

ECO ECONOMIC EPOCH HEARTBEAT / ALGORITHMIC COMMODITY STABLECOIN

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



Fig A OOTW Operations Other Than War / Foundation Tech Programmable \$\$\$, Economy

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STEVEN J MCGEE: CONSUL: / PATENT APPLICANT USPTO 13/573,002
251 Berwind Street Punxsutawney Pennsylvania 15767

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TITLE: USPTO 13/573,002 The Heart Beacon Cycle Time - Space Meter / Eco sustainable Economic Heartbeat, Algorithmic Stable Coin, DeFi, Fintech foundation framework

SUMMARY: An invention can be an improvement to an existing invention, idea, product. USPTO 13/573,002's basis for invention is US Army CECOM Communication - Electronics Command's "Greatest Invention" a system of systems structured data exchange digital dashboard geo-temporal - spatial synchronization, standardization program matching brevity codes to symbols, symbol sets critical for A.I. Artificial Intelligence man - machine interface that has had many names over the decade used for OOTW Operations Other Than War following a German Army suggestion circa 2003. #currency #algorithmic stable coin #CBDC cryptocurrency #DeFi #fintech #systemic #system of systems

FOCUS QUOTE: "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 winner Economist who described a GDP Gross Domestic Product commodity RWA Real World Asset based K% rule to monetize a currency, control inflation and manage the economy.

FOCUS QUOTE: "There is only one revolution tolerable to all men, all societies, all political systems: Revolution by design and invention". Richard Buckminster Fuller

USPTO 13/573,002 The Heart Beacon Cycle Time - Space Meter Patent type: Adaptive Procedural Template Framework: checklist: ideas, algorithms, processes, procedures, metrics, meters, signal & telemetry structured data 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.

TERRA Trade Reference Currency TRC: currency backed by RWA Real World Assets / commodities / commodity basket / index based featuring 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. Economist Bernard Lietaer Source: <http://lietaer.com/2010/01/terra/>

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

PRECEDENT: BRICS / Eurasian Economic Union 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

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 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, terms.

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.

Supreme Court 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.

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

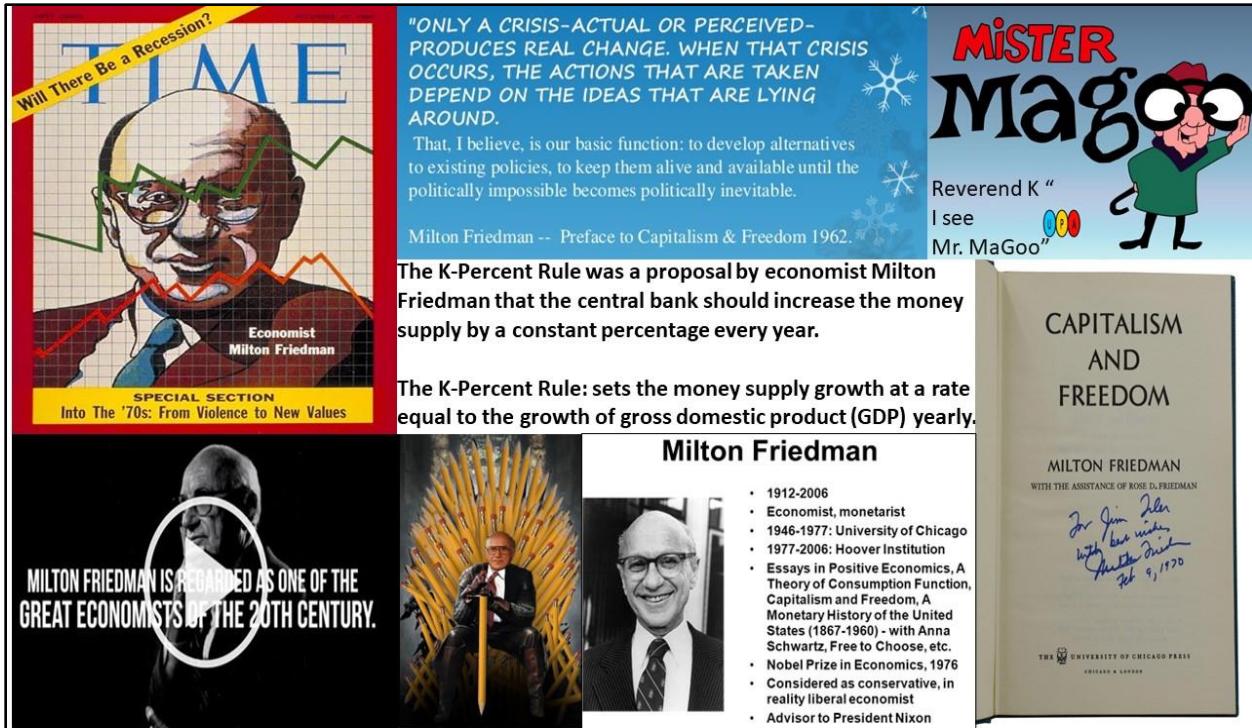
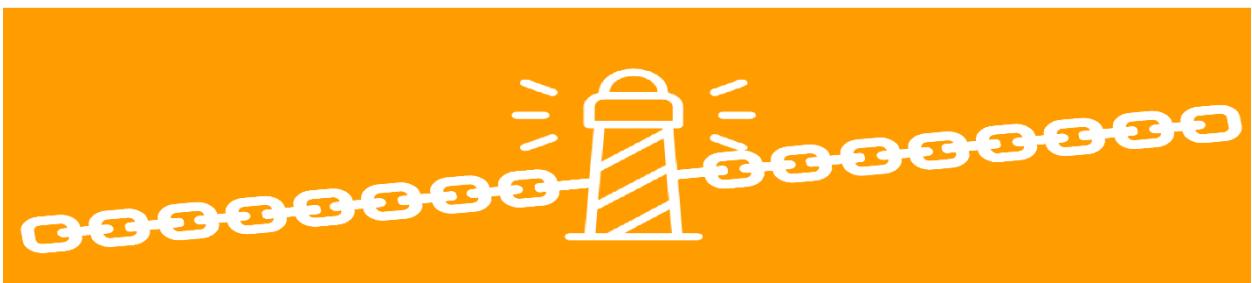


Fig B: Nobel Prize winning Economist Milton Friedman “only a crisis brings real change”

PURPOSE: Provide signaling, telemetry, data element syntax lexicon support for economist Milton Friedman's K% rule where a FEDCOIN / WORLDICOIN 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 SCOTUS **US SC 573 US 134 2347** Alice Corp Vs CLS Bank compliant, conformant physical meme i.e., cryptocurrency blockchain Digital Ledger Technology DLT programmable money for a programmable economy multi use 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 / Algorithmic stable coin support: 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 price discovery 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 data, event changes updating for example, 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 a linear sequential, geo-spatial temporal intensity radius hop count econometric metrics and meters where closer is shorter and closer is cheaper, less CO2 carbon dioxide control SLA Service Level Agreement

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 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, "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 appliqué 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.

BITCOIN AS PROPERTY / LAND / Land Use Meme PRECEDENTS:

- Hong Kong Court ruling Bitcoin as property Equivalent share of Bitcoin's total value in the form of digital real estate, using Earth's physical land model as the reference model
- IRS memo #1421 Bitcoin purchase is akin to land purchase

Owning 1 BTC of digital real estate is equivalent to owning 1126 acres habitable land:

- 15.77 billion acres of habitable land
- 14 million coins of active supply (not lost or Satoshi's coins)
- One 14 millionth of the 15.77 billion habitable acres is 1126 acres.
- Owning 0.01 of a coin (1 million sats) is equivalent to 11 acres.

Source: Reddit: <https://lnkd.in/gbCVAX7X>

Blocks created along a blockchain items #113, 123, 126, stored in a cube 131 USPTO 13/573,002 see main graphic FIGURE 3: USPTO 13/573,002



Figure C: OOTW Operations Other Than War: Eco Economic Epoch Heartbeat



Figure D: Structured Data, Standards used, derived from Net Centric Operations

APPENDIX A: SAMPLE ADAPTIVE PROCEDURAL TEMPLATE

DEFINITION: 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.

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 OPS CODE 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 SCOTUS Alice Corp V CLS Bank rule

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

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.

System of systems is a collection of task-oriented or dedicated systems that pool their resources and capabilities together to create a new, more complex system which offers more functionality and performance than simply the sum of the constituent systems. Currently, systems of systems is a critical research discipline for which frames of reference, thought processes, quantitative analysis, tools, and design methods are incomplete.[1] The methodology for defining, abstracting, modeling, and analyzing system of systems problems is typically referred to as system of systems engineering.

Overview: Commonly proposed descriptions—not necessarily definitions—of systems of systems,[2] are outlined below in order of their appearance in the literature:

Linking systems into joint system of systems allows for the interoperability and synergism of Command, Control, Computers, Communications and Information (C4I) and Intelligence, Surveillance and Reconnaissance (ISR) Systems:[3] description in the field of information superiority in modern military.

System of systems are large-scale concurrent and distributed systems the components of which are complex systems themselves:[4] description in the field of communicating structures and information systems in private enterprise.

System of systems education involves the integration of systems into system of systems that ultimately contribute to evolution of the social infrastructure:[5] description in the field of education of engineers on the importance of systems and their integration.

System of systems integration is a method to pursue development, integration, interoperability and optimization of systems to enhance performance in future battlefield scenarios:[6] description in the field of information intensive systems integration

Modern systems that comprise system of systems problems are not monolithic, rather they have five common characteristics: operational independence of the individual systems, managerial independence of the systems, geographical distribution, emergent behavior and evolutionary development:[7] description in the field of evolutionary acquisition of complex adaptive systems in the military.

Enterprise systems of systems engineering is focused on coupling traditional systems engineering activities with enterprise activities of strategic planning and investment analysis:[8] description in the field of information intensive systems in private enterprise.

System of systems problems are a collection of trans-domain networks of heterogeneous systems that are likely to exhibit operational and managerial independence, geographical distribution, and emergent and evolutionary behaviors that would not be apparent if the systems and their interactions are modeled separately:[9] description in the field of National Transportation System, Integrated Military and Space Exploration. Taken together, all these descriptions suggest that a complete system of systems engineering framework is needed to improve decision support for system of systems problems. Specifically, an effective system of systems engineering framework is needed to help decision makers to determine whether related infrastructure, policy and/or technology considerations as an interrelated whole are good, bad or neutral over time.[10] The need to solve system of systems problems is urgent not only because of the growing complexity of today's challenges, but also because such problems require large monetary and resource investments with multi-generational consequences.

System-of-systems topics: The system-of-systems approach:

While the individual systems constituting a system of systems can be very different and operate independently, their interactions typically expose and deliver important emergent properties. These emergent patterns have an evolving nature that stakeholders must recognize, analyze and understand. The system of systems approach does not advocate particular tools, methods or practices; instead, it promotes a new way of thinking for solving grand challenges where the interactions of technology, policy, and economics are the primary drivers. System of systems study is related to the general study of designing, complexity and systems engineering, but also brings to the fore the additional challenge of design.

Systems of systems typically exhibit the behaviors of complex systems, but not all complex problems fall in the realm of systems of systems. Inherent to system of systems problems are several combinations of traits, not all of which are exhibited by every such problem:[11][12]

Operational Independence of Elements, Managerial Independence of Elements, Evolutionary Development, Emergent Behavior, Geographical Distribution of Elements, Interdisciplinary Study, Heterogeneity of Systems, and Networks of Systems

The first five traits are known as Maier's criteria for identifying system of systems challenges. The remaining three traits have been proposed from the study of mathematical implications of modeling and analyzing system of systems challenges by Dr. Daniel DeLaurentis and his co-researchers at Purdue University.

Research: Current research into effective approaches to system of systems problems includes: Establishment of an effective frame of reference, **Crafting of a unifying lexicon**, Developing effective methodologies to visualize, communicate complex systems, Distributed resource management, Study of designing architecture, Interoperability, Data distribution policies: policy definition, design guidance and verification, Formal modelling language with integrated tools platform, Study of various

modeling, simulation and analysis techniques:, network theory. agent based modeling, general systems theory, probabilistic robust design (including uncertainty modeling/management), object-oriented simulation and programming, multi-objective optimization. Study of various numerical and visual tools for capturing the interaction of system requirements, concepts and technologies. Sample Applications

Systems of systems, while still being investigated predominantly in the defense sector, is also seeing application in such fields as national air and auto transportation and space exploration. Other fields where it can be applied include health care, design of the Internet, software integration, and energy management and power systems. Social-ecological interpretations of resilience, where different levels of our world (e.g., the Earth system, the political system) are interpreted as interconnected or nested systems, take a systems-of-systems approach. An application in business can be found for supply chain resilience. Reference: Wikipedia

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 OPSCODE brevity code 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

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

1.13. 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, across time-space i.e., UTC zones
- Common foundation blocks data entrees
- Organization Identifiers {"Org_ID"}
- Uniform Resource Name {"URN"} Describe 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 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, 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 appliquéd 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 appliquéd 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

1.15.10 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

1.16 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>

1.17 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.

1.18 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

1.19 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

1.20 Records Control Table ELECTRONIC RECORDS MANAGEMENT

1.21 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>

1.22 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,

1.23 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.

1.24 POLICIES: adaptive procedural template will include standards and policies published by standards groups describing detailed treatises

1.25 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...

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

1.27 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 each separate systems

1.28 GUIDELINES: Distributed Autonomous Organization DAO's trade federations agree to use common technology framework components, shared processes, methods, signaling – telemetry micro-macro schedule, metrics, meters, algorithms. API Application Program Interfaces describing smart contract service level agreements.

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

1.29.1 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

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

1.30 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.

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

1.32 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

1.33 Entry Criteria: Organizations agree to use a minimum list of procedures, processes, tools. Unsuccessful consensus of the minimum list may be resolved by member exit. Members may join, tether, untether, dissolve membership at will.

1.34 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

1.34.1 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.

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

1.35 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.

1.36 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,

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.

Source: <https://bilski.typepad.com/blog/2018/03/good-vibrations-bad-vibrations-american-axle-v-neapco-ruling.html>

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](#)

A.I. Artificial Intelligence / Robotic – Machine Algorithmic Trade

Fortune Magazine: "If you're a bank and don't have an AI strategy, then you don't have a strategy," Wells Fargo analyst Mike Mayo said during a recent Bloomberg Television interview. "AI is here to stay." Gensler, meanwhile, has spent the year warning of AI's "systemic risks" and a "nearly unavoidable" financial crisis within the next decade due to the "herding effect" of multiple firms relying too much on single AI models. In July, the regulatory agency proposed rules specifically over concerns that AI could prioritize a firm over its clients. But the world moves quickly, leaving the SEC to figure out just how — and how much — AI is being used:

- In a process known as a "sweep," the SEC has requested information from various firms seeking responses to prompts on 26 topics, such as how algorithmic models are used to manage client portfolios and what contingency plans exist for system failure, according to the WSJ, which obtained a copy of an SEC letter sent to a firm.
- A sweep doesn't mean the SEC is investigating misconduct, but that it's collecting information ahead of possible rule changes or new regulations.

The problem is that the machine has, you know, already risen. "The use of these kinds of technologies is already so widespread that I think it would be quite difficult for the commission to put the brakes on," Amy Jane Longo, litigation and enforcement practice partner at law firm Ropes & Gray, told the WSJ.

SOURCE: Fortune Magazine <https://fortune.com/2023/11/28/goldman-sachs-ai-employees-wall-street/>

See also: Equilibrium Algorithms (see Princeton University Professor John Nash)

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

BASEBALL DIAMOND

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 = not abstract.

BASEBALL COMPUTING CODE

Computing an Optimal Pitching Strategy in a Baseball At-Bat

A novel model of a baseball at-bat as a zero-sum stochastic game, in which the goal of the batter is to get on base and the pitcher aims to prevent it. The paper proposes novel representations of pitcher and batter, a deep neural network architecture for outcome prediction, and experiments using Kaggle data from MLB seasons.

Source: <https://arxiv.org/pdf/2110.04321.pdf>

Computing an Optimal Pitching Strategy in a Baseball At-Bat - arXiv.org

Every at-bat ends in one of two ways: 1) the batter is out (and, in our model, the pitcher wins), for example, after receiving the third strike, or 2) the batter gets on-base, for example, by hitting a home run. In modeling an at-bat, we assume that the goal of the batter is solely to get on base, while the pitcher aims to get the batter out.

Source: <https://www.jstage.jst.go.jp/article/jorsj/>

Dynamic Programming Algorithm for Optimizing Baseball Strategies

In addition, we compute the optimal batting order, in consideration of the decision making in a game. Keywords: Dynamic programming, OR in sports, Markov perfect equilibrium, advantage of the last-batting team, optimal lineup 1. Introduction A dynamic programming (DP) approach to baseball is the main theme for this paper, and <https://community.fangraphs.com/how-game-theory-is-applied-to-pitch-optimization> How Game Theory Is Applied to Pitch Optimization

Simulation of Baseball Gaming by Cooperation and Non-Cooperation Strategies

Matías Alvarado, Arturo Yee Rendón, and Germinal Cocho

1 Computer Sciences Department, Center for Research and Advance Studies, Mexico City, Mexico

2 Complex Sciences Department, Physics Institute, UNAM, Mexico City, Mexico

Baseball is a top strategic collective game that challenges the team manager's decision-making. A classic Nash equilibrium applies for non-cooperative games, while a Kantian equilibrium applies for cooperative ones. We use both Nash equilibrium (NE)

and Kantian equilibrium (KE), separate or in combination, for the team selection of strategies during a baseball match: as soon as the selection of strategies by NE or KE carries a team to stay match loosing, a change to KE or NE is introduced. From this variation of selection of strategies, the team that is losing tends to close or overcome the score with respect to the team with advantage according to the results from computer simulations. Hence, combining Nash selfish-gaming strategies with Kantian collaboration-gaming strategies, a baseball team performance is strengthened.

Keywords. Baseball strategies, cooperation and noncooperation, Nash equilibrium, Kantian equilibrium, computer simulations.

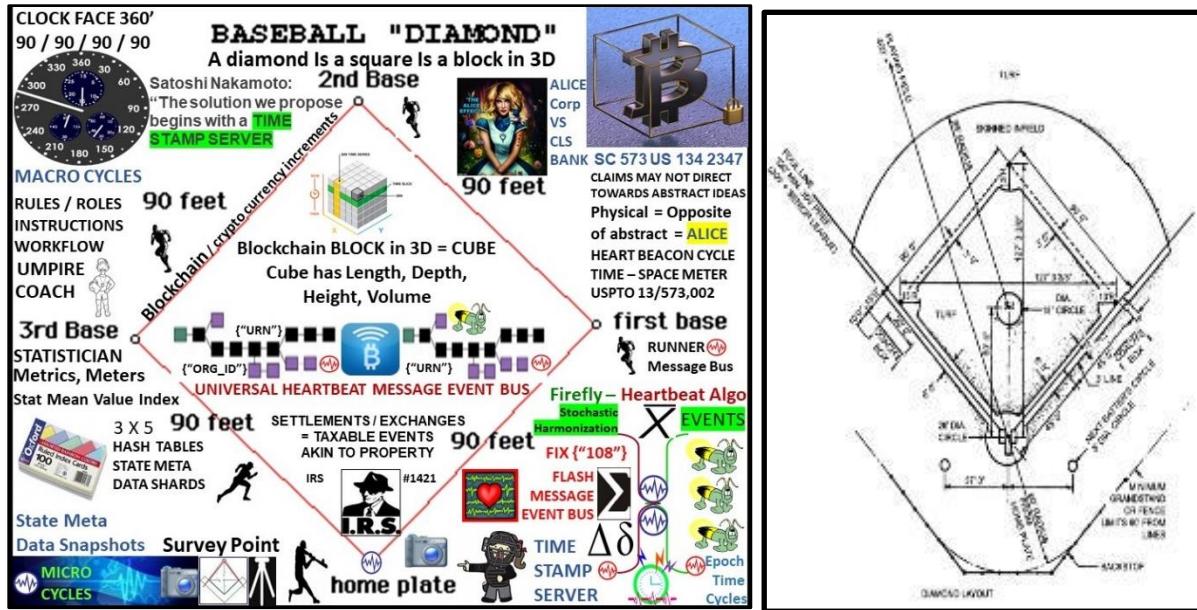


FIGURE D: SCOTUS ALICE CORP VS CLS BANK 2014 ruling compliant meme

BASEBALL TOURNAMENT RULES AND GUIDELINES

The Tournament Committee also reserves the right in its sole discretion to impose any penalties if, in its judgment, any player, manager, coach, umpire, or other volunteer conducts him/herself in any manner, on or off the field, that does not positively reflect the high standard Little League holds for sportsmanship, Tournament Rules and Guidelines citizenship, and decorum. This includes displays of unsportsmanlike conduct, "making a travesty of the game," or violating any rules, regulations, or policy contained herein during the game, at the game site, at any other location or time related to the International Tournament. The Committee also reserves the right to impose any penalty the Committee deems appropriate, if the committee determines action is necessary to correct a situation brought to its attention, regardless of the source of that information. The decision of the Tournament Committee is final and binding. Knowledge of the rules must be guaranteed before a Tournament Director is declared qualified. All Tournament Directors will undergo a thorough and instructive briefing session prior to taking on their duties, must signify that they understand the

rules, and regardless of personal feelings, they are in full agreement and can interpret them properly. At the time of the District tournament meeting, it will be required that each league president or the representative in attendance signify that the league and tournament team managing personnel are knowledgeable of Tournament Rules and are in full agreement with these conditions.

SOURCE: <https://www.littleleague.org/downloads/tournament-rules-baseball/>

On optimal control, game theory, and applications. A. Bressan, B. Piccoli, Introduction to the Mathematical Theory of Control, AIMS Series in Applied Mathematics, Springfield Mo. 2007. A. Bressan, Noncooperative differential games. Milan J. of Mathematics , 79 (2011), 357-427. A. Bressan Source: <https://cim.math.psu.edu/publications/on-optimal-control-game-theory-applications>

Sabermetrics Big Data is one way baseball teams use big data to leverage game theory in baseball. Source: Game Theory Applications in Baseball - Baseball Data Science Game theory is the science of strategy. It determines how logical "players" should behave in strategic contexts and predicts the utility the "players" will reap from their actions. A "game" is any strategic set of interactions. In baseball, an example would be an (instance of) at bat. Source: <https://www.baseballdatascience.com/game-theory-applications-in-baseball/>

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/>

Black Sox Major League 1919 World Series Baseball game-fixing scandal: eight members of the Chicago White Sox were accused of losing the 1919 World Series against the Cincinnati Reds on purpose in exchange for money from a gambling syndicate led by Arnold Rothstein. The National Baseball Commission was dissolved, and Judge Kenesaw Mountain Landis was appointed to be the first Commissioner of Baseball and given absolute control over the sport to restore its integrity.

Philadelphia Bulletin published a poem which would quickly prove to be ironic:

Still, it really doesn't matter,

After all, who wins the flag.

Good clean sport is what we're after,

And we aim to make our brag

To each near or distant nation

Whereon shines the sporting sun

That of all our games gymnastic

Baseball is the cleanest one!

Source: https://en.wikipedia.org/wiki/Black_Sox_Scandal

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.

Blockchain Tri-lemma: The perfect blockchain includes three elements: Security, decentralization, and scalability. Finding a balance between the three is difficult and presents a problem referred to as the blockchain trilemma.

- Scalability and decentralization are often held back by security, but security tends to be compromised by any shifts on a network that offer scalability.
- Projects either choose to focus on two out of three or work on finding a solution to tackle the trilemma once and for all. Innovative ideas like sharding, side-chains and state channels are used to address the trilemma.
- A solution to the problem could lead to greater adoption of cryptocurrency and blockchain and a wide-spread use of the technology across industries.

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. FOCUS QUOTE: "There is only one revolution tolerable to all men, all societies, all political systems: Revolution by design and invention". Richard Buckminster "Bucky" Fuller

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

a₁, a₂, a₃, ..., 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>

DISCOVERY MACHINE ARTIFICIAL INTELLIGENCE / MACHINE LEARNING

Discovery Machine® leverages a wide range of AI techniques from knowledge acquisition (KA) to machine learning (ML) to develop “intelligent constructs” for training, decision support and automation. Discovery Machine®’s highly acclaimed, patented knowledge capture methodology works in conjunction with our patented visual modeling tools to enable the agile production of intelligent constructs. Discovery Machine®’s AI overcomes the limitations of ML imposed by sparse data environments by capturing the mental models trapped in the heads of your organization’s subject matter experts (SME) to bias and direct learning. Discovery Machine® is headquartered in Williamsport, Pennsylvania (the home of Little League). Discovery Machine® has a vibrant team of software and knowledge engineers working on several Department of Defense (DoD) projects. Source <https://discoverymachine.com/>

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 reuses and improves upon military Network Centric Warfare best practice of organizing individuals in groups geospatially distributed across distances and UTZ time zones i.e., micro – macro cycle scheduling, use of organizational, resource identifiers via structured data exchanges is improved through use of algorithms which are essentially workflow rules and , math.

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.

DEMURRAGE FEE: "the (carrying) costs for (holding) currencies/commodities," or "international maritime shipping delay penalty fees." The TRC is a demurrage-charged currency. A demurrage charge acts much like a parking or rental fee, incurring a cost over time

to its holder. The cost for holding onto the TRC currency is estimated at 3.5%-4% per annum. This demurrage charge insures the currency's use mainly as a trading device: it would not be hoarded but always tend to remain in circulation. It would thereby strongly activate commercial exchanges and investments wherever it circulates, the opposite of a conventional currency.

DEMMURAGE FEE / SATOSHI: The Satoshi represents one hundred millionths of a bitcoin because bitcoin has increased in value exponentially, smaller denominations are needed to facilitate smaller transactions. Small denominations make bitcoin transactions easier to conduct and, can act as demurrage fees to for example, move real world assets / commodities from point a to point n within trade federations.

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/>

Econometrics analyzes data using statistical methods in order to test or develop economic theory. These methods rely on statistical inferences to quantify and analyze economic theories by leveraging tools such as frequency distributions, probability, and probability distributions, statistical inference, correlation analysis, simple and multiple

regression analysis, simultaneous equations models, and time series methods. Source: Investopedia: <https://www.investopedia.com/terms/e/econometrics.asp>

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 Source: <https://youtu.be/wUpOlqbHcjI?t=111> • water drop in pond meme •Paul Revere linear, sequential series

ENERGY WIRELESS TRANSFER TESLA INSPIRED

DARPA POWER ("Persistent Optical Wireless Energy Relay"): "develop a means of distributing energy wirelessly around the globe through airborne power transfer. First dreamed up by Nikola Tesla almost 100 years ago, if successful, this would be the most significant change to energy transfer since the first rollout of electrification almost 150 years ago. The program goals include demonstrating the key components of a resilient, speed-of-light energy network". DARPA plans to create wireless energy transfer infrastructure to supply near-uninterruptable power to U.S. military bases worldwide. The plan, as reported by Popular Mechanics, is to use laser technology to beam electricity around the planet. Famously a dream of Nikola Tesla over 100 years ago, if successful, this technology, called fittingly enough POWER ("Persistent Optical Wireless Energy Relay"), would make the U.S. military less reliant on liquid fuel like diesel and vulnerable power lines, which can be intercepted or sabotaged by enemy forces. <https://interestingengineering.com/innovation/darpa-laser-power-transfer>

USPTO 13/573,002 claim: closer- cheaper given less attenuation over distance, less infrastructure needed. SCOTUS Alice in Wonderland 2014 ruling compliant water drop in pond physical meme for sound / light metrics, meters, descriptions relevant to sound, optical based quantum computing. Source: Interesting Engineering:
<https://interestingengineering.com/innovation/wireless-energy-transmission-darpa>

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/>

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>

FIX 4.0 : Heartbeat <0> message: The Heartbeat <0> is useful for monitoring the status of the communication link and to identify when the last of a string of messages was not received. When either end of a FIX connection has not sent any data for [HeartBtInt <108>] seconds, it will transmit a Heartbeat <0> message. When either end of the connection has not received any data for (HeartBtInt <108> + "some reasonable

transmission time") seconds, it will transmit a Test Request <1> message. If there is still no Heartbeat <0> message received after (HeartBtInt <108> + "some reasonable transmission time") seconds then the connection should be considered lost and corrective action be initiated. If HeartBtInt <108> is set to zero then no regular Heartbeat <0> messages will be generated. Note that a Test Request <1> message can still be sent independent of the value of the HeartBtInt <108> which will force a Heartbeat <0> message. Heartbeats issued as the result of Test Request <1> must contain the TestReqID <112> transmitted in the Test Request <1> message. This is useful to verify that the Heartbeat <0> is the result of the Test Request <1> and not as the result of a regular timeout. Source: https://www.onixs.biz/fix-dictionary/4.0/msctype_0_0.html

HEARTBEAT: In computer science, a **heartbeat** is a periodic signal generated by hardware or software to indicate normal operation or to synchronize other parts of a computer system.^{[1][2]} Heartbeat mechanism is one of the common techniques in mission critical systems for providing high availability and fault tolerance of network services by detecting the network or systems failures of nodes or daemons which belongs to a network cluster—administered by a master server—for the purpose of automatic adaptation and rebalancing of the system by using the remaining redundant nodes on the cluster to take over the load of failed nodes for providing constant services.^{[3][1]} Usually a heartbeat is sent between machines at a regular interval in the order of seconds; a **heartbeat message**.^[4] If the endpoint does not receive a heartbeat for a time—usually a few heartbeat intervals—the machine that should have sent the heartbeat is assumed to have failed.^[5] Heartbeat messages are typically sent non-stop on a periodic or recurring basis from the originator's start-up until the originator's shutdown. When the destination identifies a lack of heartbeat messages during an anticipated arrival period, the destination may determine that the originator has failed, shutdown, or is generally no longer available.

