

ECO ECONOMIC EPOCH HEARTBEAT REAL WORLD ASSET GDP INDEX ECONOMY

Adaptive Procedural Template checklist: Use Case: foundation tech for net of \$\$\$, economy



Figure 1: DAO Trade Federation minimum list of algorithms, tools, templates, treatises

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TABLE OF CONTENTS

1, SUMMARY DESCRIPTION	2
2. USE CASES	6
3. CLAIMS	7
APPENDIX A: SAMPLE ADAPTIVE PROCEDURAL TEMPLATE	11
1.1 Purpose	11
1.2 Scope	11
1.3 Roles	11
1.4 Definitions and Acronyms	11
1.5 References	10
1.6 Traceability	12
1.7 Policies	12
1.8 Standards	12
1.9 Processes	12
1.10 Procedures	12
1.11 Guidelines	12
1.12 Templates	13
1.13. Tools	13
1.14. Procedures / Steps	14
1.15 Methods	15
APPENDIX B: PRIOR ART, TERMS, DEFINITIONS	21
APPENDIX C: SOCIAL MEDIA LINKS	49
APPENDIX D: BRIEF DESCRIPTION OF DRAWINGS / GRAPHICS	50
APPENDIX E: GRAPHICS	50

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

FEDERATION: Latin: foedus, foederis
1. covenant, union of partially self-governing states or a central government
2. League or confederacy. People, groups retain autonomy
A federated body formed by a group of nations, states, societies, unions; retaining control of own internal affairs
V CLS Bank - To abstract ideas* Alpha-Numeric Brevity Codes / Tokens "Bitcoin is a language" STRUCTURED DATA EXCHANGE
SYNTAX LEXICON CODES GUIDE
BLOCK
ROSETTA STONE
UTZ Sync
INFOCON HEARTBEAT % REAL GDP
ALGORITHMIC REGULATION FED COIN / WORLD.COIN
ECO INCENTIVES </Interest>
DEMURRAGE FEES
UTZ Sync
NAMED DATA NETWORKING
currencyindex
Real World Assets QRNB
NET Beacon
A Public Infrastructure Service
Time Series Databases
Non Repudiation

- 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

Spatial / temporal UTZ synchronization, stochastic harmonization, Time - Space Distance Estimation Service Common Consensus Algo meme Eco sustainable incentives
“We can synchronize ourselves, DAO Trade Federations in time - space for common purposes”
Eco sustainable, Equitable Economic econometrics.

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.

Figure 2: Adaptive Procedural Template Checklist derived from DoD / NATO

SUMMARY USPTO 13/573,002 The Heart Beacon Cycle Time - Space Meter

Patent type: Adaptive Procedural Template Framework: checklist: ideas, algorithms, processes, procedures, metrics, meters, t structured data telemetry for consistent Eco sustainable economic time cycle epochs for programmable \$ / economy / Net, Net of Money Foundation Technology for DeFi, programmable internet of money / Web 3.0

USPTO 13/573,002 framework supports for example, Distributed Trade Federation Organizations with DoD / NATO system of systems engineering signaling, telemetry engineering, syntax OPSCODE brevity codes matched with 2525C symbol sets vital for A.I. man-machine interface, interoperability, consistency, spatial – temporal consensus.

A global programmable currency / economy is inevitable. Question: coded how?

PRECEDENTS: Currency backed by RWA Real World Assets / Tangibles

TERRA Trade Reference Currency TRC: commodity basket / index based TRC Trade Reference Currency features demurrage fees / charges to support supplier to consumer logistics of goods. The Terra TRC Trade Reference Currency is a global complementary currency designed to provide an inflation-resistant international standard of value; to stabilize the business cycle on a global level; and to realign stockholder's interests with long-term sustainability. Bernard Lietaer Belgian Economists

[LINK http://lietaer.com/2010/01/terra/](http://lietaer.com/2010/01/terra/)

BRIC Nation Commodity Basket backed currency. "new global reserve currency."

"The matter of creating the international reserve currency based on the basket of currencies of our countries is under review" Source: Fintech Magazine

French Money of Peace: Le Fédériste" "L'Europa monnaie de la paix" Money of peace" proposed January 1st 1933

Thomas Edison's Monetary option: Thomas Edison and Henry Ford proposed a currency based on the value of a basket of crop commodities in 1922. Inventor Thomas Edison believed that crops held their value over time. "I want to cast the variable out of money. This gold money is not good enough. It's a fiction" (*New York Times* 1922).

Question: what constitutes foundation tech for #DeFi / programmable \$\$\$? Teams are forming to win the DeFi Distributed Finance / programmable \$\$\$ - money IP Intellectual Property wars. The winning team will prove that their IP intellectual property filings establishes / established foundation technology. What is foundation technology given the SCOTUS 2014 "Alice in Wonderland" ruling? The internet and now the internet of money Web 3.0 is described with memes, metaphors, made up words.

THESIS: All things internet, internet 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. Blockchains are formed by unicast, multicast, anycast and workflow filters. Programmable money's improvements are in cryptography. Web 3.0 is based on the original internet TCP/IP structure that has not changed because it cannot change.

SCOTUS Alice in Wonderland Precedent: Packets, frames, layers, blocks, shards, graphs, hash graphs "bots", "motes", ... or Satoshi's traversing the net, stored in a blockchain cube are abstractions, abstract ideas, terms. The afore mentioned terms are non-existent, fictitious, imaginary metaphorical fabrications are non - compliant with US Supreme Court SCOTUS Alice Corp Vs CLS Bank 2014 ruling "claims may not direct towards abstract ideas". Physical is the opposite of abstract.

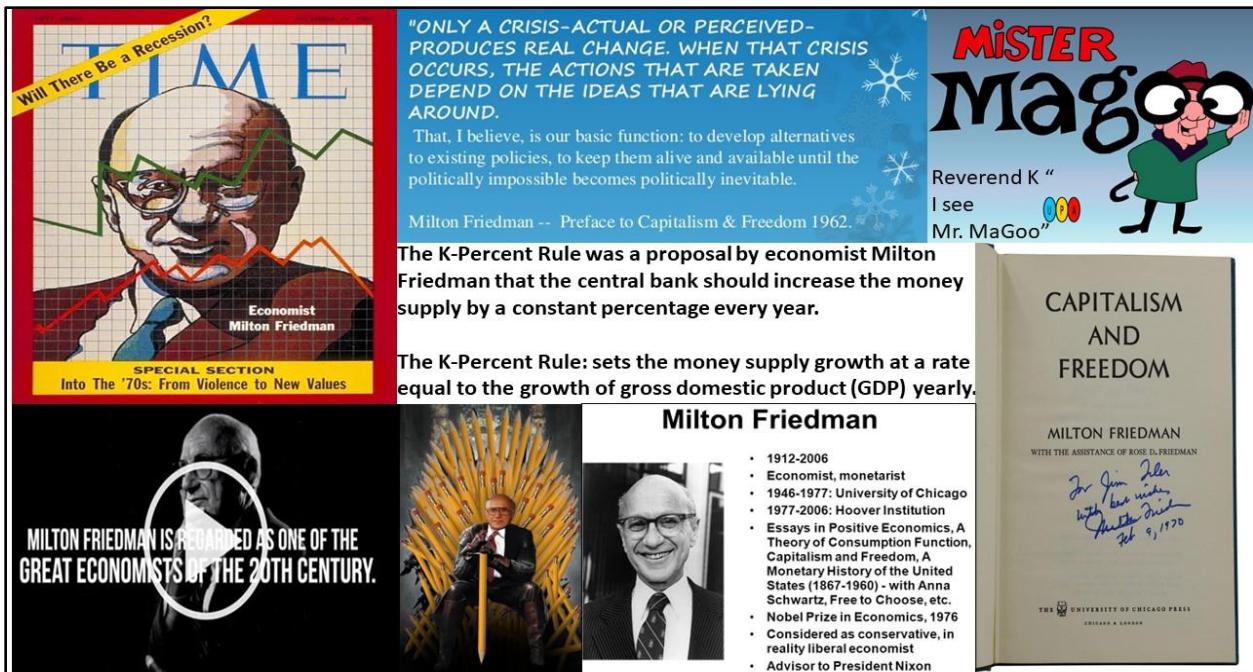


Fig 3: Nobel Prize winning Economist Milton Friedman “only a crisis brings real change”

Nobel Prize Winning Economist Milton Friedman: “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 the politically inevitable.” — Milton Friedman

PURPOSE: Provide signaling, telemetry, data element syntax lexicon support for economist Milton Friedman's K% rule where a FEDCOIN / WORLDCOIN currency is supported from sampling lead economic indicators i.e., commodity RWA Real World Assets measurable, tangible, tokenized assets across a universal event bus applying the firefly-heartbeat algorithm tracking changes, updating q statistical mean value index. Nobel Prize winning economist Milton Friedman described an "economic heartbeat" in his K% rule where the Treasury increases the money supply increases and decreases pegged to increases, decreases in GDP index volume.

PURPOSE: Climate change impact on food production: given food, fertilizer shortages (wheat, sunflower, soybean...), energy, fuel prices and looming fuel rationing, it logically follows that the world has no other options than to organize both micro (local) and macro (global) economies observing space - time conservative SLA Service Level Agreements where closer = cheaper given closer = less fuel, CO₂, time resources used to produce, ship.. Demurrage fees incentivize conservation of resources, commodities i.e., discounts for locally produced, consumed goods and commodities. It is TIME.

USE CASES

1 Supreme Court **US SC 573 US 134 2347** Alice Corp Vs CLS Bank compliant physical meme i.e., cryptocurrency blockchain Digital Ledger Technology DLT programmable money meme

2 Foundation technology for programmable money / economy i.e., Syntax Lexicon Namespace derived from NATO / DoD brevity OPSCODE FFIRN, FFUDNS structured data exchange mapped to symbols for A.I. Big Data. Establishes a consistent, universal syntax structured data exchange library – lexicon using UTZ time stamping data by organization <Org_ID>. data class type, resource type to form a universal syntax, code, date element </tag> Rosetta Stone given all things internet are formed using 1. time epoch cycles 2. syntax as instructions

3 Distributed Autonomous Organization DAO Trade Federation common signaling, telemetry, symbol, and data element sets forming a foundation technology framework including structured data exchange to assist DAO's stay synchronized, stochastically harmonized across UTZ zones.

4 Tether, untether to autonomous trade federations using agile, adhoc NetOps as an option to formal merger, acquisition. Support federations: from Latin: foedus, gen.: foederis, covenant characterized by a union of partially self-governing states or regions under a central government.

5 Micro to macro-cycle system of systems data updates at agreed upon times observing agreed durations i.e., stock, commodity, currency trade epochs. Discrete time interval start, stop, TTL Time To Live trade windows commands embedded in </108> heartbeats, heartbeat messages.

6 Algorithmic regulation: firefly inspired heartbeat synchronization algorithm in stocks, currency exchanges is a segue to algorithmic regulation. Improving temporal trade parity between Bitcoin Blockchain & conventional stock exchanges by using the firefly-heartbeat algorithm to take trade speed samples among trade populations across time zones to establish consensus among disparate trade protocols, optimal trade speed / frequency as a statistical mean.

7 The "Grail" A sync'd shared situational awareness view derived from filtering, prioritizing events drawn from a system of systems universal heartbeat message event bus sync delta epoch updates Universal Time Zone UTZ proposal using via improvement to the University of Bologna / Hungary's firefly inspired heartbeat synchronization algorithm by matching the firefly synchronization pulse to the closest OPTEMPO Heart Beacon Cycle.

8 Support economist Milton Friedman's K% rule where a CBDC, federal, world currency is derived from sampling lead GDP economic indicators across a global event message bus sync delta changes updating a RWA Real World Asset based commodity index backed currency.

9 Ecologically sustainable economic econometric epoch time cycles to measure, meter sync delta cyclic changes describes linear sequential, geo-spatial temporal intensity radius hop count econometric metrics and meters where closer is shorter and closer is cheaper, less CO2 SLA

10 Data over wired, wireless power lines SLA service level agreement where closer = cheaper given closer involves maintenance of electrical, data equipment infrastructure

USPTO 13/573,002 CLAIMS:

1. A systemic, adaptive, procedural template method used to improve synchronization in metrics, metering using </Org_ID>, {"URN"} XML data tags in signaling during heartbeat micro-cycles prior to data fusion center entry consisting of iterative heartbeat cycle metrics, meters reporting where state meta data heartbeat snapshot recalculations are performed at off site connectors that are signaling relays performing recalculation, syntax processing during macro-cycle epochs reconciling dissimilar standards, data syntax formats that are then reported signaled, news casted, beacon broadcasted to applique overlay graphics displays. Syntax code language parsed, processed during silicon chip generated time cycles forms all things internet, internet of money. Claim describes the military's network centric operations systems of systems method of collecting state meta data sync delta heartbeat snapshot data during operational micro-cycles that is then summed, aggregated, disseminated and displayed during macro-cycles as part of situation awareness system of systems engineering procedures.
2. A systemic, adaptive procedural template used to improve signaling, synchronization using TCP/IP heartbeat time stamping occurring during micro-cycles of state meta data prior to data fusion center entry among metrics, metering processes comprised of TCP/IP heartbeats, heartbeat messages signaled during micro-cycles scheduling instructions, commands, processes, procedures, algorithms, telemetry instructions for example, to master-controller processes i.e., block, start, stop, pause, resume, set Time To live TTL i.e., stock market high frequency flash trade, currency, interest rates, tax rates, time banking, cloud computing commodity exchanges, big data, electrical micro-grid, fungible goods, real time bidding, many use cases. Time stamping and applying descriptive data type tags to heartbeat state meta data after data is collected and queued, stored in temporary structures or entered into database instantiations after the fact is problematic. All internet supported devices including high frequency stock, currency, commodity etc., flash trade master controllers receive heartbeats. Heartbeats are silicon chip created intervals, epochs, time cycles used to (not) process syntax.
3. A systemic adaptive procedural template method improving stochastic networks harmonization through use of timing, synchronization intrinsic to TCP/IP heartbeat / heartbeat message signaling using set, scheduled, epochs in micro-cycles in combination with firefly insect signaling stochastic harmonization algorithms where firefly protocol sample means are matched with closest heartbeat sync delta micro-cycle report values to recalculate statistical averages, means signaled through off site connector conversion, recalculation gateways that news-cast, beacon broadcast to subscribers monitoring macro-cycle reports that heretofore would not exist without following the Heart Beacon Cycle procedural template as guides for reporting thus improving temporal harmonization in metrics and metering of stochastic telecommunication mesh fabrics grid control planes over wide areas in cases involving issues in terms of consistency, reliability, traceability, positive organizational identification, temporal transaction fidelity, event, alert predictability, data analytics, network forensics real rime bidding, stock market exchange floor server co-location verses servers distantly located, fluctuations in interest rates, currency exchanges, double payment adjudication, fungible good trading stochastic harmonization, electrical power micro-grids, cloud computing, "big data" use cases.
4. A systemic adaptive procedural template method using time stamping and signaling intrinsic to TCP/IP heartbeat, heartbeat sync delta snapshot message signaling to

improve dynamic, adaptive organization change management using XML <ORG_ID> network service interface NSI templates updating self-organizing process templates i.e., directory service, reporting, map, network, system of systems effecting changes in directory structures database MIB i.e., network subnet joins, moves, splits drops, adds as alternatives to mergers, acquisitions effecting changes responsive to leader's actions, decisions i.e., mission-aware networking, network centric operations improving agile, ad hoc organizational business operations course of actions selection by organizations registered for more than one <ORG_ID> improving reaction to change.

5. A systemic adaptive procedural template method improving search engine methods using heartbeat, beacon signaling, <ORG_ID>, , <class_types>, Paul Revere, water drop in pond meme metric recalculations occurring at off site connectors, conversion relay gateways where detection of trigger point function recalculations of state meta data set aggregations are used to detect threshold fluctuations by resource , , quantity, availability duration etc., further used to improve geo-spatial temporal descriptive mapping methods, changes in clusters of objects, entities, artifacts i.e., location, epoch time stamp geo-spatially, temporally, used to locate, search, then group into virtual collections using <data_tags> i.e., in spatial econometric, volumetric operations within network mesh fabrics triggering news-casting invitations to join equitably metered federated group arbitrage events, activities that are triggered by internet search operations improving collaboration, metrics and metering in for example, commodity, fungibles trading, resource pooling, crowd sourcing, economics. Summary: Physical linear – sequential “Paul Revere” meme used given TCP/IP internet “hops” are abstractions ineligible for patent protect. Water drop in pond physical metaphor describes geospatial temporal intensity in omni-directional, circle, radius type situations. Naval sonar meme describes geo-spatial temporal intensity metrics, meters.

6. A systemic adaptive procedural template method used to improve handicapped / information alerts, events, methods reliant on heartbeat timing, signaling synchronization of state meta-data improved using Paul Revere, water drop in pond memes to create, calculate radius, intensity metrics viewed as geo-spatial, temporal intensity effects i.e., visual light bar tabs i.e., stock exchange candlestick charts, audible tone, vibration-tactile situational awareness alerts by correlating tone based messaging precedence XML where lower / higher precedence settings equate to lower / higher audible tones, tactile vibrations for deaf where fewer / greater number of light tabs lit correlates, corresponds to priority, precedence further used in alert triggers of threshold fluctuations displayed in appliquéd overlay graphics as metrics, meters. Describes reuse of structured military messaging’s precedence system to support for example, processing of Named Data Networking distance, interest packets by numeric precedence for example, among Internet of Everything / Things IoT, IOTE

7. A systemic, adaptive procedural template method using heartbeat signaling, time stamp record keeping processes of state meta data described, typed by organizations, resources typed by Uniform Resource Name, further improved through use of Paul Revere, Water Drop in Pond memes to quantify, describe unused resources with unmet needs by performing recalculations of state meta-data snapshot artifacts occurring at off site connector conversion gateways where micro-cycle reports from local, micro-cycle

activities are signaled, relayed to higher echelon organizations monitoring macro-cycles who are interested in for example stock market "pools" where "output" is correlated and displayed onto appliqué views of aggregate sync delta changes in macro-micro economic recalculations, stocks, commodities, currencies, interest rates, electric micro-grids, currency (Terra) exchanges, spatial econometrics, contributory economics. Claim highlights 'off site connector" that is a workflow convention as the method where for example, trade federation "A" interfaces with organization (s), nations, states.

8. A systemic, adaptive procedural template method using state meta data typed by organization, resources by Uniform Resource Name, improved using Paul Revere, Water Drop in Pond memes to quantify, describe unused resources with unmet needs in terms of proximity from source to point of use, consumption, storage etc., by performing recalculations of state meta-data snapshot artifacts occurring at off-site connector conversion gateways where micro-cycle reports from local, micro-cycle activities are signaled, relayed to macro-cycles reports of data fluctuations due to geo-spatial temporal intensity changes filtered by priority, precedence then newscast signaled to ad hoc federated group subscriptions where state meta data snapshot reports are shown in appliqué overlay data filtered value index views

9. A system adaptive procedural template method to reuse, improve on Network Centric Warfare best practice of organizing individuals in groups spatial - temporally distributed and UTZ time zones that involves use of micro – macro cycle scheduling, , organizational, resource identifiers embedded in structured data exchanges messages

10 A systemic use of an adaptive procedural template checklist of tools, procedures to aid individuals join trade federations. Affiliated organizations are geo-spatially, temporally located in distributed, dispersed locations across time – space. Member organizations may join or leave in an adhoc, agile manner to take advantage or react to events, situations while retaining autonomy or the ability to act on one's own behalf, This process involves agile, adhoc joins, merges, drops to / from DAO federation in lieu of formal merger, and acquisition Trade federations form among local communities or among sovereign (First) nations. The off-site connector workflow object convention connects, mitigates, adjusts by summation, statistical mean by aggregation among federated groups acting as mediation gateways with non – participating groups.

11 Electric dipole effect electric meter claim is based on electric dipole effect where closer is cheaper given less infrastructure needed given energy attenuates over distances • data over energy link where #energy pulses constitute a method and means to transmit data over electric wired, wireless pathways • electric dipole effect Radio Wave Properties: Electric and Magnetic Dipole Antennae

LINK: <https://youtu.be/wUpOlqbHcjI?t=111>

SUMMARY of CLAIMS: The Heart Beacon Cycle Time - Space Meter USPTO
13/573,002 is an adaptive procedural template / checklist of ideas, methods, processes, procedures, algorithms, tools... used to organize a system of federated systems comprised of diverse groups, people speaking many different languages through the universal language of symbols into Distributed Autonomous groups organized in time -

space to achieve common goals. DoD / NATO structured data exchange involves reuse of over 300 use cases supported by hundreds of message sets described in spread sheet row - column format populated by thousands of brevity OPSCODES mapped to symbols essential to artificial intelligence man - machine interface.

Procedural template entries at most, includes a line or two. In depth technical treatise (s) citing every conceivable nuance is impractical, counterproductive, and out of scope of an adaptive procedural template. Procedural template entries are pointers to more detailed treatise and references and are referential to a treatise A treatise is a formal and systematic written discourse on some subject, generally longer and treating it in greater depth than an essay and are concerned with investigating subject principles. Reference: Trade Federation Stanford SLAC's Adaptive Procedural Template

NATO bases are small cities that transact many goods, items, commodities with host nations. Why reinvent the syntax lexicon Rosetta Stone wheel? Procedural template entries at most, includes a line or two. In depth technical treatise (s) citing every conceivable nuance is impractical, counterproductive and out of scope of an adaptive procedural template. Procedural template entries are pointers to more detailed treatise and references and are referential to a treatise A treatise is a formal and systematic written discourse on some subject, generally longer and treating it in greater depth than an essay and are concerned with investigating subject principles. Reference: Trade Federation Stanford SLAC's procedural template adaptation

Adaptive Procedural Template = checklist of useful tools, procedures used to aid individuals join trade federations. Affiliated organizations are geo-spatially, temporally located in distributed, dispersed locations across time – space. Member organizations may join or leave in an ad hoc, agile manner to take advantage or react to events, situations while retaining autonomy or the ability to act on one's own behalf, control one's own activities, The process may involve agile, ad hoc joins, merges, drops to / from federation in lieu of formal merger, and acquisition.



APPENDIX A: SAMPLE ADAPTIVE PROCEDURAL TEMPLATE

1.1 PURPOSE: Establish a consistent context library / lexicon and time stamping data by organization <Org_ID> and by data class type and by resource type to form a universal syntax, code, date element, tag Rosetta Stone and reference for coders, programmers. Common time – space geo spatial temporal meters. Military OPSCODE brevity alpha- numeric codes are mapped, associated, paired with MILSTD 2525 A, B, C, D symbols and symbol sets. MIL Standard structured data exchange messages, message sets are critical to A.I. Artificial Intelligence Man - machine interaction. USPTO 13/573,002 Goal: improve geo-spatial temporal, syntactic - semantic consistency, interoperability among myriad programmable cryptocurrencies, economy protocols, algorithms, syntax libraries.

1.2 SCOPE

Trade federations form among local communities or among sovereign (First) nations. The off-site connector workflow object convention connects, mitigates, adjusts by summation, statistical mean by aggregation among federated, non-federated groups acting as format gateways among participating, non – participating groups. USPTO 13/573,002's foundation is Battlefield Digitization / Network Centric Warfare's signaling, telemetry support framework where improvement to involves establishing a foundation framework for internet, net of programmable money, description, metrics, meters, econometrics for DAO Distributed Autonomous Organizations / trade federations participating in an eco sustainable programmable economy model with UTZ Universal Time Zone temporal synchronization, stochastic spatial – temporal harmonization

1.3 ROLES

The baseball umpire meme is the rule observer / enforcer i.e., the cryptocurrency blockchain segregated witness observer. The baseball game statistician performs data analytics e.g., time series database maintainer, the base runner delivers (code syntax) instructions via 3 x 5 cards. Base running forms blocks on blockchain that is represented by the baseball diamond when stood up on its home plate corner in 3d embodies a cube that has length, width, depth height = volume, Little League Tournament board votes on most valuable player in voting functions. The Little League tournament Baseball meme complies with SC Alice Corp V CLS Bank rule (partial list)

1.4 DEFINITIONS, ACRONYMS: See Appendix B

Adaptive Procedural Templates are formed using entries linked to detailed treatises. Treatises spell out and describe definitions, acronyms and process details. Terms in internet, internet of money treatises are often abstractions – hence a baseball meme.

1.5 REFERENCES: See Appendix B

References cite documents, detailed treatises, standards body publications describing procedural steps cited by a procedural template. References refer to detailed treatises.

1.6 TRACEABILITY

The act of researching or ascertaining the origin or location of something: To ascertain the successive stages in the development or progress of for example, tracing a project's life cycle. In context with this paper's procedural template, tracking changes from micro-macro cycle across UTZ time zones across space time maintaining non-repudiation at any point, place in time in the future as provided for example, by NIST's QRNB Quantum Random Number Beacon operated by the Department of Commerce's NIST National Institute of Standards and Technology in Boulder Colorado.

1.7 POLICIES

The adaptive procedural template includes standards and policies published by standards groups describing detailed treatises according to individual use cases

1.8 STANDARDS

The adaptive procedural template will include standards and policies published by standards groups describing detailed treatises according to individual use cases, consensus algorithms, Web 3.0 standards, blockchain organization standards...

1.9 PROCESSES

Heart Beacon Cycle adaptive procedural template emphasizes protocol, software application neutral rules (algorithms) over processes coded by software vendors.

1.10 PROCEDURES

Procedures, workflow are derived from, are referential to Battlefield Digitization, Network Centric Operations, Net Enabled Operations systems engineering

EXAMPLE: Firefly inspired heartbeat synchronization message event bus algorithm – protocol, software application neutral monitors geo-spatial, temporally distributed events reported across a DAO Distributed Autonomous Organization among federated groups synchronized across time-space for common goals

Other procedures are intrinsic to algorithms / protocols such as Princeton's John Nash Equilibrium algorithms and count minimum sketch or streaming K algorithms

Invention relies on System of systems type processes: collection of task-oriented, dedicated systems pooling resources, capabilities together to create a more complex system with more functionality, performance than the sum of separate systems

1.11 GUIDELINES

Example: Distributed Autonomous Organization DAO's in trade federations agree to use common components, shared processes, methods, signaling – telemetry micro-macro schedule, metrics, meters to form service level agreements used in smart contracts.

1.12 TEMPLATES

Checklist: minimum list of items, components, building blocks, processes, procedures agreed upon within federations to achieve consensus forming a basis for equitable trade

EXAMPLES

- Consensus Algorithms: consensus methods to establish common metrics, meters and space-time synchronization across many disparate, distributed autonomous organizations. The main method uses conventions of a Little League Baseball tournament where the environment is surveyed, and boundaries form a 360-degree clock face time clock. Agents and workflow are represented by players, officials
- Method includes for example, universal meme for Bitcoin and like cryptocurrencies, Blockchain Proof of Work, Stake, POET Proof of Elapsed Time, Project Lightning Vs Segregated Witness, and Fast Internet Bitcoin Relay Engine FIBRE... Therefore, a common tool / meme is needed to help establish consensus metrics, meters and to establish a code reference syntax lexicon - library of OPSCODE brevity codes mapped to symbols and (DoD / NATO) symbol sets useful for A.I. Artificial Intelligence
- Minimum essential requirements for Trade Federations on the cryptocurrency DLT Distributed Ledger Technology blockchain (partial listing):
 - GDP Gross Domestic Product Index / statistical mean value index based TRC Trade Reference Currency demurrage fees by Economist Bernard Lietaer of Belgium
 - Geo-spatial temporal metrics, and meters i.e. storing increments of value for all things internet, internet of \$\$\$ into the “blockchain cube” fictional data structure
 - Ecologically sustainable Economic Epochs applying geospatial temporal methods and means i.e., IDMaps - SonarHops, Ericsson Erlang time algorithms / time equations to base economic incentives, derive TRC Trade Reference Currency demurrage charges i.e., closer is cheaper given closer = less fuel, less time, demurrage fees
 - Universal lexicon OPSCODE brevity codes naming conventions for objects, events. OPSCODE brevity code syntax - symbol set lexicon of tokenized GDP Gross Domestic Product pacing items described in a syntax lexicon library
 - Rosetta Stone syntax lexicon library needed for A.I. Artificial Intelligence man - machine interface. Symbols, symbol sets / standardized OPSCODE brevity codes
 - Universal heartbeat message event / transaction QRNB Quantum Random Number Beacon non-repudiation bus, Time-space synchronized Universal Time Zone UTZ stochastic harmonization using a firefly inspired heartbeat algorithm / heartbeat message event - transaction bus comprised of a </108> system heartbeat message
 - Quantum computing mediation, mitigation and techniques e.g., particle detection using liquid nitrogen vs waves at room temperature that will affect for example, transactions of

HFT High Frequency Trade stock, commodities, cryptocurrencies, crypto currency synthetics, Central Bank Digital Currencies / and activities among DeFi DAO exchanges – trade federations.

- Big data sync, time – space metrics and meters descriptive framework based on geo-spatial temporal time – space stamp methods to establish time - space Epochs i.e., IDMaps – SonarHops distance estimation service, Ericsson Erlang time equations
- Epoch time cycles are (not) used in describing sync delta cyclic changes from one epoch time cycle to the next. Paul Revere meme linear sequential and water drop in pond mem geo-spatial temporal intensity radius hop count form common, universal, shared econometric metrics and meters among distributed, federated trade units

1.13. TOOLS

Tool selections may be inserted, removed by majority federation vote. If a superior tool is deemed an improvement, the old tool is replaced by the new at a point in time agreed upon by a majority of for example, trade federation representatives.

1.14 PROCEDURES / STEPS

Steps are adapted from military system of systems situation awareness reporting, net-centric warfare / operations or NEO Net Enabled Operations. Steps are correlated with Little League Baseball tournament operations and game play for universal understanding, and compliance with Supreme Court Alice Corp Vs CLS Bank ruling: claims may not direct towards abstract ideas. Physical = opposite of abstract

1.14.1 Begin a list of steps beginning at the number one

1.14.2 Begin a list of steps that restart at the number one

EXAMPLE: Net Centric Warfare procedural steps are cyclic, iterative

Entry Criteria: Example: Organizations agree to adopt a minimum list of procedures, processes, tools. Unsuccessful consensus on the minimum list may be resolved by member exit 3.2 Process / Procedure Map. Trade federations use stored procedures e.g., process workflows to implement business logic.

Inputs: Heart Beacon Cycle invention programming involves processes. Applications, procedures, procedure calls, workflows, algorithms and tools agreed upon by Trade Federations to support a signal and telemetry framework reporting events, transactions to facilitate reporting of data sync deltas in time window intervals, stages and uses data filtering iteration to eliminate duplicated instructions, identical source code in the system of systems signaling, systems telemetry engineering framework.

- A systematic series of actions directed to a goal ex: form, maintain federations
- A continuous action, operation, series of changes, sync deltas updating groups

- A cyclic, iterative process syncing groups in time-space
- Common foundation blocks data entrees
- Organization Identifiers {"Org_ID"}
- Uniform Resource Name {"URN"} Track Resources i.e., commodities
- Sample / distribute state meta data heartbeat snapshots @ N time epoch

Outputs: USPTO 13/573,002 aids in establishing consistency, interoperability, temporal synchronization and syntax, syntactical interoperability among myriad consensus algorithm memes, and cryptocurrency, programmable money memes, metaphors.

1.15 METHODS

Specific activities depend on the type of use case. However, all use cases are iterative and follow the design of adaptive procedural templates – see detailed treatise (s)

1.15.1 METHOD 1: A systemic, adaptive, procedural template method used to improve synchronization in metrics, metering using </Org_ID>, {"URN"} XML data tags in signaling during heartbeat micro-cycles prior to data fusion center entry consisting of iterative heartbeat cycle metrics, meters reporting where state meta data heartbeat snapshot recalculations are performed at offsite connectors that are signaling relays performing recalculation, syntax processing during macro-cycle epochs reconciling dissimilar standards, data syntax formats that are then reported signaled, news casted, beacon broadcasted to distributed organization applique overlay displays

1.15.2 METHOD 2. An adaptive procedural template used to improve signaling, synchronization, stochastic harmonization across UTZ Universal Time Zones using TCP/IP heartbeat time stamping occurring during micro-cycles of state meta data prior to data fusion center entry among metrics, metering processes comprised of TCP/IP heartbeats, heartbeat messages signaled during micro-cycles scheduling instructions, commands, processes, procedures, algorithms, telemetry instructions for example, to master-controller processes i.e., block, start, stop, pause, resume, set Time To live TTL i.e., stock market high frequency flash trade, currency, interest rates, tax rates, time banking, cloud computing commodity exchanges, big data, electrical micro-grid, fungible goods, real time bidding, many use cases. Time stamping and applying descriptive data type tags to heartbeat state meta data after data is collected and queued, stored in temporary structures or entered into database instantiations after the fact is problematic. All internet supported devices including high frequency stock, currency, commodity etc., flash trade master controllers receive heartbeats. System Heartbeats are intervals, epoch time cycles used to (not) process syntax.

1.15.3 METHOD 3 A systemic adaptive procedural template method improving stochastic networks harmonization through use of timing, synchronization intrinsic to TCP/IP heartbeat / heartbeat message signaling using set, scheduled, epochs in micro-cycles in combination with firefly insect signaling stochastic harmonization algorithms

where firefly protocol sample means are matched with closest heartbeat sync delta micro-cycle report values to recalculate statistical averages, means signaled through off site connector conversion, recalculation gateways that news-cast, beacon broadcast to subscribers monitoring macro-cycle reports that heretofore would not exist without following the Heart Beacon Cycle procedural template as guides for reporting thus improving temporal harmonization in metrics and metering of stochastic telecommunication mesh fabrics grid control planes over wide areas in cases involving issues in terms of consistency, reliability, traceability, positive organizational identification, temporal transaction fidelity, event, alert predictability, data analytics, network forensics real time bidding, stock market exchange floor server co-location versus servers distantly located, fluctuations in interest rates, currency exchanges, double payment adjudication, fungible good trading stochastic harmonization, electrical power micro-grids, cloud computing, spatial – temporal "big data"...

1.15.4 METHOD 4. A systemic adaptive procedural template method using time stamping and signaling intrinsic to TCP/IP heartbeat, heartbeat sync delta snapshots, heartbeat </108> message signaling to enable adaptive organization change management using XML <ORG_ID> network service interface NSI templates updating self-organizing process templates i.e., directory service, reporting, map, network, system of systems effecting changes in directory structures database MIB i.e., network subnet joins, moves, splits drops, adds as alternatives to mergers, acquisitions effecting changes responsive to leader's actions, decisions i.e., mission-aware networking, network centric operations improving agile, ad hoc organizational business operations course of actions selection by organizations improving action / reaction to change. Use cases: network moves, adds, joins, splits, drops used instead of merger, acquisition.

