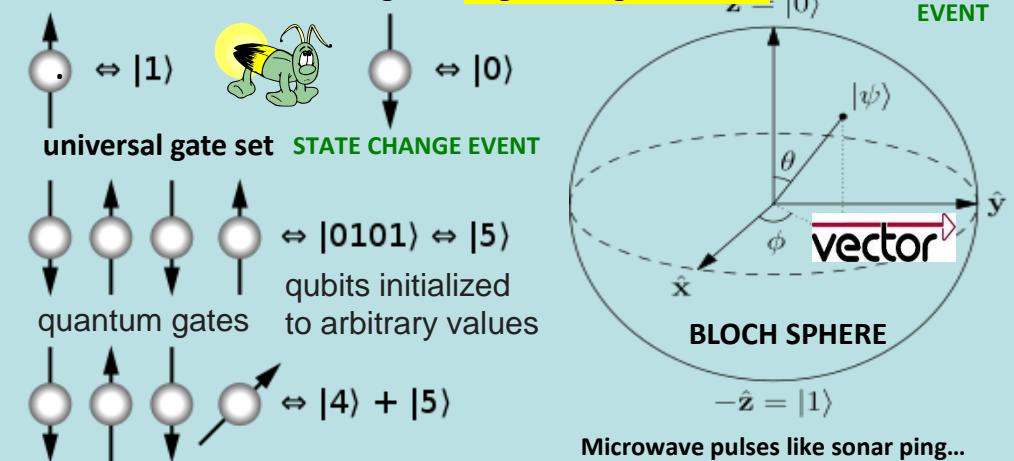
Vertical polarization vectors from a known point 0 null Sonar Hop meme



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.

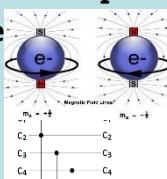


Fock state number state quantum state that is an element of a Fock space with a well-defined number of particles (or quanta)