Heartbeat protocol

A heartbeat protocol is generally used to negotiate and monitor the availability of a resource, such as a floating IP address, and the procedure involves sending network packets to all the nodes in the cluster to verify its reachability.^[3] Typically when a heartbeat starts on a machine, it will perform an election process with other machines on the heartbeat network to determine which machine, if any, owns the resource. On heartbeat networks of more than two machines, it is important to take into account partitioning, where two halves of the network could be functioning but not able to communicate with each other. In a situation such as this, it is important that the resource is only owned by one machine, not one machine in each partition.

As a heartbeat is intended to be used to indicate the health of a machine, it is important that the heartbeat protocol and the transport that it runs on are as reliable as possible. Causing a failover because of a false alarm may, depending on the resource, be highly undesirable. It is also important to react quickly to an actual failure, further signifying the reliability of the heartbeat messages. For this reason, it is often desirable to have a heartbeat running over more than one transport; for instance, an Ethernet segment using UDP/IP, and a serial link.

A "cluster membership" of a node is a property of [network reachability](#): if the master can communicate with the node , it's considered a member of the cluster and "dead" otherwise.^[6] A heartbeat program as a whole consists of various [subsystems](#):^[7]

- **Heartbeat Subsystem** (HS): The subsystem that monitors the node's presence within the cluster through a series of [keepalive](#) or "hear-beat messages".
- **Cluster Manager** (CM): The subsystem within the cluster—usually the master server—which keeps track of the "cluster members" and records which [resources](#) are on which nodes.
- **Cluster Transition** (CT): When a node joins or leaves the cluster, this subsystem is responsible for keeping track of such occurrences for the purpose of triggering events to rebalancing and reconfiguring the master to distribute the load.

Heartbeat messages are sent in a periodic manner through techniques such as [broadcast](#) or [multicasts](#) in larger clusters.^[6] Since CMs have transactions across the cluster, the most common pattern is to send heartbeat messages to all the nodes and "await" responses in [non-blocking](#) fashion.^[8] Since the heartbeat or [keepalive](#) messages are the overwhelming majority of non-application related cluster control messages—which also goes to all the members of the cluster—major critical systems also include non-IP protocols like [serial ports](#) to deliver heartbeats.^[9] Wikipedia

Heartbeat Message Test Request: FIX 4.0 : Description

The Test Request <1> message is utilized to force a heartbeat from the opposing application. The Test Request <1> message is useful for checking sequence numbers or verifying communication line status. The opposite application will respond to the Test Request <1> with a Heartbeat <0> containing the TestReqID <112>.

The TestReqID <112> is used to verify that the opposite application is generating the heartbeat as the result of Test Request <1> and not a normal timeout. The opposite application will include the TestReqID <112> in the resulting Heartbeat <0>. Any string can be used as the TestReqID <112> (one suggestion is to use a timestamp string).

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 $MTBM = (1 - 1 - 1) - 1 \cdot MTBF + MTBM-ND + MTBPM \cdot N \sum_{i=1}^n (ETi) \cdot TFi$ $M = N \sum_{i=1}^n TFi$ $Aa = Mean active maintenance downtime (where corrective and preventive actions are considered)$ $ETi = Elapsed\ time\ for\ task\ i$ $TFi = Task\ frequency\ for\ task\ i$ $N = Total\ number\ of\ tasks\ performed$ 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

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

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

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>

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**

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

Investopedia <http://www.investopedia.com/terms/k/k-percent-rule.asp>

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](#)

“Nature may reach the same result in many ways. Like a wave in the physical world, in the infinite ocean of the medium which pervades all, so in the world of organisms, in life, an impulse started proceeds onward, at times, may be, with the speed of light, at times, again, so slowly that for ages and ages it seems to stay, passing through processes of a complexity inconceivable to men, but in all its forms, in all its stages, its energy ever and ever integrally present. A single ray of light from a distant star falling upon the eye of a tyrant in bygone times may have altered the course of his life, may have changed the destiny of nations, may have transformed the surface of the globe, so intricate, so inconceivably complex are the processes in Nature. In no way can we get such an overwhelming idea of the grandeur of Nature than when we consider, that in

accordance with the law of the conservation of energy, throughout the Infinite, the forces are in a perfect balance, and hence the energy of a single thought may determine the motion of a universe.” — Nikola Tesla

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.

Pneumatic computer uses pressure instead of electricity:

A computer chip made of glass and silicone holds liquids that move from one side of the chip to the other in reaction to pressure changes. This has been used to control and automate miniaturized biochemistry experiments A pneumatic computer made of glass and silicone uses pressure instead of electricity to encode data. It can enable a chip-sized device to perform procedures that are usually done by technicians in labs. They sandwiched a sheet of silicone 0.25 millimeters thick between two thin panes of glass. They etched tiny channels into the glass so that liquids needed for chemical reactions could flow through them, and then punched small holes into the silicone layer to connect channels between the two panes. Karmela Padavic-Callaghan 2 June 2023

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: $V \cdot \text{intg.} |\log(P) - \log(\text{.DELTA.}P)| / R dt$. 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 / 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/-hxIjpxTaiA?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 Quantum Random Number Beacon 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>

QUANTUM COMPUTING VIA Sound Waves QUANTUM ACOUSTICS

Good vibrations for quantum computing Amy Navarathna & Warwick P. Bowen

Similar to the photons that make up beams of light, indivisible quantum particles called phonons make up a beam of sound. These particles emerge from the collective motion of quadrillions of atoms, much as a "stadium wave" in a sports arena is due to the motion of thousands of individual fans. When you listen to a song, you're hearing a stream of these very small quantum particles. Originally conceived to explain the heat capacities of solids, phonons are predicted to obey the same rules of quantum mechanics as photons. The technology to generate and detect individual phonons has, however, lagged behind that for photons. Technology being developed, in part by my research group at the Pritzker School of Molecular Engineering at the University of Chicago. We are exploring the fundamental quantum properties of sound by splitting phonons in half and entangling them together. [Nature Physics volume 18, pages736–738 \(2022\)](#) <https://www.nature.com/articles/s41567-022-01613-z>

Quantum Computing Vibrations encode, process data like quantum computers. A simple mechanical system built from aluminum rods uses vibrations to encode information, mimicking quantum computing in a non-quantum system. Some properties of quantum computers can be imitated with sound trapped in a simple mechanical device. This has the advantage of being less fragile than quantum computers, while still replicating some of their properties. Quantum computers could eventually solve problems that are impossible for the best conventional supercomputers, but they are tricky to work with. Many lose their quantumness, which is key for their advantages over ordinary computers, and stop working very quickly because of disturbances from their environments. propose using tiny mechanical vibrations. The atoms are coupled via phonons—the smallest quantum mechanical units of vibrations or sound waves. / USPTO 13/573,002 water drop in pond meme

SOUND ACOUSTIC WAVES FOR QUANTUM INFORMATION PROCESSING

"So, we have an acoustic system that gives us the possibility creating these Bell states," Deymier said. "It's the complete analog to quantum mechanics." Demonstrating that this is possible has opened the door to applying classical nonseparability to the emerging field of phononics. Next, the researchers will work to increase the number of degrees of freedom that can be classically entangled -- the more, the better. They also want to develop algorithms that can use these nonseparable states to manipulate information.

Once the system is refined, they plan to resize it from the tabletop down to the microscale, ready to deploy on computer chips in data centers around the world.

This work was supported by the W.M. Keck Foundation and the National Science Foundation Emerging Frontiers in Research and Innovation Program.

Source: Science Daily [University of Arizona College of Engineering](#)

<https://www.sciencedaily.com/releases/2019/09/190919142346.htm>

QUANTUM COMPUTING via acoustic waves at room temperature

Analog / digital computing origins are based on (electromagnetic - radio) waves as is energy transmission whether wired or wireless. Sound is an emerging quantum computing option for example: Sound of the future: A new analog to quantum computing: Engineers are using soundwaves to search through big data with more stability and ease. Researchers have demonstrated the possibility for acoustic waves in a classical environment to do the work of quantum information processing without the time limitations and fragility. <https://lnkd.in/gbpStiqy> Date: September 19, 2019

Source: University of Arizona College of Engineering

Quantum Vibrations via Diamonds / Silicon atoms: "We are testing tiny diamonds with built-in silicon atoms—these quantum systems are particularly promising," says Professor Peter Rabl from TU Wien. "Normally, diamonds are made exclusively of carbon, but adding silicon atoms in certain places creates defects in the crystal lattice where quantum information can be stored." These microscopic flaws in the crystal lattice can be used like tiny switches that can be toggled between a state of higher energy and a state of lower energy using microwaves. Together with a team from Harvard University, Peter Rabl's research group has developed a new idea to achieve the targeted coupling of these quanta within the diamond. One by one, they can be built into a tiny diamond rod measuring only a few micrometers in length, like individual pearls on a necklace. Just like a tuning fork, this rod can then be made to vibrate—however, these vibrations are so small that they can only be described using quantum theory. It is through these vibrations that the silicon atoms can form a quantum-mechanical link to each other. "Light is made from photons, the quantum of light. In the same way, mechanical vibrations or sound waves can also be described in a quantum-mechanical manner. They are composed of phonons: the smallest possible units of mechanical vibration," explains Peter Rabl, any number of these quanta can be linked together in the diamond rod via phonons. The individual silicon atoms are switched on

and off using microwaves. During this process, silicon atoms emit or absorb phonons. This creates a quantum entanglement of the silicon defects, thus allowing quantum information to be transferred. The main advantage of this new technology lies in its scalability. The strategy of using the smallest unit of mechanical vibration phonons for this purpose could pave the way to a scalable quantum technology. [Link](#): https://phys.org/news/2018-06-quantum_1.html /

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 Vladamir 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.

SATOSHI: The satoshi represents one hundred millionths of a bitcoin because bitcoin has increased in value exponentially, smaller denominations are needed to facilitate smaller transactions. Small denominations make bitcoin transactions easier to conduct and, can act as demurrage fees to for example, move real world assets / commodities from point a to point n within trade federations.

SCOP HEARTBEAT ADMINISTRATIVE INTERFACE TOOL: is an Internet configuration tool. SCOP can start/stop services, view/edit configuration files, make backups, take a server online/offline, add/remove virtual/real servers, adjusts Financial FIX </108> messages. See: FIX Financial Information Exchange messaging standard

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.

SCOTUS ALICE CORP VS CLS BANK compliance 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 propagates non-existent memes, metaphors each using their own terms, vernacular, syntax.

1. Department of Commerce - Treasury – NIST QRNB Quantum Random Number Beacon located in Boulder Colorado
2. NIST's 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>

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

Space - Time Energy over distance SLA:

energy attenuates over distance. Shorter = closer = cheaper given less infrastructure, maintenance needed USPTO 13/573,002 energy metrics, meter
claim [#energy](#) [#Haramein](#) [#Tesla](#) [#Bucky Fuller](#) [#SLA](#) [#space-time](#)

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

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. FedNOW / 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) + TRC Real Word Assets

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

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

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

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)

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 complimentary currency 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).

(Acoustic) Waves for energy / data propagation: Energy / data communication may travel the same paths if sufficient frequency band separation by sufficient frequency band space between the energy transmission band and the data internet band. See **Figure 39: Energy / Data unified field propagation claim water drop in pond meme**



FIGURE E: The Heart Beacon Sculpture, Portland Oregon USA
Heart Beacon is an outdoor 2013 sculpture by American artists Blessing Hancock and Joe O'Connell, installed 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
[LINK https://codaworx.com/project/heart-beacon-city-of-portland](https://codaworx.com/project/heart-beacon-city-of-portland)

APPENDIC C: FINAL REJECTION RESPONSE PAPER SUMMARY July 6th, 2016

United States Patent and Trademark Office
ATTN: COMMISSIONER FOR PATENTS
P.O. Box 1450 Alexandria, Virginia 22313-1450

July 6, 2016

SAW Concepts LLC Simple Always Wins Concepts LLC
Attn: Tammy Lee McGee (Owner) and Steven J. McGee (CEO)
P.O. Box 28, Oceanport, NJ 07757 <http://sawconcepts.com/index>

1. US Supreme Court Ruling Alice Corp V CLS Bank: "claims ineligible for patent protection under 35 U. S. C. §101 "directed to an abstract idea" <http://1.usa.gov/1V91pQe> [LINK](#)
2. 13/573,002 achieves Supreme Court Alice Corp V CLS Bank compliance via a Little League Baseball Tournament physical meme embodiment. Physical, tangible memes are applied.
3. Supreme Court Alice Corp V CLS Bank applies greater weight than Transco V Performance Ultimately, only the date when the best, most useful meme was filed matters. There is no point in establishing dates of other filings that have been superseded by a superior ruling
4. USPTO screen captures establish a patent worthy idea is formed at the exact instant of capture. The only method to protect intellectual property is patent assignment. Once a patent worthy idea is deemed formed, a court may not reverse itself. Stare decisis et non quæstio movera.
5. All internet artifacts are formed using time epochs, cycles, intervals, periods to process or not process syntax as instructions. 10/605,144, 10/708,000 establish this idea / fact. Metaphorical terms “ping”, “hop”, “packet”, “frames”, “Bitcoin”, “blockchain” “transactor chip” are described in baseball terms. “Incomprehensible” opinion due to USPTO examination of treatise language
6. All materials submitted after 10/605,144, 10/708,000 Jan 30, 2004 are theme, use case variants. No materials submitted after 10/708,000 may be considered “new” given this fact, truth.
7. USPTO cites 12/856,715 to examine 13/573,002 claims. 12/856,715 is labeled as a parent document and abandoned. USPTO must choose a condition, 12/856,715 cannot be both.
8. USPTO states applicants must submit an amendment and USPTO states application is final. USPTO must choose a condition, 13,573,002 cannot be both requiring an amendment / final.
9. Transco V Performance Contracting Inc. screen captures suspend USPTO procedures and methods redirecting examination outside USPTO PAIR system. Re-direction outside PAIR suspends expectation of applicant’s skill. USPTO lacks skill outside USPTO PAIR.
10. No date, time stamps on USPTO screen captures creates temporal ambiguity.

APPENDIX D: REFERENCES / SOCIAL MEDIA LINKS

GITHUB DOCUMENTS: https://github.com/Beacon-Heart/Heart_Beacon

Proton Email (secure) ecoeconomicepochs@protonmail.com

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

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

PIN INTEREST: <https://www.pinterest.com/EcoEconomicEpochs/>

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

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

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

Mastodon: https://universeodon.com/@Heart_Beacon

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

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

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

DISCORD: GDP_Index_Economy#6495

Skype: Steven McGee

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

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>

APPENDIX E: BRIEF DESCRIPTION OF THE GRAPHICS

Figure A: Adaptive Procedural Template checklist of tools, processes, procedures. OOTW Operations Other Than War: Foundation

A list of ideas, processes, procedures, tools, computing artifacts, algorithms used to support for example, a (Distributed Autonomous Organization DAO) trade federation. A minimum list of items required for use by consensus. An item in the list may be replaced by an item deemed an improvement – hence the description “adaptive”. Adaptive Procedural Template checklist view combining figure A and a view of a bank – tech firm team systems structure to describe a foundation tech framework

Figure B: Nobel Prize winner Economist Friedman “only a crisis brings real change”

Nobel Prize winning Economist Friedman described in his K% rule a means to automate liquidity insertion, reduction in an economy based on GDP input among his many views

Figure C: OOTW Operations Other Than War: Eco Economic Epoch Heartbeat

Figure D: Structured Data derived, developed via Net Enabled Operations NEO

Figure E: SCOTUS ALICE CORP VS CLS BANK 2014 ruling compliant meme

Supreme Court ruled in the “Alice and Wonderland ruling” that “claims may not direct towards abstract ideas. The opposite of abstract for example, is a baseball field

FIGURE F: The Heart Beacon Sculpture, Portland Oregon USA

Figure 1: Foundation tech forming the internet, programmable \$\$\$, economy listed in an Adaptive Procedural Template of tools, processes, routines algorithms, etc.

A 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 during epoch time cycles.

Figure 2: The Heart Beacon Cycle Time Space Meter Adaptive Procedural Template checklist of tools, processes, procedures.. linked to treatises

An adaptive procedural template is a checklist where items on the checklist may be added or removed and replaced by items considered to be more useful or superior. Most of the items are intrinsic to DARPA, DOD system of systems engineering internet development supporting data digital dashboard operations in use over decades. An improvement to an invention may be itself considered to be an invention such as the firefly inspired heartbeat algorithm with it's intrinsic heartbeat message event bus. If a superior algorithm is found then this algorithm replaces the old algorithm and so on

Figure 3: USPTO 13/573,002 Heart Beacon Cycle Time – Space Meter Summary

SUMMARY: An invention can be an improvement to an existing invention, idea, product. USPTO 13/573,002's basis for invention is US Army CECOM Communication - Electronics Command's "Greatest Invention" a system of systems structured data exchange digital dashboard geo-temporal - spatial synchronization, standardization program matching brevity codes to symbols, symbol sets critical for A.I. Artificial Intelligence man - machine interface that has had many names over the decade used for OOTW Operations Other Than War following a German Army suggestion circa 2003. 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.

Figure 4: OOTW Operations Other Than War / H.A.N.Ds / System of Systems Engineering framework structured data exchange

Humanitarian Assistance Networked Donor System: H.A.N.D.S adaptation of military doctrine, organization, training, material, infrastructure, interagency interaction, leadership, personnel and facilities" to OOTW Operations Other Than War i.e., humanitarian aid... Circa 2003, German Bundeswehr suggested reuse of the concepts of "Network Centric Warfare" "Network Enabled Operations" "Vernetzte Operationsführung" in Germany, "Shared situational awareness enables collaboration synchronization, and enhances sustainability, speed of command" DOD SITUATION AWARENESS PROGRAM SWORDS TO PLOWSHARES OOTW

Figure 5: Edison's Monetary Option 1922 / Algorithmic Stable Coin

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).

Figure 6: USPTO 13/573,002 Main Graphic

Graphic images representing a list of symbols, objects used to describe the invention

Figure 7: USPTO 13/573,002 Main Graphic Legend

Legend for graphic images represent a list of symbols used to describe the invention

Figure 8: USPTO 13/573,002 Building Blocks

Amended graphic depicting the main components, building blocks

Figure 9: Adaptive Procedural Template Checklist

Adaptive Procedural Template: list of ideas, processes, procedures, tools, computing artifacts, algorithms used to support for example, a trade federation. Minimum list of items required for use by consensus. An item in the list may be replaced by an item deemed as an improvement – hence “adaptive” Adaptive Procedural Template = checklist of useful tools, procedures...Use adaptive, procedural templates 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, control one’s own activities, The process involves agile, adhoc joins, merges, drops to / from federation in lieu of formal merger, and acquisition.

Figure 10 : All things internet, net of programmable money, Economy, Web 3.0 are formed using 1) Time epochs 2) syntax

Silicon quartz crystal based computer chips oscillate, vibrate when stimulated by an electric current. The trough and crest wave pattern after being represented by sawtooth cube, square, boxes emanating, propagating along a line is used to describe time epochs or time cycles that are used or not used to process, parse syntax as if, then, else instructions or used in math calculations such as cryptographic math proofs. There are no internet “layers”, “packets”, “frames”, “pings”, “satoshi’s”, blockchain blocks...

FIGURE 11: internet, net of \$ formed by 1) epoch time intervals 2) syntax

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.

Statement: there are no packets, frames, layers, blocks, shards, graphs, hash graphs “bots”, “motes”, ... or Satoshi’s traversing the net, stored in a blockchain cube.

Transactions are unicast, multicast, or anycast (workflow). The afore mention terms are non-existent, fictitious, imaginary metaphorical fabrications that 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

Figure 12: Blue Force Tracker / Maneuver Control System framework system

Force XXI Battle Command Brigade and Below (FBCB2) is a Linux-based communication platform designed for commanders to track friendly and hostile forces on the battlefield.[1] It increases a vehicle commander's situational awareness of the battlefield by gathering information near real-time based on vehicle locations being updated on the battlefield. This information is viewed graphically, and exchanged via both free and fixed text message formats (instead of verbal collection of reports).

Figure 13: Foundation technology standards basis for DeFi / Fintech IP wars

Framework: is a checklist: ideas, algorithms, processes, procedures, metrics, meters, signal & telemetry structured data 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, syntax lexicon consensus.

Foundation tech forming the internet, programmable \$\$\$, economy listed in an Adaptive Procedural Template of tools, processes, algorithms, etc. A 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 sound wave / silicon chip created intervals, epochs, time cycles used to (not) process syntax during epochs.

The Heart Beacon Cycle Time - Space Meter is an Adaptive Procedural Template Framework checklist of ideas, algorithms, processes, procedures, metric, meters, signal & telemetry standards to establish consistent Eco sustainable economic time cycle epochs for program programmable money / programmable economy among Distributed Autonomous Organizations participating in trade federations on the (technically non-existent) crypto currency blockchain / hash-graph etc.

FIGURE 14: Code Syntax Lexicon, Message Template Library

Blockchain developers use alpha-numeric brevity OPSCODES to describe commodities or fungible goods or items that represent fungible stores of value. Military NATO bases are small cities that transact a range of goods, commodities, fungible items that are described by computer codes – OPSCODES that are matched with systemically, procedurally generated symbols and 2525 A, B, C, D standard series symbol sets essential to man – machine – computer Artificial Intelligence A.I. This disciplined effort took decades and thousands of man hours to develop and refine. Why reinvent this syntax lexicon library wheel with every new cryptocurrency blockchain startup ?

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. Syntax / symbol source libraries that need a common reference format include as a minimum:

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

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>

FIGURE 15: Code Syntax Lexicon / Symbols / USPTO 13/573,002

Code Syntax Lexicon, Message Template Library: Establishing 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, heartbeat algorithm event message bus. Military OPSCODE brevity alpha- numeric codes are mapped, associated, paired with MILSTD 2525 A, B, C, D symbols and symbol sets. MIL Standard sets are critical to A.I. Artificial Intelligence Man - machine interaction. USPTO 13/573,002's foundation is Battlefield Digitization / Network Centric Warfare's signaling, telemetry support

framework where the improvement is OOTW Operations Other Than War involves use for net, net of programmable money, econometrics for DAO Distributed Autonomous Organizations / trade federations participating in a programmable economy.

Common syntax library of various Message Text Formats MTF to enable universal signaling / telemetry among a system of systems is ESSENTIAL. Decades of research at the taxpayer's expense into structured messaging / structured data exchange where the location, type of data identified by table number will help accelerate the process of organizing syntax into categories from disparate systems into data set reference repositories. Many semantic, syntax tags will be reusable. The rules, roles and logic developed by years of research involving of thousands of subject matter experts solving real world issues is the value to be extracted from 300+ message sets. NATO stays synchronized across many languages and cultures so why reinvent the wheel?

MESSAGE CATALOG: The USMTF message library has over 300 messages to choose from to facilitate information exchange requirements. MTFs presenting data in a logical, well specified and unambiguous layout. MTFs are transmission medium neutral. The content of the Message Catalogue has been developed by military operators. Military brevity codes and stock exchange codes are similar. security Identifier used in financial markets are: SYMBOL, CUSIP, ISIN, SEDOL, RIC Code, Syntax Lexicon Library

FIGURE 16: DoD / NATO structured data system of systems engineering / symbols

DoD / NATO system of systems engineering signaling, telemetry framework and syntax OPSCODE brevity codes matched with 2525C symbol sets vital for A.I. man-machine interface, interoperability, consistency and DAO consensus

Figure 17: Discovery Machine Machine Learning IP / USPTO 13/573,002

Discovery Machine® leverages a wide range of AI techniques from knowledge acquisition (KA) to machine learning (ML) to develop “intelligent constructs” for training, decision support and automation. Discovery Machine®’s highly acclaimed, patented knowledge capture methodology works in conjunction with our patented visual modeling tools to enable the agile production of intelligent constructs. Discovery Machine® leverages a wide range of AI techniques from knowledge acquisition (KA) to machine learning (ML) to develop “intelligent constructs” for training, decision support and automation. Discovery Machine Discovery Machine®’s patented knowledge capture methodology works in conjunction with our patented visual modeling tools to enable the agile production of intelligent constructs. Discovery Machine®’s AI overcomes the limitations of ML imposed by sparse data environments by capturing the mental models trapped in the heads of your organization’s subject matter experts (SME) to bias and direct learning. Source: <https://discoverymachine.com/>

Figure 18: Discovery Machine Symbolic Artificial Intelligence / USPTO 13/573,002

Symbolic artificial intelligence: is the term for the collection of all methods in artificial intelligence research that are based on high-level symbolic (human-readable) representations of problems, logic and search.[1] Symbolic AI used tools such as logic programming, production rules, semantic nets and frames, and it developed applications such as knowledge-based systems (in particular, expert systems), symbolic mathematics, automated theorem provers, ontologies, the semantic web, and automated planning and scheduling systems. The Symbolic AI paradigm led to seminal ideas in search, symbolic programming languages, agents, multi-agent systems, the semantic web, the strengths. imitations of formal knowledge and reasoning systems. Physical symbol system (also called a formal system) takes physical patterns (symbols), combining them into structures (expressions) and manipulating them (using processes) to produce new expressions. The physical symbol system hypothesis (PSSH) is a position in the philosophy of artificial intelligence formulated by Allen Newell and Herbert A. Simon. They wrote: "A physical symbol system has the necessary and sufficient means for general intelligent action." [2] —Allen Newell and Herbert A. Simon

This claim implies both that human thinking is a kind of symbol manipulation (because a symbol system is necessary for intelligence) and that machines can be intelligent (because a symbol system is sufficient for intelligence).[3]

The idea has philosophical roots in Hobbes (who claimed reasoning was "nothing more than reckoning"), Leibniz (who attempted to create a logical calculus of all human ideas), Hume (who thought perception could be reduced to "atomic impressions") and even Kant (who analyzed all experience as controlled by formal rules).[1] The latest version is called the computational theory of mind, associated with philosophers Hilary Putnam and Jerry Fodor.[4] Source: Wikipedia:

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

FIGURE 19: Blockchain Basics / How the internet really works / USPTO 13/573,002

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, net 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. Internet 3.0 and the new web will be based on the original structure and an Adaptive Procedural Template described by Stanford University. There are no packets, frames, layers, blocks, shards, graphs, hash graphs "bots", "motes" .. or Satoshi's traversing the net, stored in a blockchain cube.

Figure 20: Blockchain Tri-lemma Quad-lemma / Net, net of Money ground truth

- The perfect blockchain has three elements: Security, decentralization, and scalability. Finding a balance between the three is difficult and presents a problem referred to as the blockchain trilemma.
- Scalability and decentralization are often held back by security, but security tends to be compromised by any shifts on a network that offer scalability.
- Projects either choose to focus on two out of three or work on finding a solution to tackle the trilemma once and for all. Innovative ideas like sharding, side-chains and state channels are used to address the trilemma but they're still experimental.
- A solution to the problem could lead to greater adoption of cryptocurrency and blockchain and a wide-spread use of the technology across industries.

In reality, Terms like blockchain, levels, (side) chains are epoch cycles created after the genesis block that is an epoch time interval, cycle produced by (silicon chip) oscillations.

Figure 21: Defi, Fintech Foundation tech for IP intellectual property wars

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? ISO 20022: <https://iso20022.org/about-iso-20022>

FIGURE 22: Situation Awareness Reference Architecture SARA

Situational Awareness Reference Architecture (**SARA**) to foster knowledge sharing capabilities. **SARA** is a compilation of industry standards, technical practices and processes designed to enable situational **awareness** across shared infrastructure.

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Figure 24: INFOCON Structured Data Exchange Precedence model

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 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.

Figure 25: STRATML Markup Language

Strategy Markup Language (StratML) is an XML-based standard vocabulary and schema for the information commonly contained in strategic and performance plans and reports. StratML Part 1 specifies the elements of strategic plans, including: mission, vision, values, goals, objectives, and stakeholders. Part 2 extends Part 1 to include the additional elements required for performance plans and reports, including stakeholder roles and performance indicators. Originally adopted as an American national standard (ANSI/AIIM 21:2009) Part 1, Strategic Plans, was published as an international standard (ISO 17469–1) on February 11, 2015, with minor changes from the ANSI version.[1] On November 13, 2015, the ANSI version of Part 1 was replaced with the ISO version (ANSI/AIIM/ISO 17469-1).[2] On January 9, 2017, the ISO changes and several additional enhancements were approved for incorporation into Part 2, Performance Plans and Reports (ANSI/AIIM 22).[3] Internationalization of Part 2 will depend upon sufficient support from other nations in the ISO process.