1.15.5 METHOD 5. A systemic adaptive procedural template method improving search engine methods using heartbeat, beacon signaling, <ORG_ID>, , <class_types>, Paul Revere, water drop in pond meme metric recalculations occurring at offsite connectors, conversion relay gateways where detection of trigger point function recalculations of state meta data set aggregations are used to detect threshold fluctuations by resource , , quantity, availability duration etc., further used to improve geo-spatial temporal descriptive mapping methods, changes in clusters of objects, entities, artifacts i.e., location, epoch time stamp geo-spatially, temporally, used to locate, search, then group into virtual collections using <data_tags> i.e., in spatial econometric, volumetric operations within network mesh fabrics triggering news-casting invitations to join equitably metered federated group arbitrage events, activities that are triggered by internet search operations improving collaboration, metrics and metering in for example, commodity, fungibles trading, resource pooling, crowd sourcing, economics.

1.15.6 Method 6: Physical linear – sequential "Paul Revere" meme used to represent TCP/IP internet "hops" that are abstractions ineligible for patent protection. Water drop in pond physical metaphor describes geospatial temporal intensity in omni-directional, circle, radius type situations. Naval sonar water drop in pond USPTO 13/573,002 meme explains geo-spatial temporal intensity metrics, meters using a physical metaphor. TCP/IP "ping" is an abstraction as are "packets", "frames", "hops", "Satoshi's" as data stores in a cryptocurrency "blockchain" (distributed database)

1.16.7 METHOD 7. A systemic adaptive procedural template method used to improve handicapped / information alerts, events, methods reliant on heartbeat timing, signaling synchronization of state meta-data improved using Paul Revere, water drop in pond memes to create, calculate radius, intensity metrics viewed as geo-spatial, temporal intensity effects i.e., visual light bar tabs i.e., stock exchange candlestick charts, audible tone, vibration-tactile situational awareness alerts by correlating tone based messaging precedence XML where lower / higher precedence settings equate to lower / higher audible tones, tactile vibrations for deaf where fewer / greater number of light tabs lit correlates, corresponds to priority, precedence further used in alert triggers of threshold fluctuations displayed in appliqué overlay graphics as metrics, meters. Reference: Describes reuse of structured military messaging's precedence system to support for example, processing of Named Data Networking distance, interest packets by numeric precedence. This method is effective among machine to machine (Internet of Things).

1.15.8 METHOD 8. A systemic, adaptive procedural template method using heartbeat signaling, time stamp record keeping processes of state meta data described, typed by organizations, resources typed by Uniform Resource Name, further improved through use of Paul Revere, Water Drop in Pond memes to quantify, describe unused resources with unmet needs by performing recalculations of state meta-data snapshot artifacts occurring at offsite connector conversion gateways where micro-cycle reports from local, micro-cycle activities are signaled, relayed to higher echelon organizations monitoring macro-cycles who are interested in for example stock market "pools" where "output" is correlated and displayed onto appliqué views of aggregate sync delta changes in macro-micro economics recalculations, stocks, commodities, currencies, interest rates, electric micro-grids, currency (Terra) exchanges, spatial econometrics, contributory economics. Syntax code language parsed, processed during silicon chip generated time cycles forms all things internet, internet of money.

1.15.9 Method 9: Method / Claim describes the military's network centric operations systems of systems method of collecting state meta data sync delta heartbeat snapshot data during operational micro-cycles that is then summed, aggregated, disseminated and displayed during macro-cycles as part of Network Enabled Operations NEO situation awareness system of systems engineering best practice over time

Outputs: State meta data collected from a current micro-cycle to the next and from many micro-cycles summed, aggregated to report during macro-cycle reporting periods are stored, collected in the off-site collector depicted by that corresponding workflow symbol. See detailed treatise on workflow, workflow symbols for example <https://edrawsoft.com/flowchart-symbols.php>

Verification and Validation: A comprehensive review, analysis, and testing, (software and/or hardware) performed by an objective third party to confirm (i.e., verify) that the requirements are correctly defined, and to confirm (i.e., validate) that the system correctly implements the required functionality and security requirements.

Exit Criteria: Organizations may elect to tether, untether to the Distributed Autonomous Organization based federation at their discretion (maintain autonomy) or organizations may be disconnected if they fail to observe federation rules

Metrics: Use of physical metaphors such as the water drop in pond, Paul Revere metaphor comply with Supreme Court Alice Corp Vs CLS Bank ruling claims may not direct towards abstract ideas. See USPTO application 13/573,002 main embodiment. Metrics are based on epoch time cycles

Records Control Table ELECTRONIC RECORDS MANAGEMENT

Controlled Documents Table ELECTRONIC RECORDS MANAGEMENT

EXAMPLE: 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 associated 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>

Roles: For example, the baseball umpire meme is the rule observer / enforcer i.e., the cryptocurrency blockchain segregated witness observer. The baseball game statistician performs data analytics e.g., time series database maintainer, the base runner delivers (code syntax) instructions via 3 x 5 cards. Base running forms blocks on blockchain that is represented by the baseball diamond when stood up on its home plate corner in 3d embodies a cube that has length, width, depth height = volume, Little League Tournament board votes on most valuable player in voting functions. The Little League tournament Baseball meme roles comply with SC Alice Corp V CLS Bank rule,

TRACEABILITY: Template entries reference, point towards, link to detailed treatises. Treatises define, spell out and describe definitions, acronyms and process details. Terms in internet, internet of money treatises are often abstractions. References cite, detailed treatises, standard body publications describing procedural steps cited by the procedural template. References refer to detailed treatises. The act of researching or ascertaining the origin or location of something: To ascertain the successive stages in the development or progress of for example, tracing a project's life cycle.

POLICIES: adaptive procedural template will include standards and policies published by standards groups describing detailed treatises according to individual use cases

STANDARDS: adaptive procedural template will include standards and policies published by standards groups describing detailed treatises according to individual use cases, consensus algorithms, Web 3.0 standards, blockchain organization standards...

PROCESSES: adaptive procedural template emphasizes protocol, software application neutral rules (algorithms) over processes coded by software vendors.

Procedures / Processes / Workflow are derived from, and are referential to Battlefield Digitization, Network Centric Operations, Net Enabled Operations and like terms. Procedures are intrinsic to algorithms / protocols such as Princeton's John Nash Equilibrium algorithms and count minimum sketch or streaming K algorithms. Invention relies on System of systems type processes: collection of task-oriented, dedicated systems pooling resources, capabilities together to create a more complex system with more functionality, performance than the sum of separate systems

GUIDELINES: Distributed Autonomous Organization DAO's trade federations agree to use common components, shared processes, methods, signaling – telemetry micro-macro schedule, metrics, meters forming service level agreements in smart contracts.

TEMPLATES: Checklist: minimum list of items, components, foundation technology building blocks, processes, procedures within federations to achieve consensus.

EXAMPLE: TRC Trade Reference Currency: global complementary currency designed to provide an inflation-resistant international standard of value; to stabilize the business cycle on a global level; and to realign stockholder's interests

EXAMPLE: GDP Gross Domestic Product Index / statistical mean value index based TRC Trade Reference Currency demurrage fees by Economist Bernard Lietaer

TOOLS: Tool selections may be inserted, removed by majority federation vote. If a superior tool is deemed an improvement, the old tool is replaced by the new at a point in time agreed upon by a majority of for example, trade federation representatives.

Profiles: See Organizational Profile: for example: NIST National Institute of Standards and Technology http://nist.gov/baldridge/publications/bus_org_profile.cfm

Procedure (Steps) Steps are adapted from military system of systems situation awareness reporting, net-centric warfare / operations or NEO Net Enabled Operations. Steps are correlated with Baseball tournament operations and game play for universal understanding, and compliance with Supreme Court Alice Corp Vs CLS Bank ruling: claims may not direct towards abstract ideas. Physical = opposite of abstract

- Begin a list of steps beginning at the number one
- Begin a list of steps that restart at the number one

Entry Criteria: Organizations agree to adopt a minimum list of procedures, processes, tools. Unsuccessful consensus on the minimum list may be resolved by member exit

Process / Procedure Map: System of Systems trade federations use stored procedures e.g., process workflows to implement business logic in the distributed database / blockchain. Logic filters and text tags used as code syntax is stored in a syntax lexicon “Rosetta Stone” i.e., database

Inputs: programming involves processes. Applications, procedures, procedure calls, workflows, algorithms, and tools agreed upon by Trade Federations to support a signal and telemetry framework reporting events, transactions to facilitate reporting of data sync deltas in time window intervals, stages and uses data filtering iteration to eliminate duplicated instructions, identical source code in the system of systems signaling, systems telemetry engineering framework.

Outputs: aids in establishing consistency, interoperability, temporal synchronization and stochastic harmonization among myriad consensus algorithm memes, and metaphors under constant development and change

Verification and Validation See detailed treatise (s) on Verification and Validation abbreviated as V&V) are independent procedures used to check that a product, service, or system meets requirements and specifications and that it fulfills its intended purpose. These are critical components of a quality management system such as ISO 9000.

Exit Criteria: Organizations may elect to tether, untether to the Distributed Autonomous Organization based federation at their discretion (maintain autonomy) or organizations may be disconnected if they fail to observe federation rules.



APPENDIX B: Prior Art References, Acronyms, Terms, Memes, Metaphors

ABSTRACT / ABSTRACTION:

1. existing in thought or as an idea but not having a physical or concrete existence. thought of apart from concrete realities, specific objects, an abstract idea
2. expressing a quality or characteristic apart from any specific object or instance
3. theoretical; not applied or practical: abstract science.
- 4, difficult to understand; abstruse

Alice Corp Vs CLS Bank Supreme Court precedent case requires all internet, internet of money (Bitcoin, Blockchain) related patent applications to apply physical memes. For example, the internet TCP/IP “ping” terms is an abstraction. The internet’s “hop”, “hop count” is an abstraction. SAW Concept LLC’s application is compliant with the Supreme Court internet, internet of money precedent by using a Little League Baseball tournament as a main embodiment with internet technical theme derivative use cases

Adaptive dispatch table US 7,571,430 Trimbell, et al. August 4, 2009 Adaptive dispatch table based on templates Assignee: LSI Logic Corp Inventors: Forrest Trimbell,

Apache ZooKeeper is a software project of the Apache Software Foundation, providing an open source distributed configuration service, synchronization service, and naming registry for distributed systems. [LINK https://en.wikipedia.org/wiki/Apache_ZooKeeper](https://en.wikipedia.org/wiki/Apache_ZooKeeper)

Apache Storm is a free and open source distributed real-time computation system. Storm makes it easy to reliably process unbounded streams of data, doing for real-time processing what Hadoop did for batch processing. Storm has many use cases: real-time analytics, online machine learning, continuous computation, distributed RPC, ETL etc. Storm benchmark clocked it at over a million tuples processed per second per node. Trident is an abstraction on top of Storm providing higher-level constructs “cascading”, it batches groups of Tuples to 1) Make reasoning about processing easier 2) efficient data persistence with the help of an API that provides exactly-once semantics [LINK](#)

ATOMIC CLOCK NIST National Institute of Science and Technology timing is based on the consistent decay of radioactive material such as Cesium. Atomic clocks are constructed by locking an electronic oscillator to the frequency of an atomic transition. The frequencies associated with such transitions are so reproducible that the definition of the second is now tied to the frequency associated with a transition in cesium-133: 1 second = 9,192, 631,770 cycles of a standard Cs-133 transition

A baseball diamond is a square, is a block. A Bitcoin block is awarded using age (time) or vectors (time / direction / velocity) or voting (tournament league board). A baseball tournament is played on baseball diamonds that are physical, tangible but not abstract.

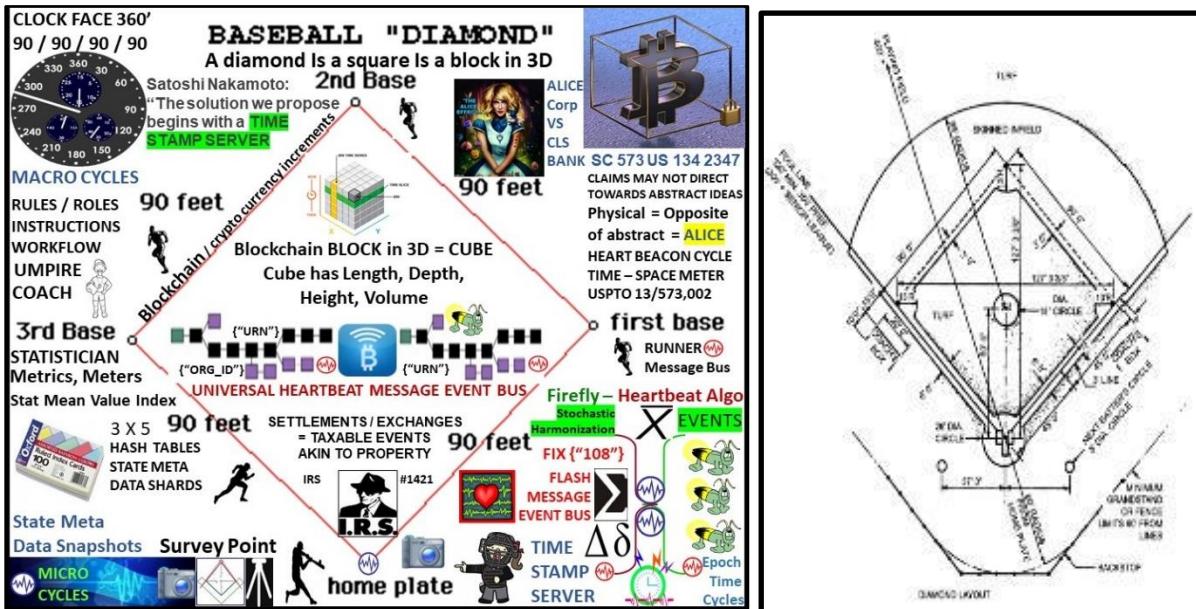


FIGURE 5: SCOTUS ALICE CORP VS CLS BANK 2014 ruling compliant meme

AMERICAN AXLE V. NEAPCO RULING Judge: "an inventive concept to instead focus on the reliance on Hooke's law and predicted that because all inventions depend to some extent on the operation of unstated natural laws, the majority's opinion would open the door to Section 101 challenges in practically every patent case. Tesla: "think of energy, frequency, and vibration" Judge Moore also took exception to the majority disregarding the use of a cardboard liner as an inventive concept to instead focus on the reliance on Hooke's law and predicted that because all inventions depend to some extent on the operation of unstated natural laws, the majority's opinion would open the door to Section 101 challenges in practically every patent case. Article source: <https://bilski.typepad.com/blog/2018/03/good-vibrations-bad-vibrations-american-axle-v-neapco-ruling.html>

BITCOIN / CRYPTOCURRENCY PROGRAMMABLE MONEY: a.k.a. the "Internet of Money" "Bitcoin is a language" "Bitcoin's language is time itself" Diginomics.com

Bitcoin Time-Chain "creates a new layer of trust that we can all reference".. Bitcoin is the TIME - CHAIN that creates a BEACON of TRUTH.. economically incentivized to show truth" Bitcoin Magazine & Mark Moss .. "store of wealth = baseball card": SOURCE: <https://bitcoinmagazine.com/>

BLOCKCHAIN DISTRIBUTED LEDGER: provides a tamper-proof data structure, providing a shared public ledger open to all. The mathematics involved are impressive, and the use of specialized hardware to construct this vast chain of cryptographic data renders it practically impossible to replicate. All transactions are embedded in the bitcoin blockchain. Use of SHA-256 cryptography ensures the integrity of the blockchain applications – all transactions must be signed using a private key or seed, which prevents third parties from tampering with it. Transactions are confirmed by the network

within 10 minutes or so and this process is handled by bitcoin miners. Mining is used to confirm transactions through a shared consensus system, and usually requires several independent confirmations for the transaction to go through. This process strives towards random distribution and makes tampering difficult.

BLOCH SPHERE: In quantum mechanics and computing, the **Bloch** sphere is a geometrical representation of the pure state space of a two-level quantum mechanical system (qubit), named after the physicist Felix **Bloch**. Quantum mechanics is mathematically formulated in Hilbert space or projective Hilbert space.

BITNATION GOVERNANCE 2.0 [LINK](https://bitnation.co/) <https://bitnation.co/>

BITNATION provides the same services traditional governments provides, from dispute resolution and insurance to security and much more – but in a geographically unbound, decentralized, and voluntary way. BITNATION is powered by Cryptocurrency blockchain Distributed Ledger DLT technology – a cryptographically secured distributed public ledger. “As we like to say – BITNATION: Blockchains, Not Borders”.

BUCKMINSTER FULLER’s SPACE-SHIP EARTH: Operating Manual for Spaceship Earth relates Earth to a spaceship flying through space. The spaceship has a finite amount of resources and cannot be resupplied. Buckminster Fuller Institute [LINK](#) BFI dot Org https://en.wikipedia.org/wiki/Operating_Manual_for_Spaceship_Earth

CASPER PoC3 Blockchain BACKBONE: Casper is a security-deposit based economic consensus protocol. Nodes, as “bonded validators”, have to place a security deposit (action called “bonding”) in order to serve the consensus by producing blocks. The protocol’s direct control of these security deposits is the primary way in which Casper affects the incentives of validators. Specifically, if a validator produces anything that Casper considers “invalid”, their deposit is forfeited along with the privilege of participating in the consensus process. The use of security deposits addresses the “nothing at stake” problem; that behaving badly is not expensive. When something is at stake, bonded validators who misbehave in an objectively verifiable manner will lose it.

CELIOMETER, GNOCCHI, PANDA: builds metering around a data structure called samples. A sample is generated each time Ceilometer measures something. It is composed of a few fields, such as the resource id that is metered, the user and project ID owning resources, the meter name, the measured value, a timestamp and a few free-form metadata. Each time Ceilometer measures something, one of its components (an agent, a pollster...) constructs and emits a sample headed for the storage component called the collector. The collector is responsible for storing samples into a database. The Ceilometer collector uses a pluggable storage system usable with any database

Ceilometer REST API allows executing various reading requests on the data store. It returns the list of resources that have been measured for a particular project, or computes statistics on metrics. Source: <https://dzone.com/articles/openstack-ceilometer>

CHAMBER OF DIGITAL COMMERCE is the world’s leading trade association representing the digital asset and blockchain industry. Our mission is to promote the

acceptance and use of digital assets and blockchain-based technologies. Through education, advocacy, and working closely with policymakers, regulatory agencies and industry, our goal is to develop a pro-growth legal environment that fosters innovation, jobs and investment. [LINK](http://www.digitalchamber.org) <http://www.digitalchamber.org>

CODE FOR AMERICA city, county, state governments redesign public services in three key areas that have high impact for communities. Goal: Turn challenges into opportunities to serve communities better, transform how governments use tech. [LINK](#)

COUNT MINIMUM SKETCH ALGORITHM: streaming algorithm Find a randomized streaming algorithm whose output (as a random variable) has the desired expectation but usually high variance (i.e., noise). To reduce the variance/noise, run many independent copies in parallel and combine their outputs. Count sketch is a probabilistic data structure designed to answer the following question: Reading a stream of elements a_1, a_2, a_3, \dots , where many elements are replicas in a given time it will provide an answer to question: how many original elements have been seen Count minimum sketch is a probabilistic data structures sacrificing certainty for space. Count minimum sketch selects 2 parameters: accuracy of the results ϵ and probability of bad estimate δ .

Cool Copper Collider (or C3 for short). This proposal calls for accelerating particles with conventional, or “normal-conducting,” radio frequency (RF) cavities—as opposed to the superconducting RF cavities used in modern colliders. <https://lifeboat.com/blog/2022/10/a-retro-collider-design-for-a-higgs-factory>

Distributed Autonomous Organization DAO was created by a military think tank RAND Corporation circa 2001. This term is being reused by organizations describing cryptocurrency blockchain technology. USPTO 13,573,002's method is protocol, technology neutral. Use cases focus on the cryptocurrency blockchain. For example, many message oriented middleware products use message event bus strategies. USPTO 13/573,002 reuses and improves upon military Network Centric Warfare best practice of organizing individuals in groups geo-spatially distributed across distances and UTZ time zones i.e., micro – macro cycle scheduling, use of organizational, resource identifiers via structured data exchanges is reused / improved through use of algorithms which are essentially workflow rules and math for example.

DASH: Unlike Bitcoin nodes, Master nodes receive payments for their service to the network – similar to demurrage charges in the Trade Reference Currency TERRA TRC. Dash includes decentralized funding, decentralized governance, decentralized storage. Dash's governance system, visit <https://dash.org>. Dash features: - InstantX:

Masternodes instantly lock transactions to solve the problem of lag time in transactions

- Self-Budgeting: To solve the problem of lack of funding for development, Masternodes can direct funds right from the blockchain to support development.
- Self-Governance: To solve the problem of making governance decisions on the future of the currency, Masternodes can vote on what development occurs.

DHS goal: "A national common operating picture for critical infrastructure". A congressional directive states "nothing less than network centric homeland security akin to network centric warfare". This Interoperability challenge exists to this day to develop a common syntax library / Rosetta Stone among disparate systems to form an integrated, synchronized, situational awareness system of systems. Syntax / symbol source libraries that need a common reference format include a partial list:

- Named-Data Networking NDN <Content> Centric Networking (XML tags)
- OASIS TOSCA YAML document indent data encoding scheme
- GITHUB code, syntax library, Java Script OS ("tag") convention

ECO INCENTIVES: Ecologically sustainable economic transactions need to be incentivized among the world's Ecological and Economic system of systems.

DECISION POINT: Economic #RESET is a mathematical certainty. Do we RESET the global system of systems as is or will we re-engineer using NATO system of systems engineering standing on the shoulders of giants

1. **CLIMATE CHANGE: IF / WHEN:** Climate Change causes a drop in crop commodity food production by 20–25 % while population continues to grow, THEN it follows that this condition will become a matter of national security. It's TIME to implement an Ecologically Sustainable Economic Heartbeat ELSE face > greater chaos by not leveraging proven system of system structured data exchange methods. An ecologically sustainable economic heartbeat is needed. Why wait until crisis, DEFCON 2 stage?
2. **CLIMATE CHANGE: IF** climate change causes a drop in crop commodity by 20–25 % while population grows, THEN this condition will become a matter of national security. THEN this will require revisiting Belgian Economist Bernard Lietaer's TRC Trade Reference Currency ELSE face >socio economic chaos TERRA Trade Reference Currency by Economist Bernard Lietaer
LINK <http://lietaer.com/2010/01/terra/>

Electric dipole effect Electric meter claim based on electric dipole effect: closer is cheaper given less infrastructure needed given energy attenuates over distances • data over energy link where #energy pulses constitute a method and means to transmit data over electric wired, wireless pathways • electric dipole effect Radio Wave Properties: Electric and Magnetic Dipole Antennae LINK: <https://youtu.be/wUpOlqbHcjl?t=111> • water drop in pond meme •Paul Revere linear, sequential

ERICSSON OPEN MONEY: Ericsson Patents Open Money for Society 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." Ericsson posted on their commerce site "Bitcoin And the Value of Money" which discusses "From Bartering, to

Gold, to Bitcoins" Facilitation of Effective Trade, Limited Resources, and Value as a Mutual Agreement. <https://letstalkbitcoin.com/ericsson-patents-open-money-for-society>

"Local producers are sometimes forced to price goods relative to distant competition, and, because of lower production and wage costs in different parts of the world (or even country), substantially lower profit margins can be the result. There are times, however, when consumers might be willing to buy locally produced goods for the good of the society {Emphasis LTB}, and that attitude is more prevalent today than in the past. But what a consumer says they will do, and what occurs in practical, real shopping situations can be significantly different. Faced with competitive quality products, but disparate prices, the consumer often feels that he or she has no real choice, especially if budgets are more constrained because of uncertain economic conditions, and therefore are not what they used to be. Thus, personal economic pressures can hinder "good" buying decisions. Retailers too are cognizant of an increased awareness for the value of locally produced products. They market local producers and arrange special sections with "good" products, i.e., those that minimally impact the environment both in terms of environmentally friendly manufacturing methods, but also those articles that have been produced locally." "Thus, current economic conditions, and prevailing economic theories make it difficult, if not impossible, for an average consumer to make an impact on the local economy and the local environment, regardless of their attitudes. Therefore, we provide methods for creating a context based payment system.

ERICSSON CONTEXT BASED PAYMENT SYSTEM: "Disclosed herein is a context-based payment system. Electronic currency or coupons can be made dependent on context, and the context can be one of location or geography, time, date, distance, sound, or other devices. The value of the currency exists only if a pre-condition is fulfilled. For example, if the currency is location dependent, the value only exists in a defined area (currency value area). The goods or the service in the value-system are also context dependent, that is, they can only be sold or offered in a defined area (product value area). Accordingly, if the product value area and the currency value area overlap, a purchase and payment can be made."

ERLANG – ERLANG FOLSOM by ERICSSON: Erlang based metrics system inspired by Coda Hale's metrics (<https://github.com/dropwizard/metrics>). The metrics API's purpose is to collect real-time metrics from Erlang applications and publish them via Erlang APIs and output plugins. folsom is not a persistent store. There are 6 types of metrics: counters, gauges, histograms (and timers), histories, meter_readers and meters. Metrics can be created, read and updated via the folsom_metrics module. [LINK](#) <https://github.com/boundary/folsom>

ETHEREUM “WORLD COMPUTER” combination of cryptographic architecture and Turing completeness, Ethereum virtual machine (EVM) refers to part of the protocol that handles internal state and computation. It is often referred to as the project's defining innovation over other blockchain-based systems. By taking the cryptographic payment structure of bitcoin and adding a Turing complete scripting language, The term "Turing complete" means a system capable of performing logical steps of computational

functions. Ethereum is different than from bitcoin in that it is first and foremost a computing platform Vs a payment system. [LINK http://coindesk.com/whats-big-idea-behind-ethereums-world-computer/](http://coindesk.com/whats-big-idea-behind-ethereums-world-computer/)

EQUILIBRIUM ALGORITHM / polynomial-time algorithm by John Nash Princeton University: Nash equilibrium, named after the mathematician John Nash, is the most common way to define the solution of a non-cooperative game involving two or more players. In a Nash equilibrium, each player is assumed to know the equilibrium strategies of the other players, and no one has anything to gain by changing only one's own strategy.[1] The principle of Nash equilibrium dates back to the time of Cournot, who in 1838 applied it to competing firms choosing outputs.[2]

If each player has chosen a strategy – an action plan based on what has happened so far in the game – and no one can increase one's own expected payoff by changing one's strategy while the other players keep theirs unchanged, then the current set of strategy choices constitutes a Nash equilibrium.

If two players Alice and Bob choose strategies A and B, (A, B) is a Nash equilibrium if Alice has no other strategy available that does better than A at maximizing her payoff in response to Bob choosing B, and Bob has no other strategy available that does better than B at maximizing his payoff in response to Alice choosing A. In a game in which Carol and Dan are also players, (A, B, C, D) is a Nash equilibrium if A is Alice's best response to (B, C, D), B is Bob's best response to (A, C, D), and so forth.

Nash showed that there is a Nash equilibrium for every finite game: see further the article on strategy. See: <http://web.cs.ucla.edu/~awm/cs288/class3.pdf>

FEDERATION (CLOUD COMPUTING): FEDERATION: from Latin: foedus, gen.: foederis, covenant characterized by a union of partially self-governing states or regions under a central (federal) government. In a federation, the self-governing status of the component states, as well as the division of power between them and the central government, are typically constitutionally entrenched and may not be altered by a unilateral decision of either party, the states or the federal political body. Individuals, organizations retain AUTONOMY to act on their own behalf. Federation: reuse of military System of Systems research, best practice guiding formation of a procedural template framework is key to forming and maintaining sustainable Trade Federations as Distributed Autonomous Organizations DAO's / DAC's Corporations. Military's organize individuals into organizations <OrgID> and Organizational Units <OU><OU><OU> dispersed autonomous groups working on collective goals synchronized in space-time.

FEDERATE: Within a federated system, an organization needs a standardized and repeatable way of describing services it makes available to teams in leagues and policies by which it runs its operations. Organization Identifiers </ORG IDs> represents a business, non-profit corporation, or government entity in the American Registry of Internet Numbers ARIN database. Entities may have more than one <Org_ID> for

contingency planning. More than one ORG_ID enables business contingency plans for different scenarios, use cases, different circumstances.

FEDERATED IDENTITY MANAGEMENT: federation describes the organization arrangements necessary for interconnection between teams, leagues, and commissions joined to achieve common goals. Federated systems need to interoperate across organizational boundaries and connect processes utilizing different technologies, identity storage, security approaches and programming models. Resources available to the group include the health or availability of individuals forming groups where monitoring is performed to ascertain if groups are mission capable or not in context with available resources and whether the group's location is within a pre-defined geo-spatial range of a given activity or event. A federation describes the organization arrangements necessary for linkage between teams, leagues, and commissions joined to achieve common goals. Operations are performed as part of group's activities. If trade is deemed non-equitable, groups, individuals may leave the trade federation as a network drop until conditions change or the individuals change their minds and decide to re-affiliate, re-tether to the collective. [LINK https://en.wikipedia.org/wiki/Federation](https://en.wikipedia.org/wiki/Federation)
See Bitcoin Blockchain smart contract RSK [federation](#) network Buenos Aires [Rootstock](#).

FIREFLY-HEARTBEAT ALGORITHM UNIVERSITY of BOLOGNA / HUNGARY: Firefly inspired Heartbeat Synchronization: in a paper entitled Firefly-inspired Heartbeat Synchronization in Overlay Networks by the University of Bologna and Trento Italy along with the University of Szeged, Hungary: "Heartbeat synchronization strives to have nodes in a distributed system generate periodic, local "heartbeat" events approximately at the same time. Many useful distributed protocols rely on the existence of such heartbeats for driving their cycle- based execution. The heartbeat synchronization protocol for overlay networks is inspired by mathematical models of flash synchronization in certain species of fire flies. Nodes send flash messages to their neighbors when a local heartbeat triggers. Fireflies adjust the phase of their next heartbeat based on incoming flash messages using an algorithm inspired by mathematical models of fire-fly synchronization. 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 synchronization in that nodes are not interested in counting cycles and agreeing on a ID of a current cycle. There is no requirement regarding the length of a cycle with respect to real time as long as a length is bounded and all nodes agree on it eventually. The goal is to guarantee that all nodes start and end their cycles at the same time, with an error that is at least one, but preferably more, orders of magnitude smaller than a chosen cycle length. Firefly heartbeat synchronization reduces uncertainty in stochastic networks.
Paper: Firefly-inspired Heartbeat Synchronization in Overlay Networks.Ozalp Babaoglu. Univ. Bologna, Italy <http://cs.unibo.it/~babaoglu/papers/pdf/SASO07-fireflies.pdf>

FIREFLY – HEARTBEAT ALGORITHM CHINA: The firefly algorithm (FA) is a nature-inspired metaheuristic optimization algorithm developed by Xin-She Yang that is inspired by the flashing behavior of fireflies (Yang, 2008), originally designed to solve continuous optimization problems (Lukasik and Žak, 2010 a major part of an edited

book was also dedicated to the firefly algorithm and its applications (Yang, 2013a). For example, Senthilnath et al. provided an extensive performance study by comparing the firefly algorithm with 11 different algorithms and concluded that FA can be used for efficient clustering (Senthilnath et al., 2011); From: Swarm Intelligence and Bio-Inspired Computation, 2013 <https://www.sciencedirect.com/topics/engineering/firefly-algorithm>

GAMIFICATION: application of typical elements of game playing (e.g., point scoring, competition with others, rules of play) to other areas of activity, typically as an online marketing technique to encourage engagement with a product or service

GDP INDEX ECONOMY: Thomas Edison and Henry Ford proposed a currency based on the value of a basket of crop commodities. Edison believed that crops held their value over time. Consider climate change reality and the merits are self-evident.

GERMAN ARMY RECOMMENDATION CIRCA 2003: using Battlefield Digitization, Net Centric Warfare, System of Systems Engineering best practice for OOTW Operations Other Than War - a German Army suggestion made in 2003 to support DATF Distributed Autonomous Trade Federations / DAOs for a world economic framework.

GEIA-STD-0007 Logistics Product Data Central Exchange Federated database, must establish exchange agreements with each “Partner”. • Point to Point Simple exchange, must establish exchange agreements and Protocols with each Partner , similar data and structure. Data Types Dictionary „ XML Schema for Logistics Product Data – Update/Change Process „ XML Schemas for Transaction Sets – Provisioning & Style Sheet — Task Analysis. Data Element Dictionary Example The probability that, when used under stated conditions in an ideal support environment, a system will operate satisfactorily at any time. This differs from Inherent Availability only in its inclusion of consideration for preventive action. Aa excludes supply downtime and administrative downtime. The measurement bases for MTBM and M must be consistent when calculating Aa. Aa may be expressed by the following formula: $Aa = \frac{MTBM}{MTBM + M}$ where $MTBM = (1 - \frac{1}{MTBF} + \frac{1}{MTBM-ND} + \frac{1}{MTBPM}) \sum_{i=1}^N ETi(TFi)$

$M = \frac{1}{N} \sum_{i=1}^N TFi$ $M =$ Mean active maintenance downtime (where corrective and preventive actions are considered) $ETi =$ Elapsed time for task i $TFi =$ Task frequency for task i $N =$ Total number of tasks performed Note: The measurement bases for MTBF, MTBM-ND, and MTBPM must be consistent when calculating the MTBM parameter.

GITHUB: GitHub is a web-based Git repository hosting service. It offers distributed revision control, source code, source code management, bug tracking, feature requests, task management, and Wikis for every project. GitHub renders common formats like text, CSV, and geospatial data. GitHub includes enterprise controls to collaborate openly while limiting access to a team, to select stakeholders, or to entire organizations. [LINK http://github.com/Beacon-Heart/Heart-Beacon](http://github.com/Beacon-Heart/Heart-Beacon)

GRAPHENE: form of partnership called a Decentralized Conglomerate A universal shared platform allows organizations to have a common interest in the platform itself, without the platform imposing any control on the organizations that join the universal platform ecosystem where organizations directly invest in each other.” Profits can be shared without the necessity of the companies coordinating their operations. “ By

entering into a Decentralized Conglomerate means the co-ordination takes place within an automated system," "The OpenLedger team has created the universal shared platform on which organizations can enter agreements to share their profits in exchange for community support." Graphene Blockchain Worker System [LINK](#)
https://bitshares.org/doxygen/group_workers.html

HADOOP: Apache Hadoop is an open-source software framework for distributed storage and distributed processing of very large data sets on computer clusters.