STATE  
CHANGE  
EVENT

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





# The Hopf Fibration

Edmund Harriss

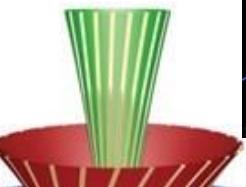
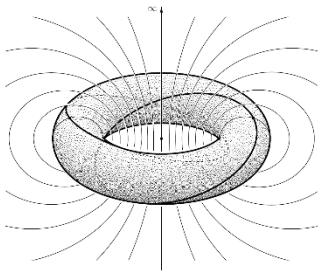
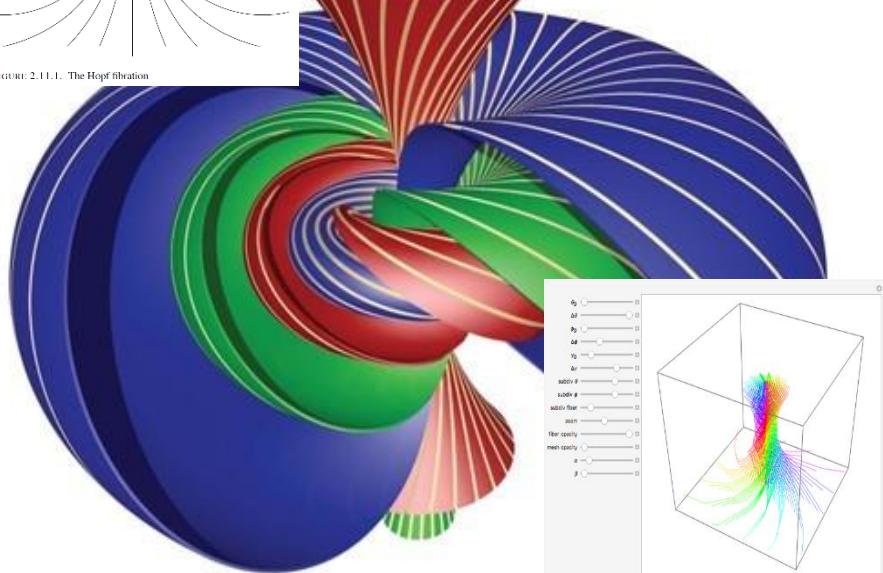
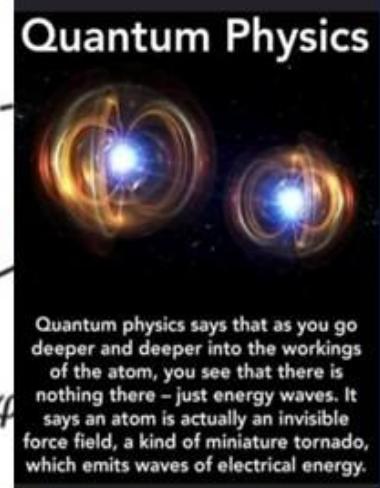
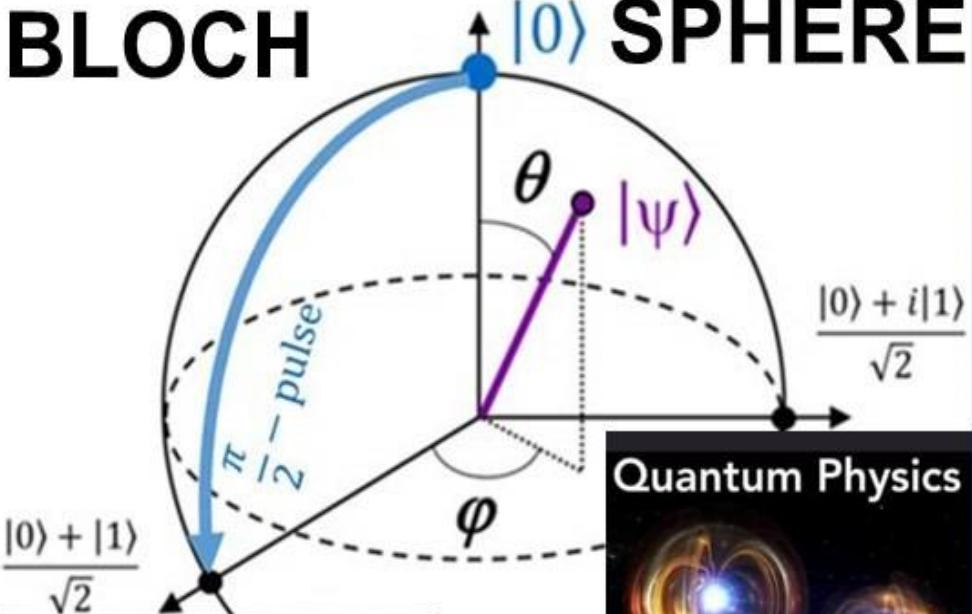


FIGURE 2.11.1. The Hopf fibration



# BLOCH SPHERE



Quantum physics says that as you go deeper and deeper into the workings of the atom, you see that there is nothing there – just energy waves. It says an atom is actually an invisible force field, a kind of miniature tornado, which emits waves of electrical energy.

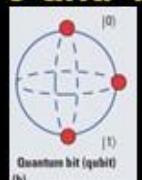
## Hopf Fibration / #Bloch sphere

"the most important object in the universe"

"Hopf fiber bundles pop up in 8 quantum physics situations"... USPTO 13/573,002 water drop in pond meme / scalar wave in 2D - 3D

Paul Revere linear - sequential hop count meme

The Bloch sphere provides a useful means of visualizing the state of a single qubit & operations on it. Any point on this sphere represents a linear combination of the 0 and 1 states with complex coefficients. A  $\pi/2$ -pulse 'rotates' a qubit from the 0-state to a superposition state.