The vision of the StratML standard is: "A worldwide web of intentions, stakeholders, and results." Its more explicit purposes include enabling strategic alignment through literal linkages between performance objectives and the business records supporting them. Although the initial focus has been on the plans and reports that U.S. federal agencies

are required to compile and maintain under the Government Performance and Results Act (GPRA), the standard has been specified generically so as to be applicable not only to all organizations, worldwide, but also to individuals who choose to lead mission/goal-directed lives. Section 10 of the [4] GPRA Modernization Act (GPRAMA) requires U.S. federal agencies to publish their strategic and performance plans and reports in machine-readable format. StratML is such a format.

Source: [Wikipedia](#)

Figure 26: Universal Time Zone UTZ Stochastic Harmonization / Synchronization

Geo-spatial, temporal metrics, meters that are synchronized, stochastically harmonized across UTZ Universal Time Zone. Micro to macro-cycle heartbeat cycle, heartbeat message, blockchain updates for system of systems synchronization, stochastic harmonization, spatial econometrics

Figure 27: SCOP Heartbeat Epoch Time Interval Start, Stop, TTL Time To Live

INTERNET BUILDING BLOCK: HEARTBEAT ADMINISTRATIVE INTERFACE: SCOP Administrative Interface as an Internet, net of Money 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.

FIGURE 28: The Alice Effect / SCOTUS Alice Corp Vs CLS Bank 2014 ruling

SCOTUS 2014 Alice in Wonderland Alice Corp Vs CLS Bank ruling "claims may not direct towards abstract ideas". Physical is the opposite of abstract.

How the internet really works / impact on SCOTUS Alice Ruling 2014

Internet = unicast / anycast publish - subscribe / multicast - broadcast & workflow stored across, among a distributed database now as it was in the beginning

Figure 29: Firefly Inspired Heartbeat Synchronization Algorithm

Firefly inspired heartbeat synchronization algorithm proposed by the Universities of Bologna Italy, Hungary includes message event bus algorithm – protocol, software application neutral monitors geo-spatial, temporally distributed events reported across a DAO among federated groups synchronized in time-space for common goals. 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; From: Swarm Intelligence and Bio-Inspired Computation, 2013).

This work presents a **heartbeat** synchronization protocol for overlay networks **inspired** by mathematical models of flash synchronization in certain species

of fireflies, and shows that synchronization emerges even when messages can have significant delay subject to large jitter. **Heartbeat** synchronization strives to have nodes in a distributed system generate periodic, local "heartbeat" events as heartbeat messages over a universal event message bus.

FIGURE 30: ECONOMIST MILTON FRIEDMAN'S K% RULE GDP HEARTBEAT

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.

FIGURE 31: TERRA TRC TRADE REFERENCE COMMODITY BASED CURRENCY

TRADE REFERENCE CURRENCY TERRA TRC: Terra (The Trade Reference Currency, TRC) is the name of a possible "world currency". The concept was proposed by Belgian economist and expert on monetary systems Bernard A. Lietaer in 2001, based on a similar proposal from the 1930s. The currency is meant to be based on a basket of the 9-12 most important commodities (according to their importance in worldwide trade). Currency resistant to inflation.

FIGURE 32: FEDERATE / FEDERATION

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. Federate Latin: foedus, gen.: foederis Latin: foedus, gen.: foederis, covenant characterized by a union of partially self-governing states or regions under a central (federal) government

Figure 33: Federate / Federation Beacon Communities

The parallel economy has two major draws. For consumers, it offers the opportunity to buy from firms that reflect their values. PublicSq, an online marketplace, is home to 40,000 firms devoted to freedom, the family unit and the constitution. The term "parallel economy" has been used to describe black markets, regional economies, and is also the name of a payment processor by Rumble. The term is most often used to describe the emergence of new technologies - centered ecosystem

FIGURE 34: ERICSSON ERLANG OPEN MONEY / USPTO 13/573,002

ERLANG – ERLANG FOLSOM: 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>

FIG 35: CRYPTOCURRENCY LAND USE IRS MEMO 1421 / USPTO 13/573,002

IRS Memo #1421: Purchased Bitcoins are treated akin to property. Plots A, B, C represent 3 unspent transaction outputs controlling N Bitcoins. - End-state Bitcoin quantity will be fixed like land “Bitcoin as protocol of ownership, not transfer. Coins never travel, but simply switch owners”. Method and means metric steps:

Step 1: prove coin ownership <Org_ID> Coin Issuer

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

Step 3: specify ownership <Org_ID> issuing agent

Step 4: Issuing Org of Record adjudicates w buyer

Figure 36: IDMaps / SonarHops Distance Estimation Service / USPTO 13/573,002

IDMAPS – SONAR HOPS: IDMaps / SonarHops 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 matching heartbeat time temporal snapshot cycle interval.

FIGURE 37: BIG DATA THE NEXT OIL / USPTO 13/573,002

Big Data as the “Next Oil”: Establishing 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, heartbeat algorithm event message bus. 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, heartbeat algorithm event message bus. Military OPSCODE brevity alpha- numeric codes are mapped, associated, paired with MILSTD 2525 A, B, C, D symbols and symbol sets. MIL

Standard sets are critical to A.I. Artificial Intelligence Man - machine interaction. USPTO 13/573,002's foundation is Battlefield Digitization / Network Centric Warfare's signaling, telemetry support framework where the improvement is OOTW Operations Other Than War involves use for net, net of programmable money, econometrics for DAO Distributed Autonomous Organizations / trade federations participating in a new model eco sustainable programmable economy across the UTZ Universal Time Zone.

FIGURE 38: (Wireless) ENERGY ATTENUATION / USPTO 13/573,002 claim

USPTO 13,573,002 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/wUpOlqbHcjI?t=111>

FIGURE 39: Tesla inspired Energy / data (sound) waves as medium for unified quantum field propagation / transmission / quantum computing foundation technology #Tesla #energy #data #quantumcomputing

FIGURE 40: SPACE – TIME BEACON / CLOSER = CHEAPER = LESS TIME / FUEL

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. The world's systems need to be time-space synchronized, stochastically harmonized across the one world, global UTZ Universal Time Zone via heartbeat messages using universally shared, standards based OPSCODE brevity codes drawn from a universal structured data exchange syntax lexicon with over 300 use case templates

Figure 41: Space - Time Energy over distance SLA: energy attenuates over distance.
Shorter = closer = cheaper given less infrastructure, maintenance needed
USPTO 13/573,002 energy metrics, meter. Example: "when space-time spins, it creates mass. It produces energy in space that radiates. This radiation is what we call mass. At the fundamental level of space-time is a honey comb of overlapping spheres of energy each having a singularity at the center: Nassim Haramein "the new Einstein" USPTO 13/573,002 claim [#energy #Haramein #Tesla #Bucky Fuller #SLA #space-time](#)

Figure 42: myriad consensus algorithm blockchain memes / metaphors = Tower of Babel / Universal meme SCOTUS 2014 Alice Corp Vs CLS Bank compliant

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 algorithms, memes. 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... A common tool / meme is needed to help establish consensus metrics, meters

Figure 43: Proof of Work Consensus / USPTO 13/573,002

Proof of Work (PoW) was first published in 1993 by Cynthia Dwork and Moni Naor and was later applied by Satoshi Nakamoto in the Bitcoin paper in 2008. The Proof of Work consensus algorithm involves solving a computational challenging puzzle in order to create new blocks in the blockchain. The process of verifying the transactions in the block to be added, organizing these transactions in a chronological order in the block and announcing the newly mined block to the entire network does not take much energy and time. The energy consuming part is solving the ‘hard mathematical problem’ to link the new block to the last block in the valid blockchain. When a miner finally finds the right solution, the node broadcasts it to the whole network at the same time, receiving a cryptocurrency prize (the reward) provided by the PoW protocol.

FIGURE 44: Proof of Stake Consensus

Proof-of-stake is a cryptocurrency consensus mechanism for processing transactions and creating new blocks in a blockchain. A consensus mechanism is a method for validating entries into a distributed database and keeping the database secure. In the case of cryptocurrency, the database is called a blockchain—so the consensus mechanism secures the blockchain. The next block writer on the blockchain is selected at random, with higher odds being assigned to nodes with larger stake positions.

Figure 45: PoST Proof of Space – Time Consensus

The rational proof of financial interest in the network achieved by PoST addresses two problems with proof-of-capacity: Arbitrary amortized cost - In a consensus system that doesn't account for time, participants can generate an arbitrary amount of PoC proofs by reusing the same storage space, lowering their true cost.

Figure 46: Proof of Activity Consensus

Proof-of-activity (PoA) is a blockchain consensus algorithm used to ensure that all transactions occurring on the blockchain are genuine, as well as to ensure that all miners arrive at a consensus. PoA is a combination of two other blockchain consensus algorithms: proof-of-work (PoW) and proof-of-stake (PoS). PoA increases the difficulty level of mining as time passes, PoA also prevents the chance of a 51% attack, like in POW and POS, because it is impossible to predict who the signing peer would be in the future, and coin saving competition among signers does not allow the computing power to be accumulated within a group.

Figure 47: Proof of Authority Consensus

Proof-Of-Authority (PoA) is a consensus method that gives a small and designated number of blockchain actors the power to validate transactions or interactions with the

network and to update its more or less distributed registry. It works as follow: according to the chosen scheme, one or more validating machines are responsible for generating each new block of transactions that will be included in the Blockchain. The new block can be accepted directly without verification, or by unanimous vote of block generators, or simply by a majority, depending on the configuration chosen for the Blockchain.

Figure 48: Proof of Burn Consensus

PoB coins are “burned” by sending coins to an address from where they are irretrievable. By committing the coins to an unreachable address, validators earn a privilege to mine on the system based on a random selection process. Thus, burning coins means that validators have a long-term commitment in exchange for their short-term loss. Depending on how the PoB is implemented, miners may burn the native currency of the Blockchain application or the currency of an alternative chain, such as bitcoin. The more coins validators burn, the better the chances of being selected to mine the next block.

Figure 49: Proof of Capacity Consensus

Proof of capacity (PoC) is a consensus mechanism algorithm used in blockchains that allows for mining devices in the network to use their available hard drive space to decide mining rights and validate transactions. Proof of capacity (PoC) authentication systems employ spare space on a device's hard drive to store solutions to a cryptocurrency hashing problem. 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 and 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 even before the mining activity commences. 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. To draw an 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 50: Proof of Weight / Volumetric Consensus

Proof-of-Weight is a blockchain consensus mechanism that gives users a 'weight' based on how much cryptocurrency held. Proof-of-weight consensus mechanisms are based off of the first Proof-of-Weight consensus model used in the cryptocurrency Algorand, which was developed by researchers at the MIT Computer Science & Artificial Intelligence Laboratory. The Proof-of-Weight consensus mechanism remains secure as long as the majority of weighted users are honest, and protects the network against double-spend attacks. Each time a transaction is made on a blockchain using the Proof-of-Weight consensus mechanism, the network creates a committee of random network

members and assigns each member 'weight' (based on how much currency held on the network) which slightly centralizes the consensus process within a random committee.

FIGURE 51: Bitcoin Classic / Core / Unlimited / USPTO 13/573,002

Bitcoin Classic was a proposed hard fork from Bitcoin Core that proposed increasing the maximum size of transaction blocks. Bitcoin Classic proposed increasing blockchain sizes from 1 megabyte to 2 megabytes. In effect, this would double the number of transactions that could be processed per second. The proposed increase was less aggressive than what was proposed by Bitcoin XT in 2015 proposed increasing the size of blocks to 8 megabytes.

FIGURE 52: Microsoft Cloud blockchain formerly known as Project BLETCHLEY

Project Bletchley is a vision for Microsoft to deliver Blockchain as a Service (BaaS)

In Project Bletchley, Azure provides the fabric for blockchain, serving as the cloud platform where distributed applications are built and delivered.

Azure will be open to a variety of blockchain protocols, supporting simple, Unspent Transaction Output-based protocols (UTXO) like Hyperledger, more sophisticated, Smart Contract-based protocols like Ethereum, and others as developed. Introduced in Project Bletchley are two new concepts: blockchain middleware and cryptlets.

Blockchain middleware will provide core services functioning in the cloud, like identity and operations management, in addition to data and intelligence services like analytics and machine learning. These technologies will ensure the secure, immutable operation that blockchain provides, at the same time, deliver the business intelligence and reporting capabilities business leaders and regulators demand. Newly developed middleware will work in tandem with existing Azure services, like Active Directory and Key Vault, and other blockchain ecosystem technologies, to deliver a holistic platform and set of solutions. Cryptlets, a new building block of blockchain technology, will enable secure interoperation and communication between Microsoft Azure, ecosystem middleware and customer technologies. Cryptlets function when additional information is needed to execute a transaction or contract based on a date or time and providing market data. They will become a critical component of sophisticated blockchain systems, enabling all technology to work together in a secure, scalable way.

Figure 53: SAWTOOTH / POET Proof of Elapsed Time Consensus

Proof of elapsed time (PoET) is a [blockchain](#) network consensus mechanism that prevents high resource utilization and energy consumption; it keeps the process more efficient by following a fair lottery system. The algorithm uses a randomly generated elapsed time to decide mining rights and block winners on a blockchain network. By running a trusted code within a secure environment, the PoET [algorithm](#) also enhances transparency by ensuring lottery results are verifiable by external participants.

- Proof of elapsed time (PoET) is a consensus algorithm developed by Intel Corporation that enables permissioned blockchain networks to determine who creates the next block.
- PoET follows a lottery system that spreads chances of winning equally across network participants, giving each node the same chance.
- The PoET algorithm generates a random wait time for each node in the blockchain network; each node must sleep for that duration.
- The node with the shortest wait time will wake up first and win the block, thus being allowed to commit a new block to the blockchain.
- PoET workflow is similar to Bitcoin's proof of work (PoW) but consumes less power because it allows a node to sleep and switch to other tasks for the specified time, thereby increasing network energy efficiency.

Figure 54: Proof of Space Time POST / USPTO 13/573,002

A proof of space-time (PoST) shows the prover has spent an amount of time keeping the reserved space unchanged. Its creators reason that the cost of storage is inextricably linked not only to its capacity, but to the time in which that capacity is used.

Figure 55: State Channels / USPTO 13/573,002

State channels allow participants to securely transact off-chain while keeping interaction with Ethereum Mainnet at a minimum. Channel peers can conduct an arbitrary number of off-chain transactions while only submitting two on-chain transactions to open and close the channel. State channels are two-way pathways opened between two users that want to communicate with each other in the form of transactions. Each participant in the channel signs these transactions with his private key to ensure that they are undeniably true and authorized.

FIGURE 56: Segregated Witness - Lightning Consensus / USPTO 13/573,002

Segregated Witness (SegWit) refers to a change in the transaction format of Bitcoin. Its stated purpose as a protocol upgrade was to protect against transaction malleability and decrease transaction times by increasing block capacity. Transaction malleability refers to the possibility that tiny pieces of transaction information could be changed, invalidating new cryptocurrency blocks. It is intended to speed up the validation process by storing more transactions in a block.

Segregated Witness (SegWit) is a change in Bitcoin's transaction format where the witness information was removed from the input field of the block. The stated purpose of Segregated Witness is to prevent non-intentional Bitcoin transaction malleability and allow for more transactions to be stored within a block. SegWit is intended to solve a blockchain size limitation problem that reduces Bitcoin transaction speed.

The Lightning Network is a second layer for Bitcoin that uses micropayment channels to scale the blockchain's capability to conduct transactions more efficiently. This layer consists of multiple payment channels between parties or Bitcoin users. A Lightning

Network channel is a transaction mechanism between two parties. Using channels, the parties can make or receive payments from each other. Transactions conducted on the Lightning Network are faster, less costly, and more readily confirmed than those conducted directly on the Bitcoin blockchain. The Lightning Network can also be used to conduct other types of off-chain transactions involving exchanges between cryptocurrencies. Concerns About the Lightning Network

The most apparent problem with the Lightning Network—which is meant to be decentralized—is that it could lead to a replication of the hub-and-spoke model that characterizes today's financial systems. In the current model, banks and financial institutions are the primary intermediaries through which all transactions occur. Businesses that invest in Lightning Network nodes may become similar hubs or centralized nodes in the network by having more open connections with others. Other concerns are fraud, fees, hacks, and price volatility.

FIGURE 57: BITCOIN NG NEXT GENERATION / USPTO 13/573,002

Bitcoin-NG is a Byzantine fault tolerant blockchain protocol that is robust to extreme churn and shares the same trust model as Bitcoin. In addition to Bitcoin-NG, we introduce several novel metrics of interest in quantifying the security and efficiency of Bitcoin-like blockchain protocols. We implement Bitcoin-NG and perform large-scale experiments at 15% the size of the operational Bitcoin system, using unchanged clients of both protocols. These experiments demonstrate that Bitcoin-NG scales optimally, with bandwidth limited only by the capacity of the individual nodes and latency limited only by the propagation time of the network.

Figure 58: Decentralized Oracle Networks / USPTO 13/573,002

Decentralized metalayer of oracle networks allows smart contracts to seamlessly use and create an array of decentralized services that accelerate dApp development, enable cross-chain functionality, and harmonize disparate technologies. DON's enables smart contracts on any blockchain to leverage extensive off-chain resources, such as tamper-proof price data, verifiable randomness, automation functions, external APIs,

FIGURE 59: Brave New Coin B-WAP Consensus / 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. 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. As of 2018, coins were mined using a proof of work algorithm with a hash function called "X11", with eleven rounds of hashing, and the average time to mine a coin was around two and a half minutes. Masternodes provide two additional kinds of transactions. "InstantSend" bypasses mining and instead requires a consensus of masternodes to validate a transaction, speeding transactions.[3][1] "PrivateSend" is intended to give users optional consumer-grade privacy; it mixes participating users' unspent Dash before executing a transaction.

FIGURE 60: DASH / USPTO 13/573,002

Dash is an open source cryptocurrency. It is an altcoin that was forked from the Bitcoin protocol. It is also a decentralized autonomous organization (DAO) run by a subset of its users called "masternodes". Dash was designed to allow transactions quickly and to have a swift governance structure in order to overcome shortfalls in Bitcoin.[3] What makes Dash different from Bitcoin is that it splits its rewards into three categories: 45% goes to miners, 45% goes to masternodes (these are computers that provide additional services in the network and have a significant investment in Dash tokens), and 10% goes towards its decentralized governance budget. Governance is handled through a form of decentralized autonomous organization in which decisions are made on a blockchain via masternodes. Masternodes perform standard node functions like hosting a copy of the blockchain, relaying messages, and validating transactions on the network, and in addition act as shareholders, voting on proposals for improving Dash's ecosystem. Anyone with 1,000 Dash Coins (DASH), the protocol's native cryptocurrency, can become a masternode owner.

FIGURE 61: ETHEREUM – CASPER / USPTO 13/573,002

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

FIGURE 62: HYPERLEDGER FRAMEWORK / USPTO 13/573,002

Hyperledger Fabric, an open source project from the Linux Foundation, is the modular blockchain framework and de facto standard for enterprise blockchain platforms. Intended as a foundation for developing enterprise-grade applications and industry solutions, the open, modular architecture uses plug-and-play components

FIGURE 63: R3 Consortium CORDA / USPTO 13/573,002

Corda is a scalable, permissioned peer-to-peer (P2P) distributed ledger technology (DLT) platform that enables the building of applications that foster and deliver digital trust between parties in regulated markets. CORDA core functions:

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

FIGURE 64: DFINITY Blockchain Nervous System / USPTO 13/573,002

The DFINITY Foundation is a major contributor to the Internet Computer blockchain. Internet Computer (IC) is a platform for executing smart contracts/The term “smart contract: a general-purpose, tamperproof computer program whose execution is performed autonomously on a decentralized public network. smart contracts

- are composable, meaning that they may interact with one another, and
- support tokenization, meaning that they may use and trade digital tokens.

Figure 65: Byzantine Fault Tolerant BFT-SMART / 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.

FIGURE 66: OpenBazaar Free Trade on the Blockchain / USPTO 13/573,002

OpenBazaar is an open source project developing a protocol for e-commerce transactions in a fully decentralized marketplace. [2] It uses cryptocurrencies as medium of exchange and was inspired by a hackathon project called DarkMarket. OpenBazaar 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

FIGURE 67: EPCIS RFID / USPTO 13/573,002

Electronic Product Code Information Services (EPCIS) GS1 Standard for creating, sharing visibility event data. What identifiers of object(s) or entities / subject of event

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

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

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

Figure 68: HASHGRAPH DAG Directed Acyclic Graph / USPTO 13/573,002

Hashed Timelock Contract (HTLC) A hashed timelock contract (HTLC) is a type of smart contract used in blockchain applications. It reduces counterparty risk by creating a time-based escrow that requires a cryptographic passphrase for unlocking. In practical terms, this means that the person receiving the funds in a transaction has to perform two actions to access the funds: enter the correct passphrase and claim payment within a specific timeframe. If they enter an incorrect passphrase or do not claim the funds within the timeframe, they lose access to the payment. A hashed timelock contract (HTLC) reduces counterparty risk in decentralized smart contracts by effectively creating a time-based escrow that utilizes a cryptographic passphrase. This type of smart contract requires the receiver of a payment to acknowledge it within a certain period of time or forfeit it. HTLCs is a fundamental tool used by the lightning network.

Figure 69: FEDCOIN – WORLDCOIN ECONOMIC HEARTBEAT

Economist Milton Friedman's K% rule: "FEDCOIN / WORLDCOIN currency derived from sampling lead economic indicators across a global, universal event bus by use of the firefly-heartbeat algorithm message event bus to track changes i.e., updating statistical means of a GDP Gross Domestic Product based index, USPTO 13/573,002 supports economist Milton Friedman's K% rule where a FEDCOIN / WORLDCOIN currency is derived from sampling lead economic indicators across a global, 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.

Figure 70: Federal Reserve FedNOW Metallicus / USPTO 13/573,002

Federal Reserve Integration of FedNow with Metal Blockchain. Metal Blockchain is a crypto network designed by Metallicus, based on a modified version of Avalanche's code. The network was developed to offer compliance-friendly options for DeFi developers. The network incorporates a subnet called "X-Chain" that empowers developers to establish transfer rules for assets. For instance, a token can be issued with guidelines, such as "only for US citizens" or "non-tradable until tomorrow."

Figure 71: World Bank IMF Unicoin STABLE COIN / USPTO 13/573,002

Universal Monetary Unit (UMU), a.k.a Unicoin: store of value cryptograph supported by artificial intelligence (A.I.) Goals: continuous purchasing demand, minimal price volatility, and annual asset pricing targets. The primary value of any commodity is its utility value. Utility = pay for goods, services, and debts, preserve value over a long period of time. Employs machine learning trading bots. UMPC will establish yield payout rates for wallet holders to stake Unicoin in the Staked Proof of Trust (SPOT) consensus protocol. PoT consensus selects validators I.A.W contribution to the DeFI network.

Figure 72: Unicoin STABLE COIN CBDC / USPTO 13/573,002 TERRA TRC / UTZ

The primary value of any commodity is its utility value. Utility = pay for goods, services, and debts, preserve value over a long period of time. Employs machine learning trading bots. UMPC will establish yield payout rates for wallet holders to stake Unicoin in the Staked Proof of Trust (SPOT) consensus protocol. PoT consensus selects validators I.A.W contribution to the DeFI network / 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). Events across time zones will require synchronization, stochastic harmonization to be displayed by all in a common picture.

FIG 73: TRUTH COIN Nullius in Verba: On the word of no one. Future Wikipedia**1) Tradable Reputation**

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

2) SVD Cross-Validation

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

3) Strategic Use of TIME

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

Figure 74: Figure 69: Volatility Problem Solution

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

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

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

Figure 75: NEO / NEO Net Enabled Operations / Distributed Smart Economy

NEO NET Enabled Operations: Users are monitored as individuals within groups. Groups status is described, validated, authenticated, defined by statistical readiness / availability. operational concepts, architecture definition, information exchange requirements, data standards and protocols, and strategic and tactical-level decision support (with special emphasis on timely, data-driven collaborative decision making for complex operational problems among a system of systems using structure data).

Figure 76: IBM – Samsung ADEPT / USPTO 13/573,002

ADEPT: Autonomous Decentralized Peer-to-Peer Telemetry) concept that uses the BitTorrent peer-to-peer file sharing protocol, the Bitcoin cryptocurrency, Ethereum, and the peer-to-peer comms protocol Rehash. ADEPT tech ledgers, or record-keepers, store transactions which the IoT Internet of Things, programmable money will generate.

Figure 77: High Frequency Flash Trade Breaker / Algorithmic Regulation

HFT 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? Quantum computing mediation, mitigation among the quantum haves, have nots 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. HFT Algorithmic regulation: firefly inspired heartbeat synchronization algorithm applied to stocks, commodities, currency exchanges. Improving temporal trade parity between cryptocurrency blockchain and conventional and HFT, quantum computing enabled stock exchanges by using the firefly-heartbeat algorithm to take trade speed samples among trade populations across time zones to establish temporal consensus among disparate trade protocols, optimal trade speed / frequency by defining a start, stop and duration TTL Time To Live trade window. Define time intervals with discrete start, stop, TTL Time To Live trade windows using commands embedded within </108> heartbeats, heartbeat messages organic to all system's master controller.

Figure 78: USPTO 13/573,002 Econometrics, Meters, Trade Demurrage Fees

GDP Gross Domestic Product Index / statistical mean value index based TRC Trade Reference Currency demurrage fees by Economist Bernard Lietaer of Belgium. Demurrage fees incentivize conservation of resources, commodities i.e., discounts for

locally produced, consumed goods and commodities where for example, closer is cheaper given closer consumes less fuel and produces less carbon emissions. 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. SOURCE: <https://lietaer.com/2010/01/terra/>

FIGURE 79: BLOCKCHAIN TRADENET

Block Tradenet trade system simple trade-investment platform uses a copy-trading method. Each investment runs on an FX-Bot which trades using trading algorithms. Bitcoin and the blockchain function as a medium of exchange, a store of value, a unit of account. Bitcoin adds digital, cryptographic, and distributed server functions to currencies. Because it functions simultaneously as a currency, an asset and a platform, Bitcoin is better described as a global cryptoCAP (currency, asset, platform) -- a synergistic form of "cryptocapital" to unleash the full economic power of the networked age. Bitcoin makes money PROGRAMMABLE. MONEY IS SIMPLY DATA - a simple way to measure and keep track of exchanges in value wealth accumulation. Bitcoin aggregates data in a distributed global ledger accessible to anyone, and software. First open platform for financial services. Color coins represent stocks, bonds, currencies,

FIGURE 80: Block-Time Arbitrage Blockchain: Blueprint for a New Economy

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

BLOCKTIME: A General Temporality of Blockchains Blocktime as blockchains' temporality allows the possibility of rejiggering time and making it a malleable property of blockchains. The in-built time clock in blockchains is blocktime, the chain of time by which a certain number of blocks will have been confirmed. Time is specified in units of transaction block confirmation times, not minutes or hours like in a human time system. Block confirmation times are convertible to minutes. Conversion metrics may change over time. Credit: Melanie Swan: Blockchain Blueprint for a new economy

FIGURE 81: Financial Nostradamus / FutureMan fusion USPTO 13/573,002

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/>

FIGURE 82: GAMIFICATION / USPTO 13/573,002

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

FIGURE 83: IOTA TANGLE DAG / 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

FIGURE 84: RIPPLE XRP Real Time Protocol / USPTO 13/573,002

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

FIGURE 85: E Government as a Service E-GASS/ USPTO 13/573,002 Synergy

E-GaaS: international blockchain platform for organizing economic, state, social activities of citizens , communities on the basis of smart law, smart contract system. eGaaS offers a comprehensive solution needed for state and business management on the blockchain platform. Distributed digital asset registries were the first projects that used blockchain systems such as databases designed for secure storage of records on real estate property, stocks, copyright and so on. It is assumed hosting any document on the blockchain is equivalent to notarization of its content at a fixed time point ex:

7.2 A continuous action, operation, series of changes, sync deltas updating groups

1.5.7.3 A cyclic, iterative process syncing groups in time-space

Sync Deltas = changes from one epoch time cycle to the next: crypto currencies tethered to tangible commodities formed into indices of assets.

Heart Beacon Cycle provides 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.

Figure 86: GNOSIS / USPTO 13/573,002

Gnosis Wisdom (WIZ) pay platform fees in Services layer, Wiz subsidize other participants fees, provide initial subsidies for markets, or market trading. WIZ pegged to \$1 USD worth of fees. WIZ acts as coupon for \$1 of Gnosis

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

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

Figure 87: Programmable money's main issues / adjustments

The crypto community has six major issues: Volatility, Inconsistent Memes, Identity, lack of intrinsic value and blockchain scalability. USPTO 13/573,002 addresses all six issues systemically. All things internet are built / made of TIME Cycles used / not used to process syntax as instructions. It follows, that issues with any internet system -- including Bitcoin must be fixed using this fundamental, universal truth.