Hashgraph is a [distributed ledger technology](#) that has been described as an alternative to [blockchains](#). The hashgraph technology is currently [patented](#), and the only authorized ledger is Hedera Hashgraph. The native [cryptocurrency](#) of the Hedera Hashgraph system is HBAR. Unlike blockchains, hashgraphs do not bundle data into blocks or use miners to validate transactions. Instead, hashgraphs use a "gossip about gossip" protocol where the individual nodes on the network "gossip" about transactions to create [directed acyclic graphs](#) that time-sequence transactions.^[1] Each "gossip" message contains one or more transactions plus a [timestamp](#), a [digital signature](#), and [cryptographic hashes](#) of two earlier events. This makes Hashgraph form an asynchronous [Byzantine Fault-Tolerant \(aBFT\) consensus algorithm](#).^[2] Hashgraph was invented by the American [computer scientist](#) Leemon Baird. Baird is the co-founder, chief technical officer of Swirlds holder of hashgraph algorithm patents

HISTOGRAMS / TIMERS: Histograms are collections of statistical analysis values, such as mean, min, max, kurtosis and percentile that can be used as timed update functions.

HFT High Frequency Trade Circuit Breaker / Trade Window token passing

The World Economic Forum WEF in 2008: stated the need for a HFT High Frequency Trade circuit breaker. Given the quantum computing arms race where quantum computer A is "1000 x faster" than B, is it TIME? Use of the </108> heartbeat message is a simple method to implement a way to stop trade activities, algorithms belonging to a specific system or company, fund rather than shutting down the entire trading system. Setting time limits (TTL Time To Live) token passing to trade windows pegged to the closest statistical mean heartbeat epoch avoids the potential of rapid attrition of firms with slower quantum, non-quantum systems and retail individual investors. If given a choice of detecting </events> {"events"} using quantum particles or waves, are not waves preferable given a wave is more likely to reliably detect an event than a probabilistic based particle? Wave detection doesn't necessarily involve cooling to absolute zero that consumes resources and energy to a greater degree.

HFT Circuit Breaker: </108> Heartbeat message Start, Stop, TTL epoch time limit trade window turn token pass </Org_ID> </URN>

Hopf Fibration / Bloch sphere: In the mathematical field of [differential topology](#), the **Hopf fibration** (also known as the **Hopf bundle** or **Hopf map**) describes a [3-sphere](#) (a [hypersphere](#) in [four-dimensional space](#)) in terms of [circles](#) and an ordinary [sphere](#). Discovered by [Heinz Hopf](#) in 1931, it is an influential early example of a [fiber bundle](#). Technically, Hopf found a many-to-one [continuous function](#) (or "map") from the 3-sphere onto the 2-sphere such

that each distinct *point* of the 2-sphere is mapped from a distinct [great circle](#) of the 3-sphere ([Hopf 1931](#)).¹¹ Thus the 3-sphere is composed of fibers, where each fiber is a circle — one for each point of the 2-sphere. The Hopf fibration has many implications, some purely attractive, others deeper. For example, stereographic projection $S^3 \rightarrow R^3$ induces a remarkable structure in R^3 , which in turn illuminates the topology of the bundle (Lyons 2003). Stereographic projection preserves circles and maps the Hopf fibers to geometrically perfect circles in R^3 which fill space. Here there is one exception: the Hopf circle containing the projection point maps to a straight line in R^3 — a "circle through infinity". The fibers over a circle of latitude on S^2 form a torus in S^3 (topologically, a torus is the product of two circles) and these project to nested toruses in R^3 which also fill space. The individual fibers map to linking Villarceau circles on these tori, with the exception of the circle through the projection point and the one through its opposite point: the former maps to a straight line, the latter to a unit circle perpendicular to, and centered on, this line, which may be viewed as a degenerate torus whose minor radius has shrunken to zero. Every other fiber image encircles the line as well, and so, by symmetry, each circle is linked through every circle, both in R^3 and in S^3 . Two such linking circles form a Hopf link in R^3 . Hopf proved that the Hopf map has Hopf invariant 1, and therefore is not null-homotopic. In fact it generates the homotopy group $\pi_3(S^2)$ and has infinite order. In quantum mechanics, the Riemann sphere is known as the **Bloch sphere**, and the Hopf fibration describes the topological structure of a quantum mechanical two-level system or qubit. Similarly, the topology of a pair of entangled two-level systems is given by the Hopf fibration. See USPTO 13/573,002 water drop in pond, Paul Revere linear sequential (line) memes. Source: https://en.wikipedia.org/wiki/Hopf_fibration

IDMAPS – SONAR HOPS: internet distance estimation service: IDMaps is a global internet host distance estimation service that provides distance information used by SONAR / HOPS query / reply service. IDMaps measures, disseminates internet wide distance information to for example, Distributed Autonomous Virtual Organizations DAVOS. Higher level services for example at the macro-cycle level collect distance information to build a virtual distance map of internet by estimating distance between any IP address pair. Location is achieved by use of triangulation Distance information adjusts to "permanent" topology changes e.g., splits, joins, adds, moves, drops, merges in lieu of formal merger / acquisition. IDMaps assists Network Time Protocol (NTP) servers establish long term peering relationships. Distance Metrics focus is on latency (e.g., round-trip delay) and where possible, bandwidth. We improve stochastic harmonization by use of firefly inspired algorithms that strive to achieve synchronization by matching firefly synchronization behavior with the closest heartbeat snapshot. [LINK](#)

IEEE 802.11AG hop-by-hop detection and control for epoch assignment and hop counts management and for hop by hop detection function to determine hop by hop count corresponding to machine readable and executable null / 0 and steps from null representing hop counts e.g., +1, +2, +3, +4 and / or -1, -2, -3, -4 Paul Revere linear, sequential metaphor indicating distance traveled in context with router / server / switch / node traversal. IEEE 802.11 HbH hop by hop control described, represented by USPTO 13/573,002 Paul Revere, rain drop in pond meme - metaphor metrics denoting increases / decreases in thresholds intensity, duration and hop count sums

IEEE 802.11AG hop by hop detection, control for epoch assignment, hop count management, hop by hop detection function to determine hop by hop count corresponding null / 0 and steps from null representing hop counts e.g., +1, +2, +3, +4

and / or -1, -2, -3, -4 Paul Revere linear, sequential metaphor indicating distance traveled in context with router / server / switch / node traversal

IEEE 802.11 HbH hop by hop control supporting Paul Revere, metrics of increases / decreases in thresholds, intensity, duration and hop count summation

IEEE C37.118 Harmonization and Synchronization for heartbeat data pulses and watchdog heartbeat functions in electrical power grid applications to base micro-grid arbitrage when used with user, customer, client, organization beacon broadcasts

Financial Nostradamus / USPTO 13/573,002 fusion: Veritaseum is a blockchain-based fintech software company which delivers global access to peer-to-peer capital markets through its decentralized platform, digital asset research, and transfers. At heart, the project seeks to level the economic playing field by creating software which enables participation in P2P capital markets without intermediates like banks, brokers, financial advisors, and other mediators. The use case of VERI token is to redeem with Veritaseum software for advisory services, research and to gain entry into Veritaseum's autonomous financial machines, P2P value trading system, and P2P letters of credit. The platforms utility token VERI is used to purchase access to the platform's products and services, which range from asset tokenization to financial research data and even self-custody escrow services. VeADIR stands for Veritaseum Autonomous Distributed Interactive Research. Source: <https://cryptonews.com/coins/veritaseum/>

Financial Standard ISO 20022 is a 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. It is a common platform for the development of messages using:

- a modelling methodology to capture in a syntax-independent way financial business areas, business transactions and associated 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, when use of the ISO 20022 XML or ASN.1-based syntax is preferred.

The resulting models and derived messages are published in the Catalogue of messages and stored in the ISO 20022 Financial Repository available on this website. This flexible framework allows communities of users and message development organizations to define message sets according to an internationally agreed approach using internationally agreed business semantics and, whenever desirable, to migrate to the use of a common XML or ASN.1-based syntax.

ISO 20022 ISO describes semantic Foundation Tech / Standards for programmable \$ given the internet was financed, steered by the Department of Defense / NATO. Why

reinvent decades of research and system of systems engineering structured data exchange best practice? Is this even possible any time soon?

Gross national income (GNI), previously known as gross national product (GNP), is the total domestic and foreign output claimed by residents of a country, consisting of Gross Domestic Product (GDP), plus factor incomes earned by foreign residents, minus income earned in the domestic economy by nonresidents (Todaro & Smith, 2011: 44).[2] Comparing GNI to GDP shows the degree to which a nation's GDP represents domestic or international activity. Kuznets became the first economist to show that the Absolute Income Hypothesis gives inaccurate predictions in the long run by using time-series data. Wikipedia https://en.wikipedia.org/wiki/Simon_Kuznets

K% RULE: Economist Milton Friedman predicted the rise of a computer capable of automatically adjusting the inflation rate of money. is the monetarist proposal that the money supply should be increased by the central bank by a constant percentage rate every year, irrespective of business cycles.

KRYPTON: Ethereum based smart contract platform [LINK](http://krypton.rocks) <http://krypton.rocks>
KONG API MANAGEMENT: Application Program Interface scalable, open source API Layer (API Gateway, or API Middleware). Kong runs in front of any RESTful API and is extended through Plugins, which provide extra functionalities and services beyond the core platform. Kong was originally built at Mashape to secure, manage and extend over 15,000 APIs & Microservices for its API Marketplace [LINK](https://getkong.org/about/) <https://getkong.org/about/>

Law of Time dot org: 13 MOONS OF PEACE Math:

The 13 Moon calendar is a solar-galactic cycle that meshes the 365-day third-dimensional solar cycle with the 260-day fourth-dimensional galactic cycle (Tzolkin) every 52 years. The 365-day orbit of Earth around the Sun naturally divides into thirteen 28-day sequences ($13 \times 28 = 364$) which correspond to the thirteen lunations occurring during one solar year, plus one extra day, July 25, the Day Out of Time, a day to practice time is art and peace through culture. Its daily use helps entrain the mind into the threshold of galactic consciousness. The 13 Moon/28-day calendar embraces and synchronizes all true calendrical and mathematical systems, from lunar calendars, to the Mayan long count, to the Elder Futhark runes, to the I Ching hexagrams. In other words, this system reveals a master matrix, which contains all other systems. In the Gregorian calendar there is little cyclic or periodic order. Months are uneven; the length of months does not correlate with number of seven-day weeks, and the numbers change every month. <https://lawoftime.org/education/>

"One people, one Earth, one Time": "The times we are living in require higher thinking. There has never in the history of the Earth been a time like this. We are now participating in what is called the biosphere-noosphere transition. "Only by lifting our minds to planetary consciousness and beyond can we realize solutions to the multiple challenges facing our planet today. With a new consciousness we can effectively educate and mobilize humanity to an unprecedented level of creative problem solving and realize a positive future." Source: <http://lawoftime.org>

LAW OF TIME Book of the Cube Time Cube Matrix Cosmic Calendar Law of Time dot org – see math behind the Earth – Moon – Sun cyclic math based repeating patterns

LIBRARY of ALEXANDRA (The Distributed Blockchain Library) [LINK](#)

LITTLE LEAGUE BASEBALL TOURNAMENT / GAME OF BASEBALL RULES
See Baseball Rules: http://mlb.mlb.com/mlb/official_info/official_rules/official_rules.jsp

Luxor Egypt: "the shortest path to the knowledge of truth is nature"

MEDICI Stock Exchange Blockchain “Medici,” Goal: democratize Wall Street
[LINK http://wired.com/2014/10/overstock-com-assembles-coders-build-bitcoin-like-stock-market/](http://wired.com/2014/10/overstock-com-assembles-coders-build-bitcoin-like-stock-market/)

MICROSOFT Azure Blockchain as a Service (BaaS): Project Bletchley is a vision for Microsoft to deliver Blockchain as a Service (BaaS) that is open and flexible for all platforms, partners and customers. Source: <https://azure.microsoft.com/en-us/blog/bletchley-blockchain/> Project Bletchley common themes:

- Platform openness requirement.
- Identity, key management, privacy, security, operations management, interoperability
- Consortium / Federation blockchains, permissioned networks for contracts,
- Fabric for blockchain, serving as cloud platform for distributed applications

Milton Friedman's K% rule as an “economic heartbeat”. K-Percent Rule DEFINITION: The K-Percent Rule proposal by economist Milton Friedman was the central bank should increase the money supply by a constant percentage every year. The K-Percent Rule proposes to set the money supply growth / reduction at a rate equal to the growth of real GDP each year. K-Percent Rule —
Investopedia <http://www.investopedia.com/terms/k/k-percent-rule.asp>

Milton Friedman's K% rule is a GDP Gross Domestic Product economic heartbeat, a GDP pulse. Apply a Quantum Random Number Beacon QRNB for non-repudiation at any location / time in the future = basis for a one world economic system of systems unit of value statistical mean value index for a Federal FEDCOIN, World Coin. Milton Friedman was a Nobel Prize winning Economist

MONEYBALL: The Art of Winning in an Unfair Game Book

Moneyball: The Art of Winning an Unfair Game is a book by Michael Lewis is about the Oakland Athletics baseball team and its general manager Billy Beane.

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

<https://datascience.berkeley.edu/moneyball-book-review/>

MONEYBALL ECONOMICS: Sabermetrics, or Moneyball, is the practice of crunching data in an effort to build a stronger and smarter team without needing to go after the rock stars of the sport who may cost a team millions. This method holds that the skill of individual players isn't what makes or breaks a team; in the long run, the goal is to make

sure that each necessary skill is accounted for, whether by one player or four. The team will work like a clock, with each cog serving its own purpose (no matter how hopeless they may be at another area).. crafting a team while staying within a meager budget.

NAMED DATA NETWORKING NDN NEXT GENERATION INTERNET: Named-data networking focus is on content caching to reduce congestion and improve delivery speed, simpler configuration of network devices, and building security into the network at the data level. Types of Packets: Communication in NDN is driven by receivers i.e., data consumers, through the exchange of two types of packets: Interest and Data. Both types of packets carry a name that identifies a piece of data transmitted in one Data packet. Overview of the Packet Contents for NDN Packet: **NAMED DATA NETWORK INTEREST:** A consumer puts name of a desired piece of data into an Interest packet and sends it to network. Routers use name to forward Interest query toward data producer(s). **Data:** Once Interest packet reaches a node that has the requested data, the node will return a Data packet that contains both the name and the content, together with a signature by the producer's key which binds the two. This Data packet follows in reverse the path taken by requesting consumer's interest. **NDN Distance packet.**

NATO / DoD SYSTEM OF SYSTEMS ENGINEERING REUSE: DoD - NATO has invested decades of mapping OPSCODE brevity codes to symbology / symbols / symbol sets contained in three hundred 300 plus message set / use cases as part of Battlefield digitization, Net Centric Warfare NET Enabled Operations NEO NETOPS system of systems engineering. Blockchain, Digital Ledger Technology DLT crypto currency developers are recreating, reinventing this decades old, tedious, time intensive, labor intensive, expensive structured data exchange wheel with every new meme, metaphor. Crypto currency economics needs a universal syntax lexicon digital base Artificial Intelligence A.I., quantum blockchain heartbeat beacon to synchronize, sample tokenized commodities across a stochastically harmonized UTZ Universal Time Zone using the firefly-heartbeat algorithm and Princeton University Mathematician John Nash's Equilibrium algorithms NATO bases are small cities that transact most goods, commodities with the host nation. Why reinvent the syntax lexicon Rosetta Stone wheel? Reuse: system of systems tool to accelerate an EIN Earth Intelligence Net – see Project #UNRIG by Robert David Steele

NET CENTRIC OPERATIONS / NET ENABLED OPERATIONS NEO

See: https://en.wikipedia.org/wiki/Network-centric_warfare See: <http://ncoic.org>

To determine if a organization - squad or platoon was mission capable or where it was supposed to be and equipped with the requisite resources: food, water, fuel, ammo etc. data is sampled and forwarded using a minimum of network resources e.g., time frames, intervals, epochs allocated for specific purposes. The Internet Protocol was examined closely and it was re-discovered that time interval frame assignments were left unassigned / available by internet creators (Stanford U etc.) to transport additional state meta data at some future date when a need arose. These heretofore unassigned time intervals set aside for future use would be used to carry data about the organization – the unit designation or Organizational Identifier <Org_ID>, geo-location at specified times and its resources <URN> Uniform Resource Name. Deriving common

building blocks from JBFSA which are the common building blocks (heartbeat and </108< heartbeat messages intrinsic to financial and First Response Systems. USPTO 13/573,002 is based upon and applies improvements to United States Army Communication Electronic Command CECOM's greatest invention Blue Force Tracker.

National Information Exchange Model NIEM: connects communities of people who share a common need to exchange information in order to advance their missions. [LINK](#)

NXT FOUNDATION: Nxt revolutionizes the financial technology, crowdfunding and governance industries by providing not only the groundbreaking NXT crypto-currency, but also a powerful, modular toolset to build with in any way Nxt users can imagine. Nxt gives users complete freedom to create their own applications.

<http://blockchainwizards.com/nxtfoundation/>

OPEN LEDGER: Smart #Bitcoins backed w real world collateral: decentralized exchange #blockchain. Graphene real-time blockchain technology, options:

1. Create new currency as User Issued Asset. revenue generating asset of Open Ledger using decentralized platform called OBITS. [LINK](#)
2. Create a Market Pegged Asset for coin: allow trading only in certain market pairs. Define who is allowed to hold coin by using white- and blacklists. Issuer can opt-out of his privileges indefinitely for the sake of trust and reputation.
3. BitTeaser is powered by a digital token with the abbreviation “BTSR”. The network infrastructure allows users to earn tokens by blogging, selling ads, and being active community members. [LINK](#) <http://ccedk.com/dc/btsr>
4. ICO Crowd Funding Economic Enterprise Engine – “Crowdfunding 3.0”: : official form of payment used to pay for any startup services offered by CCEDK, investment with revenue streams from payments and fees, token offering real return over time, Token and investment with an exit ex: sell ICO token at level 1 ICO price until final launch. Fund buy back, burning process reducing overall supply allowing a growth in value of remaining funds over time

Object Management Group's (OMG) Data Distribution Service for Real-Time Systems (DDS) is an open middleware standard that enables scalable, real-time, dependable, high performance and interoperable data exchanges between publishers and subscribers. DDS is brokerless and provides abstraction of a virtual Global Data Space, a ubiquitous, universal and fully distributed data cache. DDS provides a standard API as a interoperable wire protocol.

OPCODE: TURING COMPLETE SCRIPTING LANGUAGE: In computing, an opcode (abbreviated from operation code) is the portion of a machine language instruction that specifies the operation to be performed. Beside the opcode itself, instructions usually specify the data they will process, in form of operands.

<https://en.wikipedia.org/wiki/Opcode>

Open Financial Exchange (OFX) is a [data-stream format](#) for exchanging [financial](#) information

Secrets of Synchronization / Particle - wave duality (#quantum) firefly pair coupling to synchronize across time - space via firefly-heartbeat algorithm for stochastic harmonization, UTZ synchronization @ 8:10: <https://youtu.be/t- VPRCtiUg?t=490>

Open Telemetry OTEL: Observability has made it possible for both developers and operators to gain that visibility into their systems. In order to make a system observable, it must be instrumented. That is, the code must emit traces, metrics, and logs. The instrumented data must then be sent to an Observability back-end.

OpenTracing vendor-neutral API for sending telemetry data to an Observability back-end; it relied on developers to implement their own libraries to meet the specification.

OpenCensus provided a set of language-specific libraries that developers could use to instrument their code and send to any one of their supported back-ends.

- single, vendor-agnostic instrumentation library per language with support for both automatic and manual instrumentation.
- single vendor-neutral collector binary that can be deployed in a variety of ways.
- generate, emit, collect, process, export telemetry data end-to-end.
- control of data with the ability to send data to multiple destinations in parallel through (workflow rules) configuration.
- Open-standard semantic conventions to ensure vendor-agnostic data collection
- ability to support multiple context propagation formats in parallel to assist with migrating as standards evolve.

OpenTelemetry main components:/ Cross-language specification

Tools to collect, transform, and export telemetry data/ Per-language SDKs

Automatic instrumentation and contrib packages

OpenTelemetry Collector is a vendor-agnostic proxy that receives, processes, and exports telemetry data. It supports receiving telemetry data in multiple formats (e.g., OTLP, Jaeger, Prometheus, as well as many commercial/proprietary tools) and sending data to one or more backends. It supports processing, filtering telemetry data before export. Collector contrib packages bring support for data formats and vendor backends.

OpenTelemetry Signals:

- Traces: Traces: big picture of what happens when a request (s) is / are made
- Metrics: A metric is a measurement about a service, captured at runtime.
- Logs: A log is a timestamped text record, either structured (recommended) or unstructured, with metadata.
- Baggage: Baggage refers to contextual information that's passed between spans

OpenTelemetry main components: Cross-language specification: Tools to collect, transform, and export telemetry data/ Per-language SDKs Automatic instrumentation and contrib packages. OpenTelemetry lets you replace the need for vendor-specific SDKs and tools for generating and exporting telemetry data. Data: Defines the OpenTelemetry Protocol (OTLP) and vendor-agnostic semantic conventions

Collector: The OpenTelemetry Collector is a vendor-agnostic proxy that can receive, process, and export telemetry data. It supports receiving telemetry data in multiple formats (e.g., OTLP, Jaeger, Prometheus, as well as many commercial/proprietary tools) and sending data to one or more backends. It also supports processing and filtering telemetry data before it gets exported. Collector contrib packages bring support for more data formats and vendor backends. For more information, see Data Collection.

Open Telemetry Language SDKs: language SDKs to use the OpenTelemetry API to generate telemetry data with your language of choice and export that data to a preferred data backend. These SDKs incorporate automatic instrumentation for common libraries and frameworks used to connect to manual instrumentation in your application.

OPEN TELEMETRY Automatic Instrumentation: a broad number of components that generate relevant telemetry data from popular libraries and frameworks for supported languages. For example, inbound and outbound HTTP requests from an HTTP library will generate data about those requests. Using automatic instrumentation may differ from language to language, where one might prefer or require the use of a component that you load alongside your application, and another might prefer that you pull in a package explicitly in your codebase. It is a long-term goal that popular libraries are authored to be observable out of the box, such that pulling in a separate component is not required. SOURCE: <https://opentelemetry.io/docs/reference/specification/>

OPERAND PROGRAMMABLE MONEY: Operand - “In mathematics, an operand is the object of a mathematical operation, a quantity on which an operation is performed.” “In computing, an operand is the part of a computer instruction that specifies what data is to be manipulated or operated on, while at the same time representing the data itself.”

In Operand, the transactional unit carries the execution methods and parameters that apply to the units of currency involved for that transaction. Operand is programmable money that brings the utility of everyday banking features to the unbanked and underbanked and empowers their adoption through the automata of the Operand protocol. Operand is a currency that functions as a seamless and embedded economic

layer on the web that serves as the technological underlay for payments, decentralized exchange, digital asset invocation and transfer, and smart contract issuance and execution. By embedding the instruction set of the transaction into the transaction metadata, the blockchain itself serves as the interpreter for programmed transactions. Operand creates utilities such as direct debit payments or even standing orders. Operand is trustless and non-retractable whilst being fully accountable and transparent on the public ledger. The programmable aspect enables further security on every transaction as the clients must reach network consensus on the method of execution. Smart contracts can then be forged on all aspects of exchange.

[LINK](http://operand.money) Page: <http://operand.money>

PAUL REVERE LINEAR-SEQUENTIAL MEME

The Paul Revere linear-sequential meme – metaphor is a physical, historical meme used instead of an abstract metaphor that the internet uses called TCP/IP “hop counts”.

Hop Counts: (123): Hops are linear and sequential referring to applicant's Paul Revere meme (126). Hops are described / defined from null as a condition / state: stationary, inactive. Hops are changes in location from point a to point b to point n. Hops follow a base running paradigm in the main embodiment (131) and are referential to TCP/IP in embodiment 1. Hops are counted incrementally where hops are changes in location e.g., home plate to first, second, and third base and back to home base (131). Hop metrics are incremental changes from null 0,1,2,3,4 - N (126) that may be positive or negative values. Hop counts are used to equitably meter, measure and derive performance or effectiveness metrics, meters.

Time stamps (112) form time frames, temporally bound hops e.g., in time and space. Erlang logic is useful in establishing time boundaries and time limits among geo-spatially disperse events. Time filtered and spatially metered reports are comprised of state meta-data snapshot / heartbeat message / sync delta messages where state meta data is harvested during micro-cycles then posted / displayed during longer macro-cycles. Time filtered and spatially metered reports are comprised of state meta-data snapshot / heartbeat message / sync delta messages where state meta data is harvested during micro-cycles then posted / displayed during longer macro-cycles.

Price Discovery Patent Application: 0160358256 [0056] In accordance with an example embodiment of the present invention, the amount of an investment required from a speculator is calculated by executing the following cost of speculation equation: $V.\text{intg.}|\log(P)-\log(.DELTA.P)|/R dt$. The variables for the cost of speculation equation are as follows: P represents a variable of price, P(t) is a variable function of price over time in a given market, .DELTA.P represent a speculative price function. P(t) can mathematically represent the future prices as functions of price over time. The function value of R(t) is a predetermined value for the rate of return. For example, for R(t), the value can be 100% annualized so for a t in years R(1)=2, R(2)=4 and R(0.5)=1.414, but as would be appreciated by one skilled in the art, any function is possible. The value for V(t) at any given time is the expected value to the market (e.g., volume of goods to

trade multiplied by the market commission) The value for $V(t)$ can be updated empirically as the commodities market functions by calculation as a moving average of volume times the markets total transactional overhead charge. Source / Attributed to: Noah Healy Data Scientist at Castle Hill Gaming strategic design for (commodity) markets drastically lowering transaction costs while increasing returns for informed speculators to launch a global economic boom. Price discovery method and means: Source: <https://tinyurl.com/4w4m359h>

PROJECT BEACON: Reuse NATO's system of systems syntax lexicon OPSCODE brevity code structured data exchange, heartbeat micro to macro cycle Universal Time Zone UTZ sync to support an EIN Earth Intelligence Network neural net emulation. Support Beacon Communities with an open-source Earth Intelligence Network EIN integrated with NIST's QRNB quantum random number beacon blockchain for event, transaction non-repudiation at any place – time in the future .

PROJECT BEACON METHOD: A snapshot or sync delta value taken at a predetermined time interval (micro-cycle to macro cycle) is used to calculate a statistical mean value of commodities comprising a GDP index used as a value index nation's / world's unit of value as the basis for valuating a currency unit of exchange.

Paul Revere's ride as an analog to hop by hop, hop count metrics for quantum dots comprising quantum circuits

Science Alert: <https://www.sciencealert.com/a-huge-step-forward-in-quantum-computing-was-just-announced-the-first-ever-quantum-circuit>

QUANTUM COMPUTING: the use of quantum-mechanical phenomena such as superposition and entanglement to perform computation. Quantum computers are believed to be able to solve certain computational problems, such as integer factorization. in a quantum Turing machine, the difference is that the tape exists in a quantum state, as does the read-write head. This means that the symbols on the tape can be either 0 or 1 or a superposition of 0 and 1; in other words, the symbols are both 0 and 1 (and all points in between) at the same time. While a normal Turing machine can only perform one calculation at a time, a quantum Turing machine can perform many calculations at once. The programmable economy will be anchored by quantum computing -for example, NIST's Quantum Random Number Beacon

QUANTUM COMPUTING / USPTO 13/573,002 The Heart Beacon Cycle Time - Space Meter is descriptive to the quantum computing level and SCOTUS Alice in Wonderland Alice Corp Vs CLS Bank ruling... waves (USPTO 13/573,002 water drop in pond meme) single photon shifts (USPTO 13/573,002 Paul Revere meme).

Quantum BIG Bell Test: In 2015, NIST BOULDER | Colorado was one of the first groups to carry out a complete test of Bell theorem using quantum states of light, and conclusively show the presence of Einstein's "spooky action." However, in that experiment the decisions about how to carry out the measurements were made by random numbers generated from different physical processes. <https://thebigbelltest.org/team/nist-boulder/>

Quantum annealing starts from a quantum-mechanical superposition of all possible states (candidate states) with equal weights. Then the system evolves following the time-dependent [Schrödinger equation](#), a natural quantum-mechanical evolution of physical systems. The amplitudes of all candidate states keep changing, realizing a quantum parallelism, according to the time-dependent strength of the transverse field, which causes quantum tunneling between states. If the rate of change of the transverse field is slow enough, the system stays close to the ground state of the instantaneous Hamiltonian (also see [adiabatic quantum computation](#)).^[6] If the rate of change of the transverse field is accelerated, the system may leave the ground state temporarily but produce a higher likelihood of concluding in the ground state of the final problem Hamiltonian, i.e., diabatic quantum computation.^{[7][8]} The transverse field is finally switched off, and the system is expected to have reached the ground state of the classical [Ising model](#) that corresponds to the solution to the original optimization problem. An experimental demonstration of the success of quantum annealing for random magnets was reported immediately after the initial theoretical proposal.^[9]

Quantum computing based on waves at room temperature Vs particles in a liquid nitrogen cooled chamber given energy required to keep the environment near absolute zero with liquid nitrogen. Use of light waves at room temperature = more ecologically sustainable, more accurate quantum computing given less challenge to synchronize, stochastically harmonize quantum computing sites over UTZ Universal Time Zone as a basis for programming, computing programmable money / programmable economy. Quantum computing: particle or wave? Why pursue / choose particle detection at 0 degrees Kelvin over (electro-magnetic) waves ("wave-packets") at room temperature given Heisenberg's uncertainty principle? This has profound implications for space - time, stock, commodity market data = our world. Science News Army Research Laboratory Article on quantum computing at room temperature: <https://www.sciencedaily.com/releases/2020/05/200501184307.htm>

Quantum "Schroedinger's equation at it's heart describes energy and looks similar to describing the action of waves in water" so, if an (observed) event can appear as a particle or a diffusion pattern in a wave, why not use diffusion patterns in waves at room temperatures Vs liquid cooled silicon computer chips chilled to near absolute zero for efficiencies in energy and accuracy at different temperature zones / elevations given temperature drops every 1000 meters / feet in altitude? Source: Einstein's nightmare: <https://youtu.be/-hxljpxTaiA?t=211>

QUANTUM COMPUTING STOCK / COMMODITY MARKETS USE CASE: given: other than the ubiquitous </108> {"108"} heartbeat message sending start, stop, TTL Time To Live commands to algorithmic HFT trade to master controllers, how will stock, commodity, crypto etc. markets be mitigated, moderated among the quantum computing haves / have nots? How will market trade sessions be mitigated, moderated among quantum haves and have nots? i.e., QCCS Quantum Computing Control System <https://tinyurl.com/e4h5wxk>

QEC IEEE Article: Quantum Computing Error Correct QEC is getting practical February 25th 2021: Quantum Error Correction QEC, in combination with the theory of fault-

tolerant quantum computing, suggests that engineers can in principle build an arbitrarily large quantum computer that if operated correctly would be capable of arbitrarily long computations. This would be a stunningly powerful achievement. The prospect that it can be realized underpins the entire field of quantum computer science: Replace all quantum computing hardware with “logical” qubits running QEC, and even the most complex algorithms come into reach. For instance, Shor’s algorithm could be deployed to render Bitcoin insecure with just a few thousand error-corrected logical qubits.

LINK: <https://spectrum.ieee.org/tech-talk/computing/hardware/quantum-computer-error-correction-is-getting-practical>

QFS Quantum Financial System ground station data center in Las Vegas Nevada to my knowledge does not make use of the Department of Commerce’s NIST National Institute of Science and Technology’s QRNB Quantum Random Number Beacon. Crypto currencies need to be quantum computing based rather than simply quantum resistant and use light waves at room temperature Vs particle detection given the particle - wave duality twin slot phenomenon using liquid nitrogen for Ecological energy consumption and economic (less energy, less expensive) efficiencies. In other words, a quantum computing, quantum financial system for the 99 %

Quantum Computing Quantum Circuit Quantum dots metrics

Quantum Computing Science Alert: The latest invention follows the team’s creation of the first ever quantum transistor in 2012. (A transistor is a small device that controls electronic signals and forms just one part of a computer circuit. An integrated circuit is more complex as it puts lots of transistors together.) To make this leap in quantum computing, the researchers used a scanning tunneling microscope in an ultra-high vacuum to place quantum dots with sub-nanometer precision. The placement of each quantum dot needed to be just right so the circuit could mimic how electrons hop along a string of single- and double-bonded carbons in a polyacetylene molecule. Relevance:

QRNB: QUANTUM RANDOM NUMBER BEACON NIST: uses two independent sources of randomness, each with an independent hardware entropy source and SP 800-90-approved components. The Beacon is designed to provide unpredictability, autonomy, and consistency. Unpredictability means that users cannot algorithmically predict bits before they are made available by the source. Autonomy means that the source is resistant to attempts by outside parties to alter the distribution of the random bits. Consistency means that a set of users can access the source all receiving the same random string. The Beacon broadcasts full-entropy bit-strings in blocks of 512 bits every 60 seconds. Each value is time-stamped and signed and includes the hash of the previous value to chain the 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. The 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. The main goal of the NIST Random # Beacon is to serve as a baseline for deployment of many interoperable beacons NIST: http://nist.gov/itl/csd/ct/nist_beacon.cfm

Quantum Random Number Generator QRNB: The NIST method generates digital bits (1s and 0s) with photons, or particles of light, using data generated in an improved version of a landmark [2015 NIST physics experiment](#). That experiment showed conclusively that what Einstein derided as "[spooky action at a distance](#)" is real. Researchers process the spooky output to certify and quantify the [randomness](#) available in the data and generate a string of more random bits. [LINK](#)

QRNB NON-REPUDIATION: The QRNB provides a method and means to prevent repudiation of any event, transaction at any point in time – space. QRNB intent is to be interoperable with other QRNB's, therefore, this Max Planck Institute / Announcement is germane to a discussion of a one world government / one world economic system of systems: distributed quantum computers – will need (UTZ Universal Time Zone) stochastic harmonization. "Our work provides a pathway towards extreme mechanical nonlinearities, and towards quantum devices that use mechanical resonators as qubits" <https://www.nature.com/articles/s41534-021-00393-3>

REACT JS Java script: facilitates building of stateful & reusable UI components uses a concept called the Virtual DOM Document Object Model that selectively renders subtrees of nodes based upon state changes [LINK](#)

RWA Real World Assets: The economy of imaginary wealth is being inevitably replaced by the economy of real and hard assets". President Vladimir Putin.