# THE 1919 WORLD SERIES

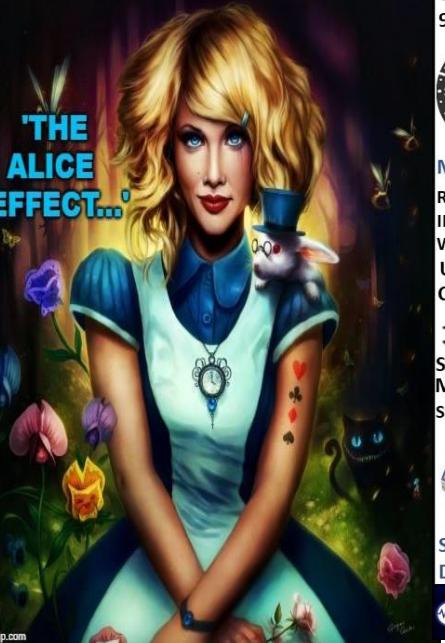
## *What Really Happened?*

## **William A. Cook**



**Stop patent trolls.  
Join The Alliance.**

Application Developers Alliance

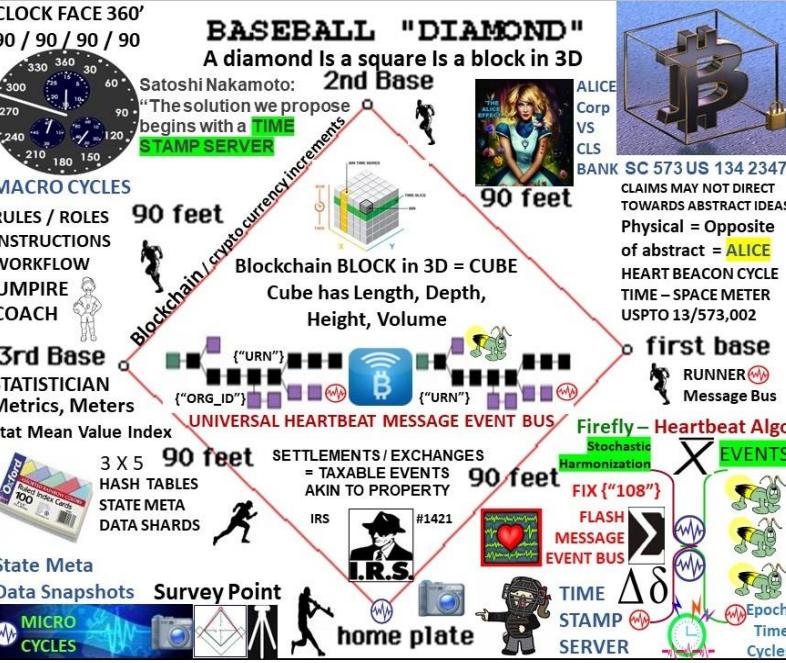


*Alice Corp. v. CLS Bank International*, 573 U.S. 134 S. Ct. 2347 (2014)  
RULING: “claims may not direct towards abstract ideas”