ARTICLE: Could the Bitcoin Lightning Network Solve Blockchain

Scalability? LINK: "hashed timelock contracts between users , in the blockchain, if only two participants care about a transaction, it's not necessary for all other nodes in the bitcoin network to know about that transaction. It is instead preferable to only have the bare minimum of information on the blockchain. It is desirable for two individuals to net out their relationship at a later date, rather than detailing every transaction on the blockchain. This can be achieved by using time locks as a component to global consensus. As a result, Bitcoin can scale to billions of transactions per day with the computational power available today on a modern desktop computer. Transaction between users occurs during a micro-cycle, then reconciled at a pre-arranged macro-cycle, with a NIST Cyber Beacon random # time stamp for non-repudiation given reconciliation will probably occur at a later data in time.

SCALABILITY: SEE ARTICLE: Could the Bitcoin Lightning Network Solve Blockchain Scalability? LINK: "hashed time-lock contracts between users" In the blockchain, if only two participants care about a transaction, it's not necessary for all other nodes in the bitcoin network to know about that transaction. It is instead preferable to only have the bare minimum of information on the blockchain. It is desirable for two individuals to net out their relationship at a later date, rather than detailing every transaction on the blockchain. This can be achieved by using time locks as a component to global consensus. As a result, Bitcoin can scale to billions of transactions per day with the computational power available today on a modern desktop computer. Transaction between users occurs during a micro-cycle, then reconciled at a pre-arranged macro-cycle, with a NIST Cyber Beacon random # time stamp for non-repudiation given reconciliation will occur at a later date in time. Bitcoin Lightning Network

IDENTITY: Organizational unit (computing) From Wikipedia, In computing, an organizational unit (OU) provides a way of classifying objects located in directories, or names in a digital certificate hierarchy, typically used either to differentiate between objects with the same name (John Doe in OU "marketing" versus John Doe in OU "customer service"), or to parcel out authority to create and manage objects (for example: to give rights for user-creation to local technicians instead of having to manage all accounts from a single central group). Organizational units most commonly appear in X.500 directories, X.509 certificates, Lightweight Directory Access Protocol (LDAP) directories, active directory (AD), and directories and certificate trees, but they may feature in almost any modern directory or digital certificate container grouping system. In most systems, organizational units appear within a top-level organization grouping or organization certificate, called a domain. In many systems one OU can also exist within another OU. When OUs are nested, as one OU contains another OU, this creates a relationship where the contained OU is called the child and the container is called the parent. Thus, OUs are used to create a hierarchy of containers within a domain. Only OUs within the same domain can have relationships. OUs of the same name in different domains are independent.

Figure 88 USPTO 13/573,002 Application key events

Patent application key events and concepts. USPTO SCREEN CAPTURES SUSPENDED PAIR RULES:

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

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

Figure 89: USPTO 13/573,002 Amendment timeline

The first patent application was filed on September 11th, 2003 Method to commercialize structured military messages that establishes that the internet consists of internet time epoch cycles used / not used to process syntax (structured data). This filing was followed by many amendment filings. The USPTO sent web file captures from the first named inventor's site to the inventor several times from 2006 at two year intervals citing the precedent Transco Vs Performance Contracting Inc establishing a patentable idea

Figure 90: Double Slit experiment particle / wave duality

In physics, the double-slit experiment is a demonstration that light and matter can display characteristics of both classically defined waves and particles; ... experiment with light was part of classical physics long before the development of quantum mechanics and the concept of wave-particle duality. 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.

Figure 91: USPTO 13/573,002 Quantum Computing Space – Time

Alice Corp Vs CLS Bank are your patent applications, patents grants descriptive to the quantum computing level - future proofed? Are they written to be quantum resistant, or quantum based or both? What if events could be propagated by waves - is there a need for liquid nitrogen if the method and means is light wave laser based? Why go the liquid nitrogen route if we know the challenges in maintaining consistent temperatures across the globe at sea level Vs mountain tops, equator Vs poles... and don't forget the need to stochastically harmonize data sampling fluctuations across the world's time zones...

Figure 92: QUANTUM COMPUTING / USPTO 13/573,002 SYNERGY

A quantum computer is a computer that exploits quantum mechanical phenomena. At small scales, physical matter exhibits properties of both particles and waves, and quantum computing leverages this behavior using specialized hardware. USPTO 13/573,002 graphics are descriptive of quantum computing measures and metrics and the particle / wave duality using a water drop in pond meme, Paul Revere linear, sequential meme to describe quantum mechanics methods and metrics, meters

Figure 93: NIST QRNB Quantum Random Number Beacon / USPTO 13/573,002

National Institute for Standards and Technology NIST ATOMIC CLOCK in Boulder Colorado provides a global temporal reference source across the UTZ Universal Time Zone source for sync data event time stamps and NIST QRNB Quantum Random Number Beacon for non-repudiation of events / transactions at any point in time / place

in the future. 1.11 Cited method uses waves Vs particles in quantum computing for ecological, temporal efficiencies and ease of synchronization, stochastic harmonization

Figure 94: NIST QRNB Quantum Random Number Beacon

NIST has developed a method for generating numbers guaranteed to be random by quantum mechanics. The method generates digital bits (1s and 0s) with photons, or particles of light. An intense laser hits a special crystal that converts laser light into pairs of photons that are entangled, a quantum phenomenon that links their properties. generates full-entropy bit-strings and posts them in blocks of 512 bits every 60 seconds. Each such value is sequence-numbered, time-stamped and signed, and includes the hash of the previous value to chain the sequence of values together and prevent even the source to retroactively change an output package without being detected.

Figure 95: Hopf Fibration / Bloch sphere

Hopf fibration, 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. “The most important object in the universe”. “Hopf fiber bundles appear in 8 quantum physics situations.”

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. [1] Quantum mechanics is mathematically formulated in Hilbert space or projective Hilbert space. the points on the surface of the Bloch sphere represent the pure states of a single 2-level quantum system. A pure state being of the form: $|\psi\rangle=a|0\rangle+b|1\rangle$ and typically the north and south poles of this sphere correspond to the $|0\rangle$ and $|1\rangle$ states. The qubit $|\psi\rangle=a|0\rangle+b|1\rangle$ can be represented as a point (theta,phi) on a unit sphere called the Bloch sphere. Define the angles theta and phi by letting $a=\cos(\theta/2)$ and $b=e^{i\phi}\sin(\theta/2)$. Here, a is taken to be real, which can always be made real by multiplying $|\psi\rangle$ by an overall phase factor (that is unobservable). Then $|\psi\rangle$ is represented by the unit vector ($\cos\theta\sin\phi, \sin\theta\sin\phi, \cos\phi$) called the Bloch vector.

FIGURE 96: QUBIT = non-existant notional construct = group think contrived for an expected outcome favorable to controlling agent

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).

Figure 97: The Great Reset of 2021 / Greater Reset of 2021 – 2030 – 2050 ?

"The Great Reset agenda would have three main components. The first would steer the market toward fairer outcomes. To this end, governments should improve coordination (for example, in tax, regulatory, and fiscal policy), upgrade trade arrangements, and create the conditions for a "stakeholder economy." To achieve a better outcome, the world must act jointly and swiftly to revamp all aspects of our societies and economies, from education to social contracts and working conditions. Every country, from the United States to China, must participate, and every industry, from oil and gas to tech, must be transformed. In short, we need a "Great Reset" of capitalism"

FIGURE 98: Solar Nova + Pole shift Vs Crypto chips

The 1859 Carrington Event impacted telegraph wires. Is it time to relook at the world's monetary unit of value in light of a energy grid / internet that is disabled? The Carrington Event was the most intense geomagnetic storm in recorded history, peaking from 1 to 2 September 1859 during solar cycle 10. It created strong auroral displays that were reported globally [1] and caused sparking and even fires in multiple telegraph stations. The geomagnetic storm was most likely the result of a coronal mass ejection (CME) from the Sun colliding with Earth's magnetosphere. In context with the world's monetary unit, should we consider silicon chips vulnerability given electromagnetic pulse EMP?

Figure 99: Standing on the shoulders of giants

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

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.THEN this condition 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/>

Fig 100: The Alice Effect / Block Time Arbitrage / USPTO 13/573,002:

SCOTUS 2014 "Alice in Wonderland" ruling / USPTO 13/573,002 Heart Beacon Cycle Time - Space Meter Adaptive Procedural Template (checklist of ideas, apps, processes, programs, algorithms...) Net, net of programmable \$\$\$ viewed through the lens of SCOTUS Alice Vs CLS Bank "Alice in Wonderland ruling" "claims may not direct towards abstract ideas" Banks & tech firms are forming teams to establish foundation #DeFi / #crypto technology IP patent law claims. Physical meme = opposite of abstract

Figure 101: Project #Unrig the System (s) Robert David Steele / Dr. Cynthia McKinney/ USPTO 13/573,002

Twelve + reforms needed to create educated engaged democracy, unrig the "pay to play system = DoD system of systems engineering structured data exchange best practice foundation DeFI Distributed Finance foundation technology for global Fintech

Figure 102: Bio Coin

Biomass Coin is a decentralized service and financial system which users can be directly informed about the process. In addition, they can exchange this coin with cryptocurrency. The idea behind Biomass is combine the benefits of renewable energy production with the benefits of cryptocurrencies using a decentralized system.

FIGURE 103: SPACESHIP EARTH OPERATING MANUAL SIGNALS ANNEX K

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

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.

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

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? 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/>

Figure 104: Programmable money through the lens of metaphysics

Metaphysical musings on programmable money: fictional "blocks on the cryptocurrency blockchain" in light of SCOTUS Alice in Wonderland 2014 ruling "claims may not direct towards abstract ideas" / The endless debate over (distributed) Database Vs messaging structured data exchange. In reality, messages are parsed in / out of data storage conventions using point to point or multicast internet protocol = same as it ever was

Figure 105: First Named Inventor / Patent Applicant's Business Card

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 such as establishing an Ecologically sustainable Economic heartbeat. This method involves reuse of over 300 structured data exchange messages and message sets (playbook) use cases described in spread sheet row - column numbered format brevity OPSCODES mapped to symbols essential to artificial intelligence man - machine interface. NATO bases are small cities that transact virtually every good, item, commodity with the host nation. Why reinvent the syntax lexicon Rosetta Stone wheel?

Blockchains are formed by unicast, multicast, anycast and workflow filters. Programmable money's improvements are in cryptography. Internet 3.0 and the new web will be based on the original structure described by Stanford University. There are no packets, frames, layers, blocks, shards, graphs, hash graphs "bots", "motes", ... or Satoshi's traversing the net, stored in a blockchain cube. Transactions are unicast, multicast, or anycast (workflow). The afore mention terms are non-existent fabrication. 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 OPS CODE brevity codes mapped to symbols and (DoD / NATO) symbol sets useful for A.I. Artificial Intelligence

USPTO 13/573,002's foundation is Battlefield Digitization / Network Centric Warfare's signaling, telemetry support framework where the improvement is OOTW Operations Other Than War involves establishing a foundation framework for internet, net of

programmable money, description, metrics, meters, econometrics for DAO Distributed Autonomous Organizations / trade federations participating in a new eco sustainable programmable economy model with UTZ Universal Time Zone temporal synchronization, stochastic harmonization supported by NIST's QRNB Quantum Random Number Beacon for non-repudiation of events at any place, time in the future

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/wUpOlqbHcjI?t=111> • water drop in pond meme •Paul Revere linear, sequential

DeFi / Fintech Economy Of Everything = **#commodity** tokens:

- ALGORITHMIC **#STABLECOIN**
- COMMODITY INDEX RWA BACKED **#CURRENCY**
- PROGRAMMABLE ECONOMY VALUE UNITS (money)

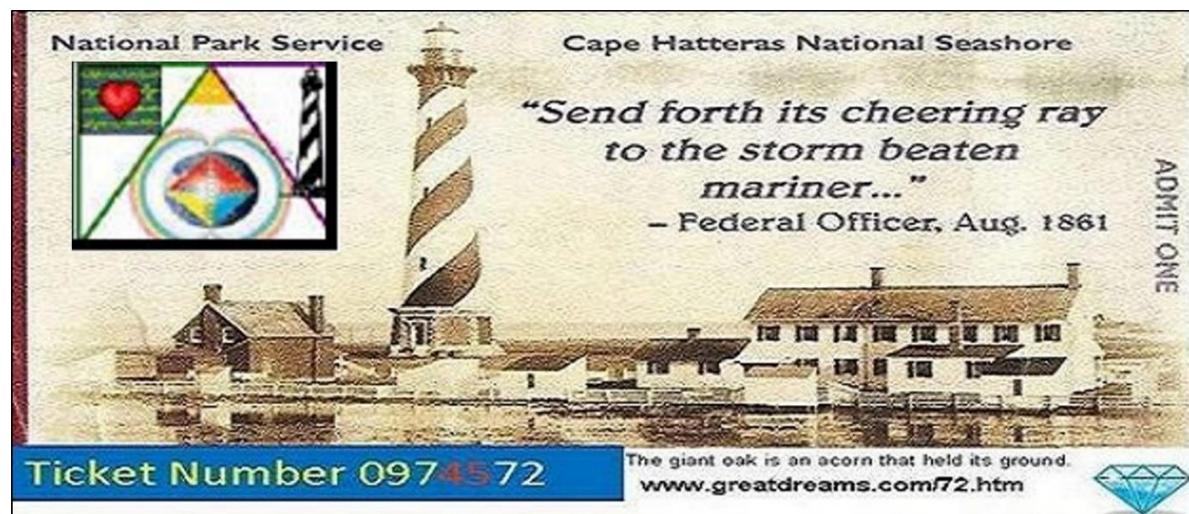
One world government's one world currency 3 main options:

IMF's International Monetary Fund SDR Special Drawing Rights stable coin , Treasuries, Bonds, Securities basket mini index

NESERA / GESERA's QFS Quantum Financial System Las Vegas = Ground Station

Department of Commerce - Treasury – NIST QRNB at Boulder Colorado (Stephen King's Book The Stand's Free Zone)

The author / First Named Inventor is an Aquarian / Aquarius Rising coincidentally.



APPENDIX F: DRAWINGS / GRAPHICS

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



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

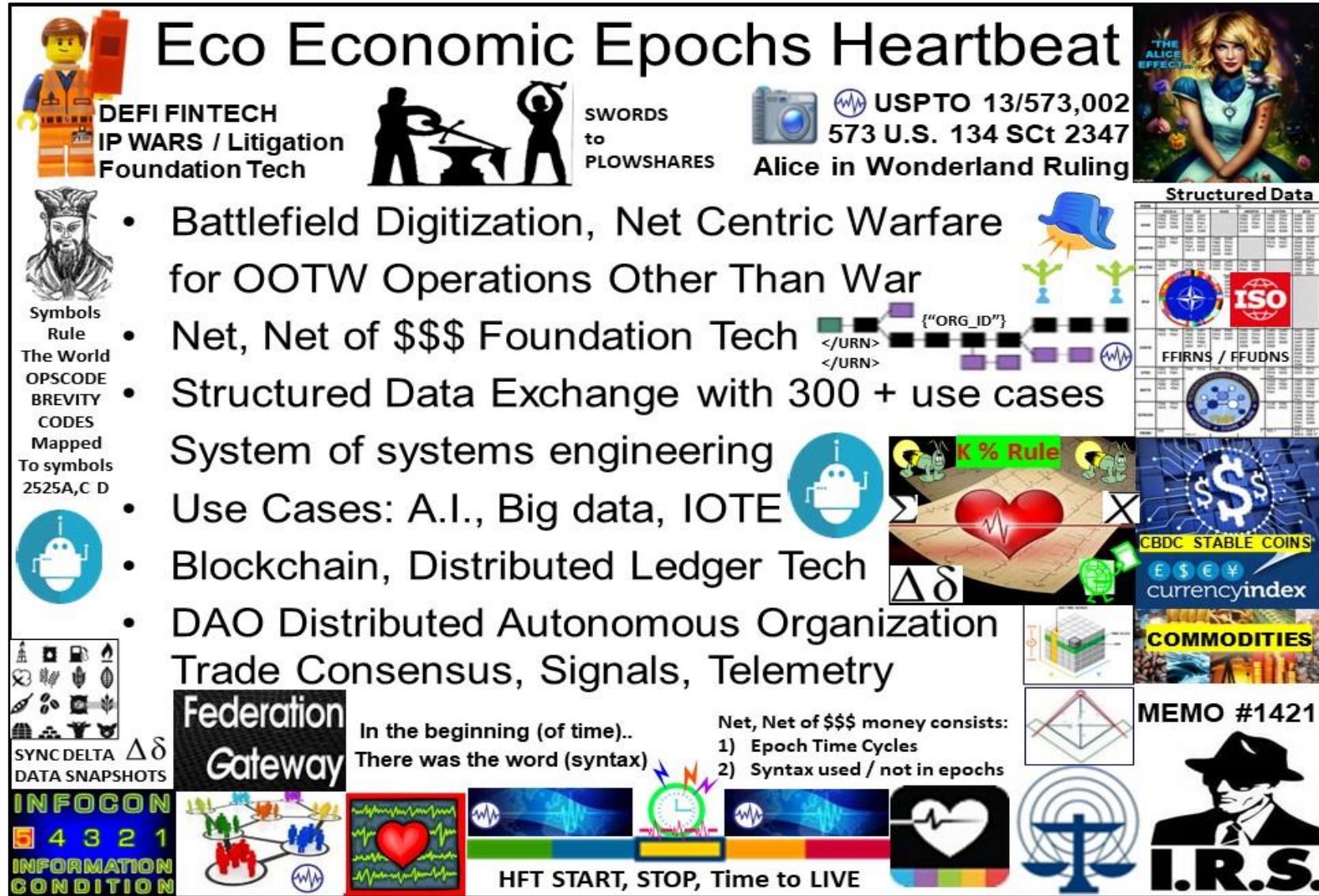


Figure 3: USPTO 13/573,002 Heart Beacon Cycle Time – Space Meter Summary

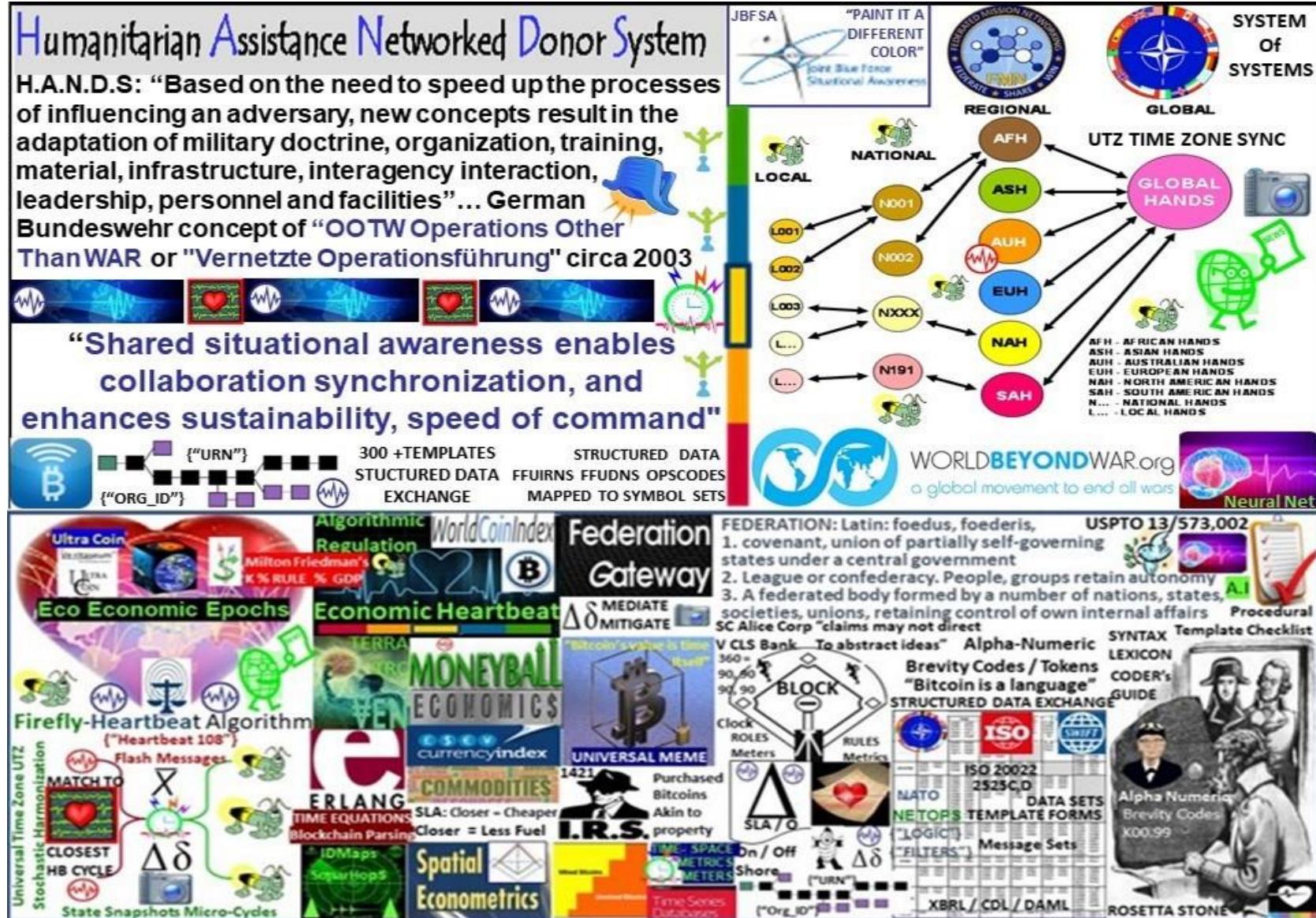


Figure 4: OOTW Operations Other Than War / H.A.N.D.s / System of Systems Engineering framework



Figure 5: Edison's Monetary Option 1922 / Algorithmic Stable Coin

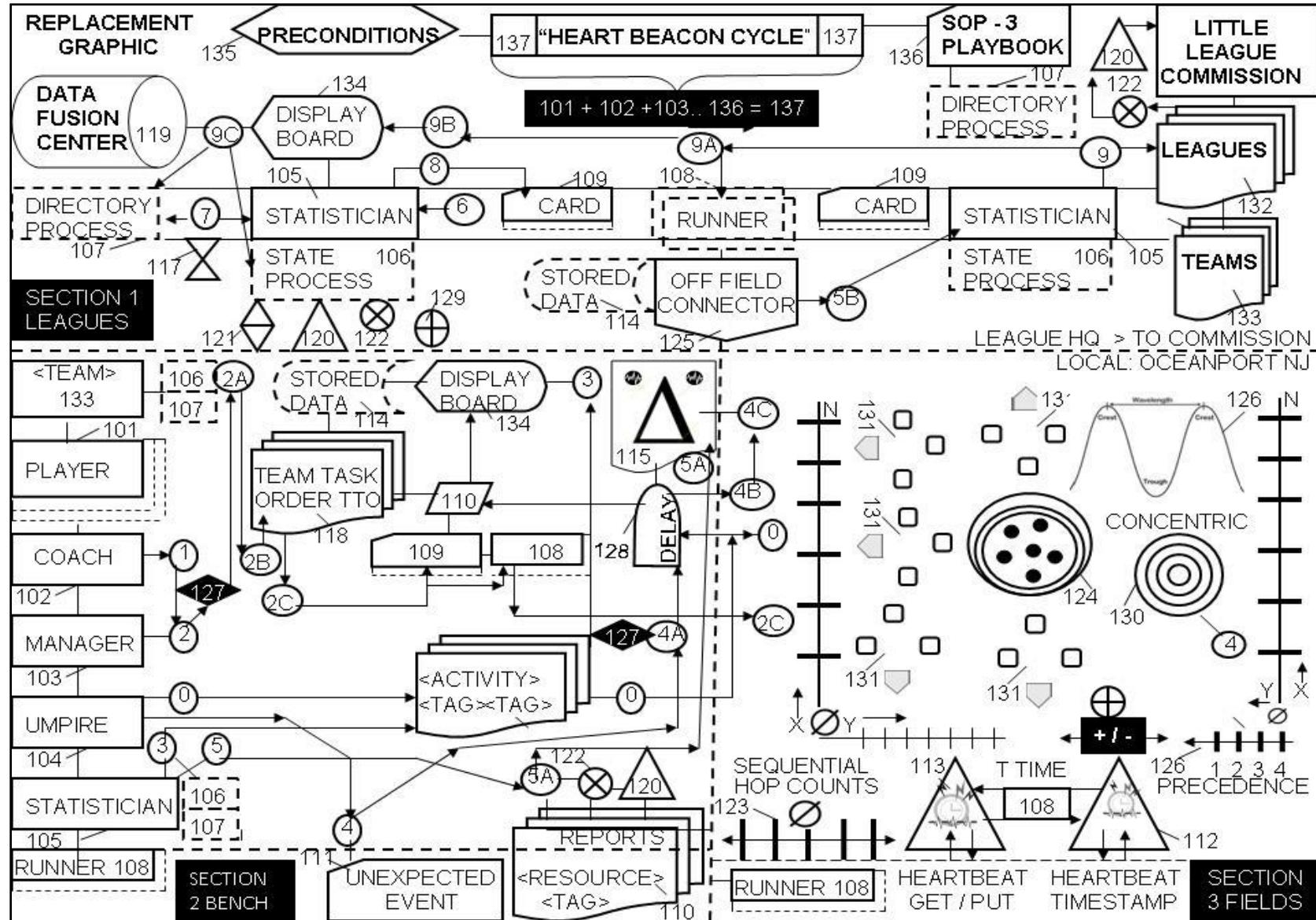


FIGURE 6: USPTO 13/573,002 Main Graphic

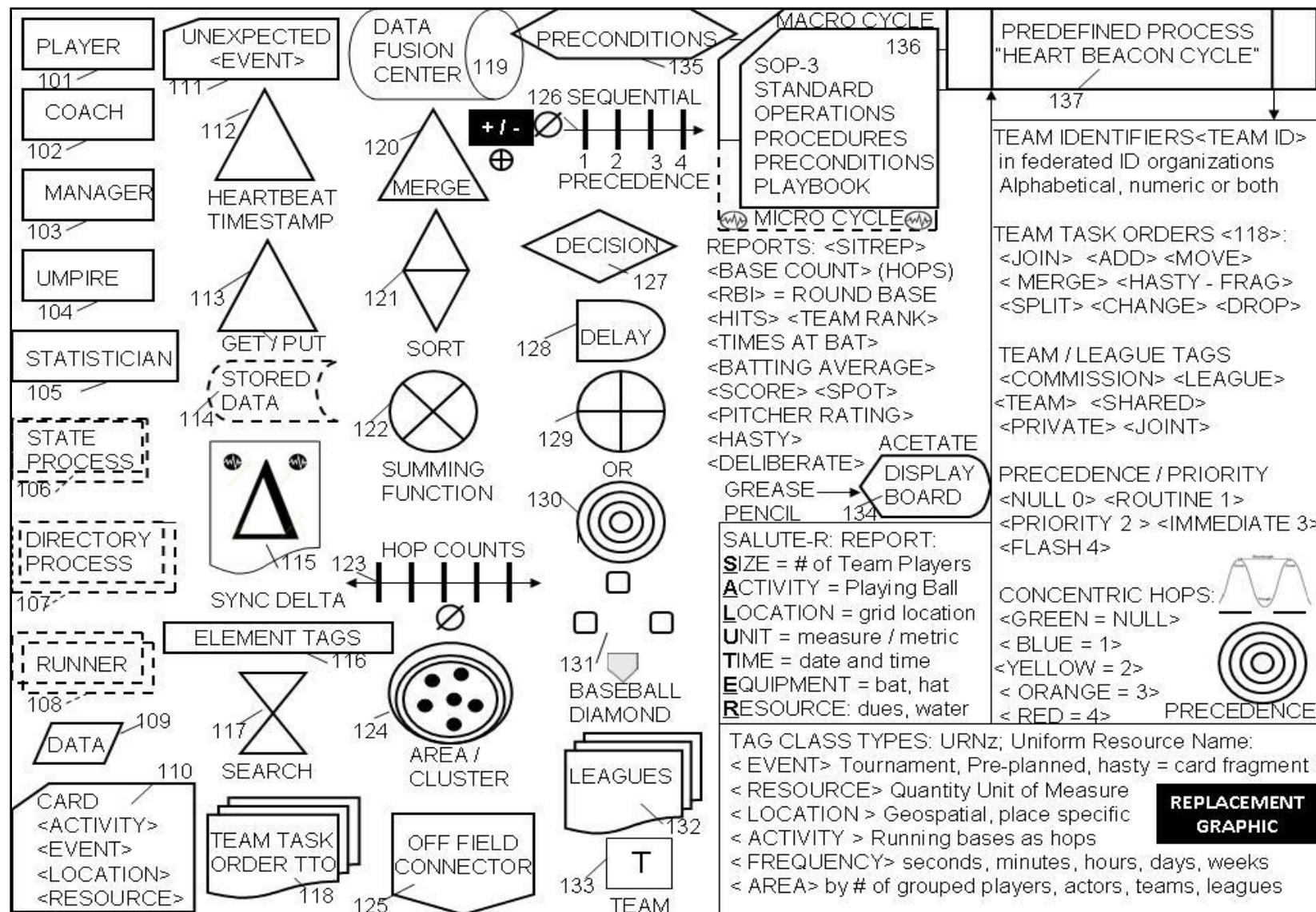


Figure 7: USPTO 13/573,002 MAIN GRAPHIC LEGEND

REPLACEMENT SHEET

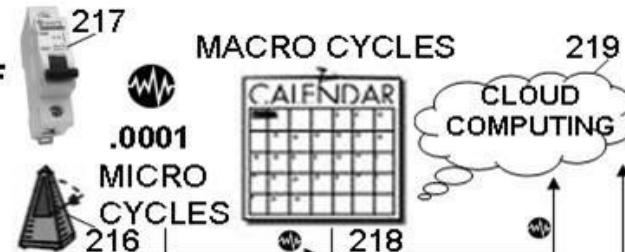
BUILDING BLOCKS

201

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



TASK ON / OFF



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

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

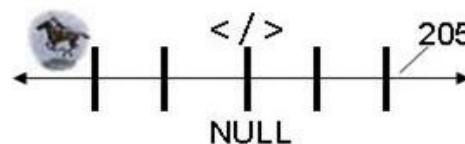


203

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



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



LENGTH, THRESHOLD, INTENSITY, DURATION



206



207

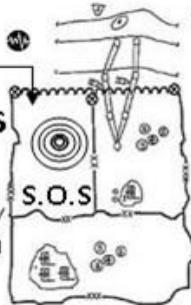
SEARCH FOLLOWED BY ARBITRAGE INVITES VIA BEACON NEWSCASTS. INVITE ACROSS SPACE / TIME

208



APPLIQUE' OVERLAYS

209



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

204

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

Figure 8: USPTO 13/573,002 Building Blocks

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



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.