ROSETTA STONE SYNTAX LIBRARY LEXICON CODE GUIDE REGISTRY

The Rosetta Stone is a rock stele, found in 1799, inscribed with a decree issued at Memphis, Egypt, in 196 BC on behalf of King Ptolemy V. The decree appears in three scripts: the upper text is Ancient Egyptian hieroglyphs, the middle portion is Demotic script, and the lowest is Ancient Greek. Because it presents essentially the same text in all three scripts (with some minor differences among them), the stone provided the key to the modern understanding of Egyptian hieroglyphs. It was the first Ancient Egyptian bilingual text recovered in modern times, and it aroused widespread public interest with its potential to decipher this previously untranslated hieroglyphic language. Lithographic copies and plaster casts began circulating among European museums and scholars. Rosetta Stone concept in context with this project: a common syntax library and ability to convert <tags> to YAML indents to binary XML to various other Message Text Formats MTF to enable universal signaling / telemetry among a system of systems is needed. Structured messaging will help accelerate the process of organizing syntax into categories and forming syntax from disparate systems into template libraries simply because numbers are universal – text and symbols less so. Structured military messaging involves identifying use cases as messages and message sets commonly used to accomplish tasks that are identified by number. Data elements or Field Form Identifiers Reference Numbers or FFIRNS and Field Unit Designators as three and four digit codes unambiguously identify the use of the data element in number forms. Three

and four digit codes in turn refer to text descriptions referencing symbols in symbol libraries / databases. Messages are processed, parsed in - out of distributed database.

SCOP Heartbeat Administrative interface tool adjusts FIX </108> messages. All systems have "heartbeat" epoch time interval messages. "Heartbeat" = metaphor

SPATIAL ECONOMETRICS:

- central place theory
- international trade theory
- location theory
- GIS data in economics, urban economics
- monocentric versus polycentric models in urban economics
- new economic geography
- systems of cities
- urban agglomeration
- urban production externalities
- urban transportation economics See Dictionary of Economics [LINK](#)
http://dictionaryofeconomics.com/article?id=pde2008_S000195

STREAMING K ALGORITHM: streaming algorithms are algorithms for processing data streams in which the input is presented as a sequence of items and can be examined in only a few passes (typically just one). These algorithms have limited memory available to them (much less than the input size) and limited processing time per item. These constraints may mean that an algorithm produces an approximate answer based on a summary or "sketch" of the data stream in memory. [LINK](#):

https://en.wikipedia.org/wiki/Streaming_algorithm

Structured Data Exchange Military Message Text Format USMTF / XML MTF FORMATTED MESSAGE CATALOG includes, describes in detail 300 + messages info exchange requirements using common, 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. Thinking of the world's language, symbol and syntax differences along with coder's proclivity to design a different data </tag> {"tag"} convention with each new programming language, the use of NUMBERS as a universal method to unambiguously, consistently describe data transaction parameters is logical. See FIGURE 5: Code Syntax Lexicon, Message Template Library
See FIGURE 6: Structured Military Messaging / Data Rosetta Stone

Structured data system of systems engineering: military messaging identifies messages, message sets, data element fields BY NUMBER to improve the interoperability of Joint military systems. See MIL-STD-6040. XML-MTF mapping specification and associated XML-MTF schema derivation procedures provided by NATO describe a common method of translating MTF messages to, and from, the equivalent XML representation. XML-MTF mapping specification and schema derivation procedure illustrate specific considerations such as Tag naming conventions and

ambiguity issues. The XML-MTF involves detailed descriptions of MTF structure and rules, specification of legal field content, e.g. data elements [LINK](#)
<https://en.wikipedia.org/wiki/USMTE>

One world government's one world currency 3 OPTIONS::

1. IMF's International Monetary Fund SDR Special Drawing Rights stable coin , Treasuries, Bonds, Securities basket mini index
2. NESERA / GESERA's QFS Quantum Financial System Las Vegas
3. Department of Commerce - Treasury – NIST QRNB at Boulder Colorado (Stephen King's Book The Stand's Free Zone)

SYNC DELTAS: STATE META DATA: Time filtered, and spatially metered reports are comprised of state meta-data snapshot / heartbeat message / sync delta messages where state meta data is harvested during micro-cycles then posted / displayed during longer macro-cycles See hop count treatise referential to internet TCP/IP treatises.

System of Systems Engineering Battlefield Digitization Sync Deltas = changes from one epoch time cycle to the next: crypto currencies tethered to tangible commodities formed into indices of Delta-1 assets: Linear Finance (LINA) is a cross-chain Decentralized Delta-One Asset Protocol with Unlimited Liquidity. It is the first protocol that allows users to cost-effectively create, trade and manage liquid assets (Liquids) and creative thematical Digital Traded Funds. Linear Buildr is a decentralized application for staking and building LUSD, accepting a mixture of LINA tokens and other major cryptocurrencies. Linear Exchange enables trading of a variety of liquid assets (Liquids) based on spot cryptocurrencies, commodities, and thematic indexes with nearly instant confirmation time and immediate finality. Source: <https://lnkd.in/dmTaeHJ>

Crypto currency index: optimal algorithm for sampling, reporting (heartbeat message event bus) index fluctuations across UTZ time zones providing stochastic harmonization? firefly-heartbeat algorithm)

SCOTUS ALICE CORP VS CLS BANK: This project describes how the internet and derivatively the internet of money works and is compliant with the Supreme Court's Alice Corp Vs CLS Bank 2014 ruling "claims may not direct towards abstract ideas". All internet Web 3.0 and programmable money efforts are incorrect and are moving away from interoperability as each internet, internet of money theme variation sprouts and propagates more and more non-existent memes, metaphors.

SCOP INTERNET TIMING TOOL: HEARTBEAT ADMINISTRATIVE INTERFACE: SCOP Administrative Interface as an Internet configuration tool. SCOP is a tool that exemplifies how the internet really works. SCOP is a web application, PHP based, that is a front-end to heartbeat. . SCOP can start/stop services, view/edit configuration files, make backups, take a server online/offline, add/remove virtual/real servers, etc.

SWORDS TO PLOWSHARES DESCRIPTION: Adaptive Procedural Template forming / supporting a system of federated systems with a distributed signaling, telemetry (OPORD Annex K) framework derived from DARPA / Pentagon / NATO's Common Operational Picture COP-SIOP Single Integrated Operational Picture / system of systems engineering family of systems dating from the mid 1990's (swords to plowshares) / German Army suggestion to use COP - SIOP Battlefield Digitization Digital Dashboard procedures for OOTW Operations Other Than War circa 2003

TELEPATHY / A.I., ARTIFICIAL INTELLIGENCE: Reuse of DARPA - NATO's structured data exchange that maps data element OPSCODES to symbol sets is key to Artificial Intelligence #AI man - machine interface, consensus, consistency among myriad #blockchain programmable #money memes, metaphors... Given space travel risks, navigation based on consciousness / telepathy (use of symbols not words), a consistent syntax lexicon to communicate with #UFO EBO's that are likely Artificial Intelligence AI drones is reuse of NATO's structured data exchange that maps data element OPSCODES to symbol sets essential for man-machine interface.

TRADE REFERENCE CURRENCY TRC Belgian Economist Bernard Lietaer proposed a commodity based TRC Trade Reference Currency based on demurrage charges to support logistics of goods moved from supplier to consumer called the TERRA TRC. The Terra TRC Trade Reference Currency is a global complementary currency designed to provide an inflation-resistant international standard of value; to stabilize the business cycle on a global level; and to realign stockholder's interests with long-term sustainability. From a legal viewpoint, the Terra is standardized "countertrade" (international barter), which is routinely used for over one trillion dollars worth of transactions per year. Legislation on countertrade exists in about two hundred countries, including all the major trading nations.

The Terra is a CC that would be issued by a nation's central bank. As outlined by Lietaer in his seminal "A 'Green' Convertible Currency", what we will have is a "commodity-based currency, for a New Currency backed by a basket of from three to a dozen different commodities for which there are existing international commodity markets. For instance, 100 New Currency could be worth 0.05 ounces of gold, plus 3 ounces of silver, plus 15 pounds of copper, plus 1 barrel of oil, plus 5 pounds of wool." This CC/new money is therefore backed by the valuation of the commodities in the basket at the value of the national currency of the society it originates from. So in the US, the value of the basket, in terms of USD, will determine the exchange rate between those trading in USD for the Terra in America. The Terra would work in tandem with the national currency and is not a new money that supplants everything else in its wake. As the Terra TRC (Trade Reference Currency) White Paper by Takashi Kiuchi, Chairman of The Future 500, states: "The Terra is designed as a complementary currency operating in parallel with national currencies. Therefore, everything that exists today as monetary and financial products or practices continues to exist. The Terra mechanism is only one additional option available for those international economic actors who voluntarily choose to use it." SOURCE: <https://www.lietaer.com/2010/01/terra/>

TIME CRYSTALS: first proposed by physicist Frank Wilczek in 2012, is a phase of matter which repeats in time, similar to how a regular crystal's structure repeats in space. What that means is that the particles in the crystal perpetually switch between two states without requiring the input of more energy and without losing any energy. These crystals are the first objects to break what is known as "time-translation symmetry," a rule in physics that states that a stable object will remain unchanged throughout time. Time crystals avoid this rule, being both stable and ever-changing. Scientists from Stanford and the Max Planck Institute for Physics of Complex Systems, as well as scientists at QuTech, a collaboration between the Delft University of Technology and the Netherlands Organization for Applied Scientific Research (TNO), (alleged) figured out for the first time how to create these theoretical crystals.

USMTF PROGRAM OVERVIEW: The USMTF program applies to all character oriented IES, as determined and derived from DMS IER, MIL-STD-6040 is a mandatory standard Scope. The USMTF program establishes the standard for preparation, processing, storage, and discovery of USMTF data assets in support of DoD operations. USMTF data provides the means to achieve interoperability at the information level across all functional and mission areas and will be leveraged by communications and information systems used throughout the DoD. USMTF is a common message text format standard that facilitates information exchange across DoD and related entities. Effective, seamless interoperability is achieved through exposure and reuse of data. It's operationally agreed definitions and expressions serve as the foundation for interoperability among the military forces and DoD agencies. USMTF leverages common information syntax and data structures to maximize successful interpretation and utilization regardless of the data provider. This ability to exchange and share information increases visibility, understanding, and lethality, and is critical to the Warfighter for present and future battlespace management. Source: CJCSI 6241.01D 12 Jan 2021

UNIVERSAL TIME ZONE UTZ PROJECT: Universal Time Zone (UTZ) Proposed Clock At the United Nations on May 20, 2003, President, George W. Bush, announced a proposal to unify all the world's time zones into a single Universal Time Zone (UTZ).

USE CASE EXAMPLE: @26:37 "we are entering a system called Bretton Woods Three: a system dominated by #COMMODITIES" statement by former Federal Reserve Board member SOURCE: Youtube: <https://lnkd.in/eN4vGP58>

WATER DROP IN POND MEME USPTO 13/573,002

"Water drop in pond meme directs to a detailed treatises describing geo-spatial temporal intensity metrics and meters using sonar in water as opposed to a TCP/IP internet ping. Reasons for this distinction is that sonar wave behavior in water used by naval military units is well known while a TCP/IP internet "ping" is an abstract metaphor formed by time intervals / cycles / epochs / CPU clock intervals that are used to process / not process instructions describing distances between internet nodes.

Water Drop in Pond area, circular, circumference metaphor – meme: areas defined by radius / circumference (124) are described in terms of radii within a circumference of a circle used to encompass or encircle a cluster of players, teams, or leagues into a

discrete set. Resource items are typed, classified by <tags> measured from a known reference point i.e. ten-digit map grid coordinate describing a limited or bounded geo-spatial area described by concentric rings /circles shown to expand or contract with threshold metric changes denoting intensity i.e., an earthquake occurs during game with pre / aftershocks. Wave crests and troughs are converted into analog integer equivalents where amplitude and frequency changes convey event intensity, duration as thresholds. Discrete wave crest to trough phase changes are summed. Wave crests and troughs define cycles in terms of on, off, duration and describe slowing and speeding up of events, activities occurring within the circular geo-spatial area containing items of interest --see geo-spatial area entries, in related art for treatises

Radius searches performed within circumference (124) use <tags> as search key tag / word targets. Search results are filtered and processed by tag classes and types then saved as search results time tagged with the micro-cycle heartbeat timestamp (112) running concurrently within and assisting with the formation of a self-organizing reporting cycle in a macro-cycle as part of a Heart Beacon Cycle (137). Radius searches are conducted to discover threshold, duration and intensity conditions changes useful in precedence processing parameters i.e., flash override, flash, immediate, priority routine shown on appliqué acetate overlay display boards (134).



The Heart Beacon Sculpture, Portland Oregon USA:
[LINK](https://codaworx.com/project/heart-beacon-city-of-portland) <https://codaworx.com/project/heart-beacon-city-of-portland>

Heart Beacon is an outdoor 2013 **sculpture** by American artists Blessing Hancock and Joe O'Connell, installed at the Bureau of Emergency Management's Emergency Coordination Center in **Portland, Oregon**, United States. *Heart Beacon* "takes the literal and metamorphic 'pulse'" of Portland's community and serves as a "symbol of hope and a potent reminder of the resilience of the individual taking inspiration from the life-saving mission" of the center. Source: https://en.wikipedia.org/wiki/Heart_Beacon

APPENDIX C: REFERENCES / SOCIAL MEDIA LINKS

GITHUB PROJECT DESCRIPTION, DOCUMENTS: <https://github.com/Beacon-Heart>

Proton Email (secure) ecoeconomicepochs@protonmail.com

Unstoppable Domains IPFS Web 3 page: <http://ecoeconomicepochs.dao>

Slideshare: <https://www.slideshare.net/EcoEconomicHeartbeat/>

PININTEREST: <https://www.pinterest.com/EcoEconomicEpochs/>

LINKEDIN: <https://www.linkedin.com/in/ecoeconepochs/>

WordPress: <http://ecoheartbeat.wordpress.com>

Substack: <https://stevenmcgee.substack.com/>

FACEBOOK: <https://www.facebook.com/beaconheart>

FLOTE: https://folute.app/Heart_Beacon

MINDS: <https://www.minds.com/beaconheart/>

TWITTER: @Heart_Beacon https://twitter.com/Heart_Beacon

We Heart It: https://weheartit.com/steven_mcgee_1/collections

DISCORD: GDP_Index_Economy#6495

Skype: Steven McGee

Gravatar: <https://en.gravatar.com/ecoeconheartbeat>

MeWE: <http://mewe.com/i/stevenmcgee2>

Maven: <https://app.maven.co/maven/506065>

Gitter <https://gitter.im/EcoEconHeartbeat/Lobby>

EIN Earth Intelligence Network: Robert David Steele's #UNRIG proposal
@ <http://robertdavidsteele.com>

Law of Time Math: <https://www.lawoftime.org/lawoftime/synchronicmathematics.html>

Science News Army Research Laboratory Article quantum computing at room temperature: <https://www.sciencedaily.com/releases/2020/05/200501184307.htm>

APPENDIX D: BRIEF DESCRIPTION OF GRAPHICS

APPENDIX E: DRAWINGS / GRAPHICS

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Figure 1: Foundation Technology for programmable \$\$\$, Economy listed in an Adaptive Procedural Template

PROCEDURAL TEMPLATE
List Items point / refer to detailed treatises

Alice Corp. v. CLS Bank Int'l Abstract Ideas

USPTO Transco V Performance
13,573,002 Sct. 573 134 2347

HEART BEACON CYCLE {"RWA"}
Series of systemic actions to achieve goals ex: form, maintain ECO sustainable Trade Federations i.e., closer = < fuel, CO₂

Federation Gateway Off Site connect PROXIMITY BEACONS TESLA Cloudcenter

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

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

MONEYBALL ECONOMICS
BLOCKTIME ARBITRAGE Veritaseum TRC Tagged Bitcoins
NAMED DATA NETWORKING Erlang Time equations
QRNB NIST Beacon Public Randomness Service Non-Repudiation Erlang
{"Interest"} {"Distance"} Erlang Time equations
Spatial Econometrics currencyindex

FIGURE 2: Adaptive Procedural Template list: The Heart Beacon Cycle Time Space Meter

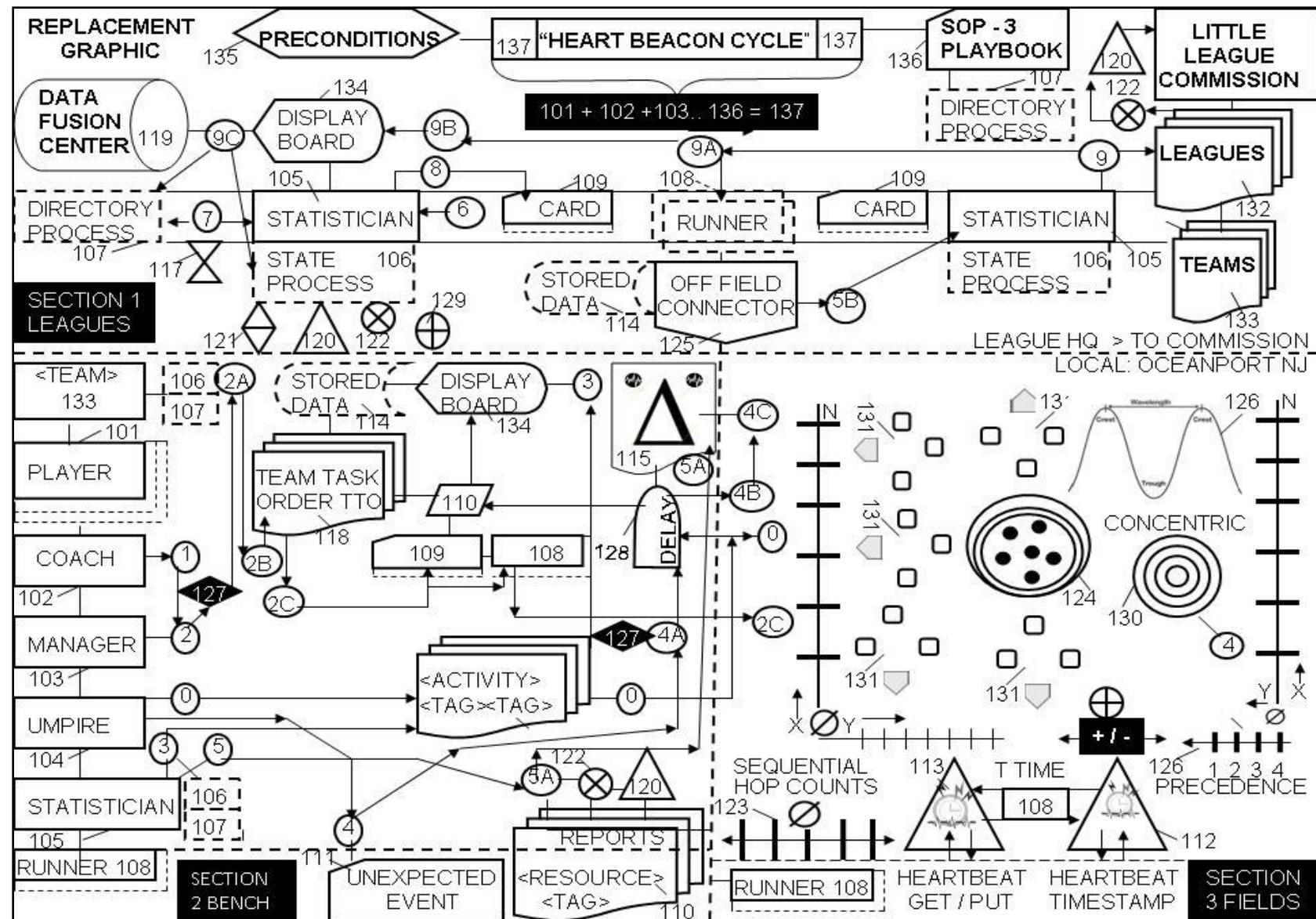


FIGURE 3: USPTO 13/573,002 Main Graphic

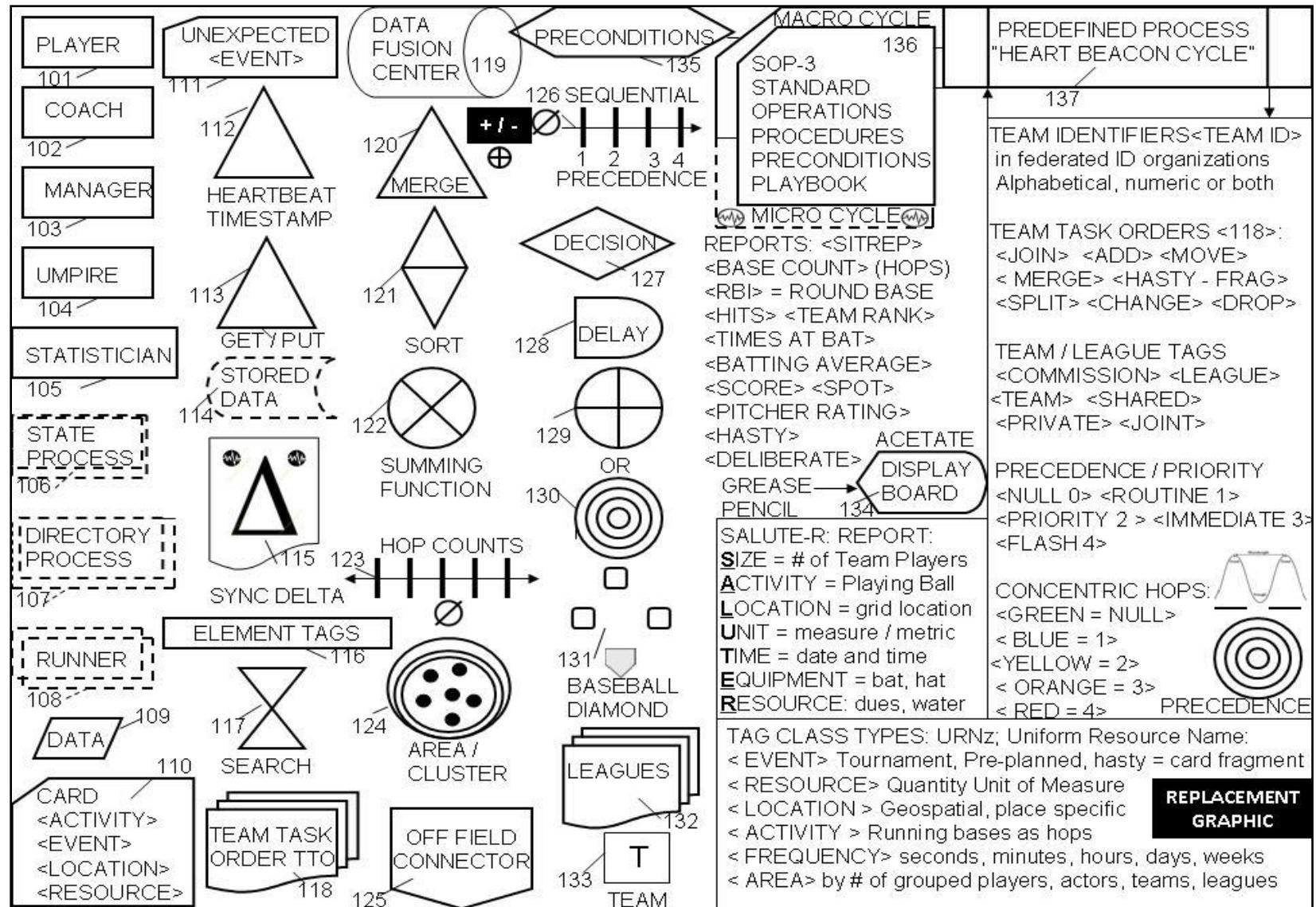


Figure 4: USPTO 13/573,002 GRAPHIC LEGEND



Fig 5: Adaptive Procedural Template Checklist of ideas, processes, procedures, structured data exchange templates

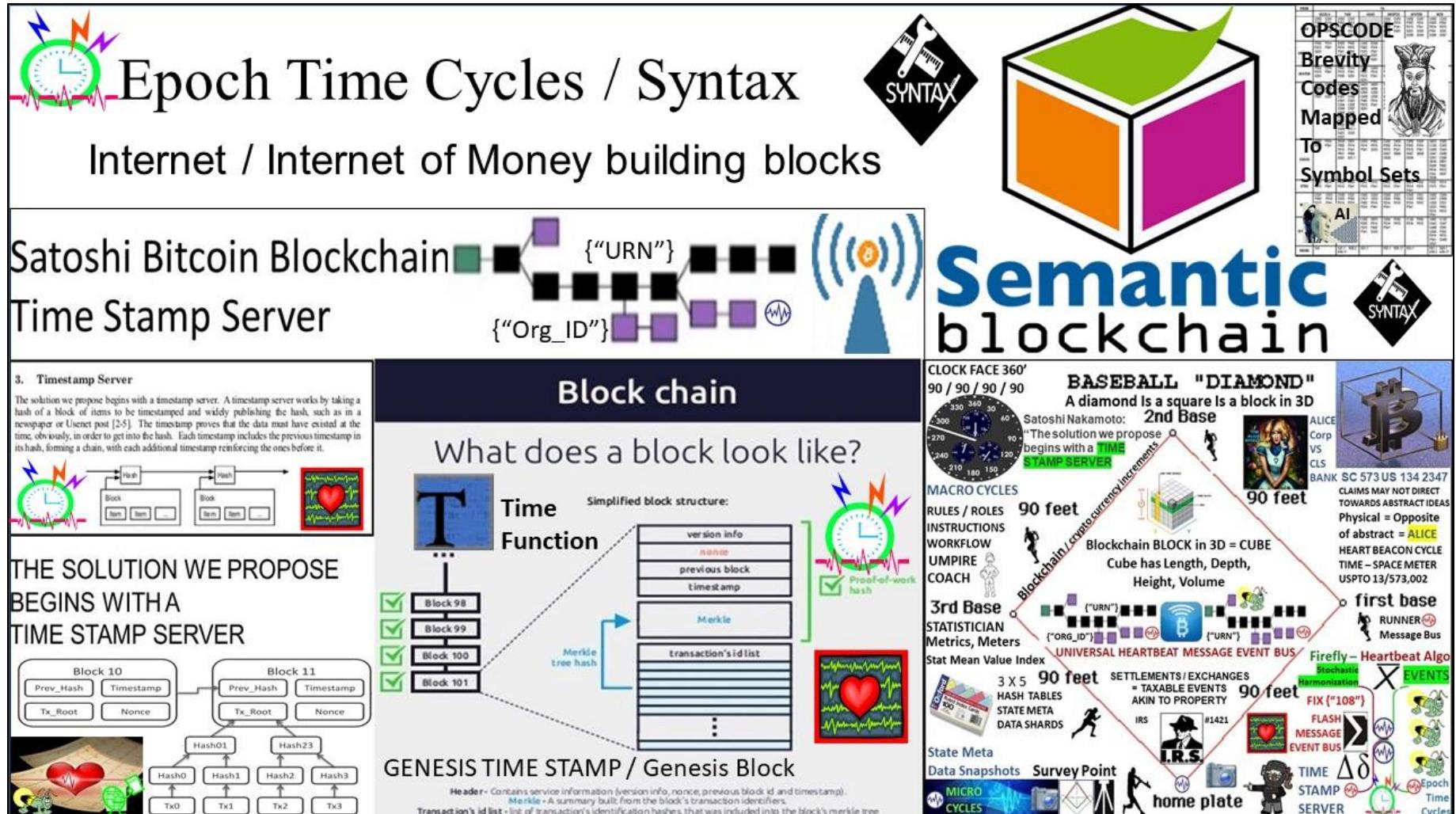
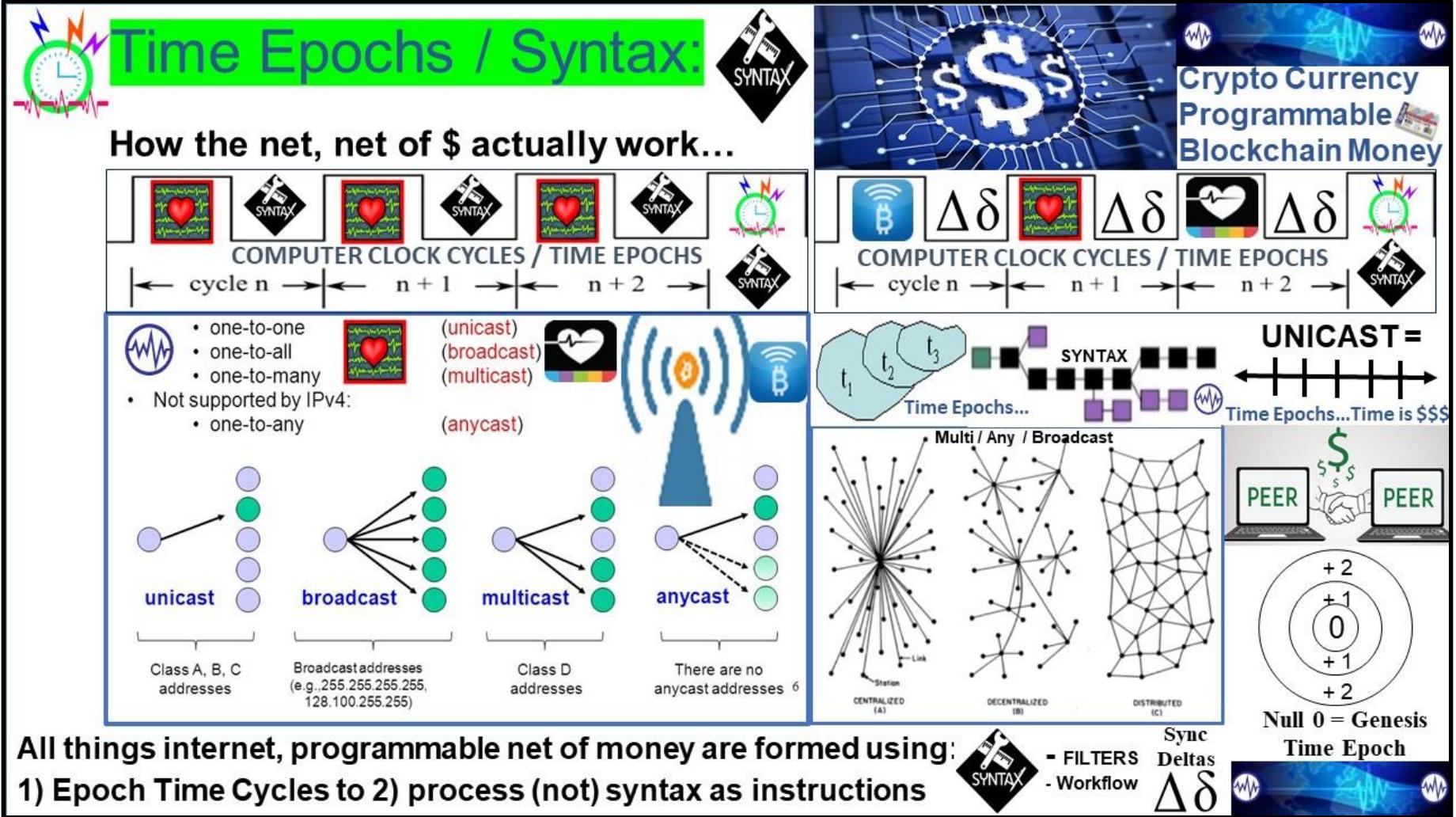


Figure 6: All things internet, artifacts of the programmable economy formed using 1) time epochs 2) syntax



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

1) Epoch Time Cycles to 2) process (not) syntax as instructions

FIGURE 7: All things internet, net of programmable money, Economy, Web 3.0 are formed using 1) Time epochs 2) syntax



FIGURE 8: ERICSSON ERLANG - ERICSSON'S OPEN MONEY / USPTO 13/573,002

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.



Figure 9: Universal Time Zone UTZ Stochastic Harmonization / Synchronization

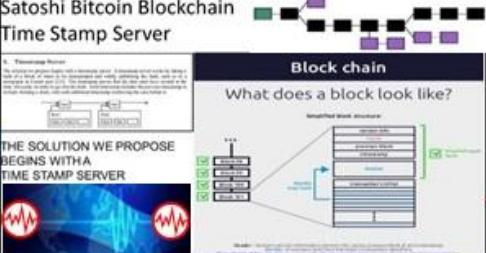
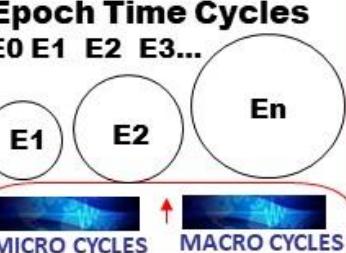
Interface Name	HEARTBEAT Administration Interface [SCOP]		
Documentation URL	http://scop.sourceforge.net/ http://linuxvirtualserver.org/software/index.html		
API Information #leT	#Big_Data	Functionality Areas 	Cloud Interface Management configuration, start, stop cloud services, edit configuration (heartbeat messages)
Programmable Money World Computer / Blockchain 	API Operation Count		
Web service access type Network Effects / A.I.	LANGUAGE / PLATFORM BINDINGS	PHP Java Erlang... 	Web application, front end to [network, device, system, blockchain] heartbeat
Interface Characteristics 	SCOP is a web application, PHP based front-end to heartbeat, IP Virtual Server ipvs and Idirectord [e.g., check interval @ 5 seconds] SCOP can start/stop services, view/ edit configuration files e.g., heartbeat message state management snapshots, backups, take a service online/offline, add/ remove virtual/real servers, services etc.		
"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	Satoshi Bitcoin Blockchain Time Stamp Server 	Epoch Time Cycles E0 E1 E2 E3... 