# USPTO SCREEN CAPTURES SUSPENDED PAIR RULES

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

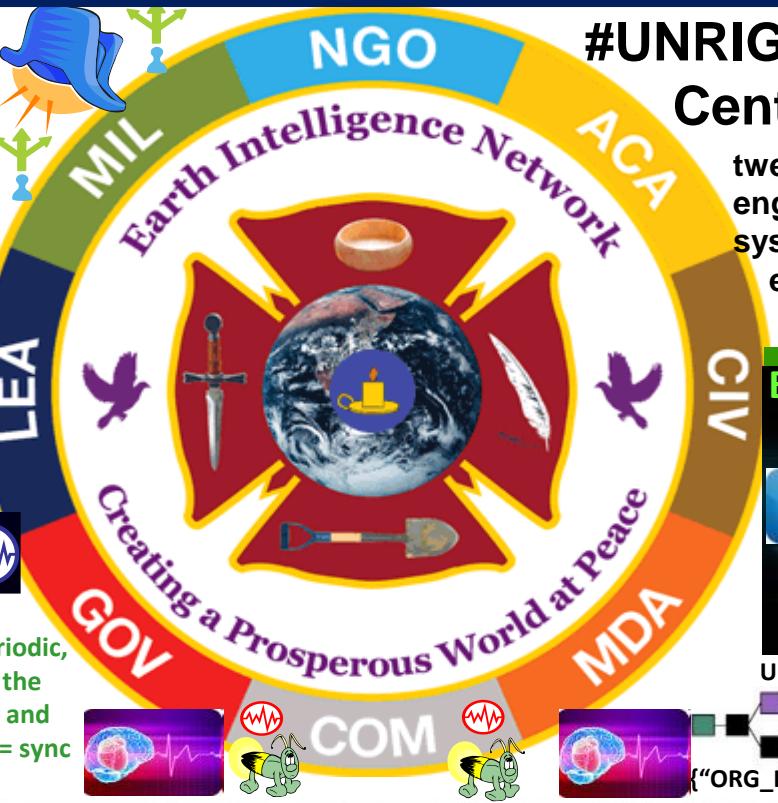
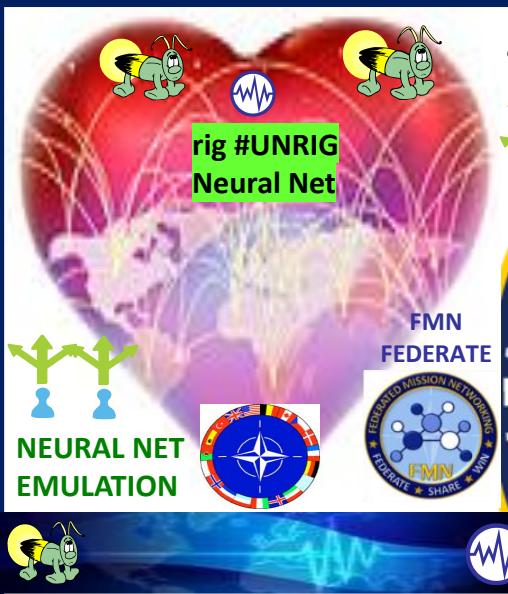






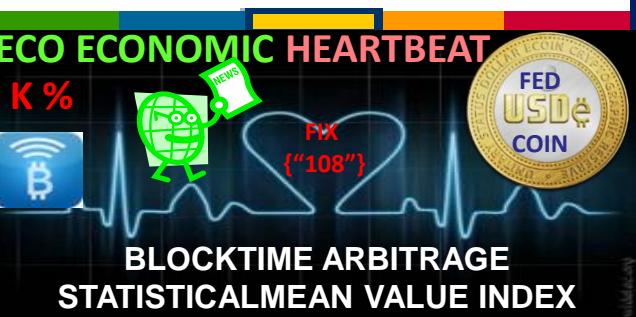
MINIMUM LIST OF COMPONENTS, BUILDING BLOCKS, PROCESSES, PROCEDURES AGREED ON BY  
TRADE FEDERATIONS TO ACHIEVE DISTRIBUTED AUTONOMOUS ORGANIZATION DAO CONSENSUS



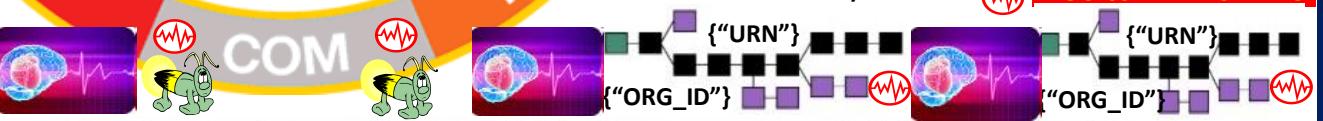


# #UNRIG Marine Corps Data Center Robert Steele RIP

twelve reforms needed to create educated engaged democracy, unrig the "pay to play" system + DoD system of systems  
engineering structured data exchange  
best practice foundation DeFI technology