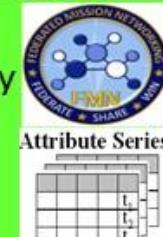


Fig 9: Adaptive Procedural Template Checklist of ideas, processes, procedures, structured data exchange templates

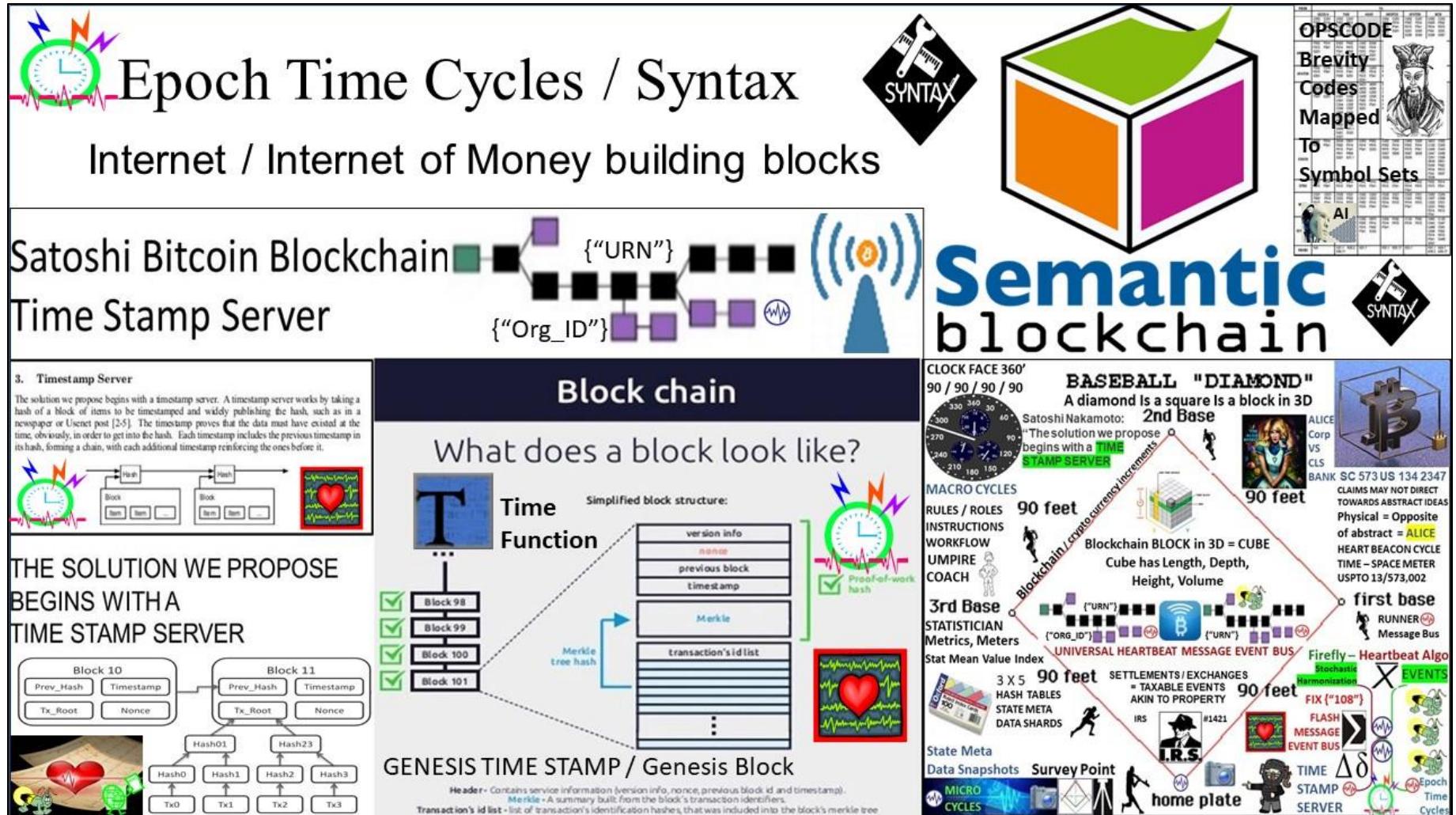


Figure 10: All things internet, artifacts of the programmable economy formed using 1) time epochs 2) syntax

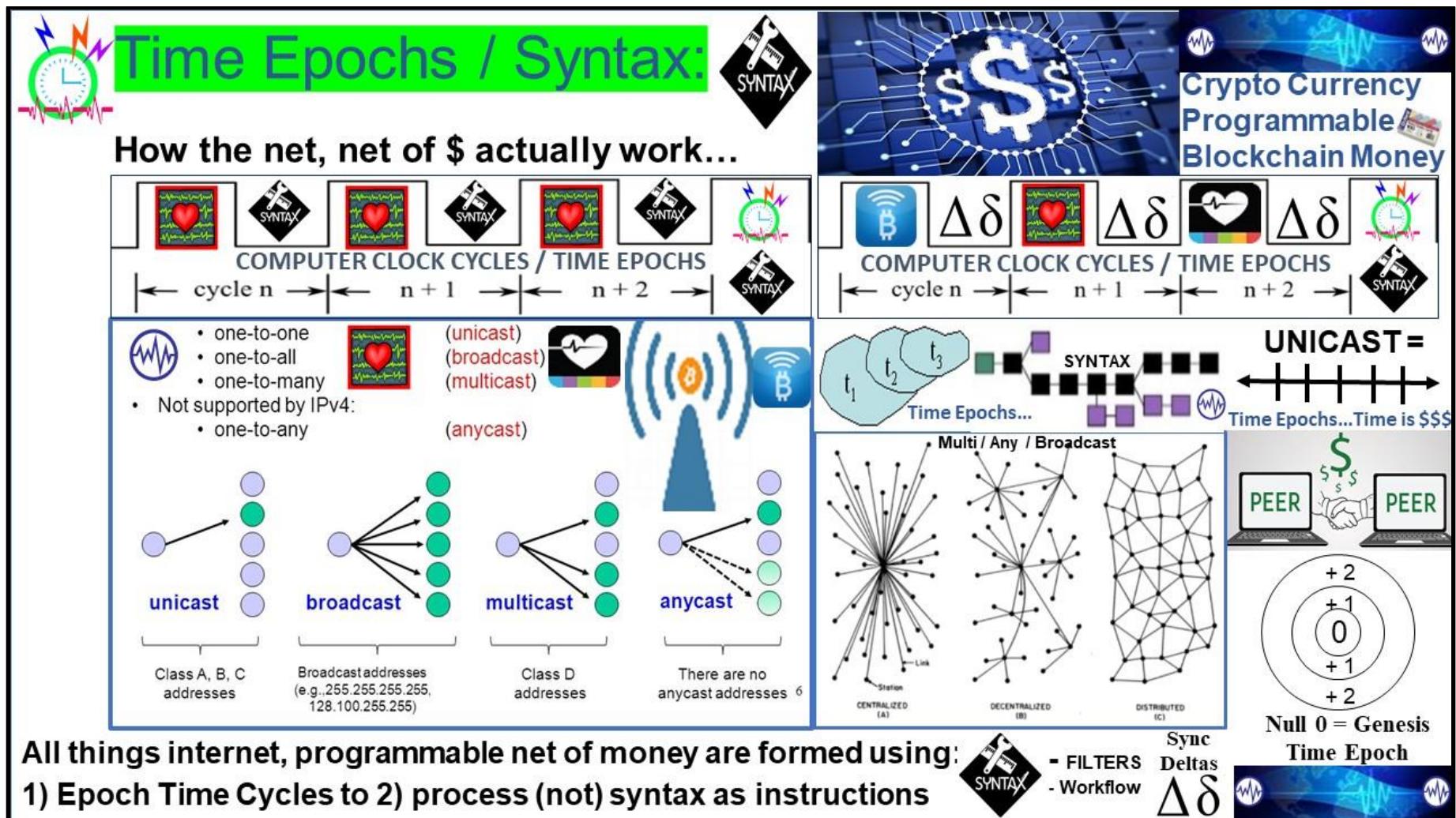


FIGURE 11: How Internet, Web 3.0 are formed using 1) Time epochs 2) syntax



Your systems.
Working as one.

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



INTERNET / BLUE FORCE TRACKER BASICS: Unicast / Multicast & Workflow

NET FUNDAMENTALS USED BY MANY OTHER SYSTEMS / FRAMEWORKS



http://rti.com/whitepapers/RTI_Connext_WP.pdf

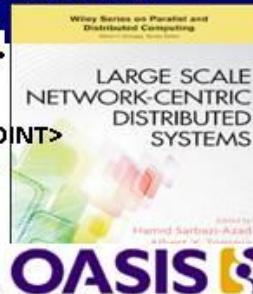


"Supports huge fanout. With the only standardized reliable multicast protocol, Connext DDS can provide updates to thousands of endpoints efficiently"

BOOK [Large Scale Network-Centric Distributed Systems](#)

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

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



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

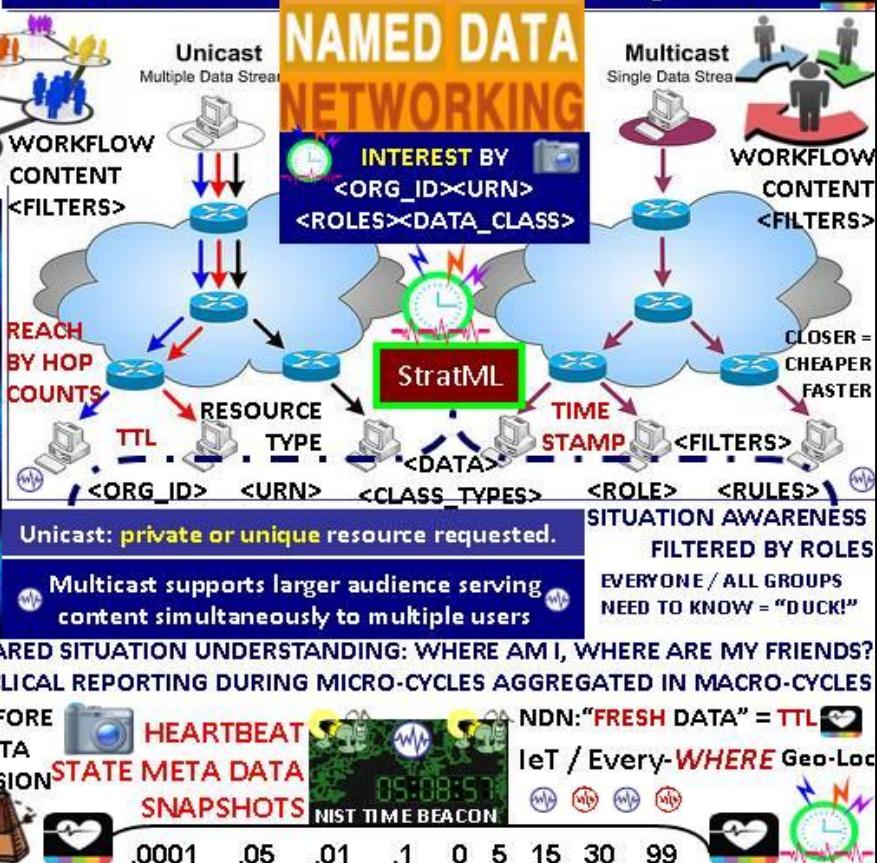


Figure 12: Blue Force Tracker / Maneuver Control Systems framework templates

ISO 20022
How does it fit into the ISO structure?

ISO Technical Committee TC68
Financial Services

SC2 Security, SC4 Securities, SC7 Banking

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

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

ISO 20022 RMG
WG4 ISO 20022 Review
TSG
SEG Securities
SEG Payments
SEG Cards
SEG Trade Services
SEG FX

ISO 20022 LV. v66

Slide 20

FOUNDATION STANDARDS TECHNOLOGY

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

SCOTUS "Alice In Wonderland" 2014 Ruling

NDN: Named Data Networking

ARIN, ASN-1 Binary XML 2525 A,B,C,D Symbol Sets for Human – A.I.

INTERNET / BLUE FORCE TRACKER BASICS: Unicast / Multicast & Workflow

RTI Your systems. Working as one.
The fundamental value driver is easy integration of applications into subsystems, of subsystems into systems, and of systems into larger SYSTEM OF SYSTEMS.
http://rti.com/whitepapers/RTI_Connect_WP.pdf

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

NAMED DATA NETWORKING

"Supports huge fanout. With the only standardized reliable multicast protocol, Connext DDS can provide updates to thousands of endpoints efficiently"

BOOK Large Scale Network-Centric Distributed Systems

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

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

Multicast supports larger audience delivery content simultaneously to multiple users

NON-"FRESH" DATA TTL

IoT / Every-WHERE Geo-Loc

OASIS

NAMED DATA NETWORKING

URN

ARIN American Registry for Internet Numbers

Situational Awareness Reference Architecture (SARA)

IDENTITY, Inventory, Activity, and Sharing

STRUCTURED MILITARY MESSAGING FORMS: FIELD TYPES, FILTERS, TAGS

USMF / XML MTF FORMATTED MESSAGE CATALOG

Catalog has over 300 messages to choose from have a common header and footer and are defined using common, CONSENSUS Message Text Format (MTF), 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

MIL-STD-2525A

STRUCTURED <CONTENTS> TEMPLATES

FEDERATE

KEYSTONE FEDERATION

VOTE ON BLOCKCHAIN

World Financial Standard ISO 20022 is a multi part International Standard prepared by ISO Technical Committee TC68 Financial Services. It describes a common platform for the development of messages in ASN.1 Abstract Syntax Notation: A single standardization approach (methodology, process, repository) to be used by all financial standards initiatives. common platform for the development of messages using:

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

Figure 13: Foundation technology standards basis for DeFi / Fintech IP wars

FROM	TO						CODE GUIDE
	GCCS-A	TAIS	ASAS	AMDPCS	AFATDS	MCS	
ASAS	C002 C203 F002 F014 F015 F541 S201 S309	C002 C203		C002 C203	C002 C203 F014 F541 S305 S309	C002 C203 E400 F002 F014 F015 S201 S507	
AMDPCS	TOKENS OPSCODE BREVITY CODES	USMTF / XML MTF FORMATTED MESSAGE CATALOG = 300 + messages info exchange sets using common, CONSENSUS Message Text Formats MTFs. MTFs specify </CONTENT> / info agreed by group consensus presenting information in a logical, well specified unambiguous layout resulting in a highly efficient info payload to overhead ratio					
AFATDS	F002 F014 F015 F541 S201				A.I.	C203 C400 D630 E500 F002 F014	INFOCON 5 4 3 2 1 INFORMATION CONDITION
MCS	 	A423 C203 C505 F002 F014 F015 F541 S201	A423 A659 C002 C203 C400 C443 C447 C488 C501 C503 C504 C505 C506 C507 C508 E400 F002 F014 F015 F541 F658 F756 G489 K01.1 S201 S303	A423 A659 A656 A690 C002 C203 C400 C505 F002 F014 F015 F541	Rosetta Stone Syntax Lexicon Coder's Guide	A423 C505 F014 F541	M2M "SYMBOLS RULE THE WORLD"
	MESSAGE CATALOG 300 + Use Cases	Data Elements: entity, attribute, relationship equivalents					
		HEARTBEAT MESSAGE = K00.99 </108> {"108"}					
		Information Categories and Examples					
Object Categories	Examples	Location	Movement	Identify	Status	Activity	Intent
OOB	SYNTAX LEXICON	STRUCTURED DATA Machine Trust Language MTL	EXCHANGE Message Sets				
Infrastructure	Comm, power, transportation, water/sewer	lat/long	spd/hdg	country / alliance, type/class	readiness	targeting, reconitering	COA {"Java JS"}
Sociological	Culture, religion, economic, ethnic, government, history, languages	temples, historic structures					
Geophysical	Terrain, weather, climatology, oceanography, astrometry	feature lat/long, alt/dpth					
		ER Model	Class Diagram	Relational Database	Object DBMS	XML DTD / Schema	TADILs
		Entity	Class	Table	Class	Element	Message
		Attribute	Attribute	Field / Column	Attribute	Child Element or Element Attribute	DRI
		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 ("Org_ID"} {"URN"} </URN></URN> FILTERS



FFUDN: Field Format Unit Designator #

FFIRN Field Format Index Reference #

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



"108" NDN Firefly-Heartbeat Flash Messages

PROCESS MESSAGE BY PRECEDENCE UNIVERSAL EVENT / ALERT MESSAGE BUS

OPERATIONAL NODES / ACTIVITIES

DATA	SYSTEM FUNCTIONS	PERFORMANCE
11.4 - Classification	11.8 - Kinematics	
11.4.1 - Category	11.8.1 - Pos / Vel / Acc (PVA)	
11.4.1.1 - Confidence Level	11.8.1.1 - Acceleration	11.8.1.1.1 - Angular
11.4.1.2 - Estimate Type	11.8.2 - Linear	11.8.2.1 - Linear
11.4.1.2.1 - Alternative	11.8.2.2 - Non-Linear	11.8.2.2.1 - Non-Linear
11.4.1.2.2 - Evaluated D	11.8.3 - Estimated	11.8.3.1 - Estimated
11.4.1.3 - Value	PURCHASE CODES	11.8.4 - Observed
		11.8.4.1 - Observed
		11.8.4.2 - Predicted
		11.8.4.3 - Smoothed Data

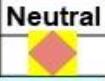
SYMBOL	Friend	Neutral	Hostile
2525C	Partner		
11.4.1.3.1 - Distance	11.4.1.3.2 - Angle	11.4.1.3.3 - Velocity	11.4.1.3.4 - Acceleration
11.4.1.3.5 - Surface	11.4.1.3.6 - Feature Type	11.4.1.3.7 - Feature Confidence	11.4.1.3.8 - Bearing Angle
11.4.2 - Platform / Point / Feature	11.4.2.1 - Vertical	11.4.2.2 - Horizontal	11.4.2.3 - Bearing Angle Rate
11.4.3 - Specific Type	11.4.3.1 - Bearing Angle	11.4.3.2 - Bearing Angle Rate	11.4.3.3 - Covariance Matrix
11.4.4 - Type Modifier	11.4.4.1 - Bearing Angle	11.4.4.2 - Bearing Angle Rate	11.4.4.3 - Covariance Matrix
11.4.5 - Unit	11.4.5.1 - Bearing Angle	11.4.5.2 - Bearing Angle Rate	11.4.5.3 - Covariance Matrix

FIGURE 14: Code Syntax Lexicon, Message Template Library from 1st patent application 9 / 11 / 2003



FIGURE 15: Structured Military Messaging / Structured Data Exchange FFIRNS, FFUDNS

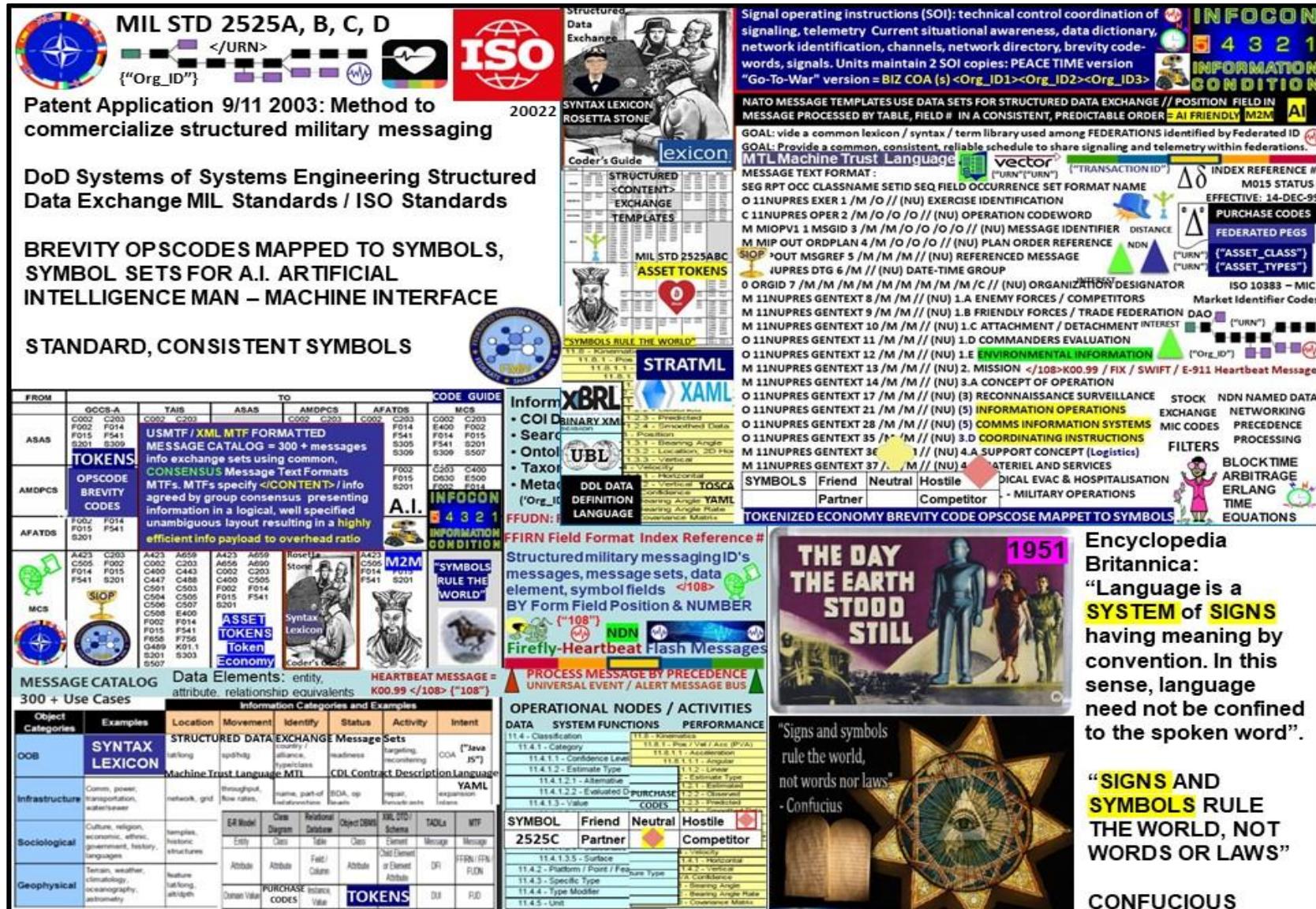


FIGURE 16: Artificial Intelligence Man – Machine Interface Syntax lexicon

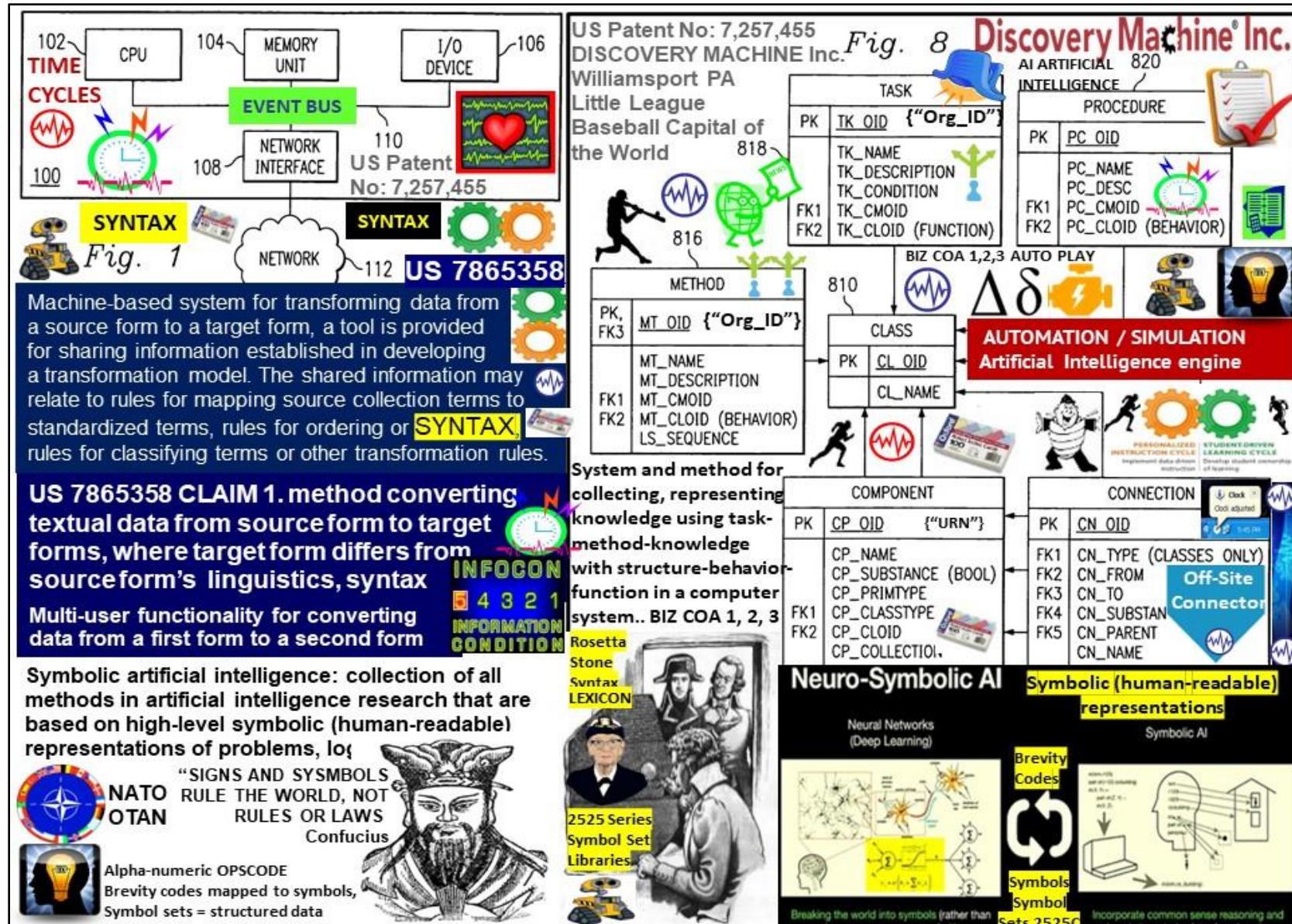


Figure 17: Discovery Machine Machine Learning IP / USPTO 13/573,002

Symbolic artificial intelligence: collection of all methods in artificial intelligence

research that are based on high-level symbolic (human-readable) representations of problems, logic and search.[1]