Figure 10: SCOP Heartbeat Epoch Time Interval Start, Stop, TTL Time To Live

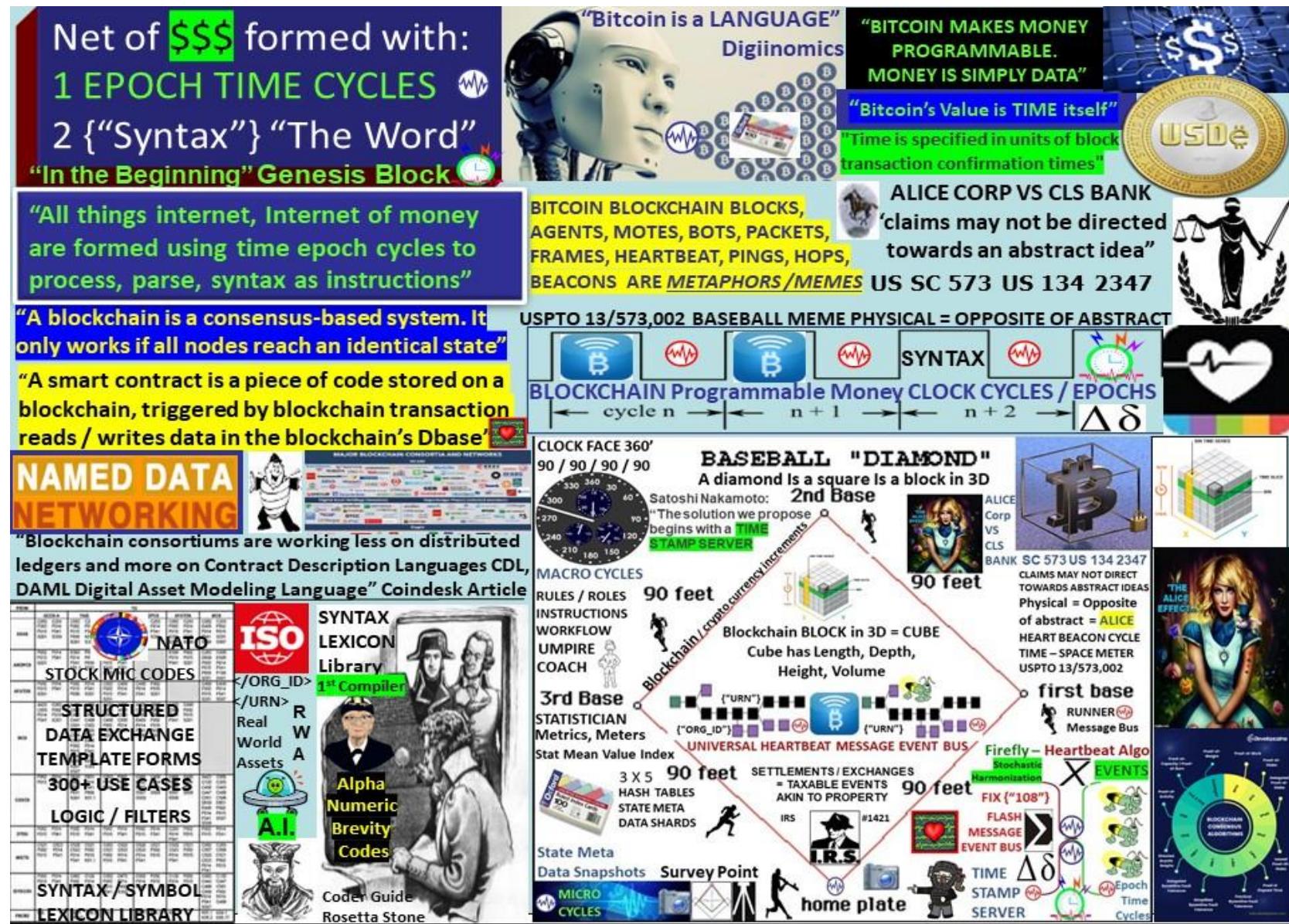


FIGURE 11: The Alice Effect / SCOTUS Alice Corp Vs CLS Bank 2014 ruling

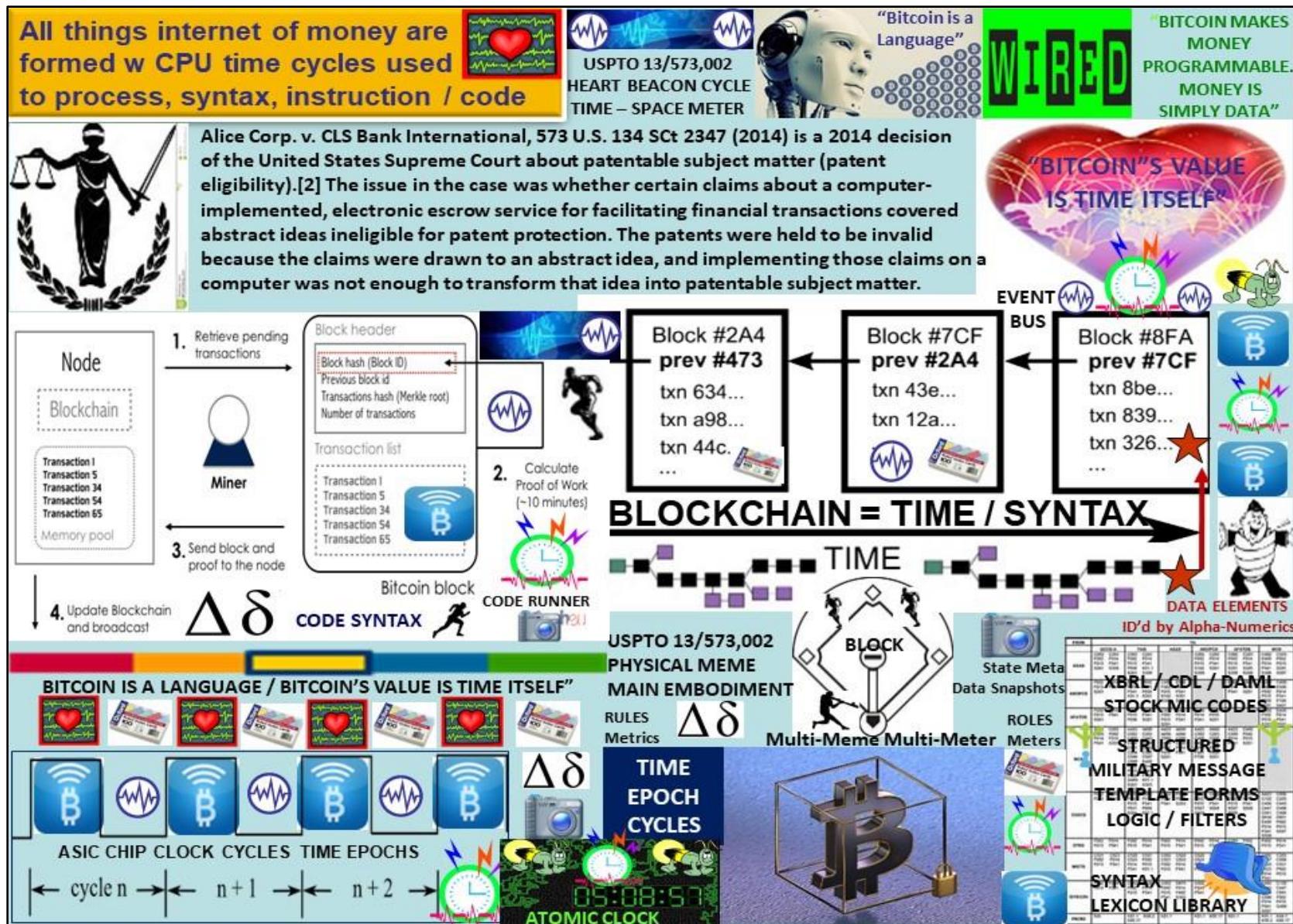


FIGURE 12: How the internet really works / impact on SCOTUS Alice Corp Ruling 2014 "Alice Effect"

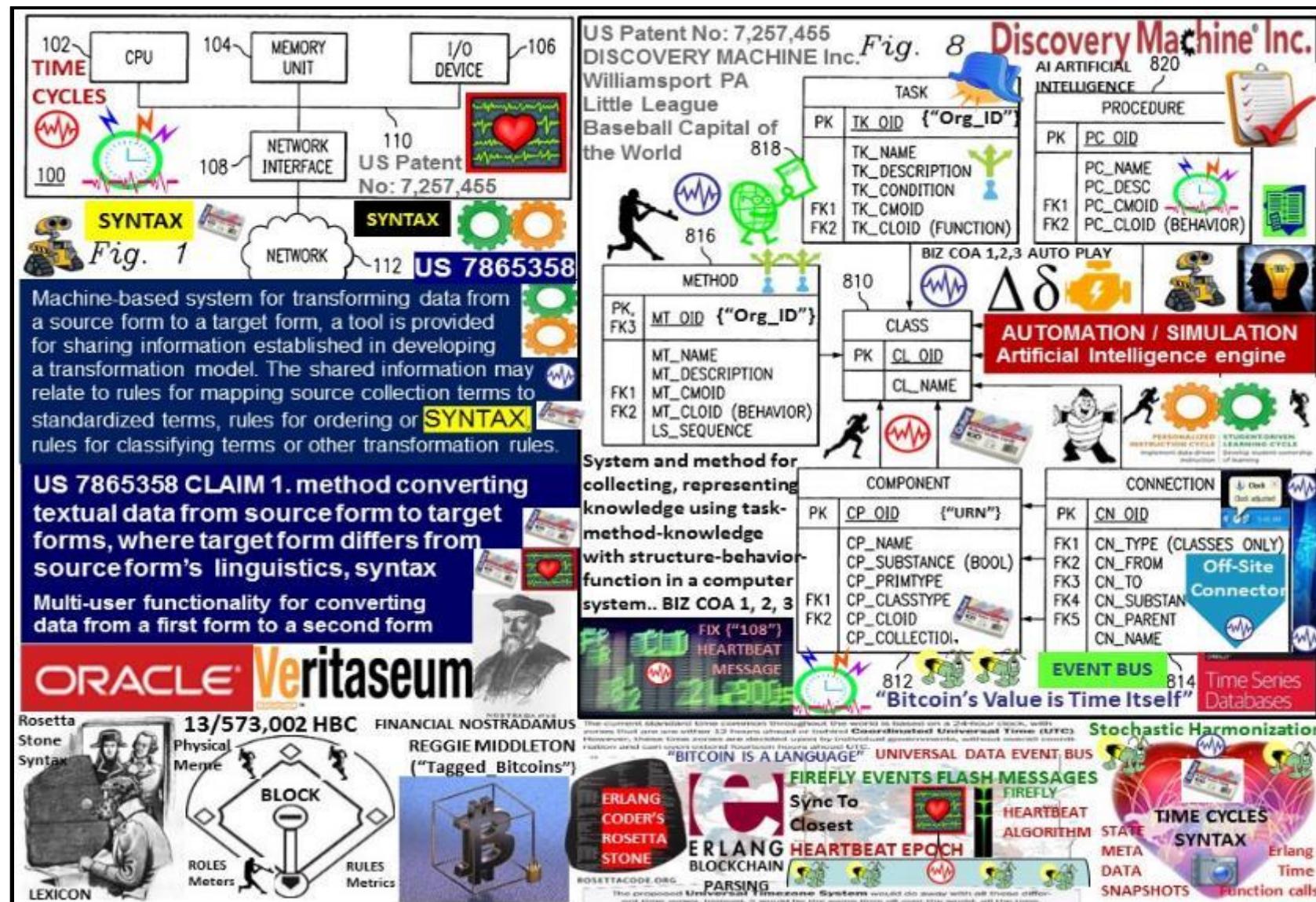


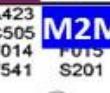


Figure 14: Firefly Inspired Heartbeat Synchronization Algorithm





FIGURE 16: TERRA TRC TRADE REFERENCE COMMODITY BASED CURRENCY

FROM	TO								CODE GUIDE								
	GCCS-A		TAIS		ASAS		AMDPCS		AFATDS		MCS						
ASAS	C002 F002 F015 S201	C203 F014 F541 S309	C002 C203	USMT / XML MTF FORMATTED MESSAGE CATALOG = 300 + messages info exchange sets using common, CONSENSUS Message Text Formats MTFs. MTFs specify </CONTENT> / info agreed by group consensus presenting information in a logical, well specified unambiguous layout resulting in a highly efficient info payload to overhead ratio													
AMDPCS	TOKENS OPSCODE BREVITY CODES		MFTs. MTFs specify </CONTENT> / info agreed by group consensus presenting information in a logical, well specified unambiguous layout resulting in a highly efficient info payload to overhead ratio														
AFATDS	F002 F015 S201	F014 F541 S201	A.I. INFOCON 5 4 3 2 1 INFORMATION CONDITION														
MCS		A423 C505 F014 F541 S201		A423 C002 C400 C447 C501 C504 C506 C508 F002 F015 F658 G489 S201 S507	A659 C203 C443 C488 C503 C505 C507 E400 F014 F756 K01.1 S303 S507	A423 A659 A656 C002 C400 C505 F002 F015 F541 S201	 ASSET TOKENS Token Economy	Syntax Lexicon Coder's Guide			"SYMBOLS RULE THE WORLD" 						
MESSAGE CATALOG 300 + Use Cases																	
Data Elements: entity, attribute, relationship equivalents HEARTBEAT MESSAGE = K00.99 </108> {"108"}																	
Object Categories		Examples	Location	Movement	Identify	Status	Activity	Intent									
OOB		SYNTAX LEXICON	STRUCTURED DATA lat/long		EXCHANGE Message Sets country / alliance, type/class	Message	Sets	targeting, reconverting	COA JS{}								
Infrastructure		Comm, power, transportation, water/sewer	network, grid	throughput, flow rates,	name, part-of relationships	BDA, op levels	repair, maintenance	expansion plans	YAML								
Sociological		Culture, religion, economic, ethnic, government, history, languages	temples, historic structures	ER Model	Class Diagram	Relational Database	Object DBMS	XML DTD / Schema	TADILs	MTF							
Geophysical		Terrain, weather, climatology, oceanography, astrometry	feature lat/long, alt/dpth	Entity	Class	Table	Class	Element	Message	Message							
			Attribute	Attribute	Field / Column	Attribute	Child Element or Element Attribute	DRI	FFRN / FFN / FUDN								
			Domain Value	PURCHASE CODES	Instance, Value			TOKENS	DUI	FUD							

Information Elements Roles

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



FFUDN: Field Format Unit Designator

EFIRN Field Format Index Reference #

**Structured military messaging ID's
messages, message sets, data
element, symbol fields </108>**



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	2 - Estimate Type	
11.4.1.3 - Value	PURCHASE	1.2.1 - Estimated
	CODES	1.2.2 - Observed
		1.2.3 - Predicted
		1.2.4 - Smoothed Data
SYMBOL	Friend	Neutral
2525C	Partner	
		Hostile
		Competitor
11.4.1.3.5 - Surface		3 - 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

FIGURE 17: Code Syntax Lexicon, Message Template Library

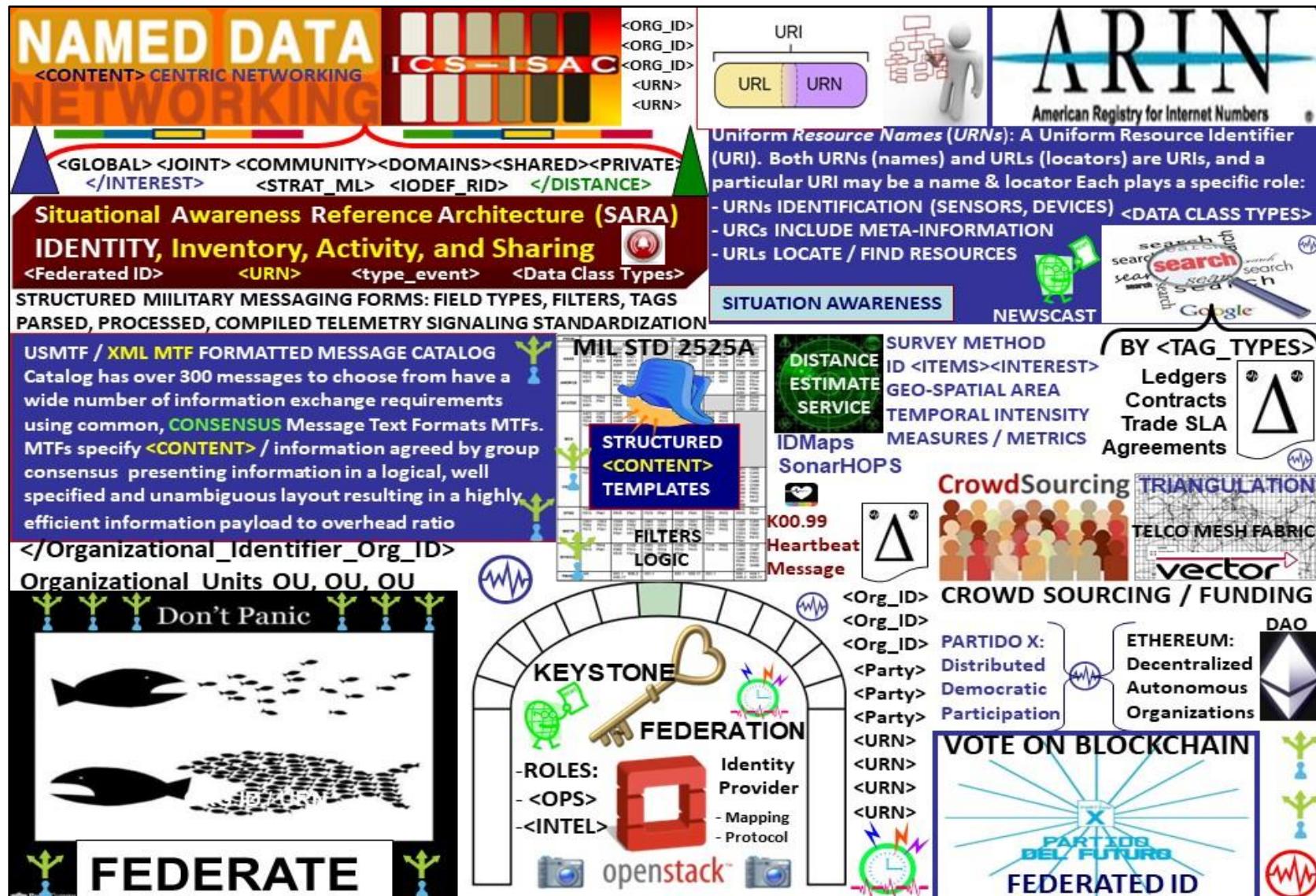


FIGURE 19: Situation Awareness Reference Architecture SARA

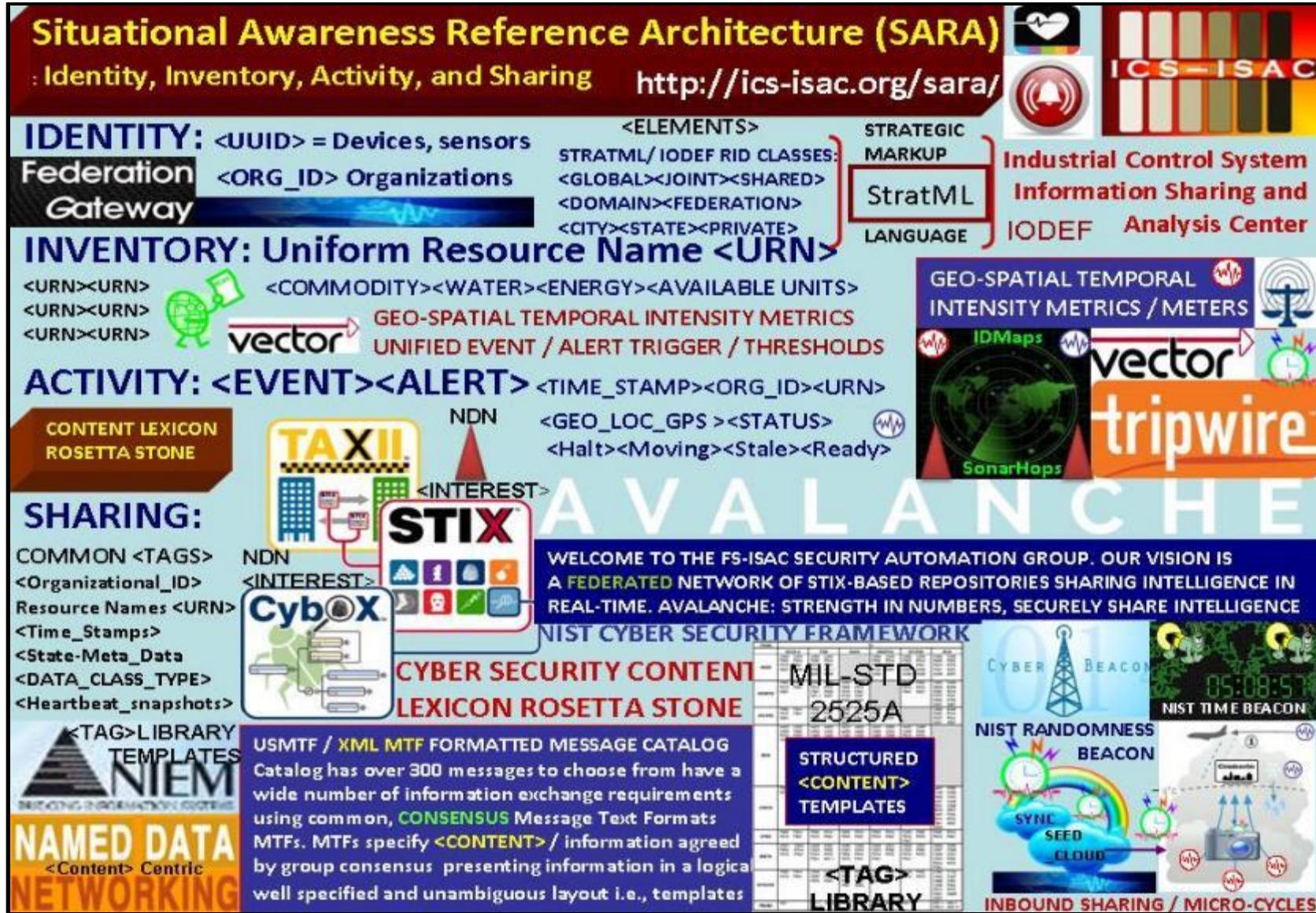


FIGURE 20: Figure KEYSTONE FEDERATION SYNTAX LEXICON LIBRARY



Figure 21: FEDERATE / FEDERATION

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

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.