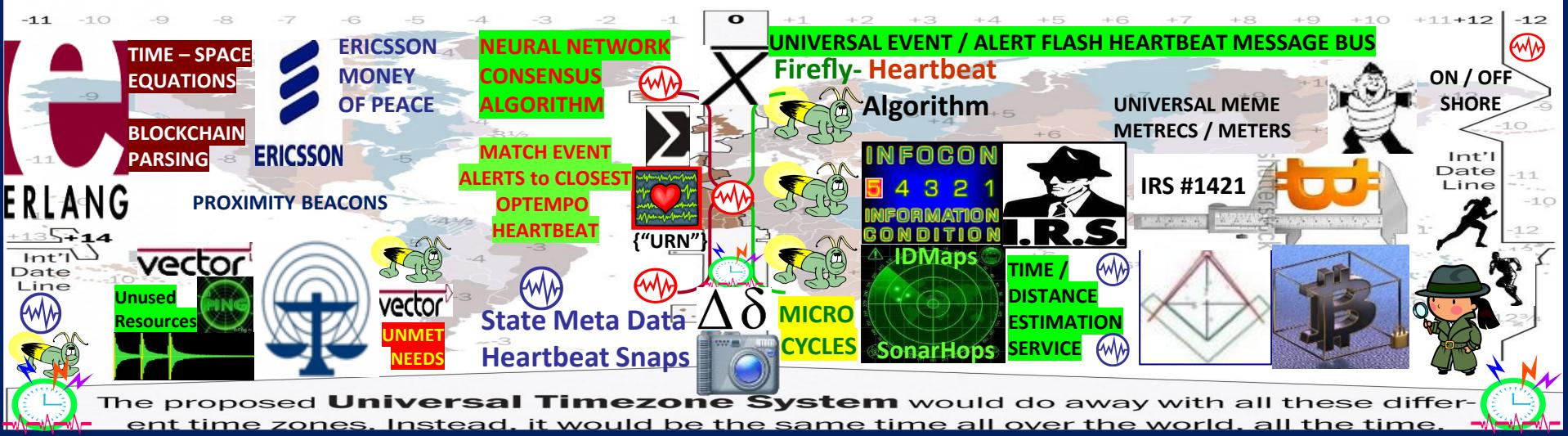


Universal Event / Alert Bus  PROCESS BY PRECEDENCE



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.