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

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

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

Source: Wikipedia: https://en.wikipedia.org/wiki/Physical_symbol_system

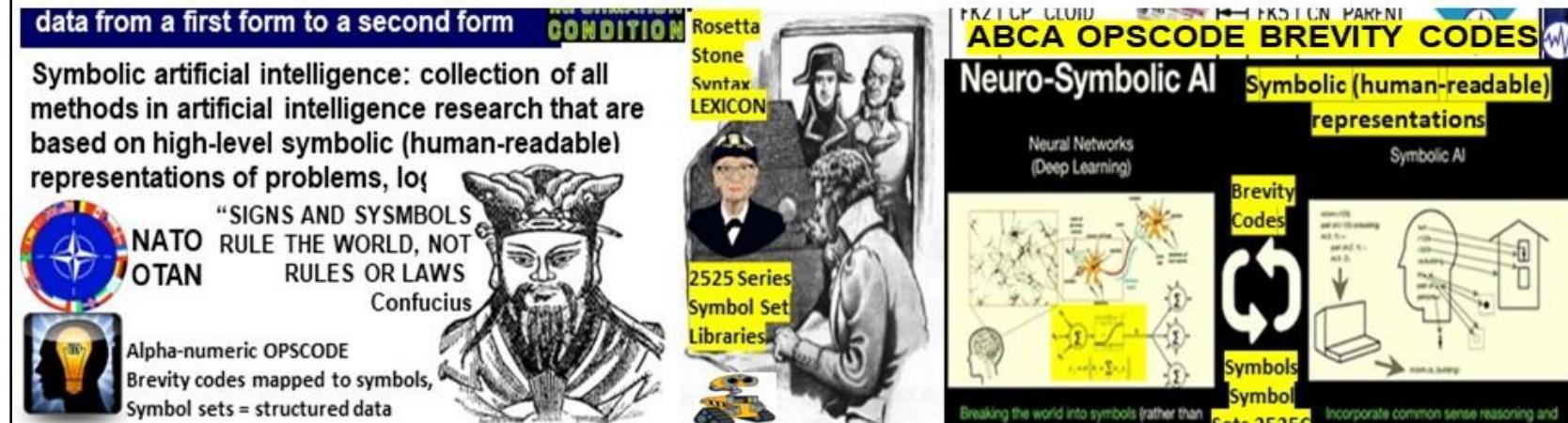


Figure 18: Discovery Machine Symbolic Artificial Intelligence / USPTO 13/573,002

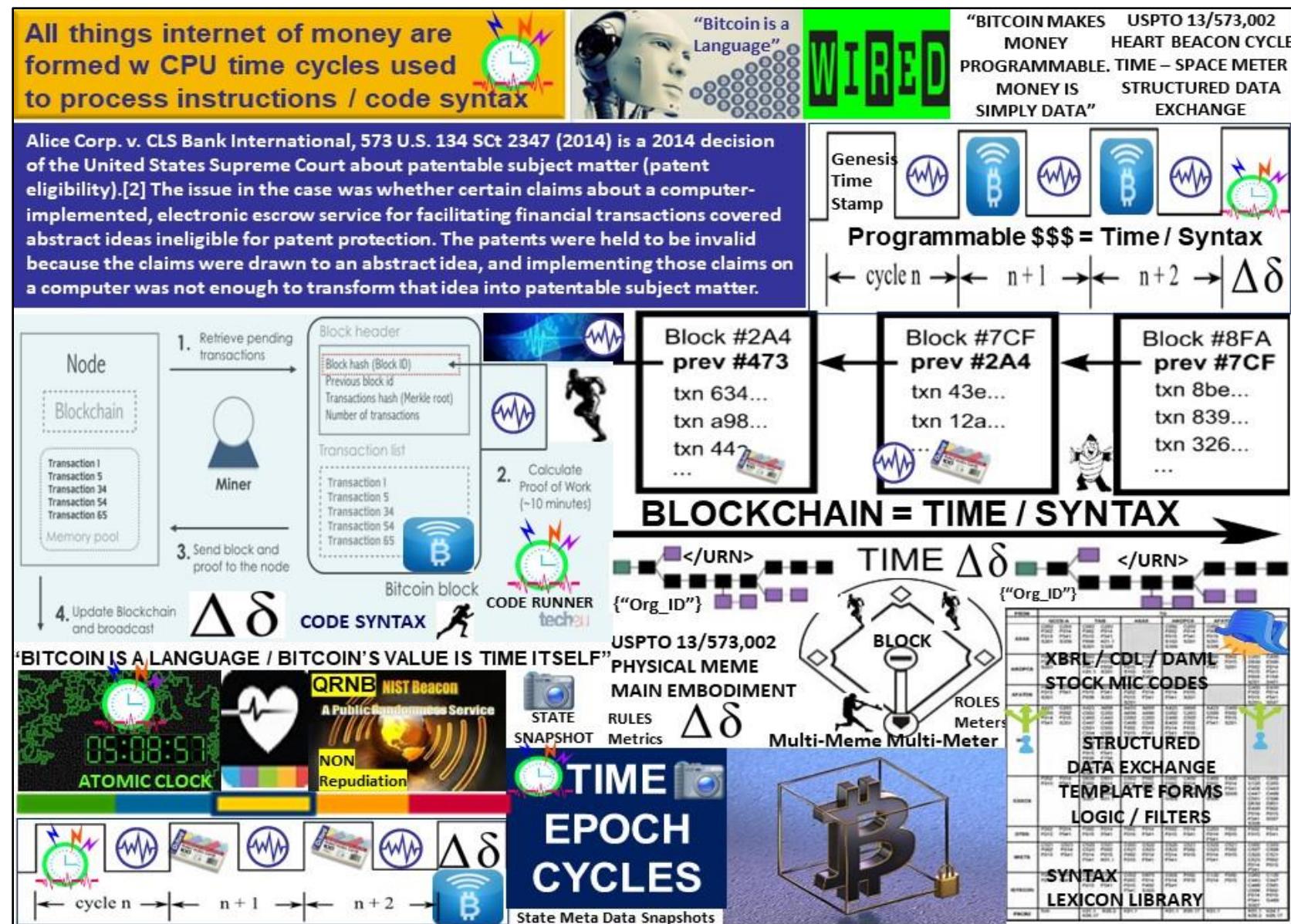


FIGURE 19: Blockchain Basics / How the internet really works / USPTO 13/573,002

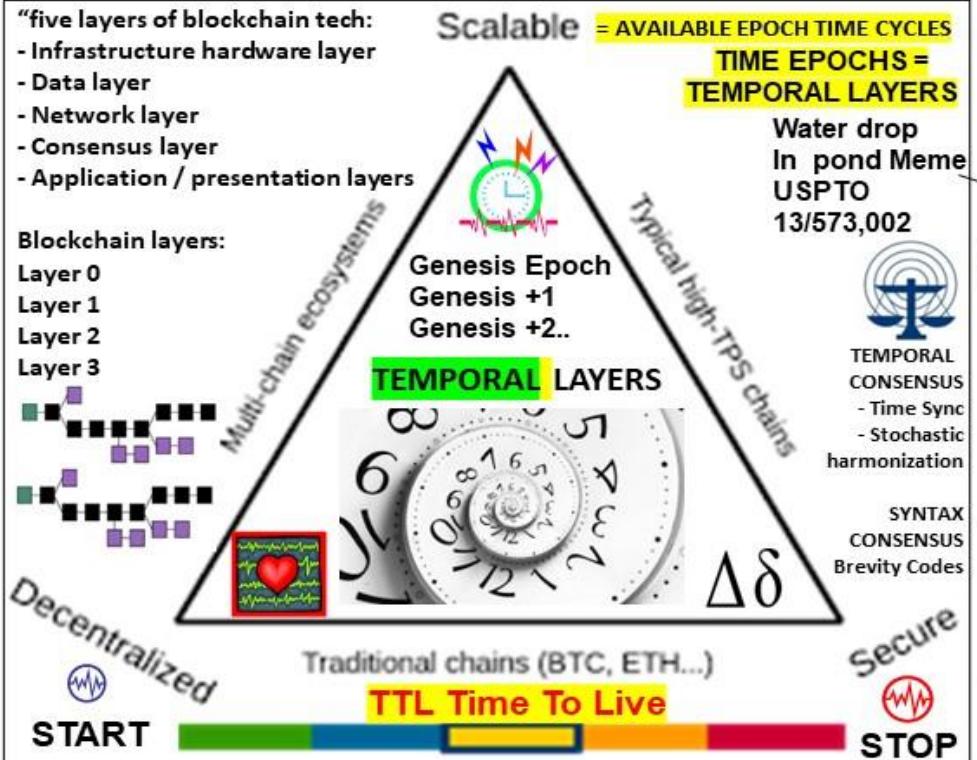
Blockchain Quad-lemma

"five layers of blockchain tech:
 - Infrastructure hardware layer
 - Data layer
 - Network layer
 - Consensus layer
 - Application / presentation layers

Blockchain layers:

Layer 0
 Layer 1
 Layer 2
 Layer 3

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

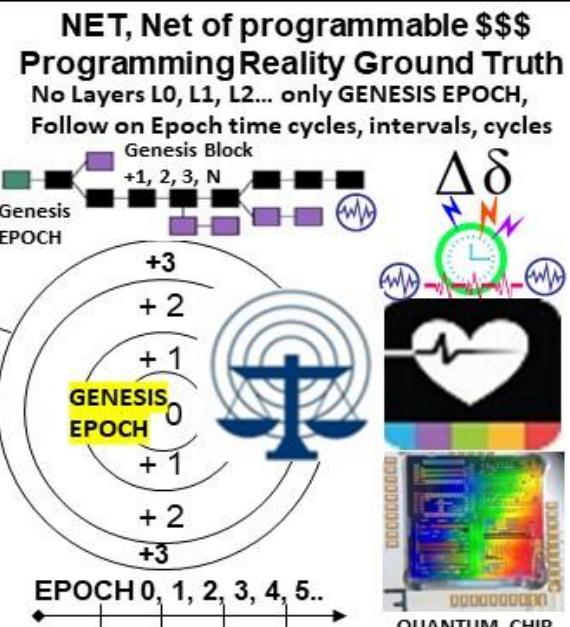


Database Flat File

"BLOCKCHAIN" = LEDGER / Database

Database flat file sama dengan file data pada spreadsheet (misal MS Excel™), berupa satu file berisi baris-baris dengan jumlah kolom tetap yang disimpan berurutan dalam file.

NIP	Nama	Nama Depan	Telp
123-45-6789	Santoso	Heru	021-316-1234
987-65-4321	Purnama	Widya	022-543-9876
987-65-4321	Jackson	Michael	021-234-5678
567-89-0123	Iskandar	Dodi	021-987-6431



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

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

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

Figure 20: The Blockchain Tri-lemma / Quad-lemma / Internet, Net of \$\$\$ ground Truth



Figure 21: Defi, Fintech Foundation technology for IP intellectual property wars

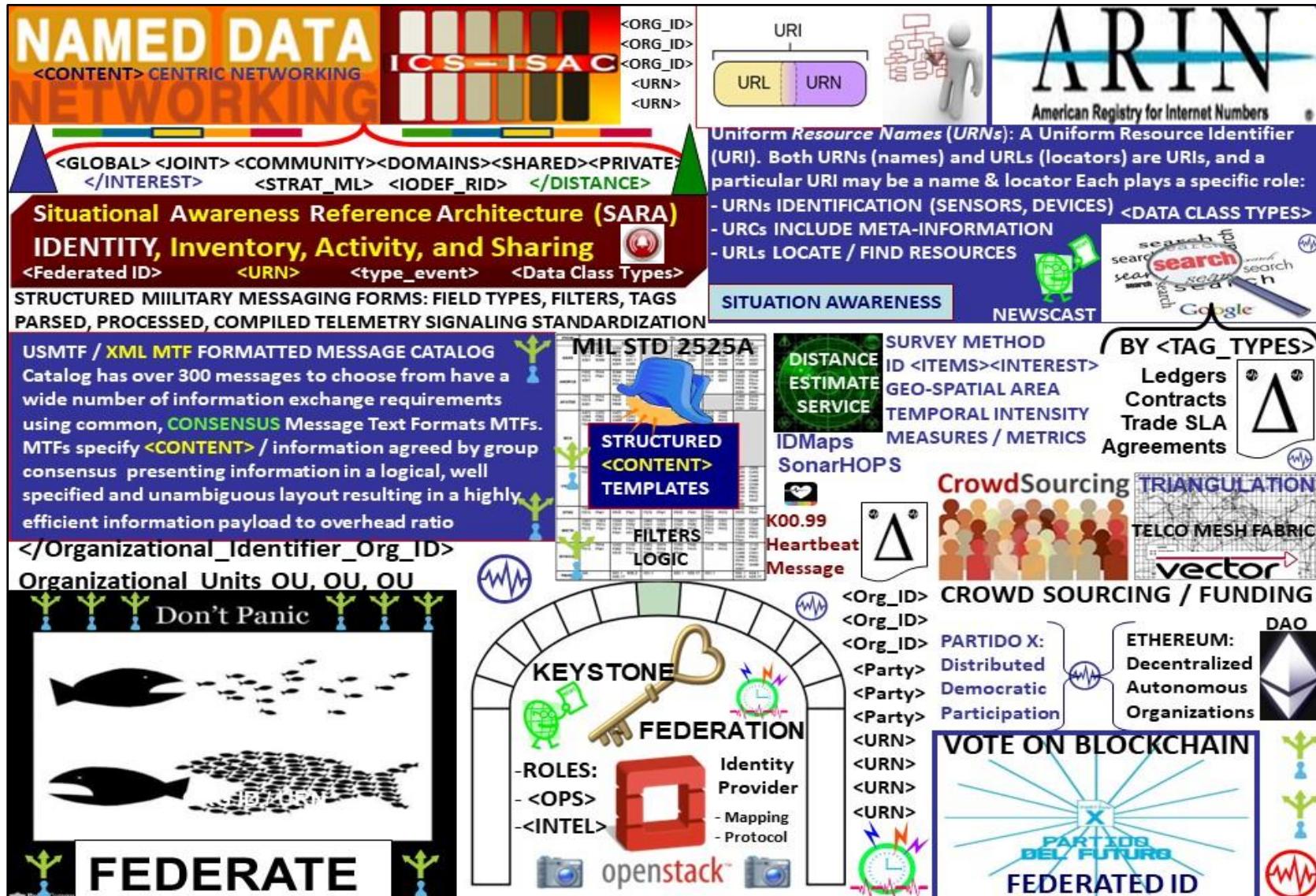




FIGURE 23: Situation Awareness Reference Architecture SARA

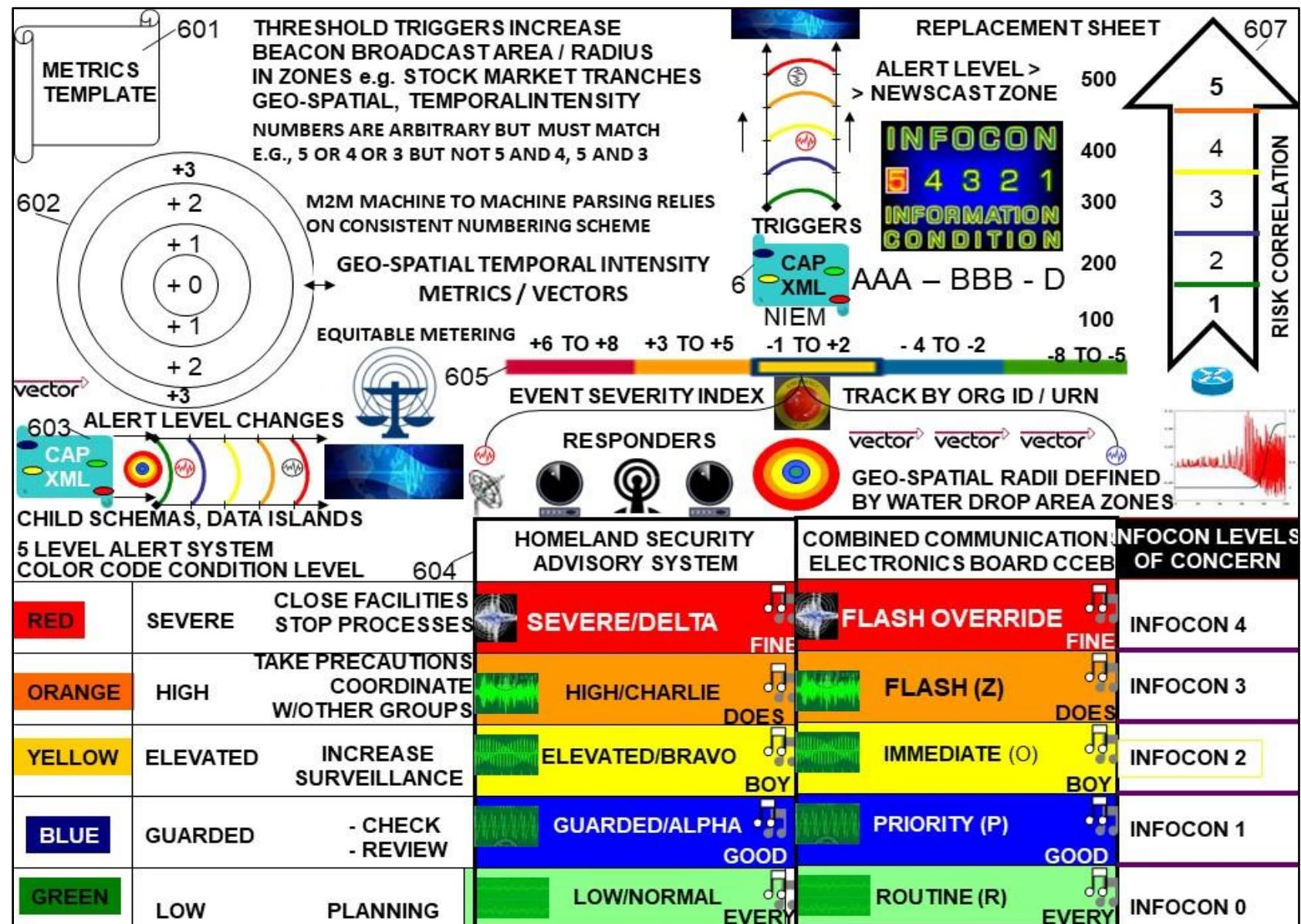


Figure 24: Structured Data Exchange INFOCON Precedence model

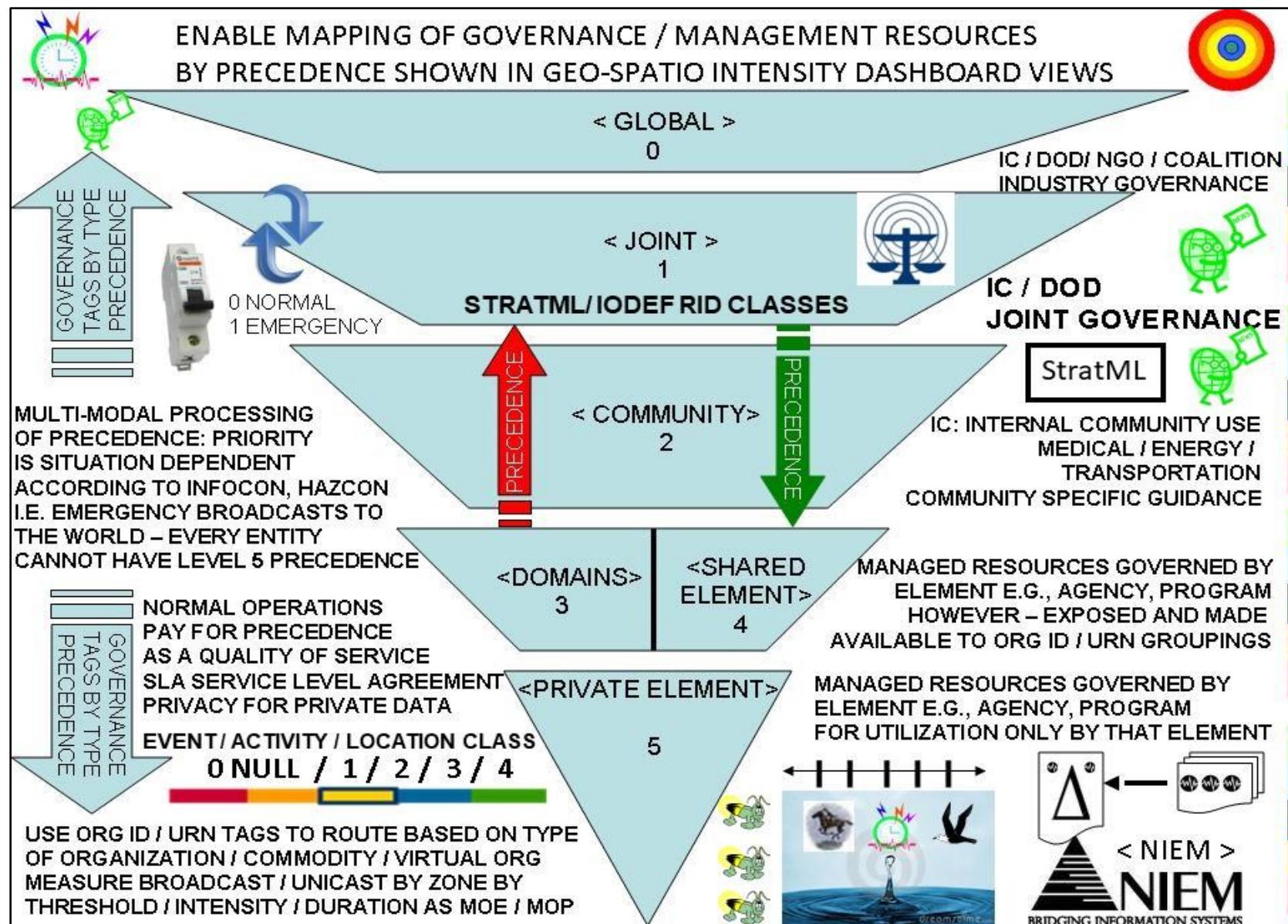


Figure 25: STRATML Markup Language

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 26: 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.		Web application, front end to [network, device, system, blockchain] heartbeat	
Interface Characteristics	LANGUAGE / PLATFORM BINDINGS	PHP Java Cloudcenter Erlang... Cloudcenter	
<p>The external environment could update resources at random... One solution is a heartbeat: defining a default lease duration delaying updates until the next cycle"</p> <p>QubitCoin Interval: Every 30 Seconds</p>		Satoshi Bitcoin Blockchain Time Stamp Server 	Epoch Time Cycles E0 E1 E2 E3... En MICRO CYCLES MACRO CYCLES

Figure 27: SCOP Heartbeat Epoch Time Interval Start, Stop, TTL Time To Live



FIGURE 28: The Alice Effect / SCOTUS Alice Corp Vs CLS Bank 2014 ruling



Figure 29: Firefly Inspired Heartbeat Synchronization Algorithm



FIGURE 30: ECONOMIST MILTON FRIEDMAN'S K% RULE Economic GDP HEARTBEAT



FIGURE 31: TERRA TRC TRADE REFERENCE COMMODITY BASED CURRENCY



Figure 32: FEDERATE / FEDERATION



FEDERATE: COMMON GOALS SYNCHRONIZED IN SPACE - TIME



Figure 33: Federate / Federation Beacon Communities



FIGURE 34: ERICSSON ERLANG - ERICSSON'S OPEN MONEY / USPTO 13/573,002

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.