FIGURE 22: CRYPTOCURRENCY LAND USE MEME / IRS MEME 1421 / USPTO 13/573,002

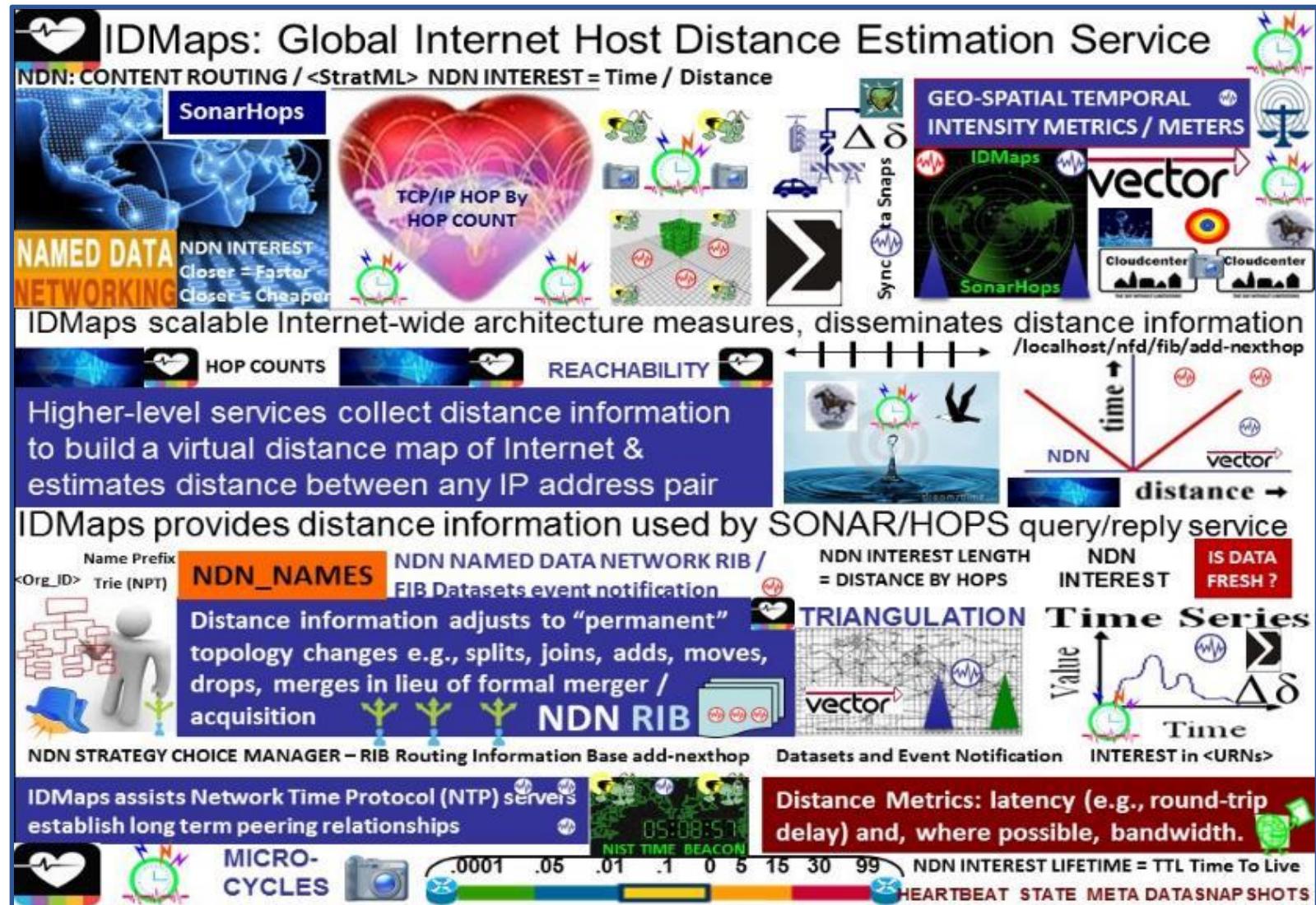


Figure 23: IDMMaps / SonarHops Distance Estimation Service / USPTO 13/573,002

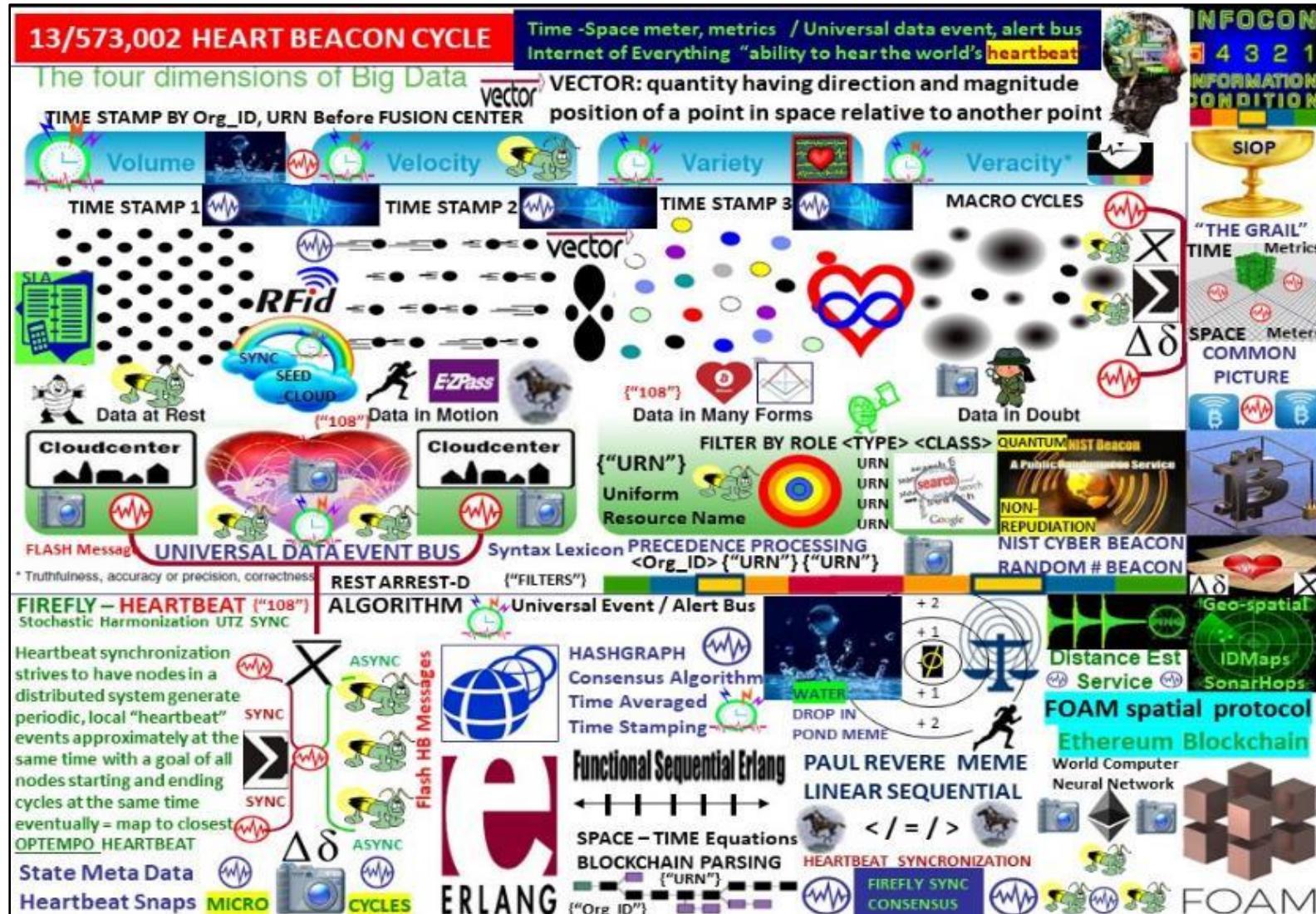


FIGURE 24: BIG DATA THE NEXT OIL / USPTO 13/573,002

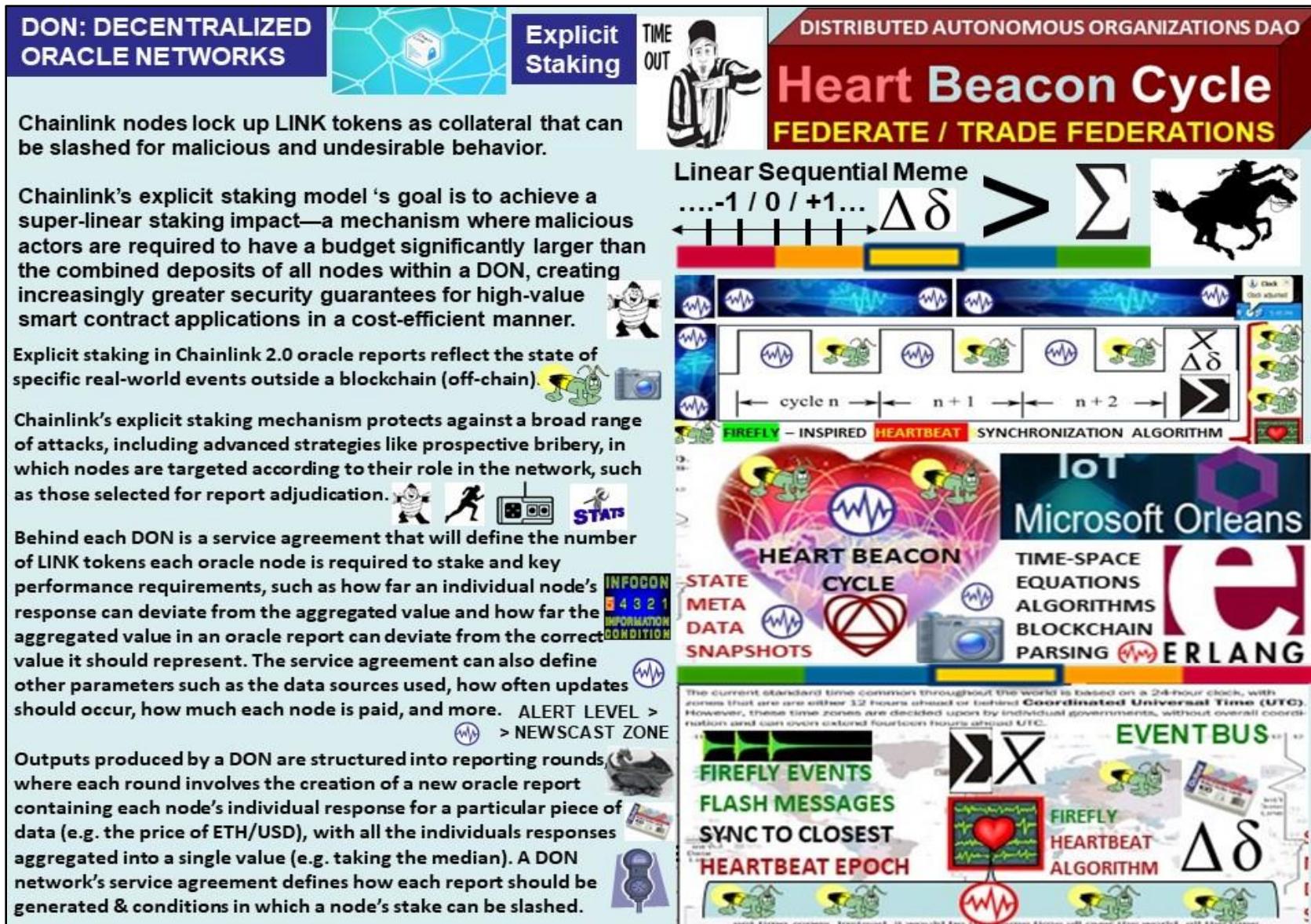


Figure 25: Decentralized Oracle Networks / USPTO 13/573,002



FIGURE 26: ENERGY ATTENUATES OVER DISTANCES / USPTO 13/573,002

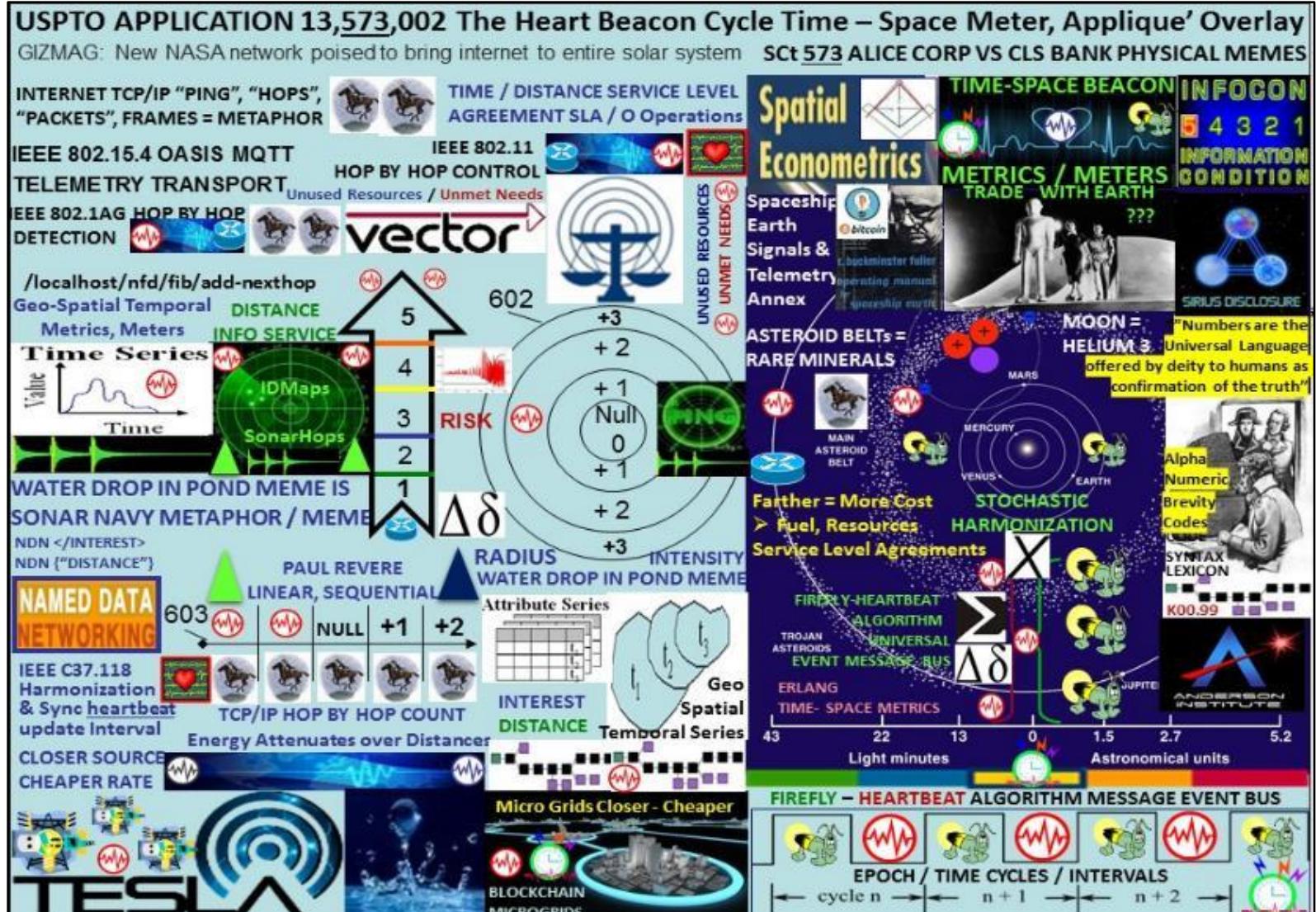


Figure 27: SPACE – TIME BEACON

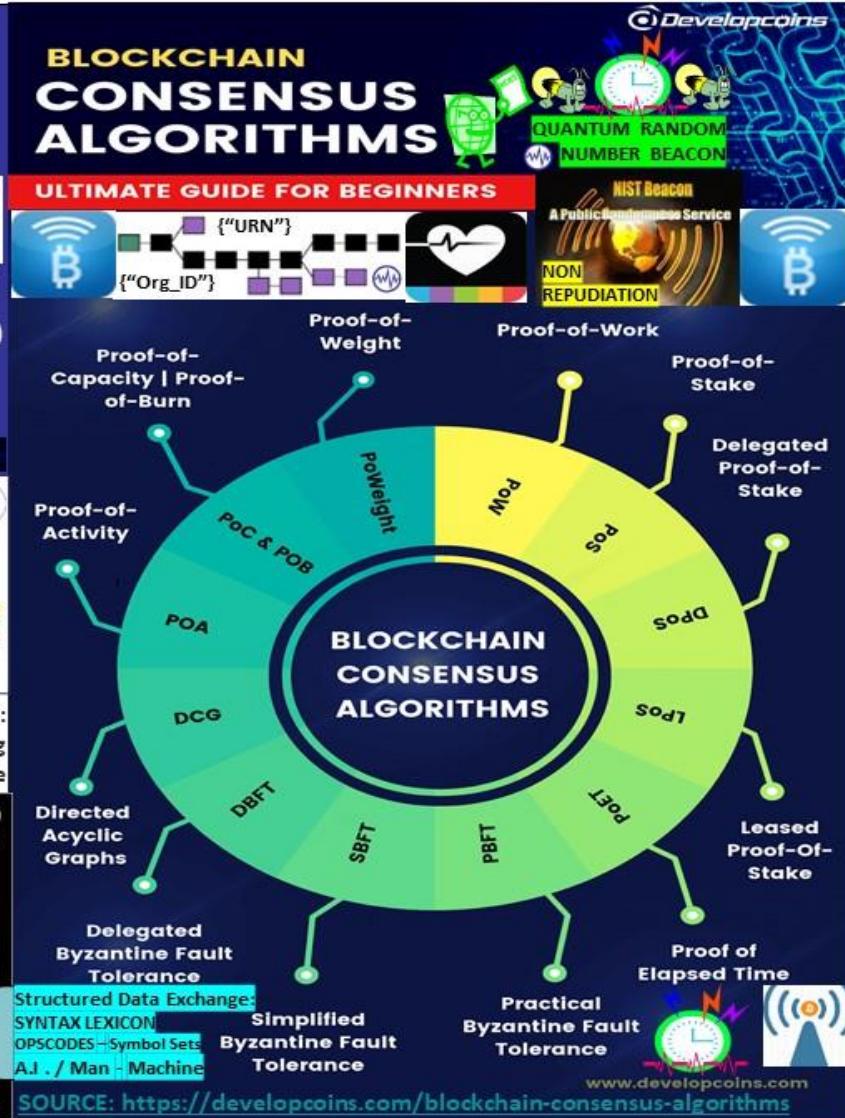


Figure 28: Universal meme / myriad consensus algorithm blockchain memes / metaphors = Tower of Babel



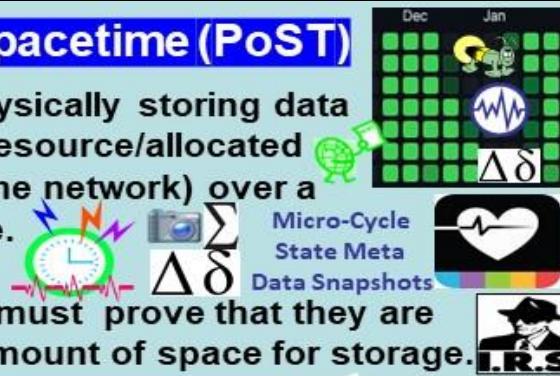
Figure 29: Proof of Work Consensus / USPTO 13/573,002



FIGURE 30: Proof of Stake Consensus / USPTO 13/573,002

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.

DISTRIBUTED AUTONOMOUS ORGANIZATIONS DAO

Heart Beacon Cycle FEDERATE / TRADE FEDERATIONS

CLOCK FACE 360°
90 / 90 / 90 / 90
330 340 30 60
270 240 210 180 150
Satoshi Nakamoto: 2nd Base
The solution we propose begins with a TIME STAMP SERVER

BASEBALL "DIAMOND"
A diamond is a square is a block in 3D
ALICE Corp VS CLS
BANK SC 573 US 134 2347 CLAIMS MAY NOT DIRECT TOWARDS ABSTRACT IDEAS Physical is Opposite of abstract = ALICE HEART BEACON CYCLE TIME - SPACE METER USPTO 13/573,002

first base
RUNNER Message Bus

Blockchain / crypto currency increments 90 feet
Blockchain BLOCK in 3D = CUBE Cube has Length, Depth, Height, Volume

MACRO CYCLES
RULES / ROLES
INSTRUCTIONS
WORKFLOW
UMPIRE
COACH

3rd Base
STATISTICIAN Metrics, Meters

Stat Mean Value Index

90 feet
Blockchain Harmonization FIX ("108") FLASH MESSAGE EVENT BUS

3 X 5 HASH TABLES STATE META DATA SHARDS 90 feet
SETTLEMENTS / EXCHANGES TAXABLE EVENTS AKA TO PROPERTY

IRS #1421 State Meta Data Snapshots Survey Point MICRO CYCLES

home plate TIME STAMP SERVER Δδ

Firefly - Heartbeat Algo EVENTS

Universal Heartbeat Message Event Bus

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.

queueing systems wait times stochastic processes, function scheduling Start, Stop TTL

PROXIMITY BEACONS BLOCKCHAIN PARSING

ERLANG TIME EQUATIONS

Time Series Databases

MICRO- CYCLES QUANTUM RANDOM #

NIST Beacon A Public Randomness Service

NON-REPUDIATION ATOMIC CLOCK

Arrival Rate Queue Forms Limited Resource Service Rate RFID Utilization * Service Time (T_s)

Attribute Series TIME Function $t_1 t_2 t_3$

Geo Spatial Temporal Series

Time Series Value Time

ERLANG CALENDAR: Calculate Wait Times Time Stamp to Date Time Conversion

Figure 31: PoST Proof of Space – Time Consensus / USPTO 13/573,002

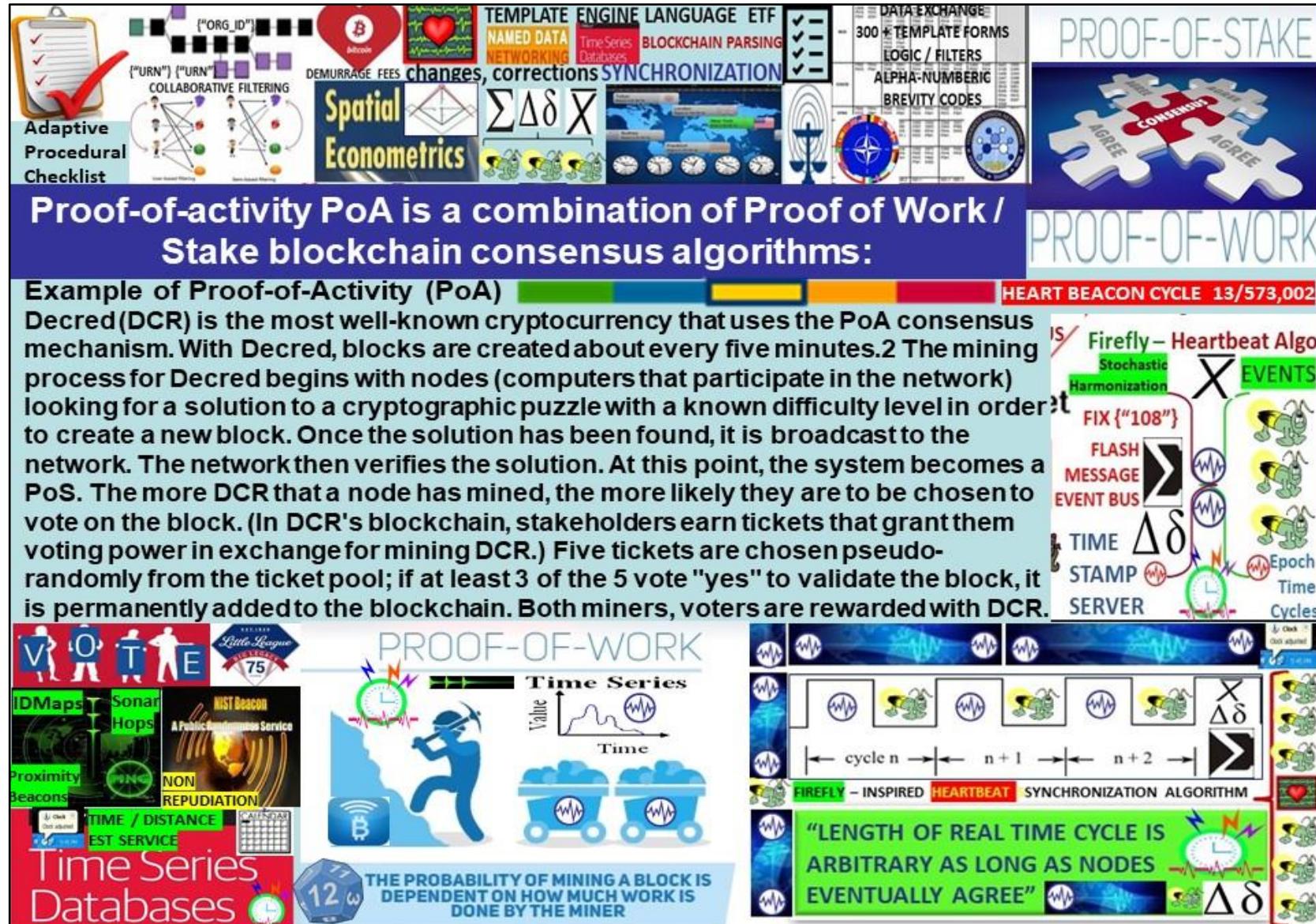


Figure 32: Proof of Activity Consensus / USPTO 13/573,002

Proof of Authority

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.



DISTRIBUTED AUTONOMOUS ORGANIZATIONS DAO

Heart Beacon Cycle FEDERATE / TRADE FEDERATIONS

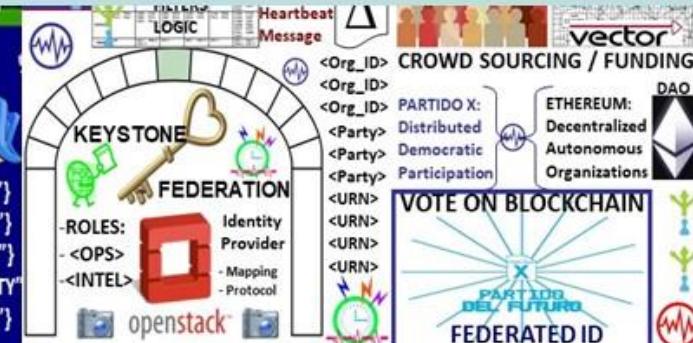
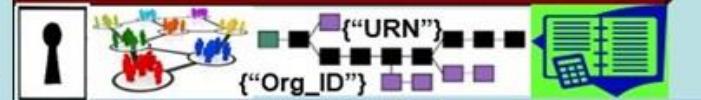


Figure 33: Proof of Authority Consensus // USPTO 13/573.002

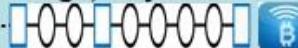
Proof of Burn



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.²

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.

UNIVERSAL HEARTBEAT MESSAGE EVENT BUS

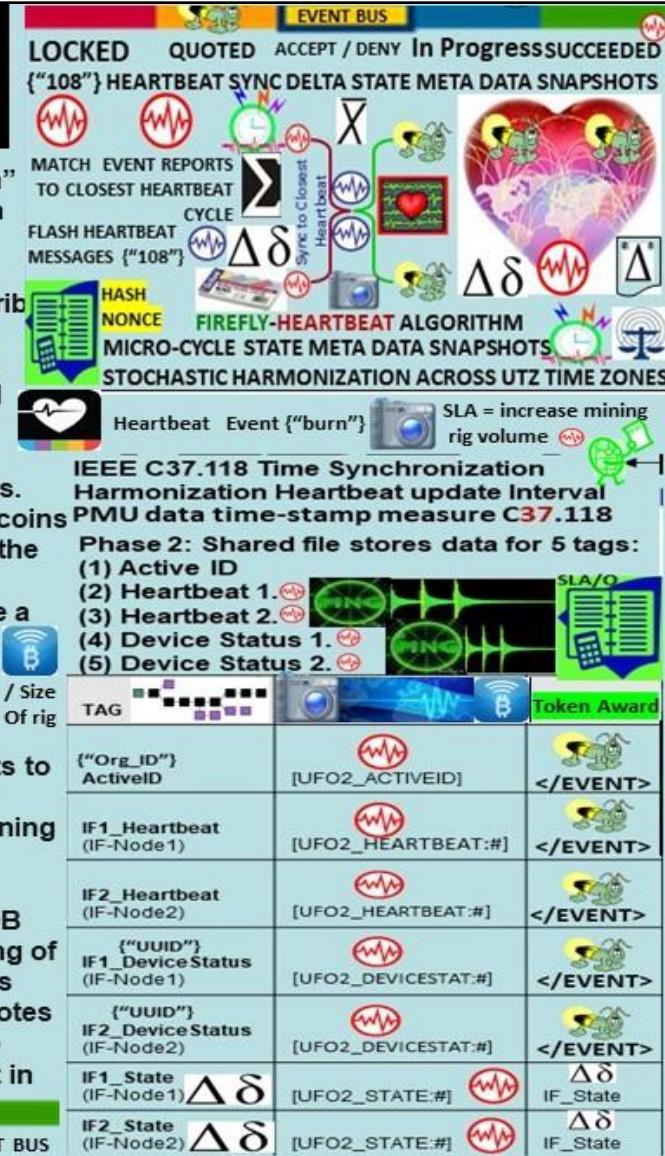


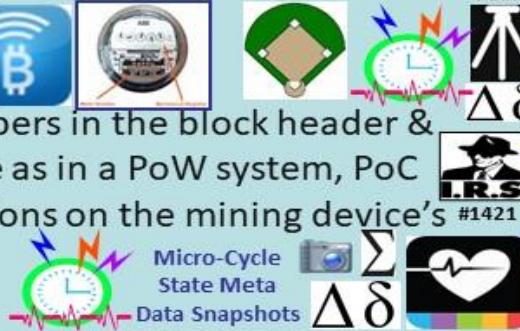
Figure 34: Proof of Burn Consensus / USPTO 13/573,002

Proof of Capacity PoC

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

Proof of capacity allows the mining devices, also known as nodes, on the [blockchain](#) network 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 more possible solution values one can store on the hard drive, the more chances a miner has to match the 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.

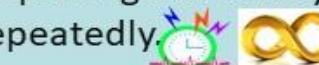


Figure 35: Proof of Capacity Consensus / USPTO 13/573,002

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.


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.

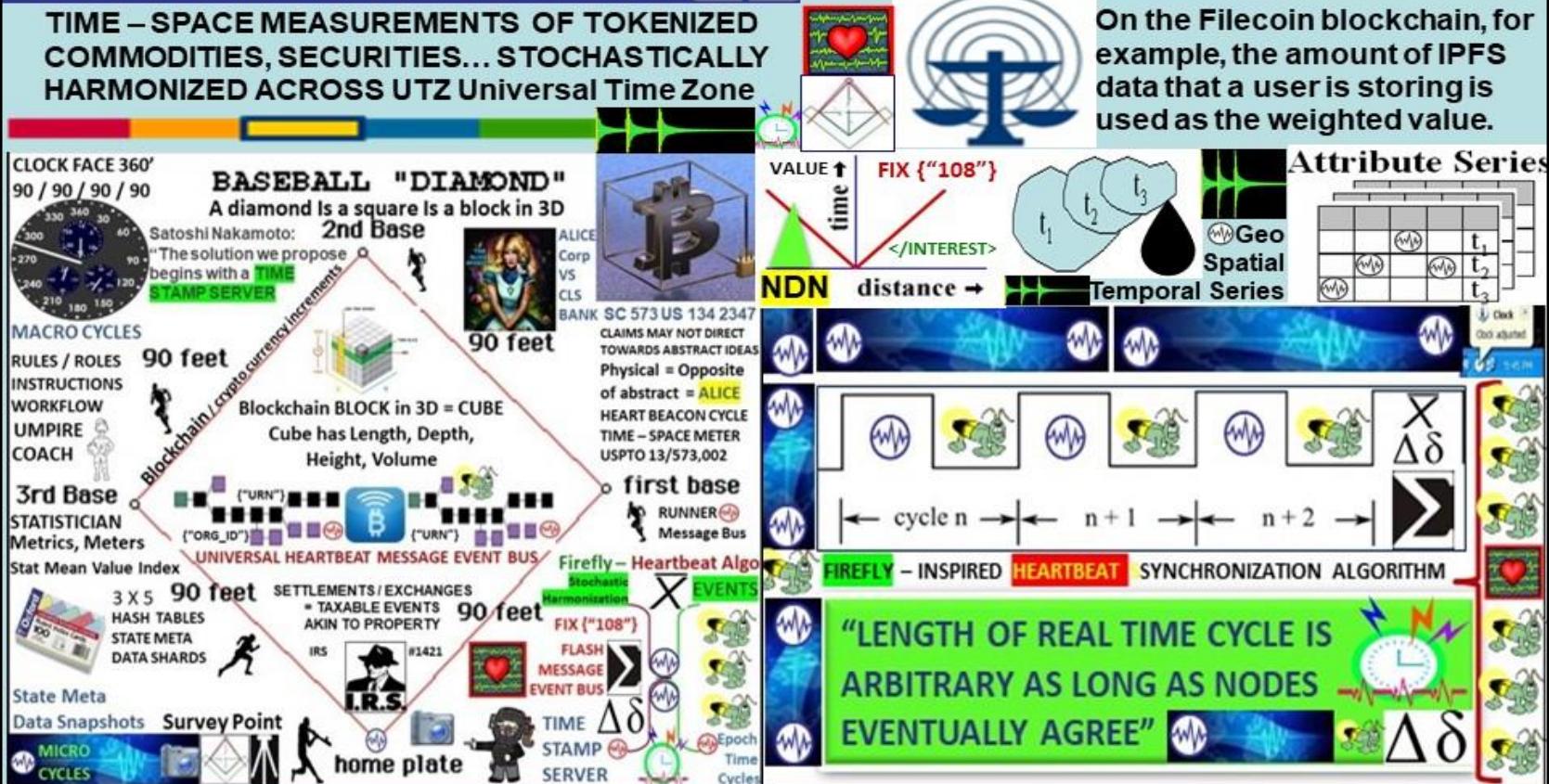


Figure 36: Proof of Weight Volumetric Consensus / USPTO 13/573,002

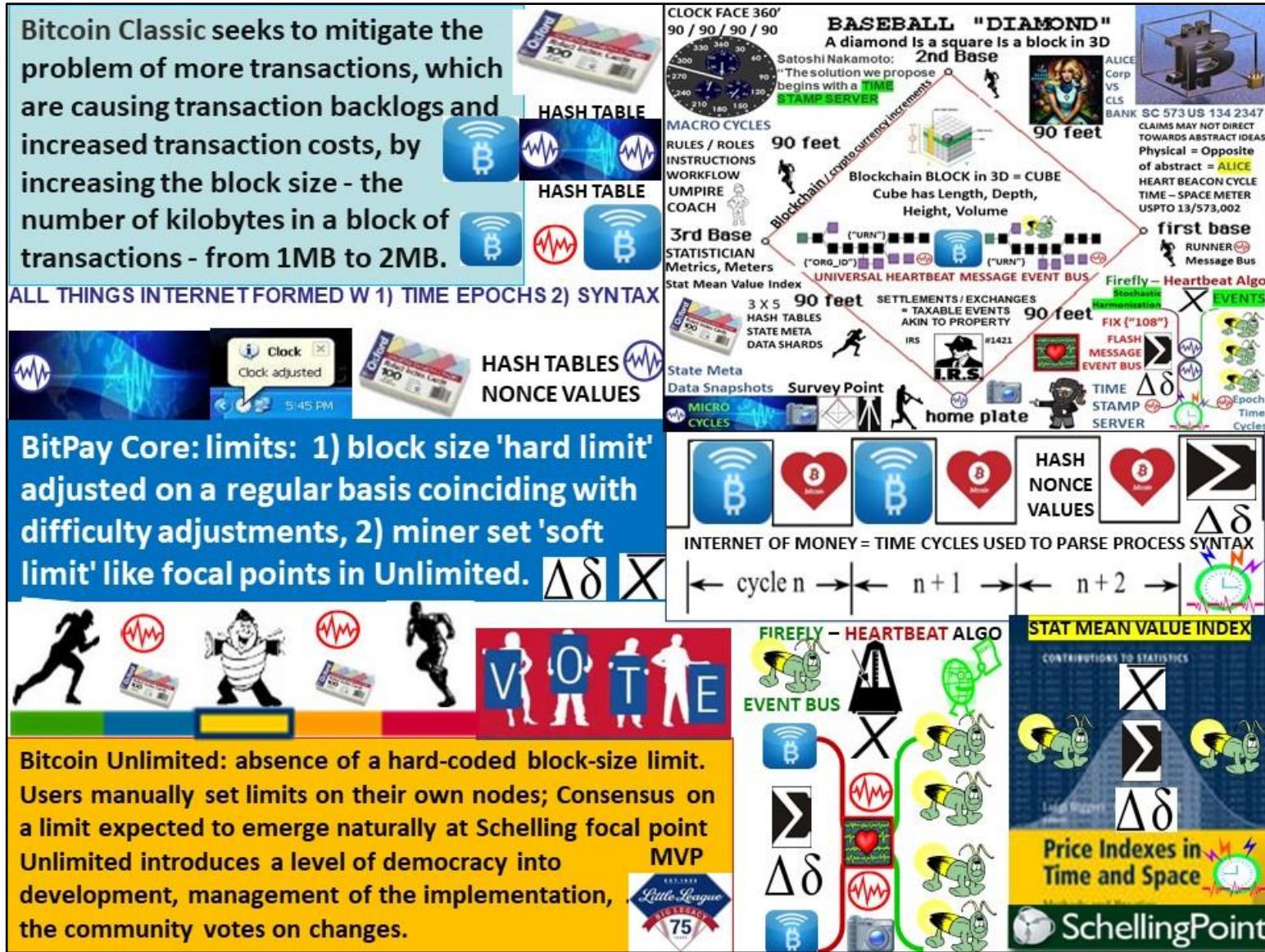


FIGURE 37: Bitcoin Classic - Core - Unlimited // USPTO 13/573,002

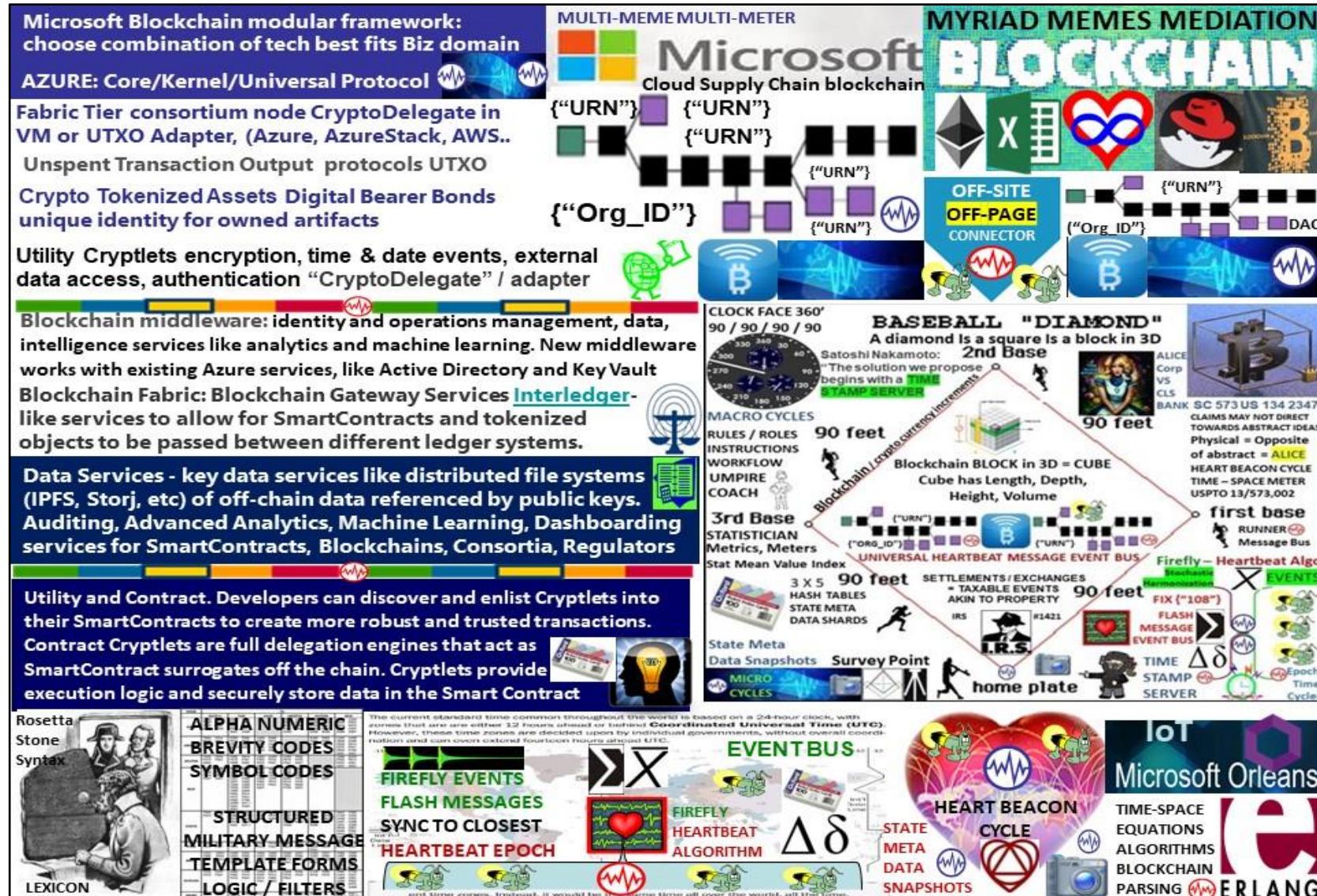


FIGURE 38: MICROSOFT CLOUD BLOCKCHAIN INTEROPERABILITY / USPTO 13/573,002

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."