# DAO: Distributed Autonomous Organization

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

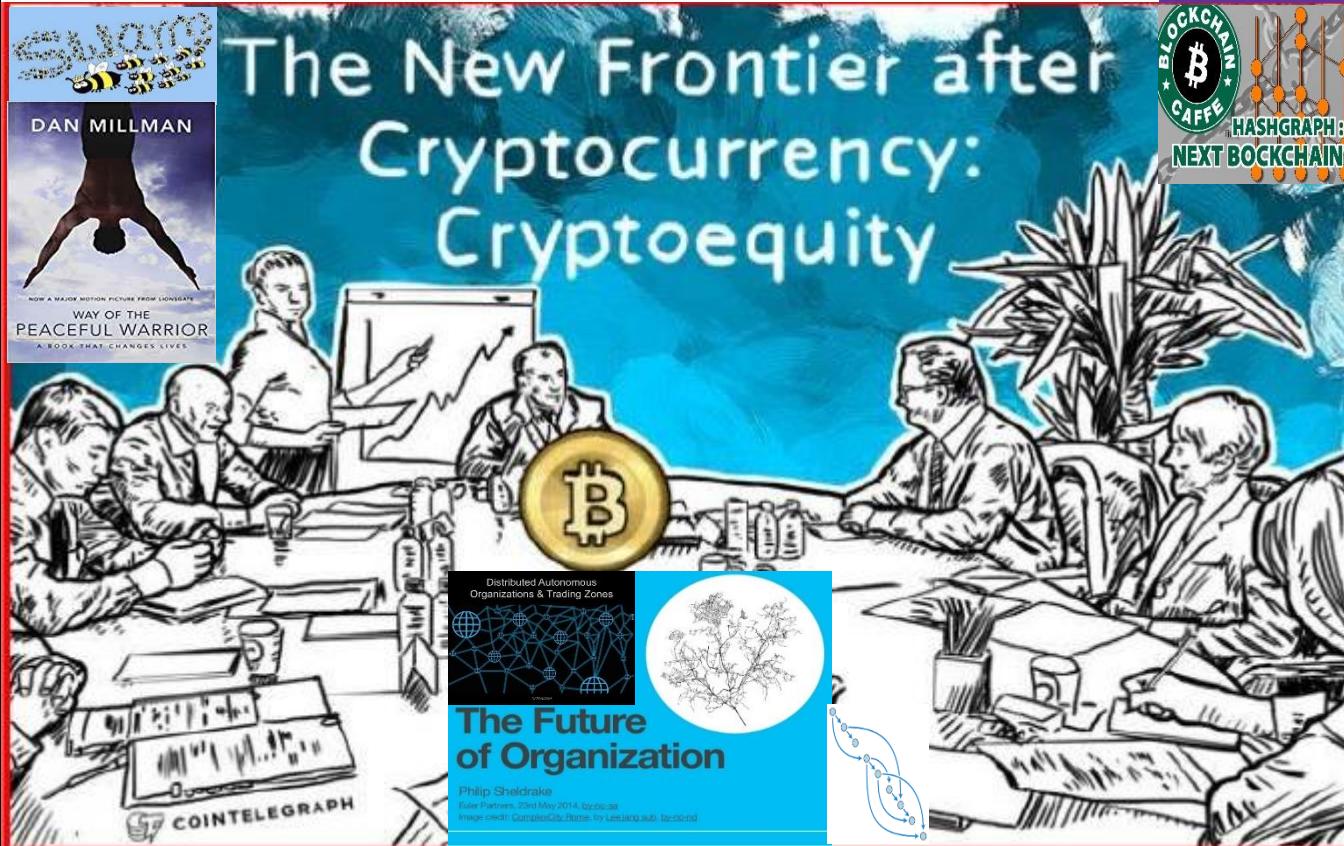
### SWARMING AND THE FUTURE OF CONFLICT



RAND

RAND  
Monograph  
Report

THE  
ADVENT  
Of NETWAR



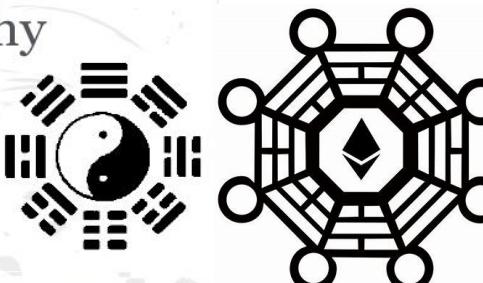
<http://cointelegraph.com/news/112077/the-new-frontier-after-cryptocurrency-cryptoequity>

## Taoism Philosophy

Taoism represents:

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

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



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

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

@TheBitcoinArmy





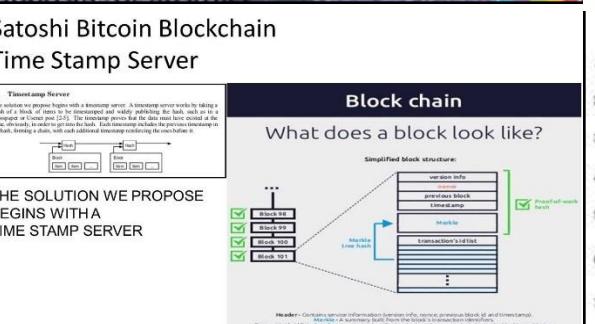
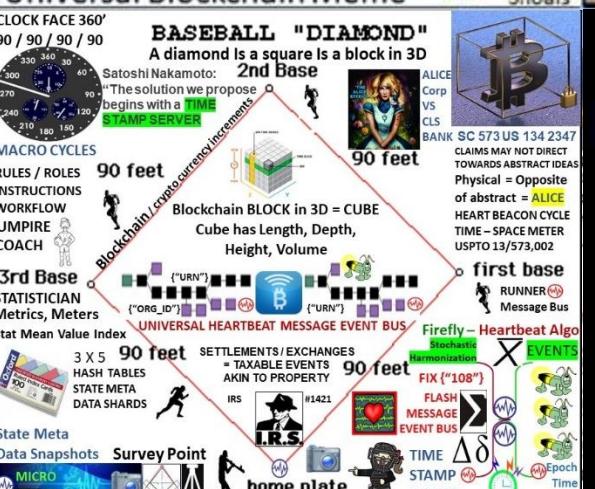
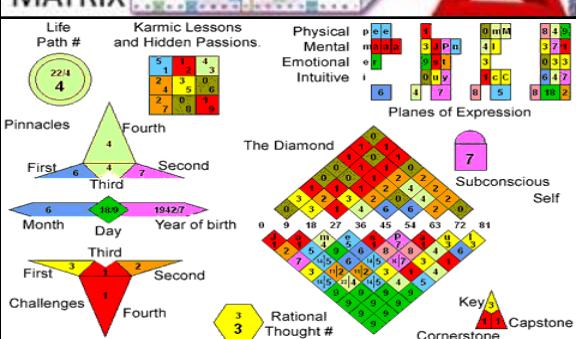
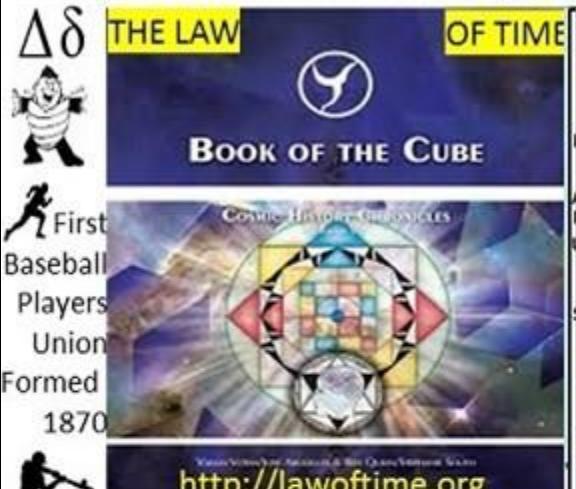
USPTO APPLICATION 13/573 002

## The Heart Beacon Cycle Time-Space Meter

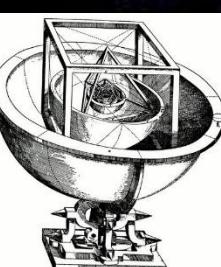
Main Embodiment: Baseball Diamond = block in 3D = cube

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

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



## Metatron's Cube and the Platonic Solids



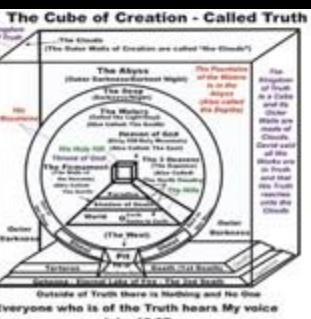
### GENESIS OF ALL FORM



### SEED OF LIFE

by Tom Rimbault

"In the beginning (of time) there was the word"





"There is only one revolution tolerable to all men, all societies, all political systems: revolution by design and invention."

-Buckminster Fuller



## THE GREAT CONJUNCTION IN AQUARIUS

HERALDING THE NEW AGE  
On December 2020, Jupiter and Saturn unite in the sign of Aquarius, forming a configuration called a Great Conjunction which only happens once every twenty years. Great Conjunctions are often longterm beginnings or foundations formed out of unstable circumstances. In the sign of AQUARIUS, this is likely to mark a major technological boom that will culminate on 2030 and last until 2040, the next Great Conjunction.