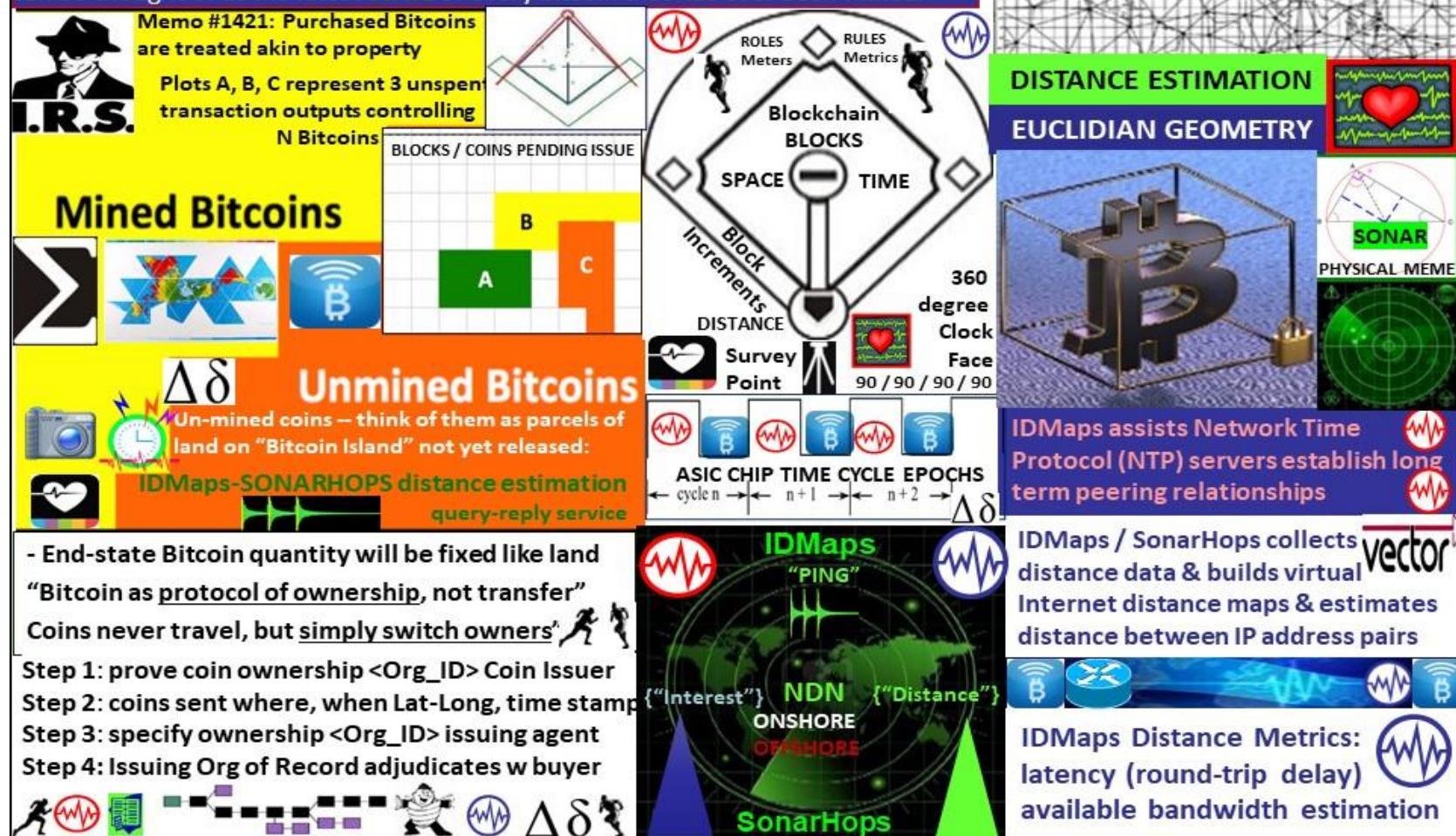


FIGURE 35: CRYPTOCURRENCY LAND USE MEME / IRS MEME 1421 / USPTO 13/573,002

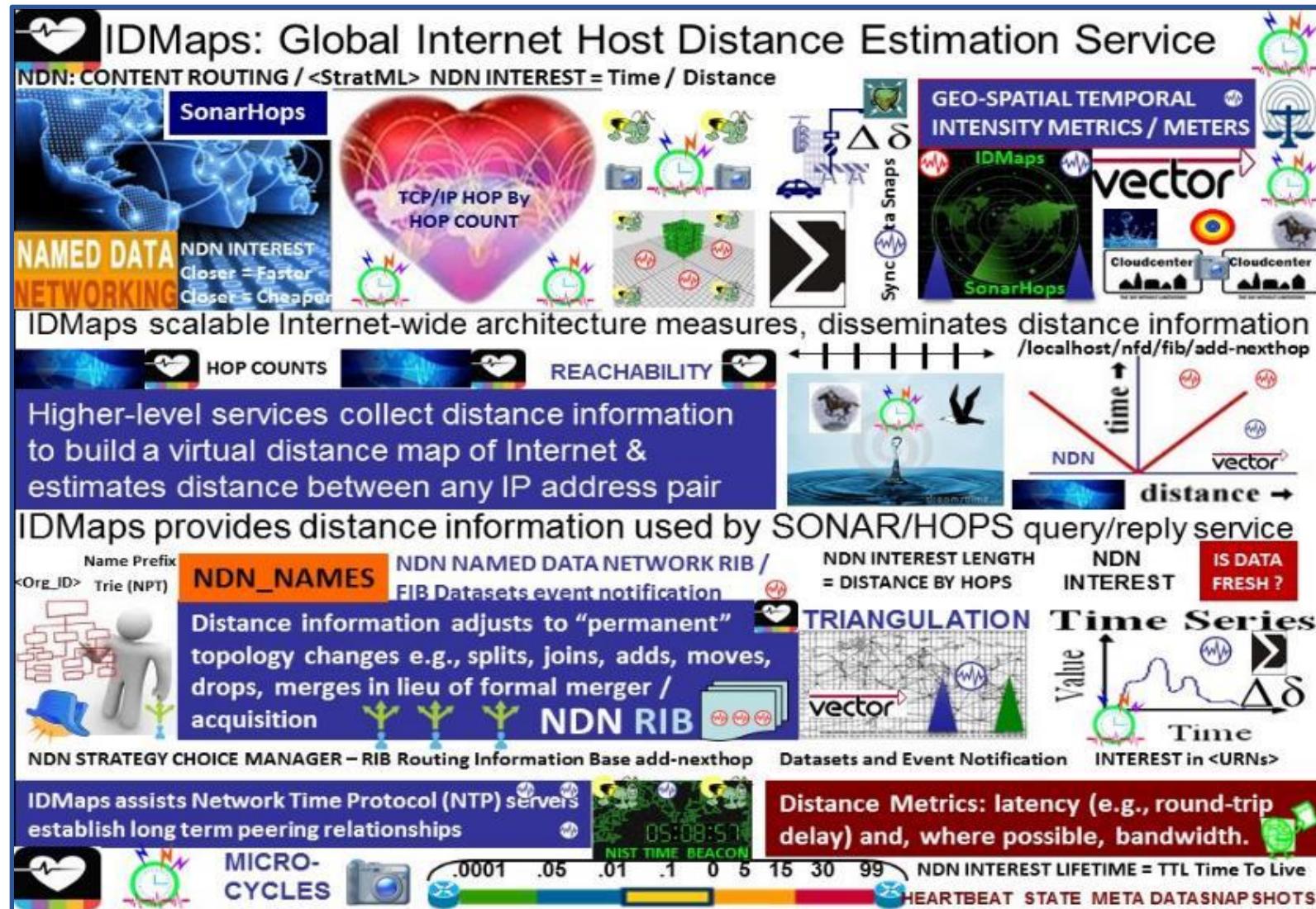


Figure 36: IDMaps / SonarHops Distance Estimation Service / USPTO 13/573,002

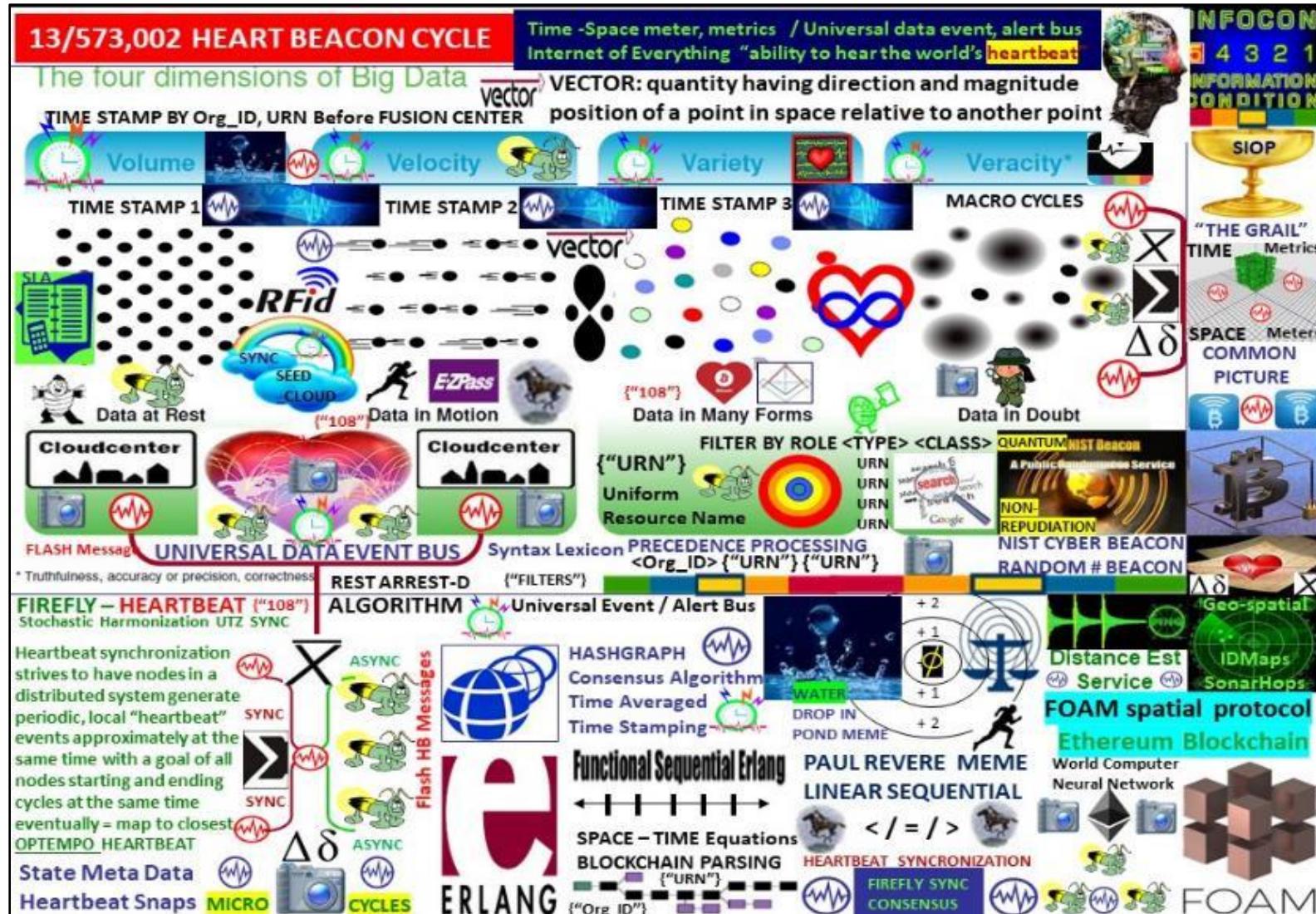


FIGURE 37: BIG DATA THE NEXT OIL / USPTO 13/573,002

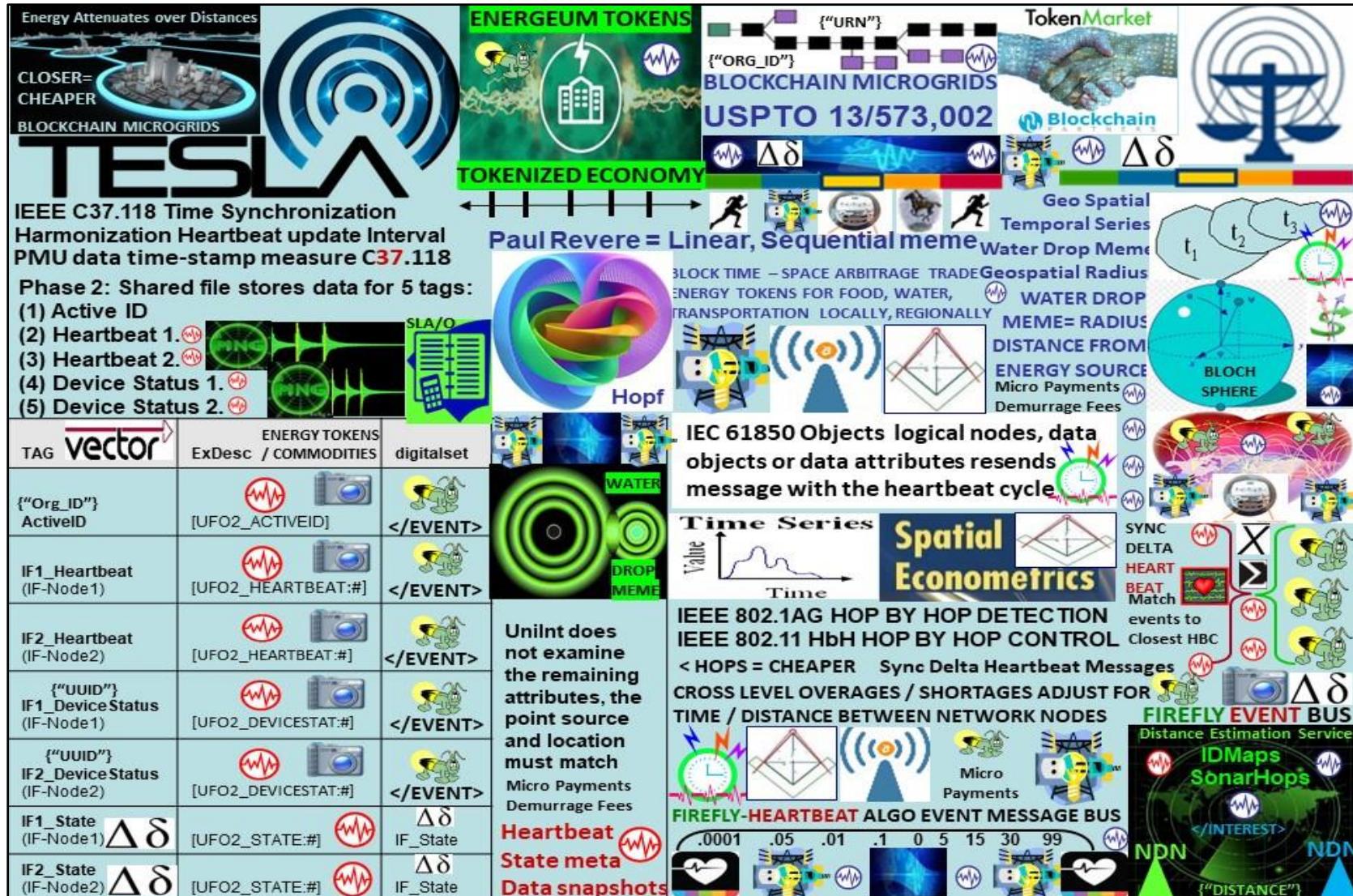
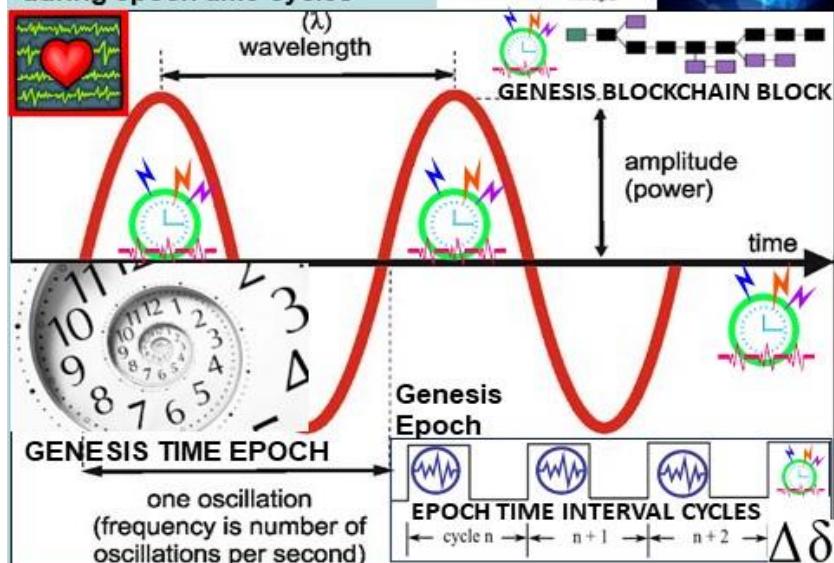


FIGURE 38: ENERGY ATTENUATES OVER DISTANCES / USPTO 13/573,002 Energy claim

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

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



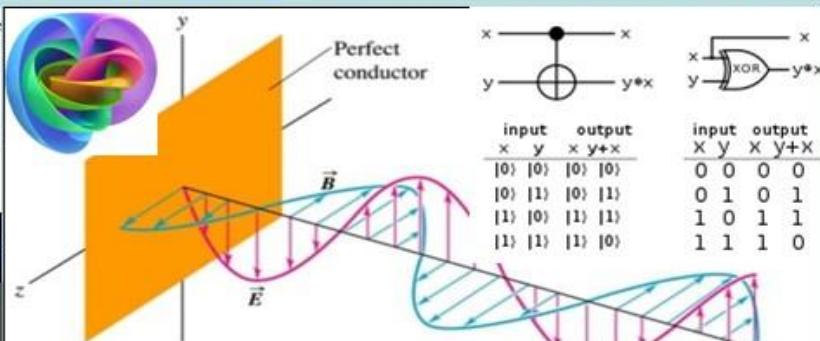
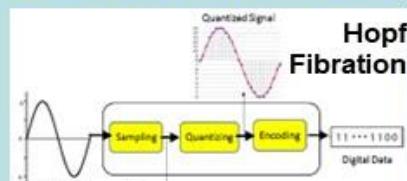
Quantum Computing Vibrations encode, process data like quantum computers. A simple mechanical system built from aluminum rods uses vibrations to encode information, mimicking quantum computing in a non-quantum system. "Light is made from photons, the quantum of light."

mechanical vibrations or sound waves can be described in a quantum-mechanical manner i.e., composed of phonons: the smallest possible units of mechanical vibration"

Link: https://phys.org/news/2018-06-quantum_1.html

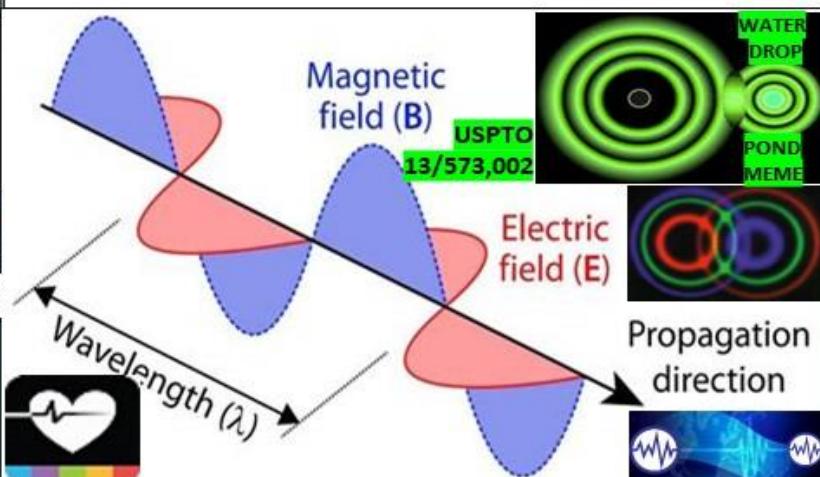
ENERGY / DATA WAVE METRICS / METERS

BELL STATE QUANTUM COMPUTING



STANDING ELECTRO- MAGNETIC WAVE

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



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

Figure 39: Energy / Data unified field propagation claim water drop in pond meme

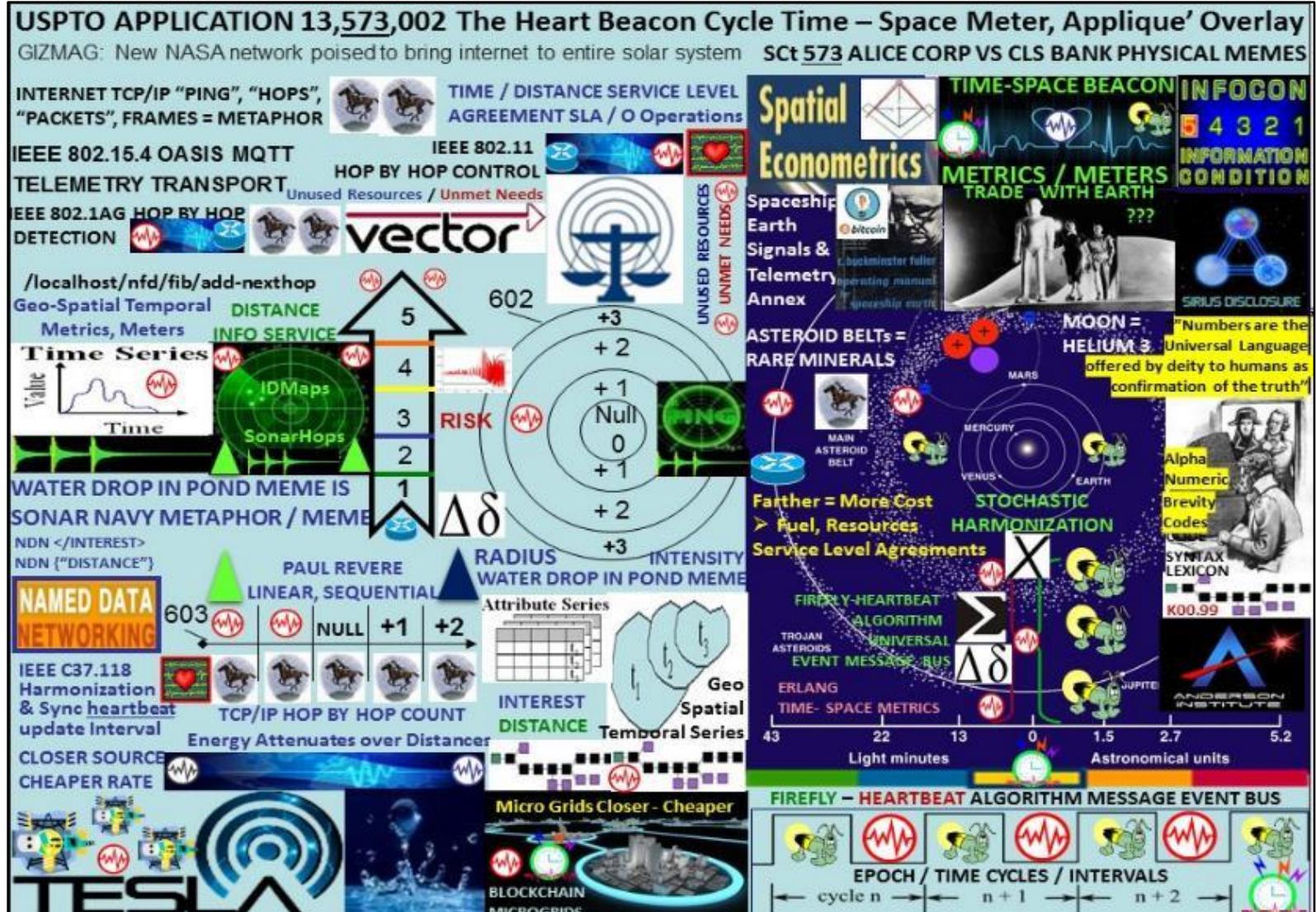


Figure 40: SPACE – TIME BEACON / CLOSER = CHEAPER = LESS TIME / FUEL

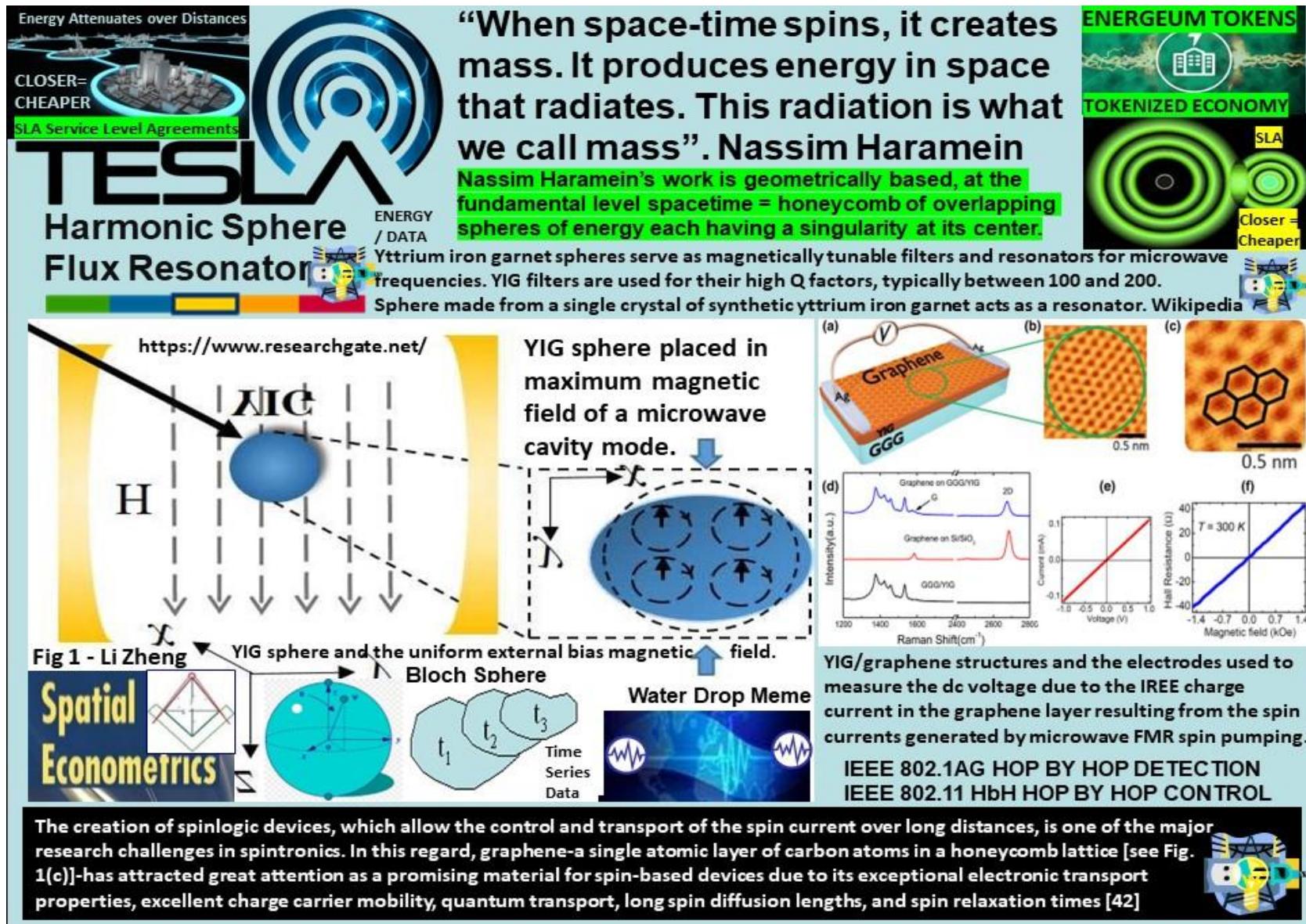


Figure 41: Space – Time Energy attenuates over distance SLA Service Level Agreement

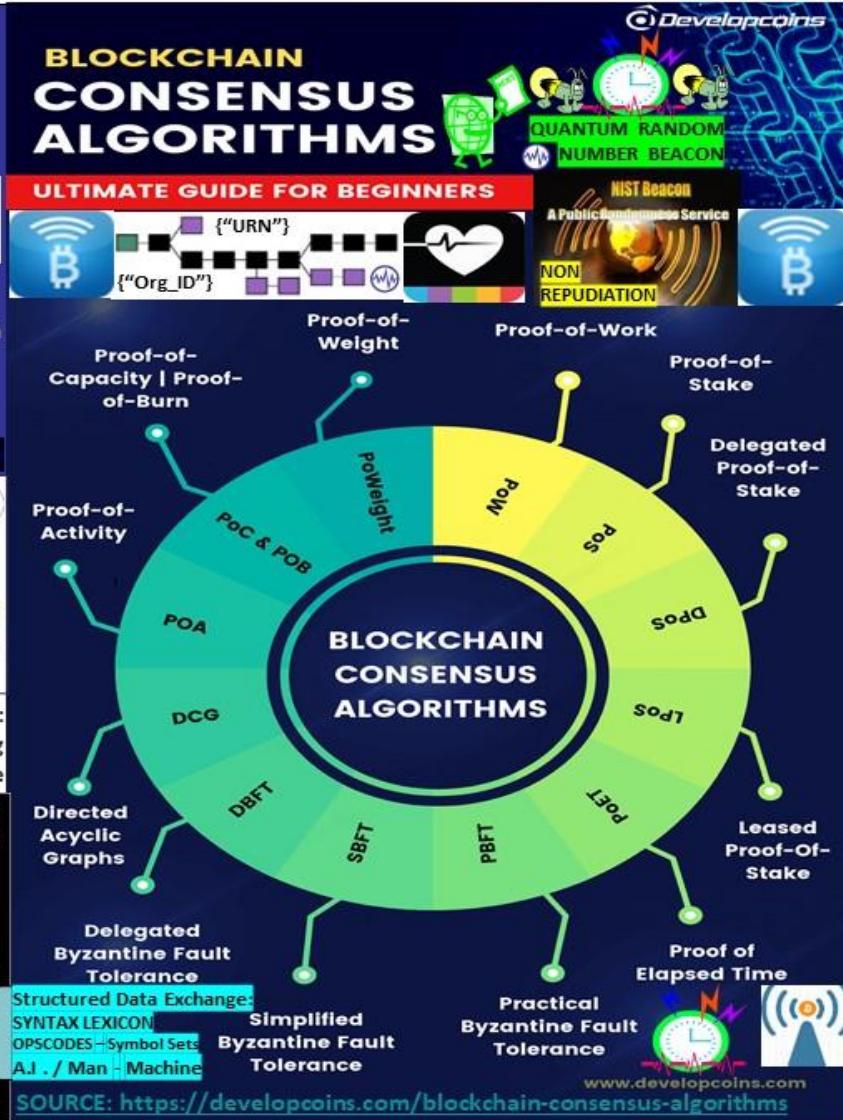


Figure 42: Universal meme / myriad consensus algorithm blockchain memes / metaphors = Tower of Babel

PROOF-OF-WORK

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

BITCOINS VALUE IS TIME ITSELF

cycle n → n + 1 → n + 2

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

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

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

GUESS stores the guess Effectively, it begins at infinity.

HASH → cycle n → n + 1 → n + 2 → Δδ

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

MESSAGE ex:
•Hashing string
•Hash Table

300+Message Templates

LOGIC FILTERS
LOGIC GATES

SYNTAX LIBRARY
LEXICON

CODER'S GUIDE

POW PAYLOAD : COMBINATIONS OF ENCRYPTED SYNTAX Attribute Series

Time Series Databases

FIREFLY-HEARTBEAT ALGORITHM STOCHASTIC HARMONY ACROSS TIME ZONES

CLOCK FACE 360°
90 / 90 / 90 / 90

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

BASEBALL "DIAMOND"

A diamond Is a square Is a block in 3D

2nd Base

ALICE Corp VS CLS BANK SC 573 US 134 2347 CLAIMS MAY NOT DIRECT TOWARDS ABSTRACT IDEAS Physical = Opposite of abstract = ALICE HEART BEACON CYCLE TIME - SPACE METER USPTO 13/573,002

90 feet

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

3rd Base

STATISTICIAN Metrics, Meters Stat Mean Value Index

90 feet

SETTLEMENTS / EXCHANGES = TAXABLE EVENTS AKIN TO PROPERTY IRS #1421

90 feet

3 X 5 HASH TABLES STATE META DATA SHARDS

90 feet

UNIVERSAL HEARTBEAT MESSAGE EVENT BUS

Firefly - Heartbeat Algo

FIX ("108")

FLASH MESSAGE EVENT BUS

TIME STAMP SERVER

Δδ

EVENTS

home plate

Micro CYCLES

State Meta Data Snapshots Survey Point

IRS

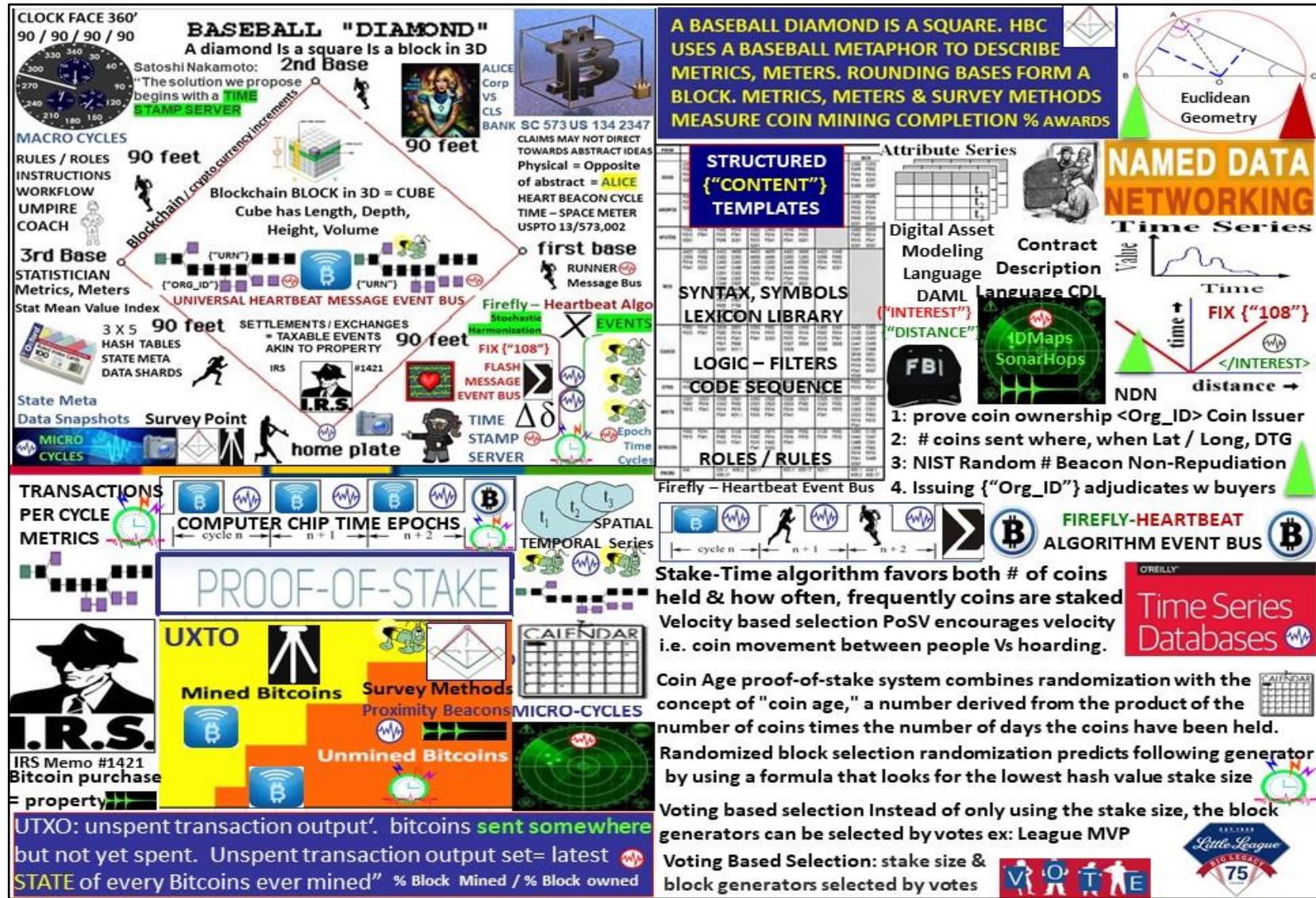
Micro CYCLES

Time Series

Value

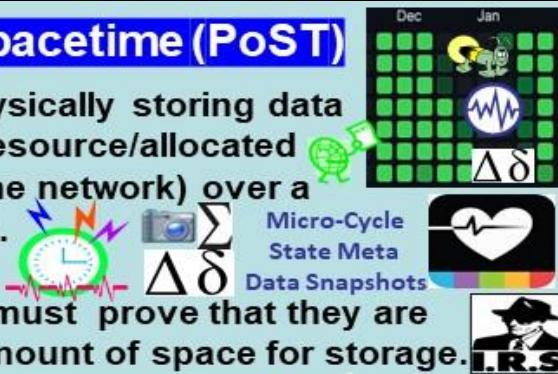
Time

Figure 43: Proof of Work 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.