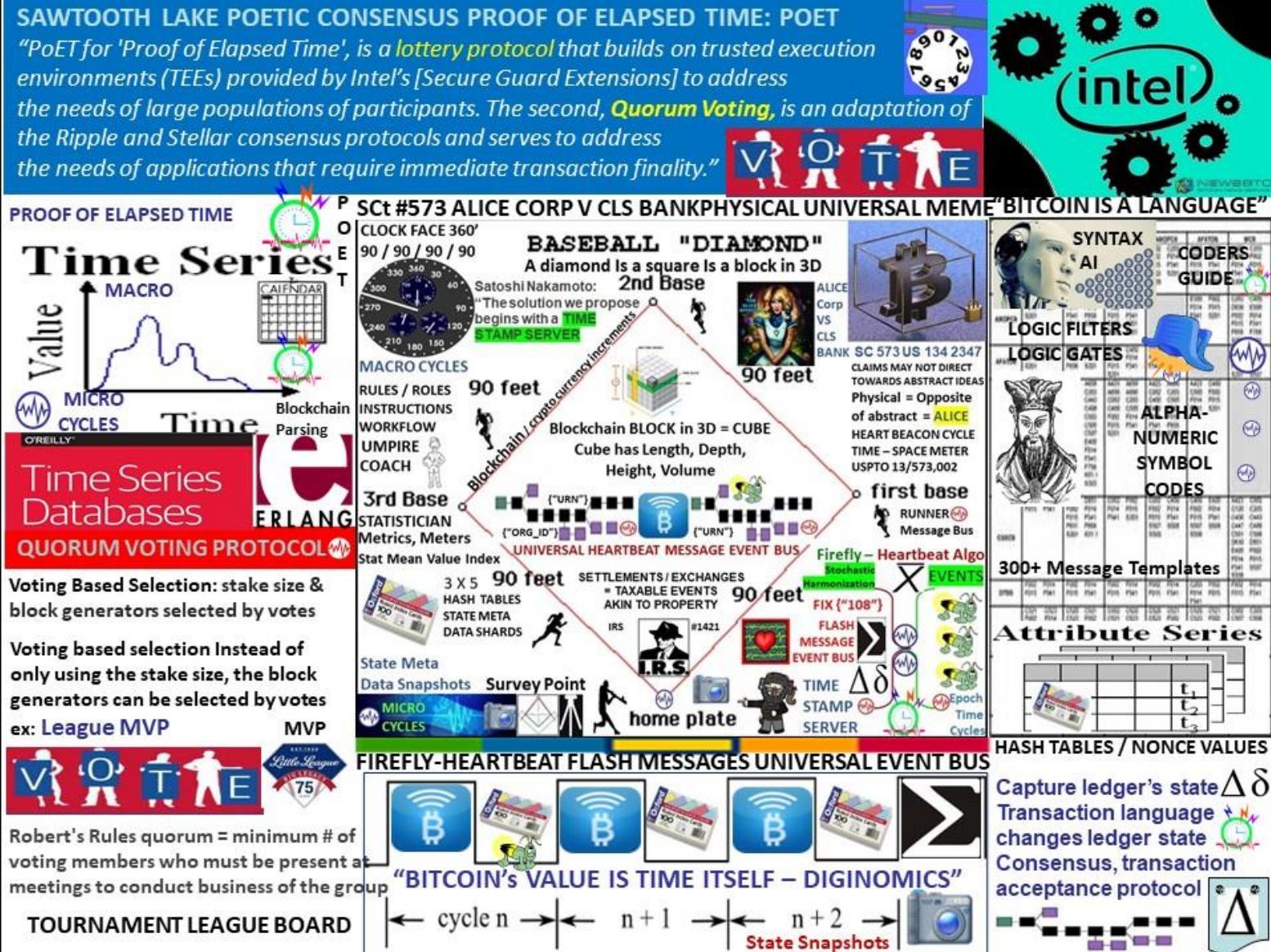


Figure 39: SAWTOOTH POET Proof of Elapsed Time Consensus / USPTO 13/573,002

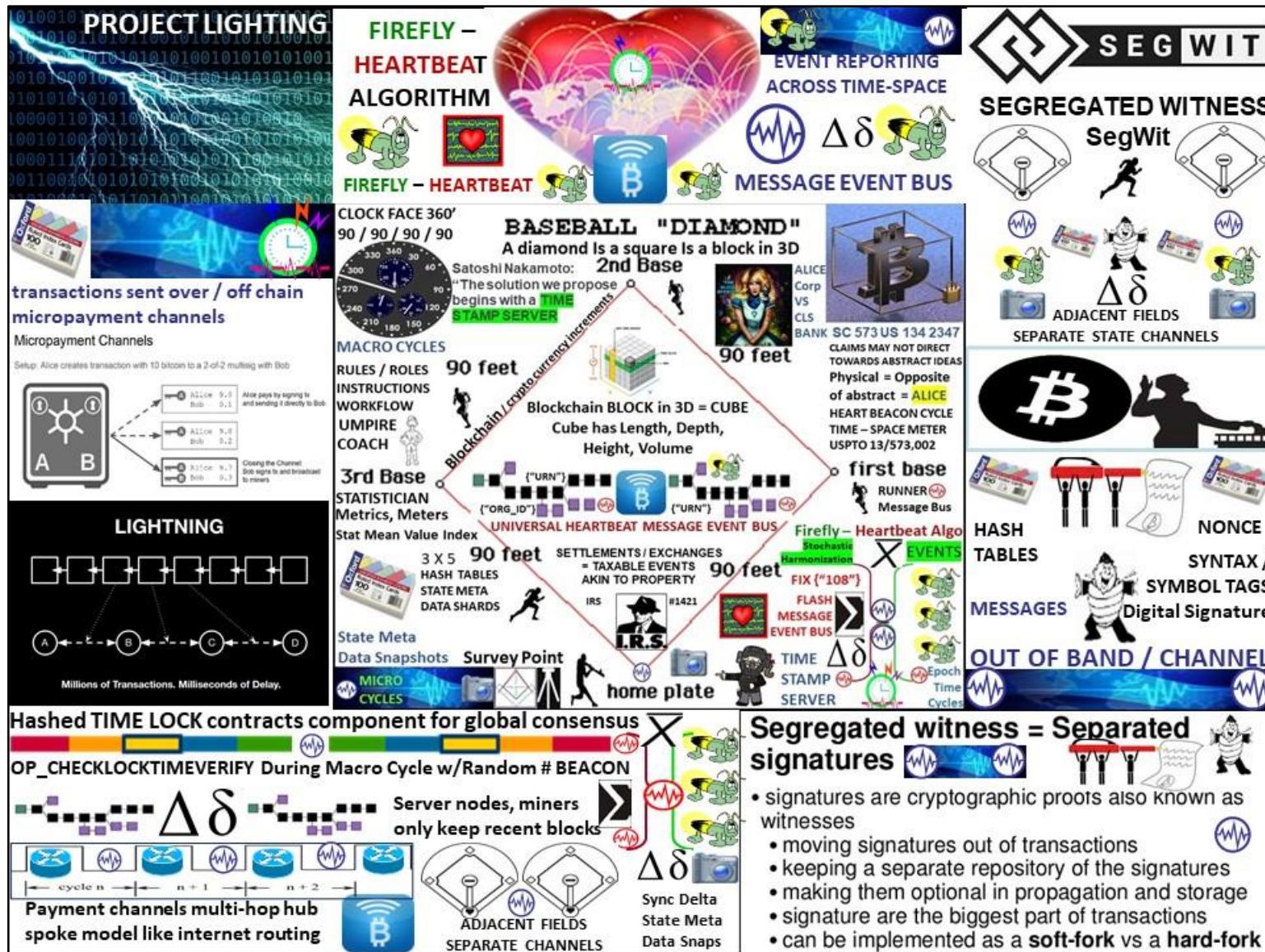


FIGURE 40: Segregated Witness / Project Lightning Consensus / USPTO 13/573,002

BITCOIN NG NEX GEN / Heart Beacon Cycle 13/573,002

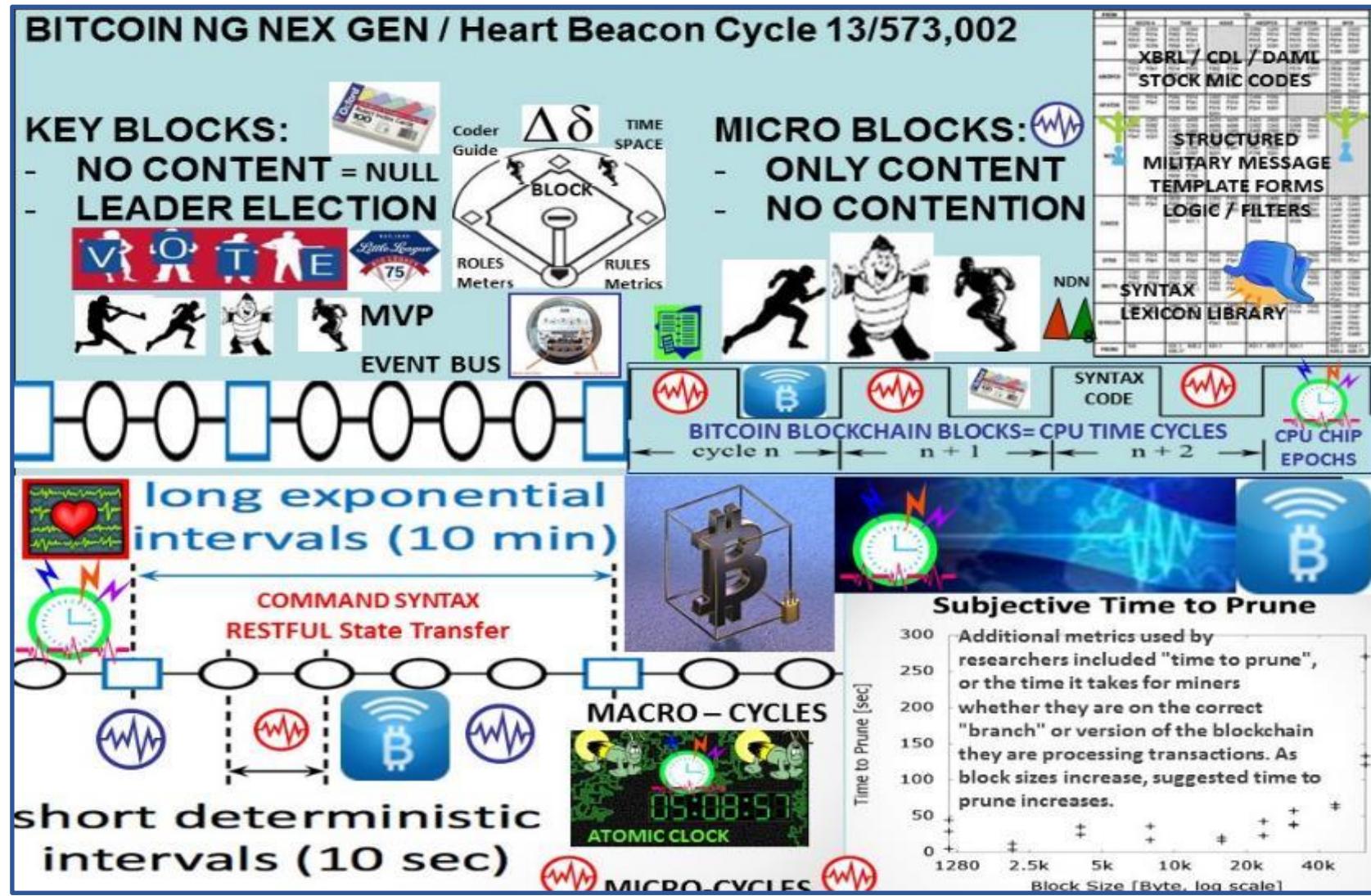


FIGURE 41: BITCOIN NG NEXT GENERATION / USPTO 13/573,002

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

Key Features:

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



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

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

All rates time-stamped in UTC.

Ability to look up by time-stamp.

Ability to look up by block-height.

Asset Classes: Digital Currencies

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

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

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

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

BRAVE NEW COIN.
Digital Currency Insights

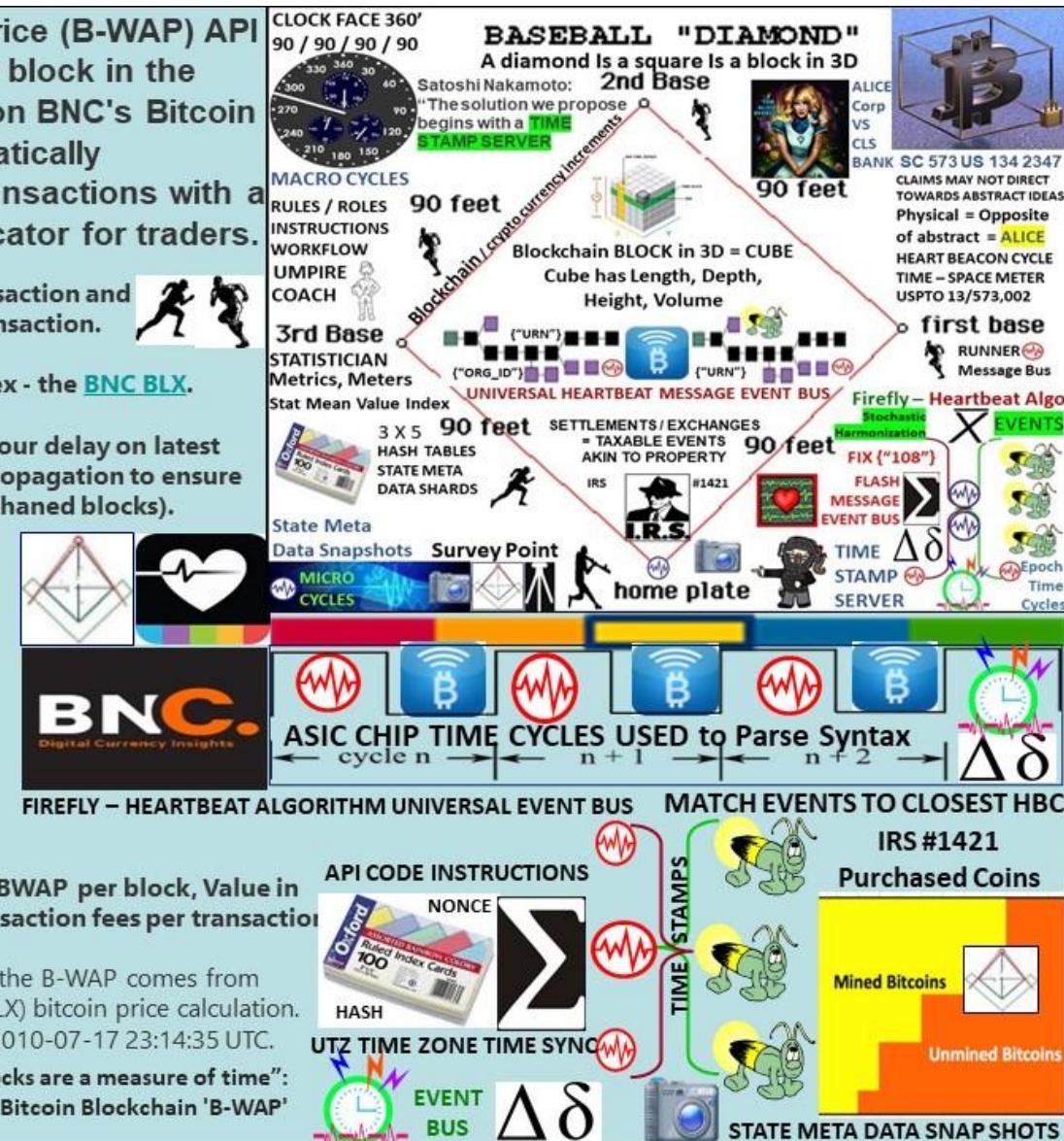


FIGURE 42: Brave New Coin B-WAP Consensus / USPTO 13/573,002



FIGURE 43: DASH / USPTO 13/573,002



FIGURE 44: ETHEREUM – CASPER / USPTO 13/573,002

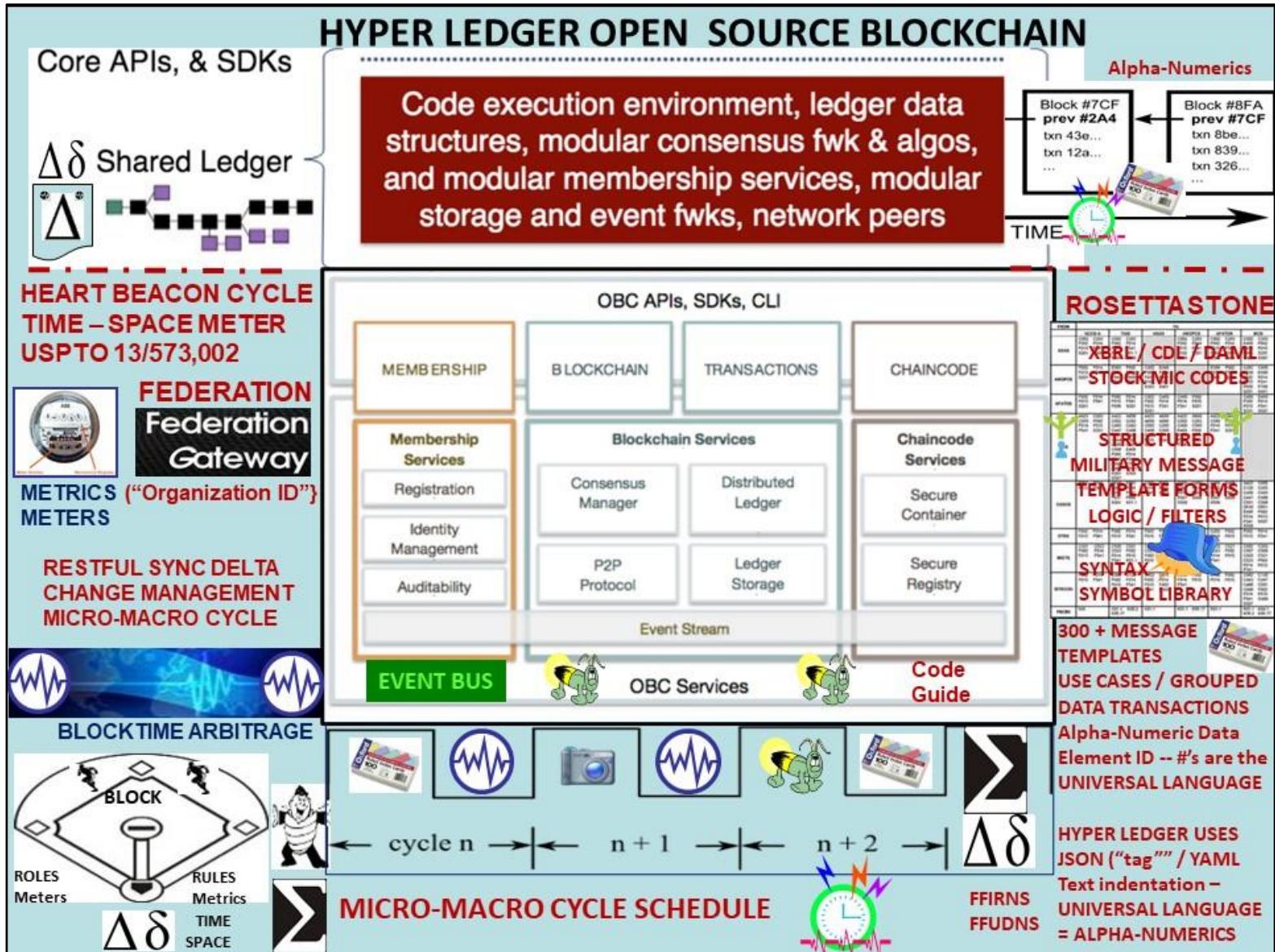


FIGURE 45: HYPERLEDGER FRAMEWORK / USPTO 13/573,002

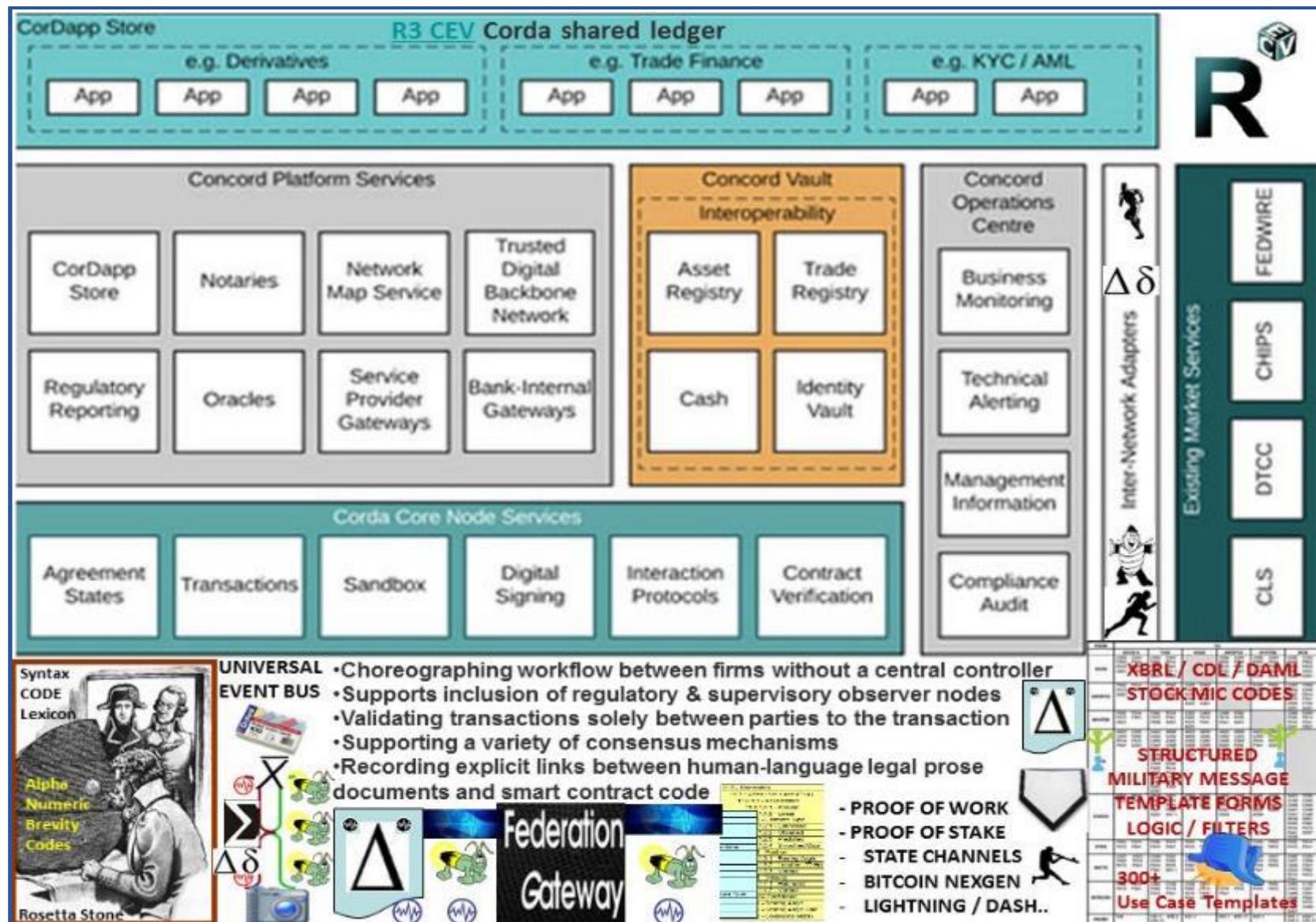


FIGURE 46: R3 Consortium CORDA / USPTO 13/573,002

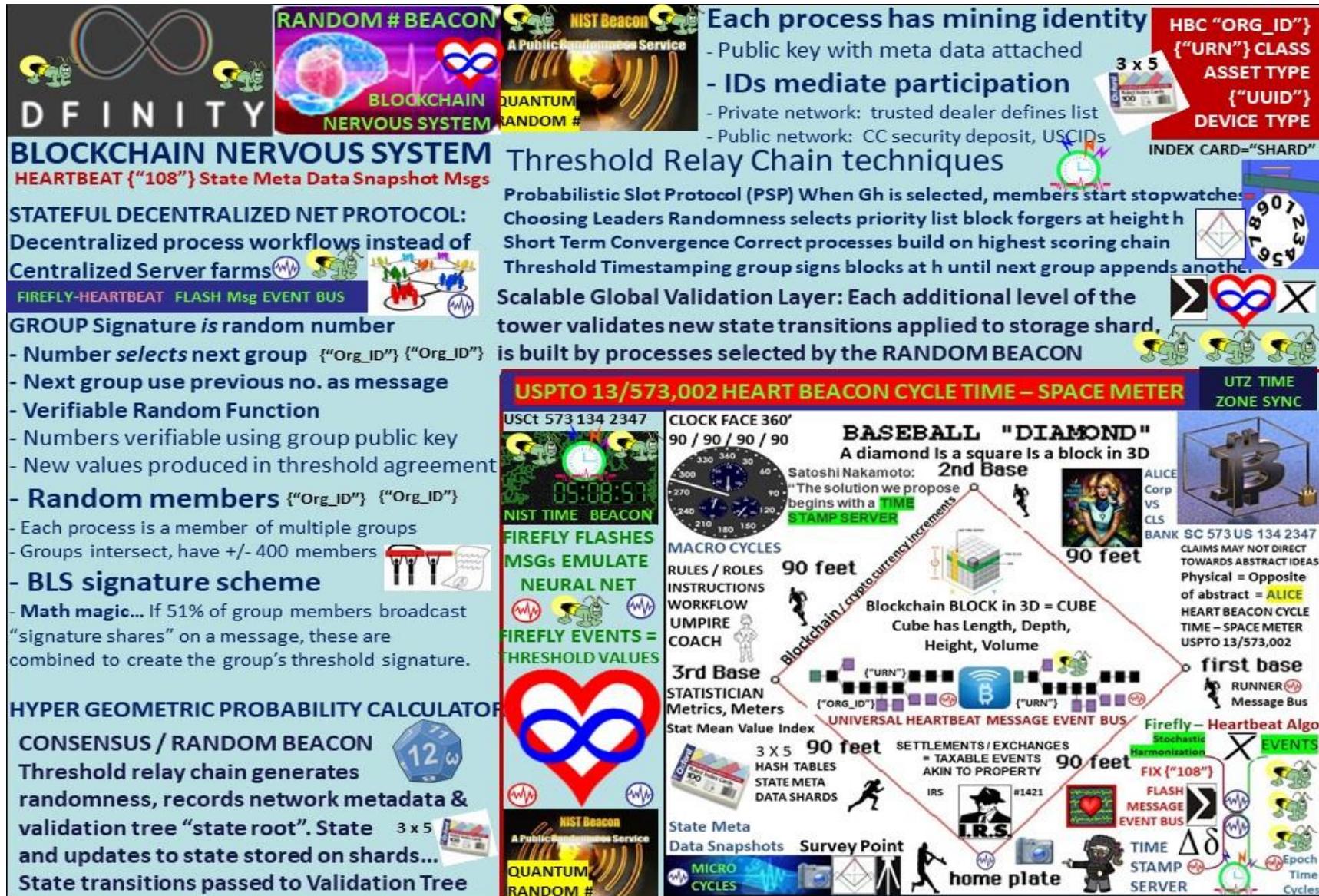
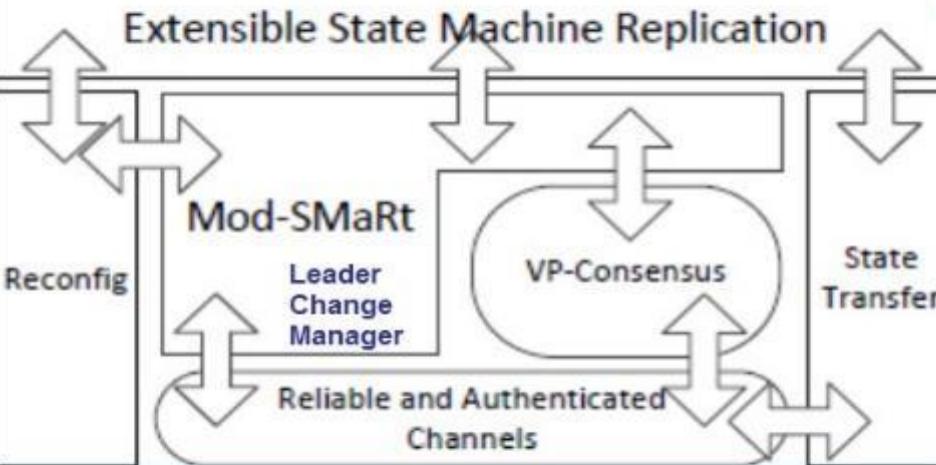


FIGURE 47: DFINITY Blockchain Nervous System / USPTO 13/573,002

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

USC ALICE CORP V CLS BANK
PHYSICAL = OPPOSITE OF ABSTRACT



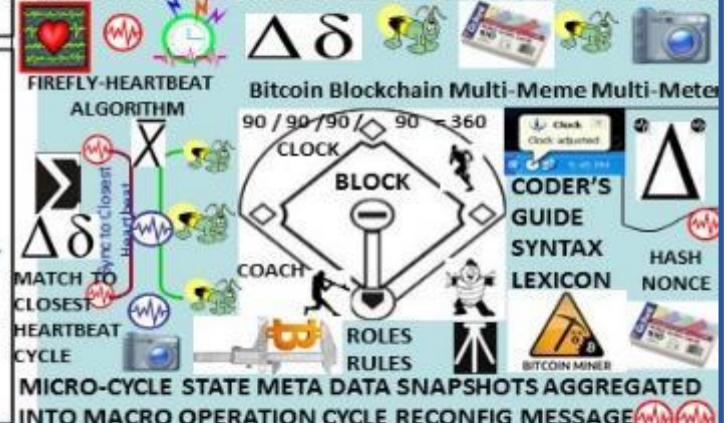
DERIVED FROM BATTLEFIELD DIGITIZATION DISTRIBUTED AUTONOMOUS ORGANIZATION DAO SYSTEM OF SYSTEMS

FEDERATED ID / ORGANIZATIONAL IDENTIFIER {"ORG_ID"}

ADDS, JOINS, DROPS, MOVES TO / FROM DAO

CHANGES IN STATE VIEWED IN "APPLIQUE' OVERLAY VIEWS

K00.99 HEARTBEAT SYNC DELTA STATE META DATA SNAPSHOT



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

Figure 48: Byzantine Fault Tolerant BFT-SMART / USPTO 13/573,002



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 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

- VALUES:   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



FIGURE 49: OpenBazaar / USPTO 13/573,002

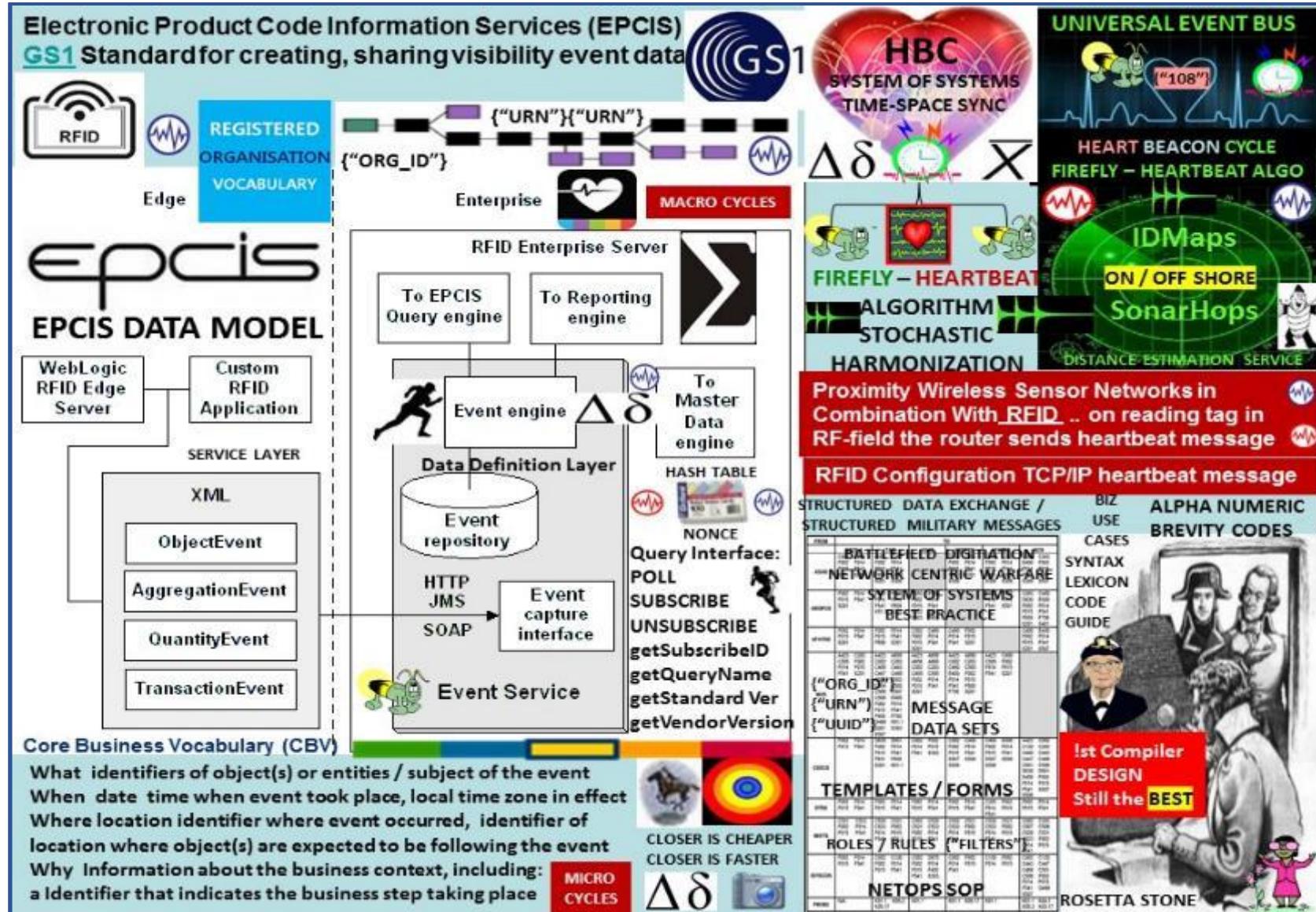


FIGURE 50: EPCIS RFID / USPTO 13/573,002



Figure 51: HASHGRAPH DAG Directed Acyclic Graph / USPTO 13/573,002



Figure 52: FEDCOIN – WORLDCOIN ECONOMIC HEARTBEAT

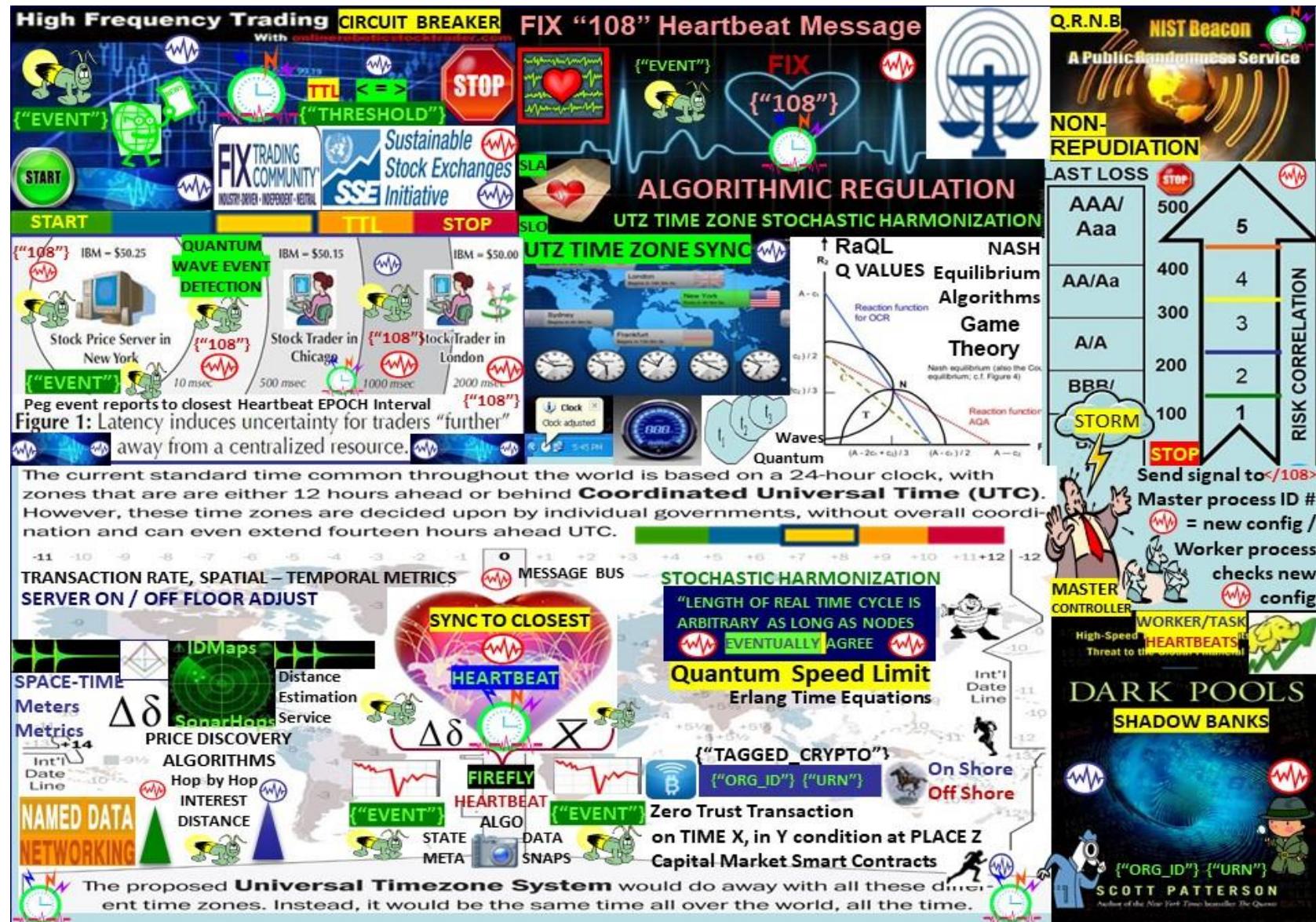


FIGURE 53: High Frequency Flash Trade Breaker HFT Algorithmic Regulation / USPTO 13/573,002



Figure 54: Econometrics, Meters, Trade Federation Demurrage Fees



FIGURE 55: TRADENET / USPTO 13/573,002



FIGURE 56: NEW ECONOMY BLOCKCHAIN BLUEPRINT / USPTO 13/573,002



FIGURE 57: Financial Nostradamus / FutureMan USPTO 13/573,002



FIGURE 58: Crypto Currency BLOCKCHAIN MESH ECONOMY

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.