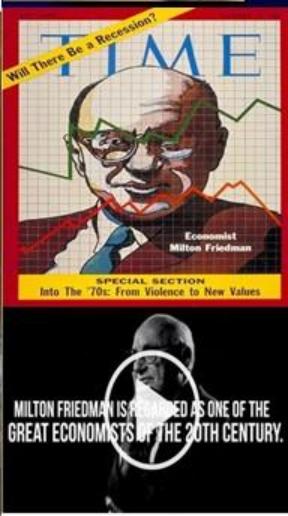
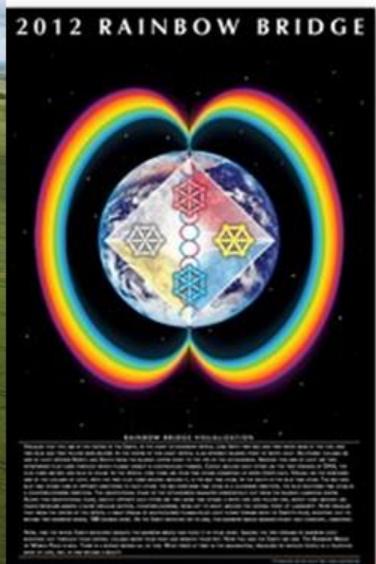
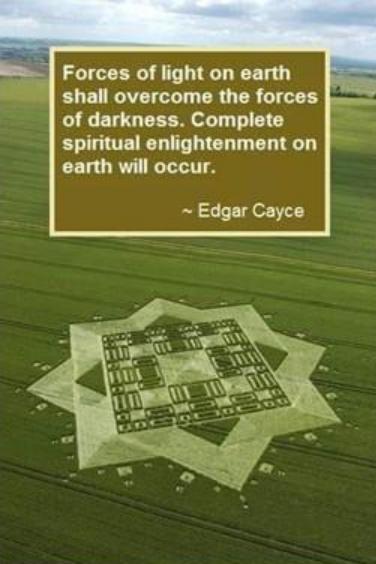
Over the next ten years, we are going to see our world innovate unlike never before, particularly in the fields of AI, technology, science, space travel, UFOs, networks, and the Internet. Major Universal truths will also be revealed as we welcome the New Age of Aquarius. The old world will soon come to an end, paving way to the new order of things.

photo by werner du plessis



Forces of light on earth shall overcome the forces of darkness. Complete spiritual enlightenment on earth will occur.

~ Edgar Cayce



"ONLY A CRISIS—ACTUAL OR PERCEIVED—PRODUCES REAL CHANGE. WHEN THAT CRISIS OCCURS, THE ACTIONS THAT ARE TAKEN DEPEND ON THE IDEAS THAT ARE LYING AROUND."

That, I believe, is our basic function: to develop alternatives to existing policies, to keep them alive and available until the politically impossible becomes politically inevitable.

Milton Friedman — Preface to Capitalism & Freedom 1962

The K-Percent Rule was a proposal by economist Milton Friedman that the central bank should increase the money supply by a constant percentage every year.

The K-Percent Rule: sets the money supply growth at a rate equal to the growth of gross domestic product (GDP) yearly.

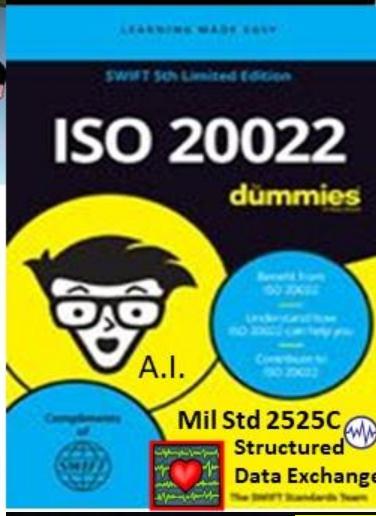
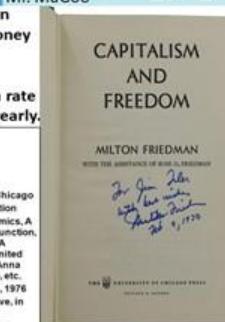


Milton Friedman

- 1912-2006
- Economist, monetarist
- 1946-1977: University of Chicago
- 1977-2006: Hoover Institution
- Essays on Positive Economics, A Theory of Consumption Function, Capitalism and Freedom, A Monetary History of the United States (1867-1960) - with Anna Schwartz, etc.
- Nobel Prize in Economics, 1976
- Considered as conservative, in reality liberal economist
- Advisor to President Nixon



Reverend K "I see Mr. MaGoo"



**The Age of Aquarius: Aquarius, Aquarius Rising @ 6:44 A.M. Feb 10<sup>th</sup> 1960**

**Buckminster Fuller "build a new model that makes the old model obsolete"**

**Socrates: focus all your energy on building the new, not fighting the old"**

#algorithmic #stablecoin #buckminster #fuller #cryptocurrency #Milton #Friedman