FIGURE 59: GAMIFICATION / USPTO 13/573,002



Figure 60: Econometrics Framework / USPTO 13/573,002

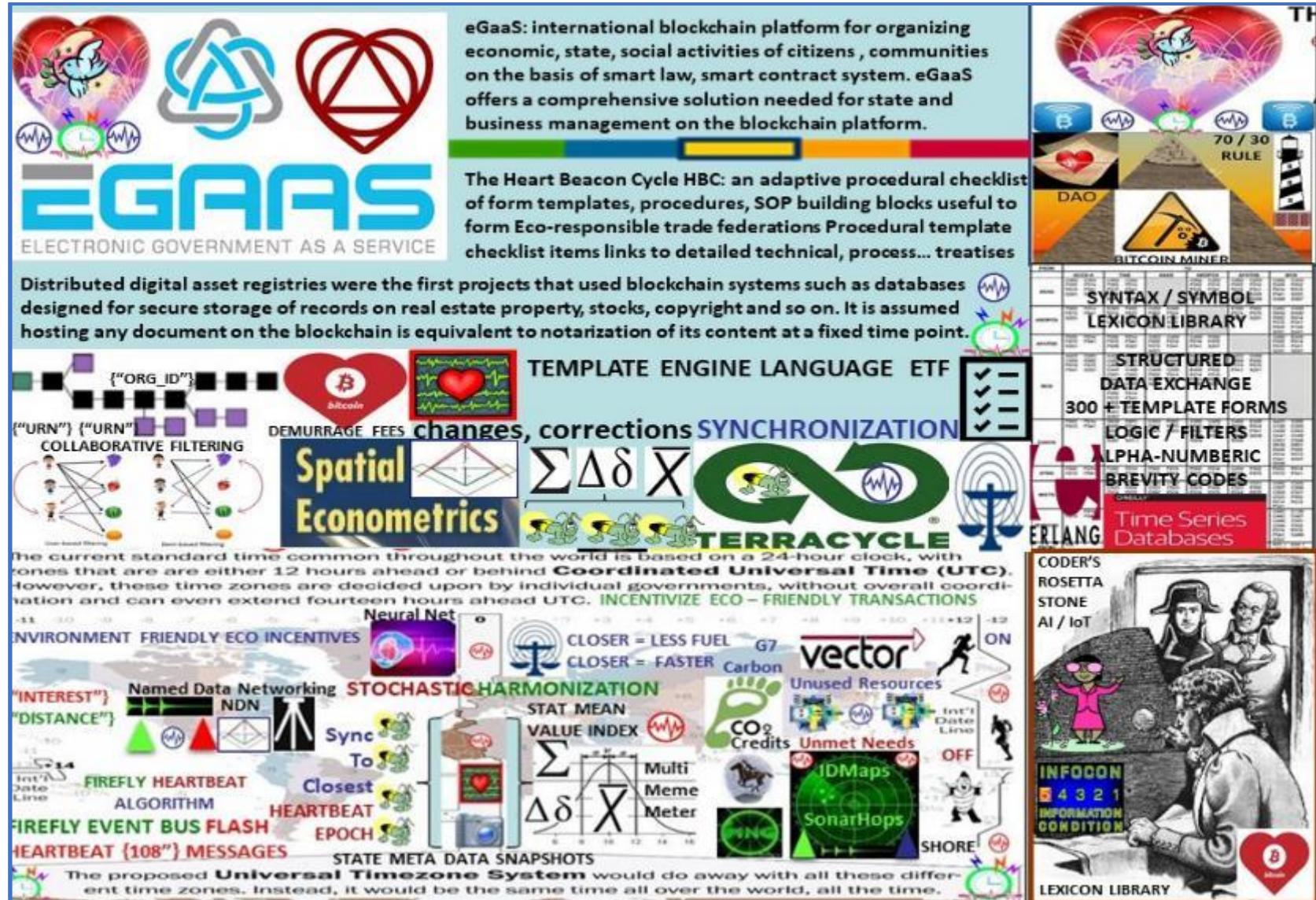


FIGURE 61: E Government as a Service E-GAAS/ USPTO 13/573,002



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

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

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

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

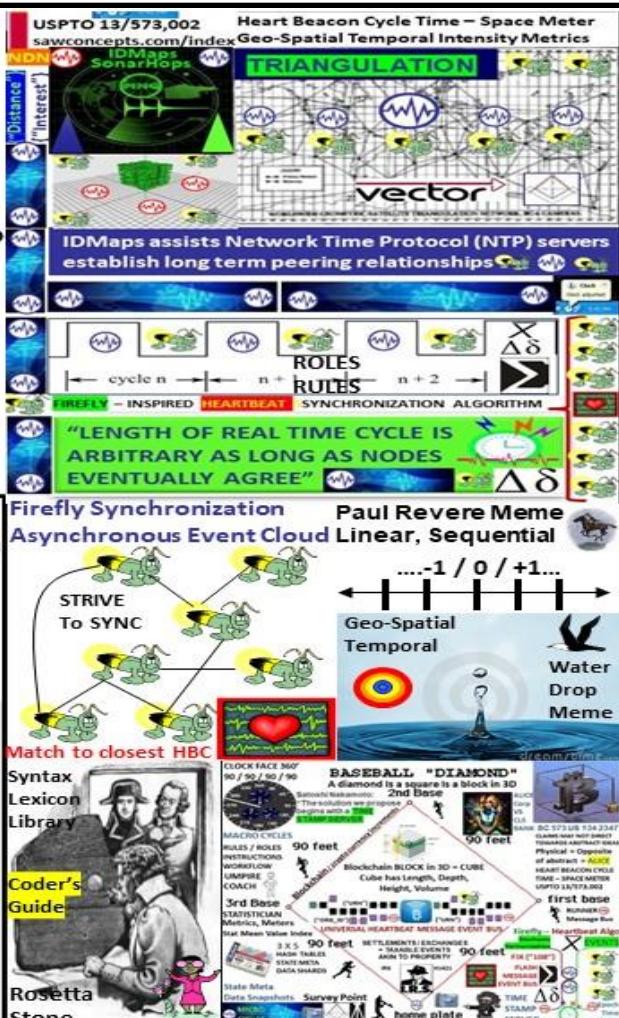
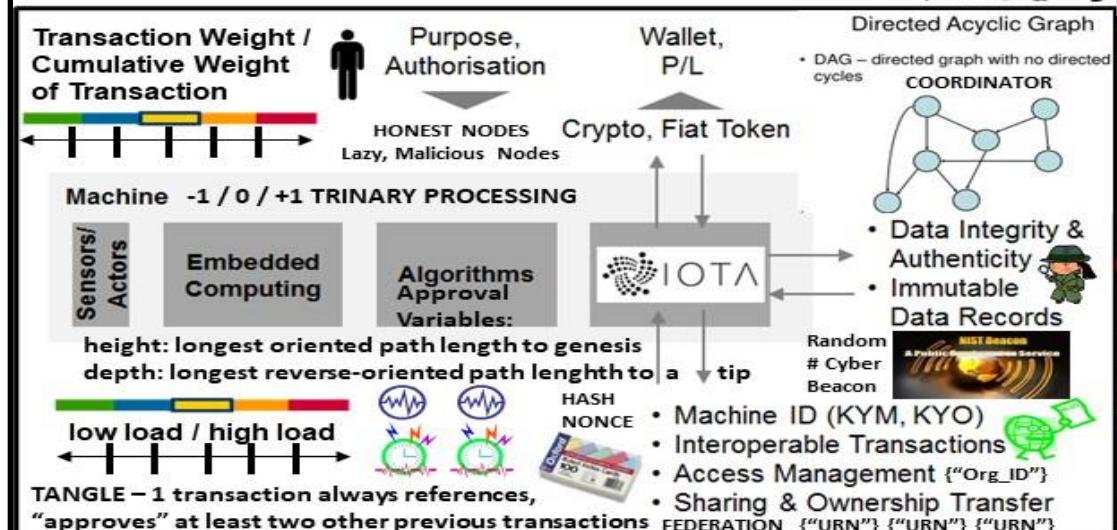


FIGURE 62: IOTA TANGLE DAG / USPTO 13/573,002

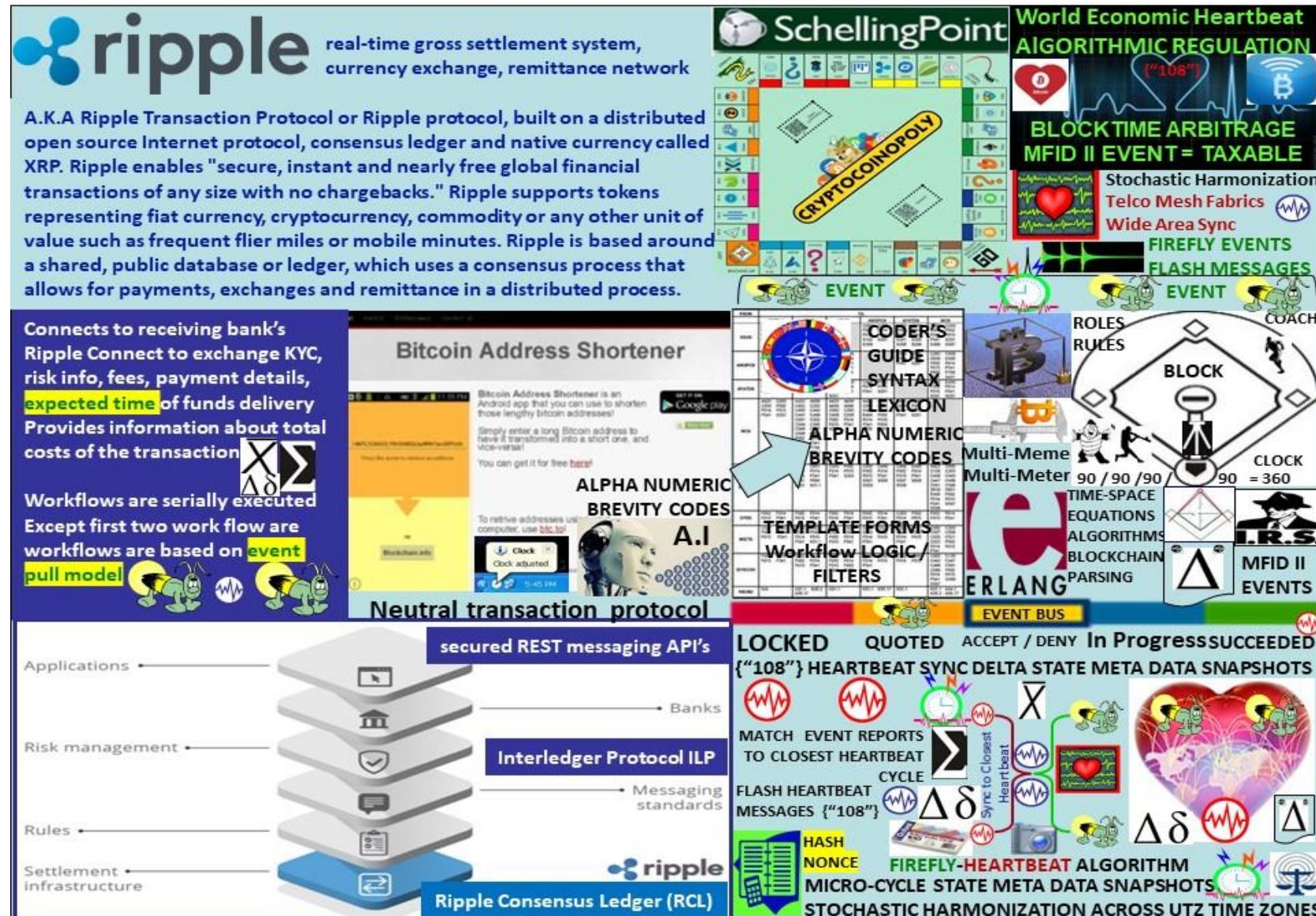


FIGURE 63: RIPPLE Real Time Protocol / USPTO 13/573,002



FIGURE 64: SPACESHIP EARTH OPERATING MANUAL SIGNALS ANNEX K



FIGURE 65: USPTO 13/573,002 APPLICATION TEMPORAL SNAPSHOT

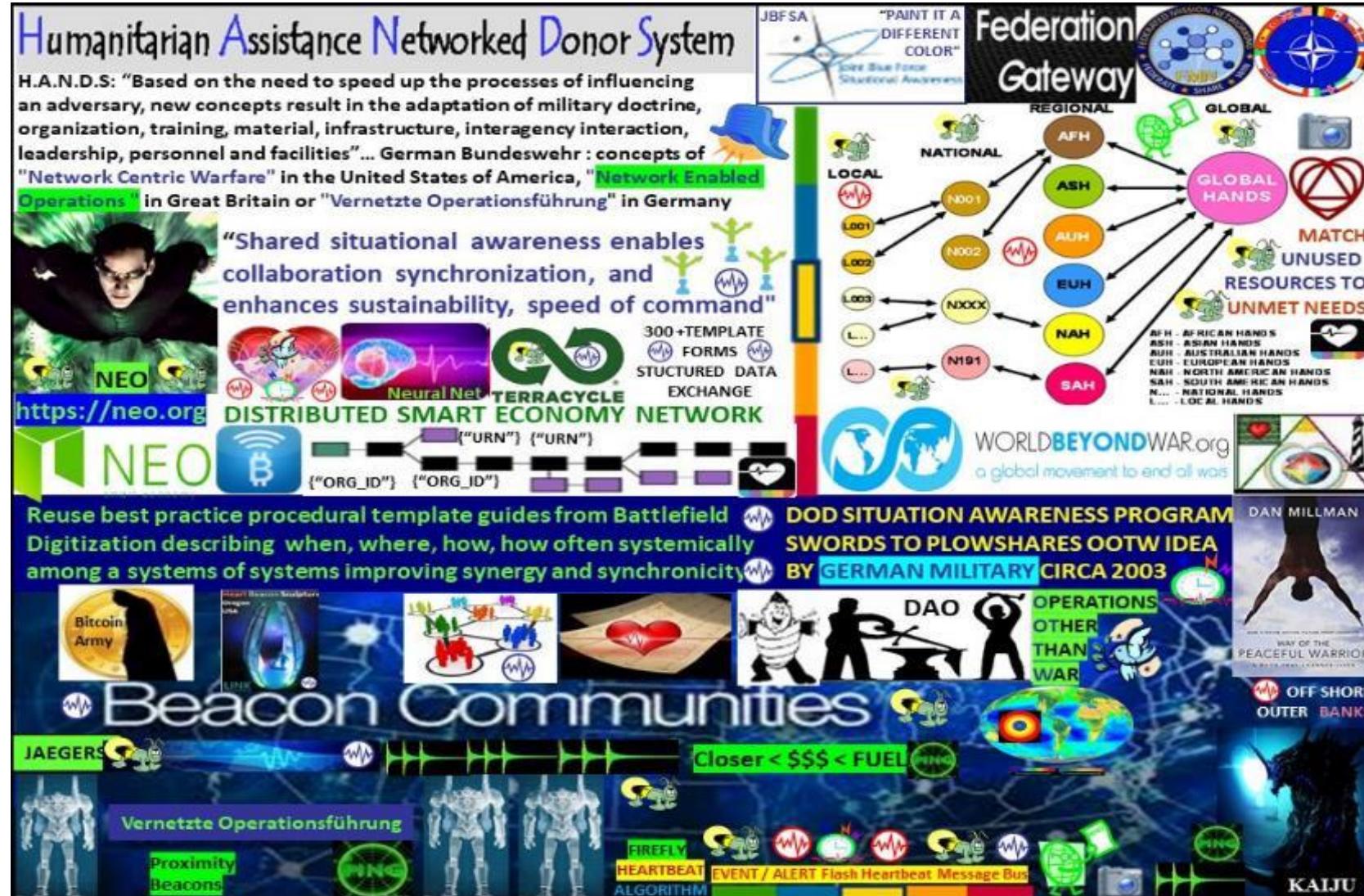


FIGURE 66: German Army H.A.N.D.S. OOTW Operations Other Than War circa 2003



Figure 67: Crypto Currencies main issues

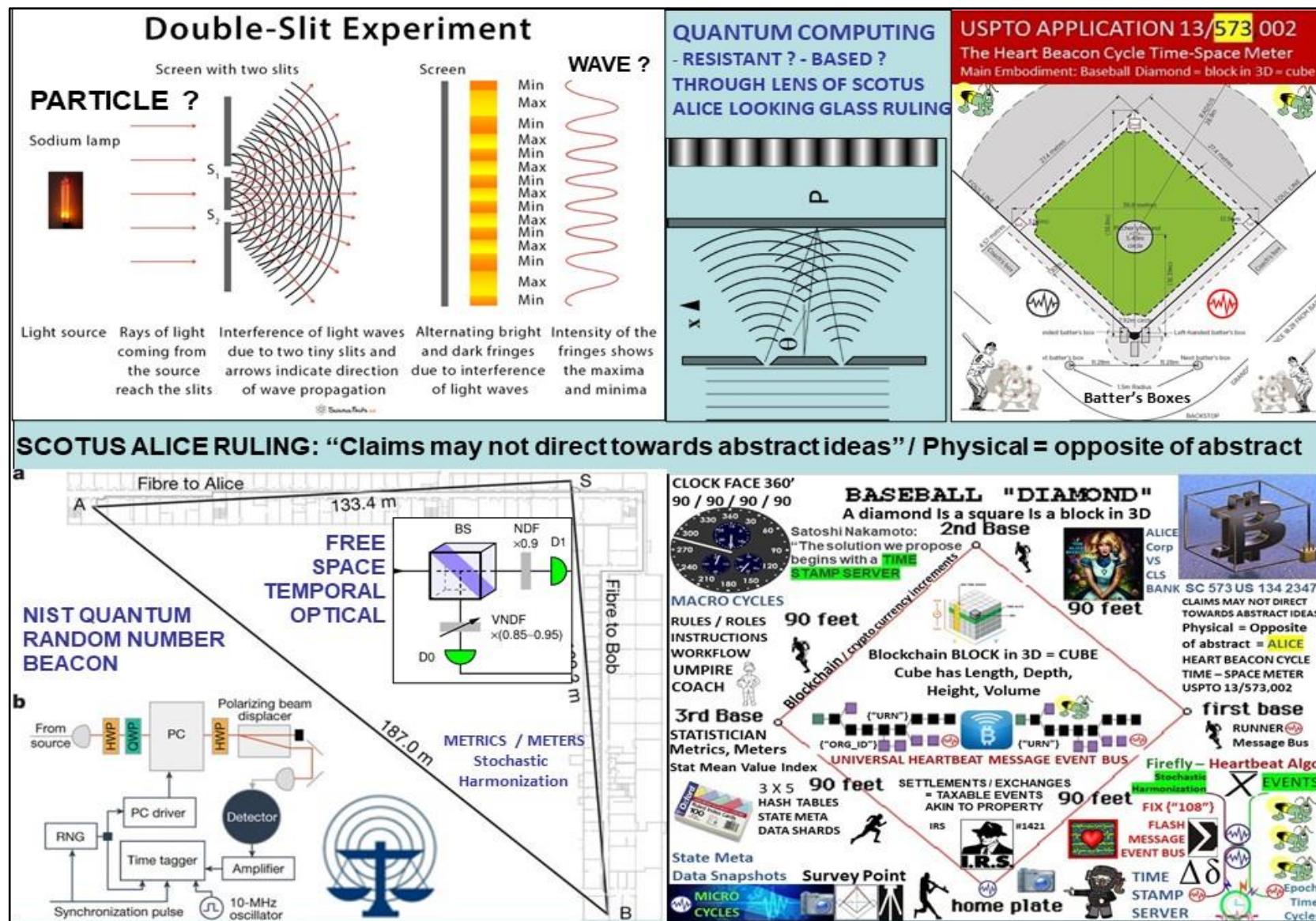


Figure 68: Double Slit experiment particle - wave duality / USPTO 13/573,002

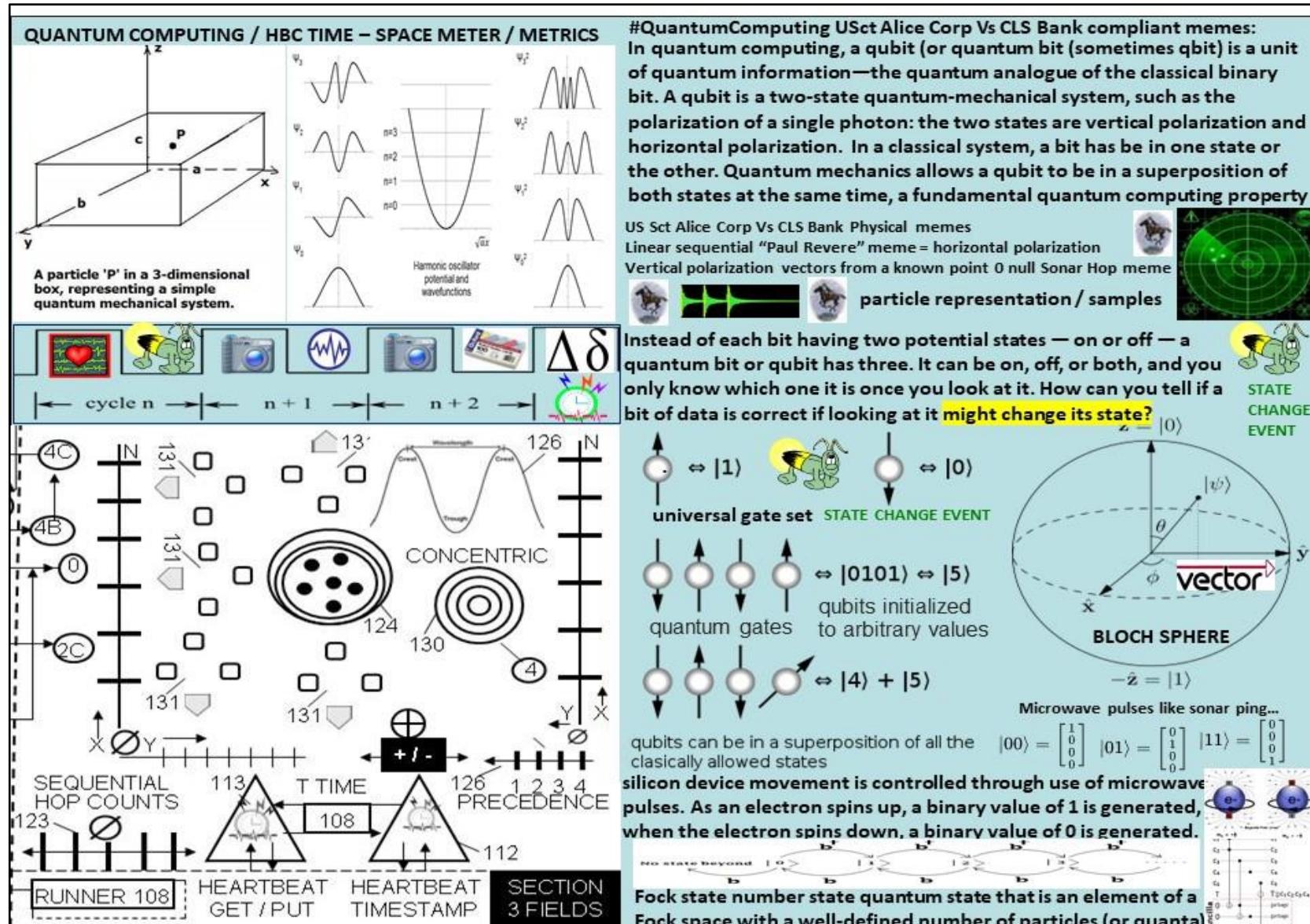


Figure 69: USPTO 13/573,002 Graphic supporting Quantum Computing Space – Time



Figure 70: QUANTUM COMPUTING / USPTO 13/573,002

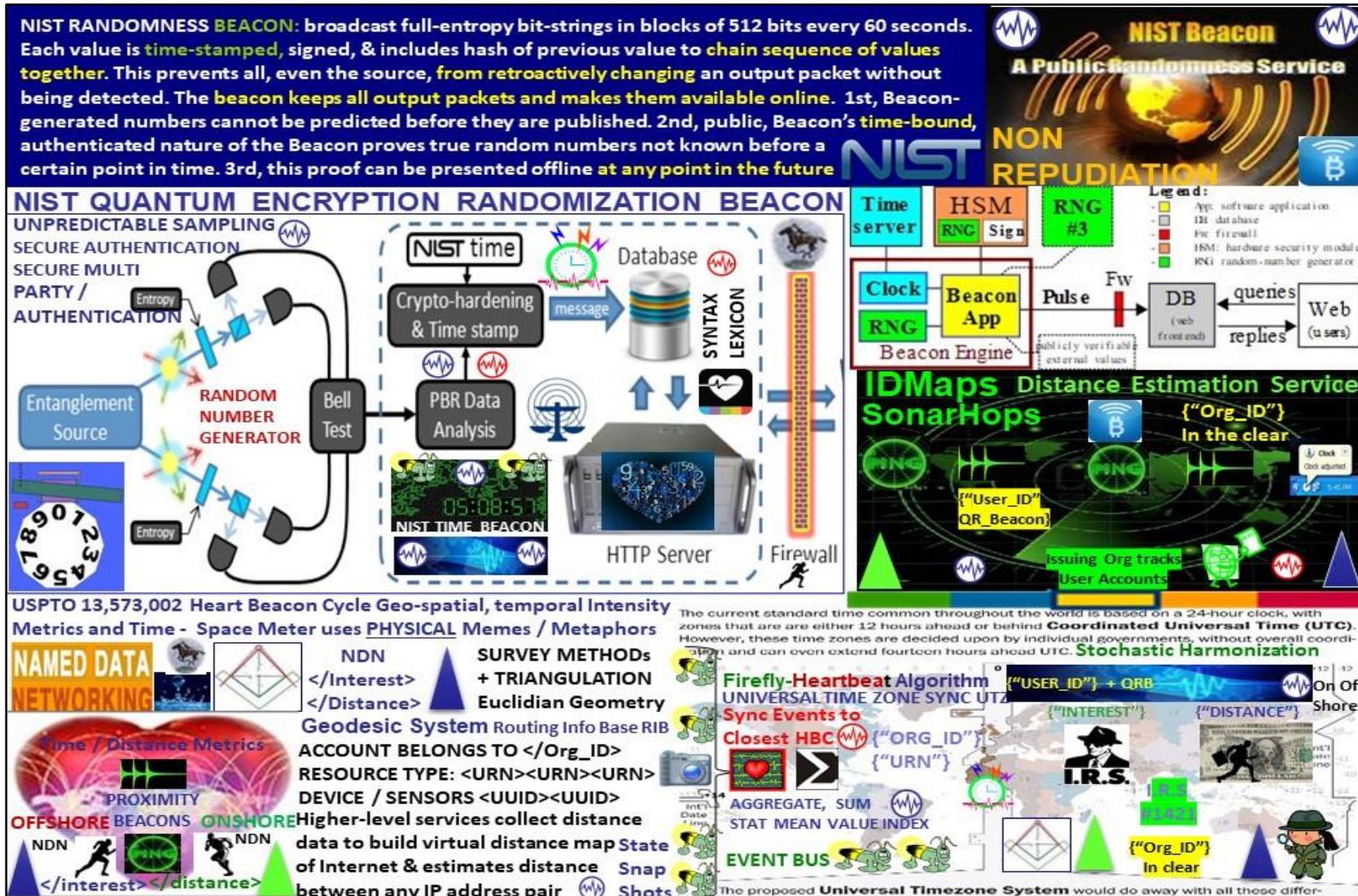


Figure 71 NIST QRNB Quantum Random Number Beacon / USPTO 13/573,002

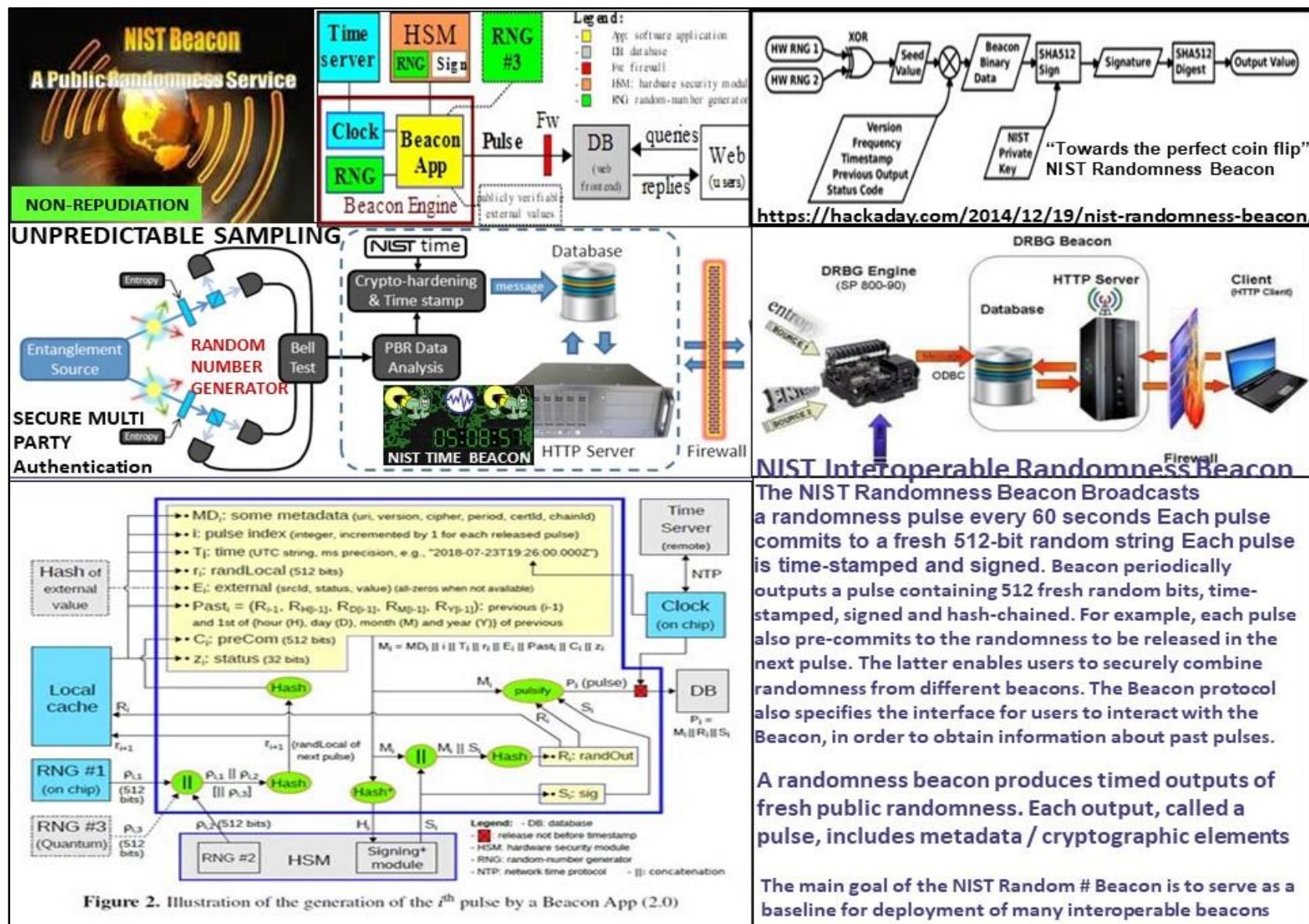


Figure 72: NIST QRNB Quantum Random Number Beacon Text Description



Figure 73: SCOTUS Alice Effect / USPTO 13/573,002



Figure 74: Defi, Fintech, Cryptocurrency Foundation technology for IP intellectual property wars



Figure 75: #Unrig the System Project Robert David Steele / Dr. Cynthia McKinney/ USPTO 13/573,002



Figure 76: Programmable money's physics – metaphysics / USPTO 13/573,002

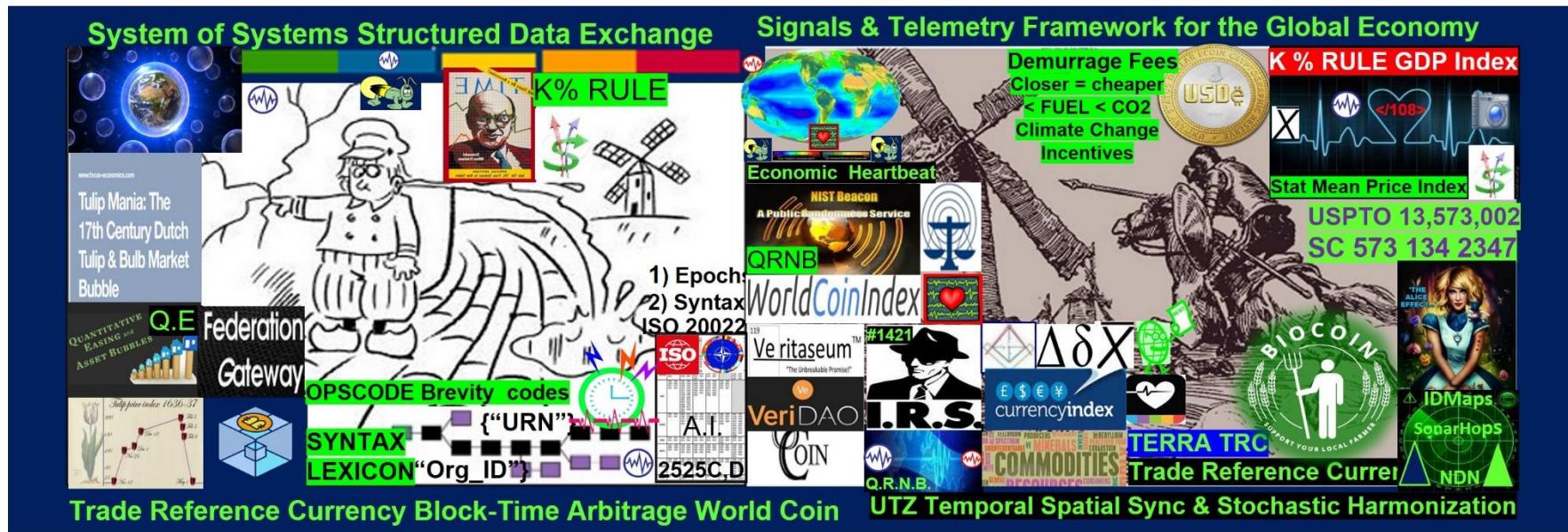


Figure 77: Patent Applicant Banner

“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 the politically inevitable.”

Milton Friedman Nobel Prize winning Economist who described a GDP commodity RWA Real World Asset based K% rule to monetize currency, control inflation



Figure 78: Business Card 3.0