181 contributions in the last year **EVENT MESSAGE BUS ("108")**

Contribution settings ▾

Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun

Mon Wed Fri

Learn how we count contributions $\Delta\delta$

UXTO Mined Bitcoins Survey Methods Proximity Beacons Unmined Bitcoins

IRS Memo #1421 Bitcoin purchase akin to property

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 Nicotib Erlang / Equilibrium Time - Sync Algorithms ROLES RULES

STATE META DATA SNAPSHOTS BITCOIN BLOCKCHAIN TRANSACTIONS ARE BASED ON TIME SEQUENCING TRANSACTION STATE CHANGES TO DISTRIBUTED LEDGERS BEACON BROADCAST

MICRO- CYCLES QUANTUM RANDOM # NIST Beacon A Public Randomness Service ATOMIC CLOCK NON REPUDIATION

Process transactions by precedence Attribute Series TIME Function $t_1 t_2 t_3$

Heartbeat Date Time Stamps Sync Pulse Arrival Rate Queue Forms Limited Resource Service Rate RFID Utilization * Service Time (T_s)

Time Series Value Time

DISTRIBUTED AUTONOMOUS ORGANIZATIONS DAO

Heart Beacon Cycle FEDERATE / TRADE FEDERATIONS

CLOCK FACE 360° 90 / 90 / 90 / 90
330 340 30 60 270 240 210 180 150 120 90
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
Blockchain = CUBE
Cube has Length, Depth, Height, Volume

90 feet Blockchain / crypto currency increments

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 Firefly - Heartbeat Algo EVENTS FIX ("108") FLASH MESSAGE EVENT BUS TIME STAMP SERVER $\Delta\delta$ Epoch Time Cycles

UNIVERSAL HEARTBEAT MESSAGE EVENT BUS

3 X 5 HASH TABLES STATE META DATA SHARDS SETTLEMENTS / EXCHANGES TAXABLE EVENTS AIN KTO PROPERTY IRS #1421 SURVEY POINT MICRO CYCLES HOME PLATE

Blockchain Interconnection FIX ("108") FLASH MESSAGE EVENT BUS TIME STAMP SERVER $\Delta\delta$ Epoch Time Cycles

Time Series Databases ERLANG TIME EQUATIONS

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

Figure 45: PoST Proof of Space – Time Consensus / USPTO 13/573,002

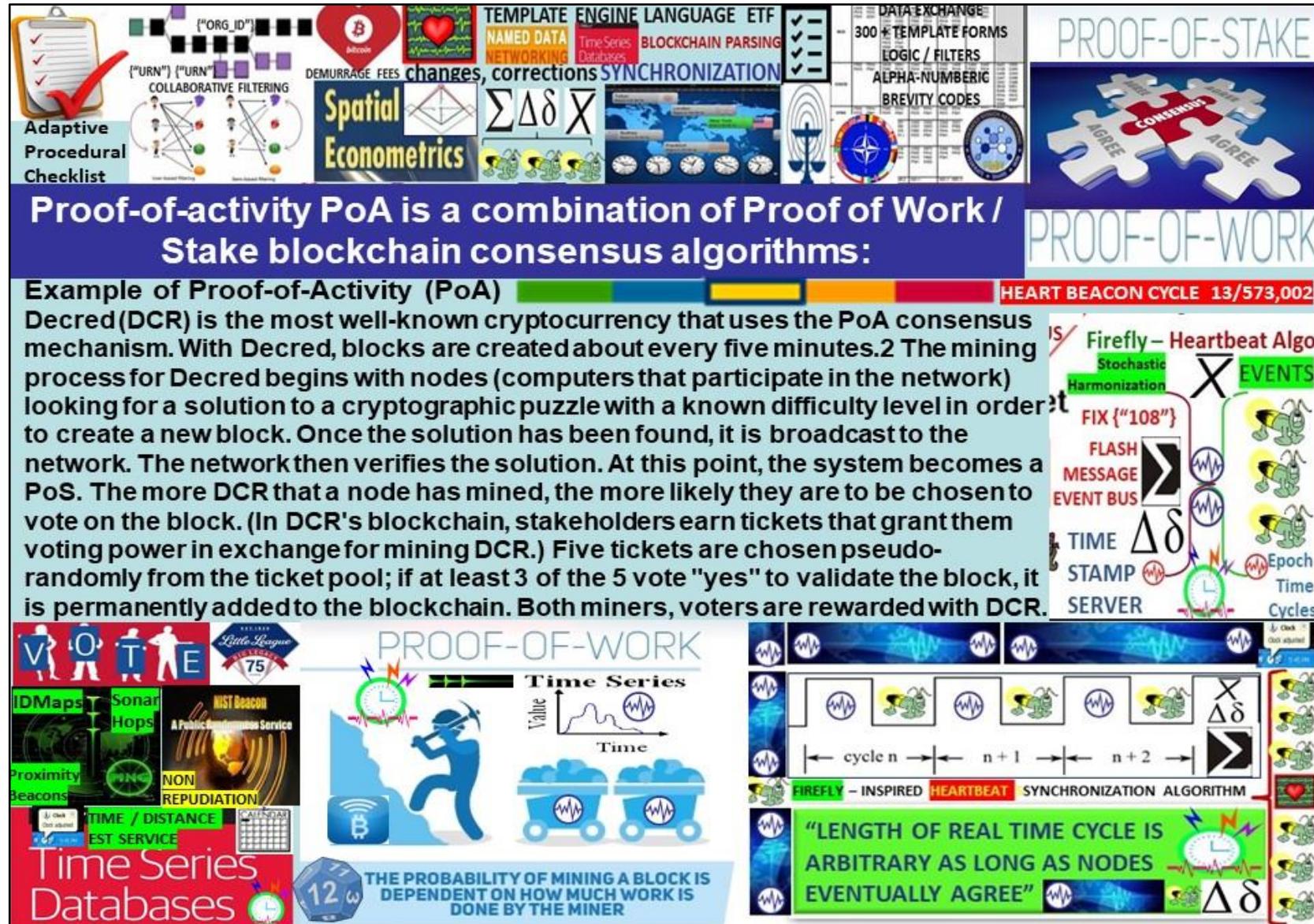


Figure 46: Proof of Activity Consensus / USPTO 13/573,002

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.



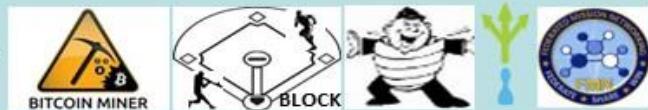
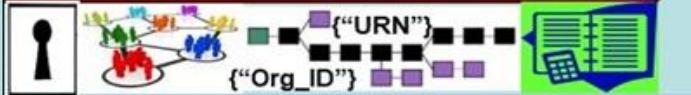
A notary license verifies the identity of the person formally, a notary license is released by the Federation / Government after extensive verification. The identity of the validator is kept for cross-referencing with the notary data and blockchain data

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.

- 1. FEDERATION: Latin: foedus, foederis, covenant, union of partially self-governing states or regions under a central (federal) government
 - 2. A league or confederacy. Individuals / groups retain AUTONOMY
 - 3. A federated body formed by nations, states, and... unions
each retaining control of internal affairs
- Federation**
Net joins, drops, splits, merges, moves
Agile, adhoc NETOPS Vs acquisition preserves the **CHANNEL**
- Gateway**
{"GLOBAL"}, {"SHARED"}, {"DOMAIN"}, {"COMMUNITY"}, {"PRIVATE"}

DISTRIBUTED AUTONOMOUS ORGANIZATIONS DAO

Heart Beacon Cycle FEDERATE / TRADE FEDERATIONS



term coined circa 1991 now in use by Blockchain tech corporations

Uniform_Resource_Name

IoT DEVICE / PLATFORM {"Asset_Type"}
IoT SENSOR DEVICE {"Asset_Class"} </URN>
123e4567-e89b-12d3-a456-426655440000
123e4567-e89b-12d3-a456-426655440001
123e4567-e89b-12d3-a456-426655440002

UUID
STOCK EXCHANGE
MIC MARKET IDENTIFIER
CODES / BREVITY CODES

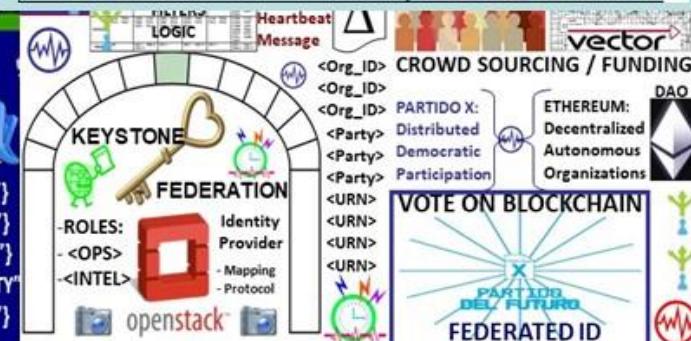


Figure 47: Proof of Authority Consensus // USPTO 13/573.002

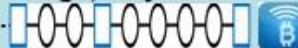
Proof of Burn



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

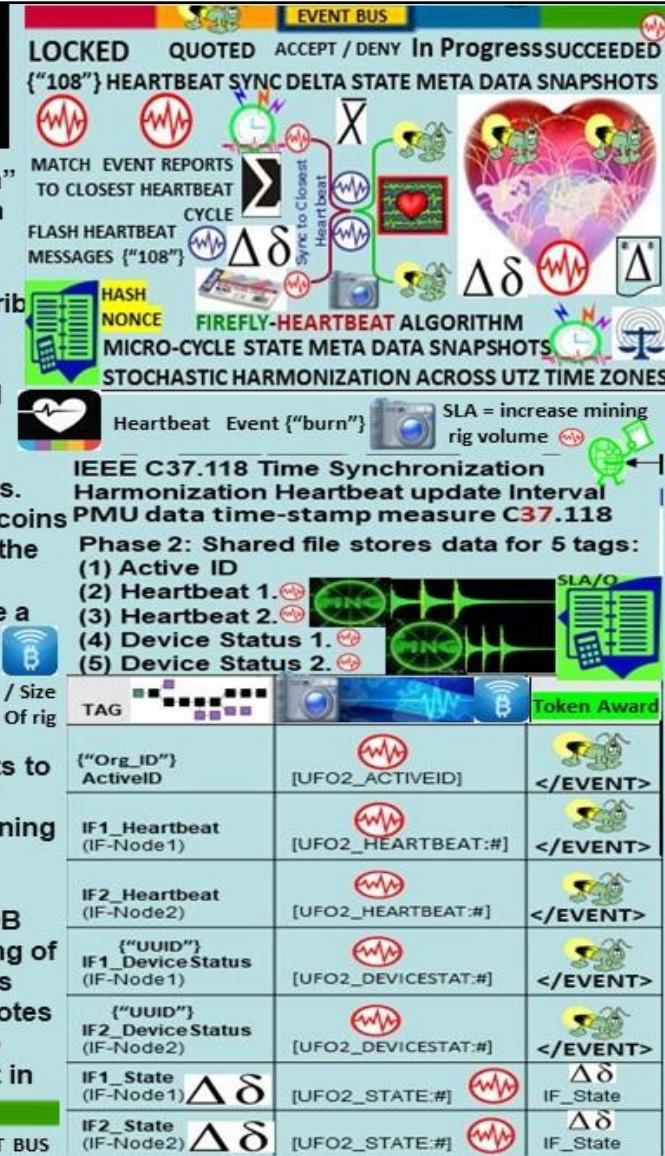


Figure 48: Proof of Burn Consensus / USPTO 13/573,002

Proof of Capacity PoC

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

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



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



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



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



Figure 49: 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.

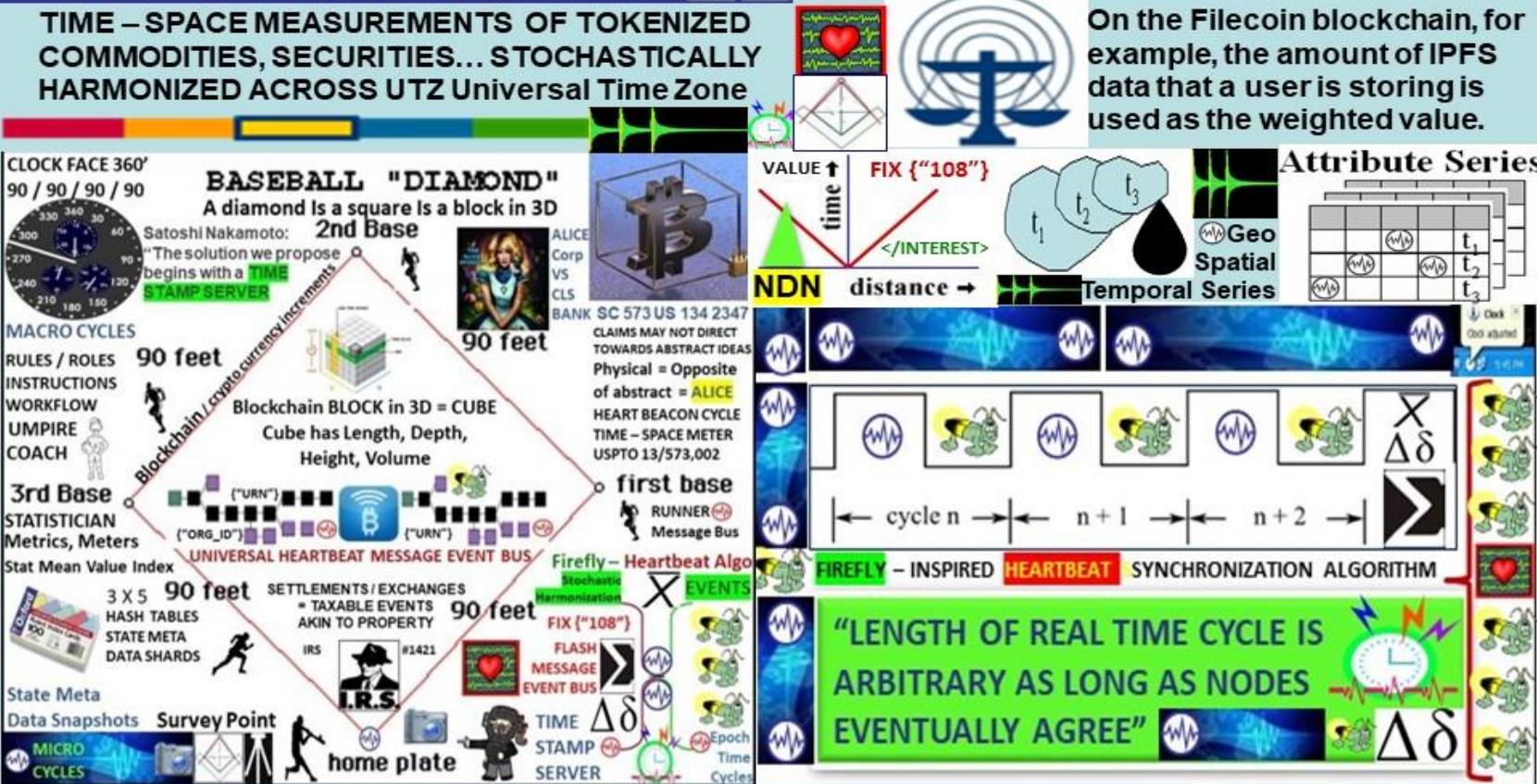


Figure 50: Proof of Weight Volumetric Consensus / USPTO 13/573,002

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



FIGURE 51: Bitcoin Classic - Core - Unlimited // USPTO 13/573,002

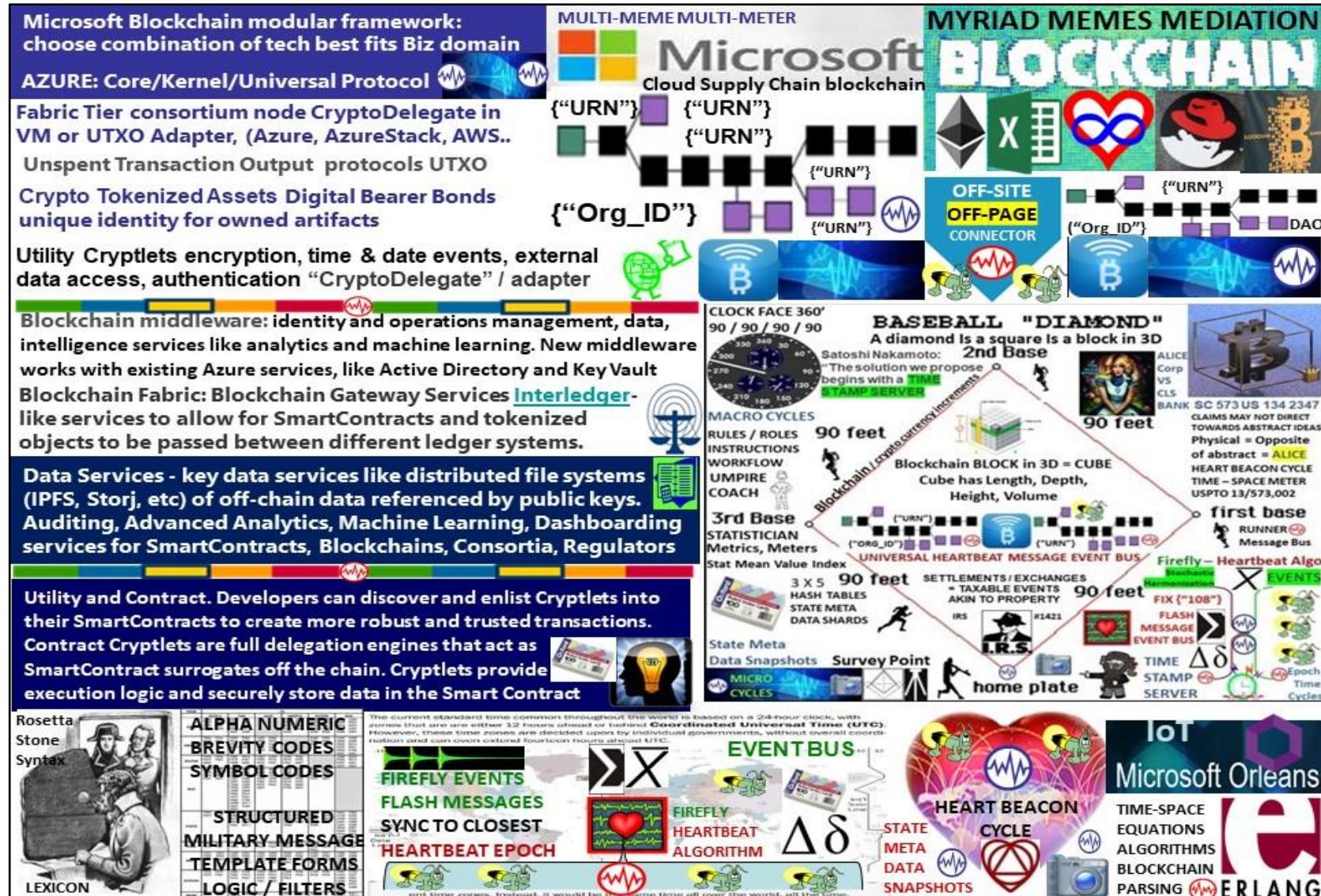


FIGURE 52: MICROSOFT CLOUD BLOCKCHAIN INTEROPERABILITY / USPTO 13/573,002

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."

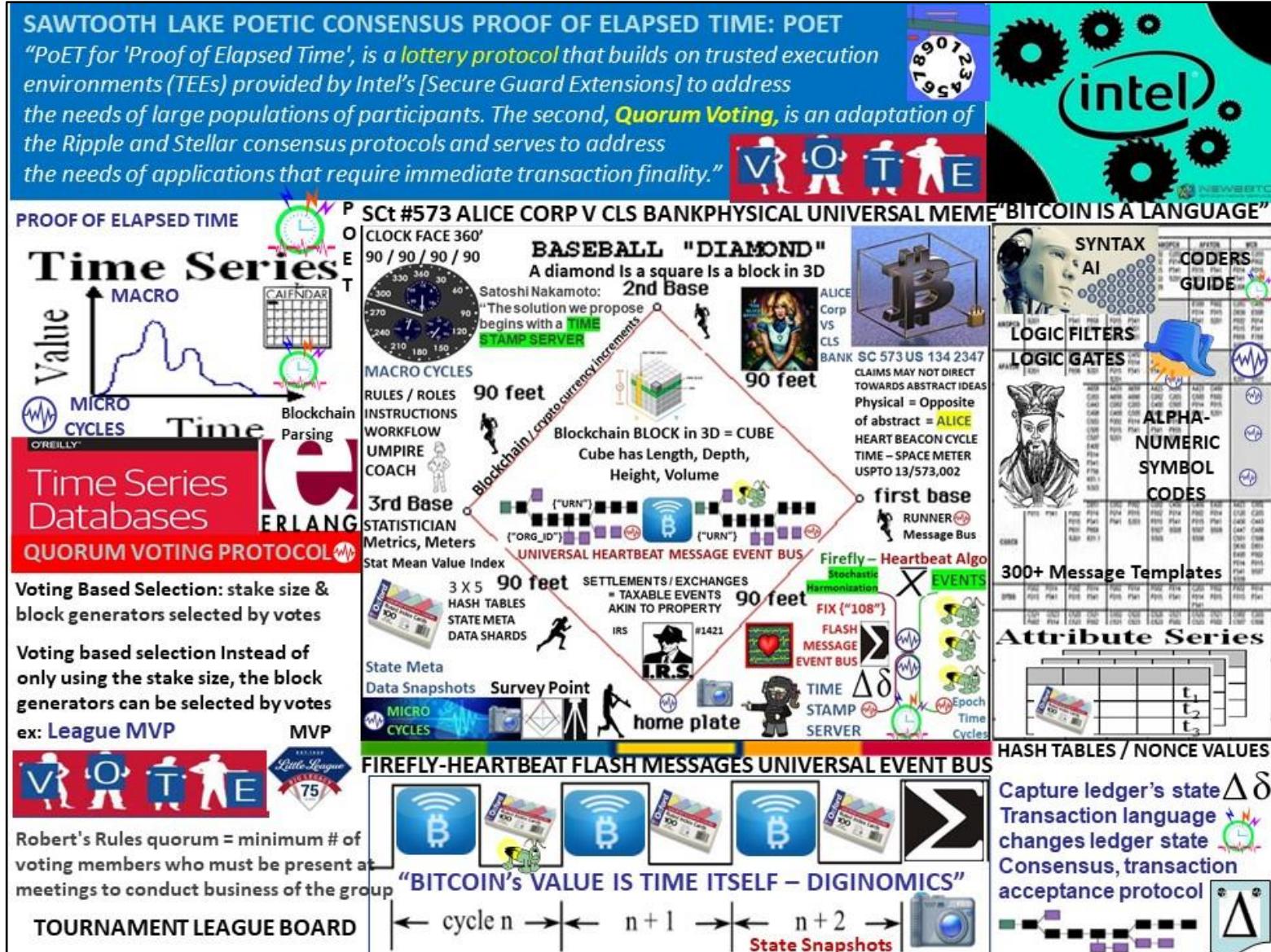


Figure 53: SAWTOOTH POET Proof of Elapsed Time Consensus / USPTO 13/573,002

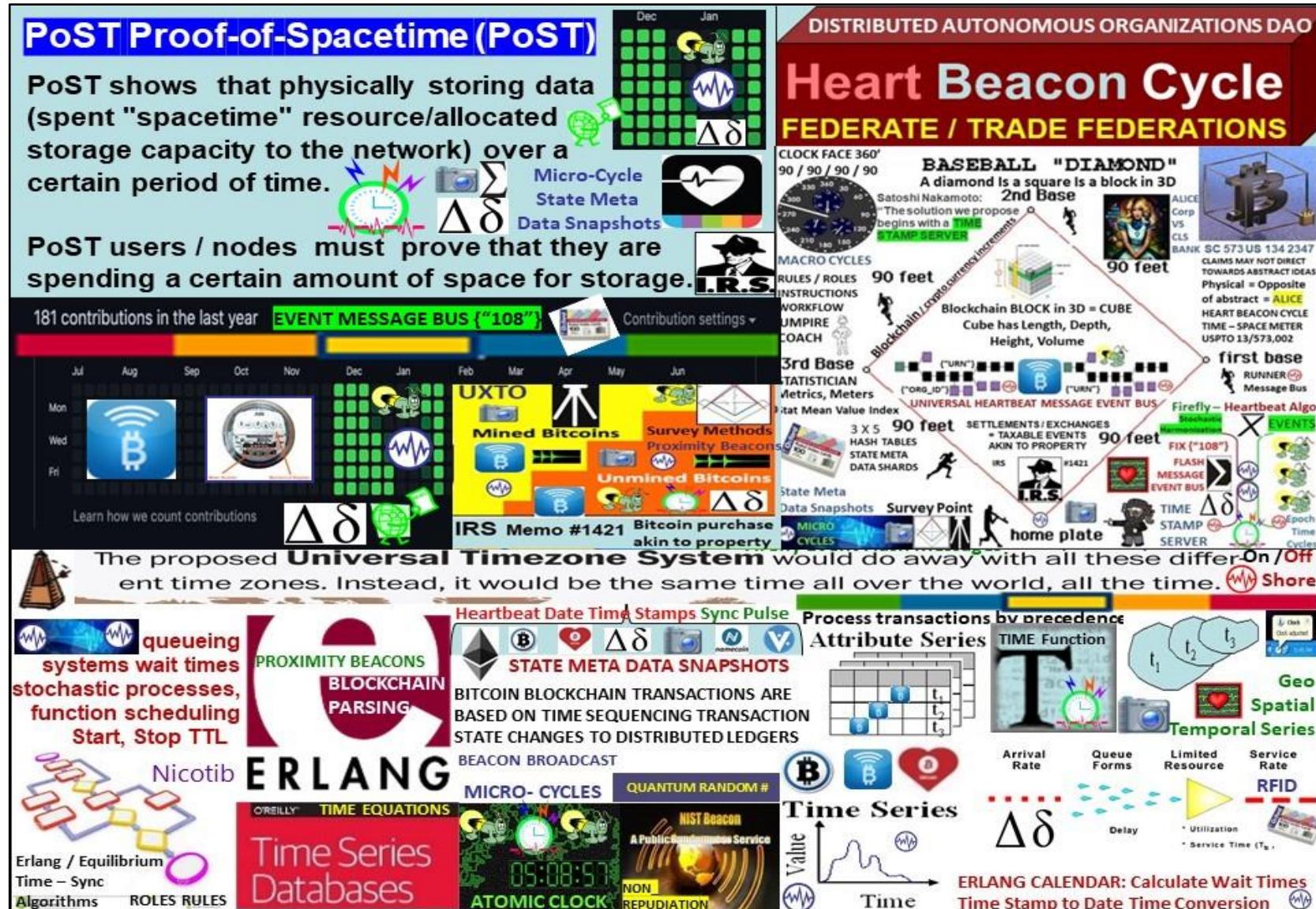


Figure 54: Proof of Space Time POST / USPTO 13/573,002

STATE: stored data at a given instant in time
STATE CHANNELS: blockchain interactions which *could* occur on the blockchain, but instead get conducted off of the blockchain, without significantly increasing the risk of any participant.

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

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

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

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

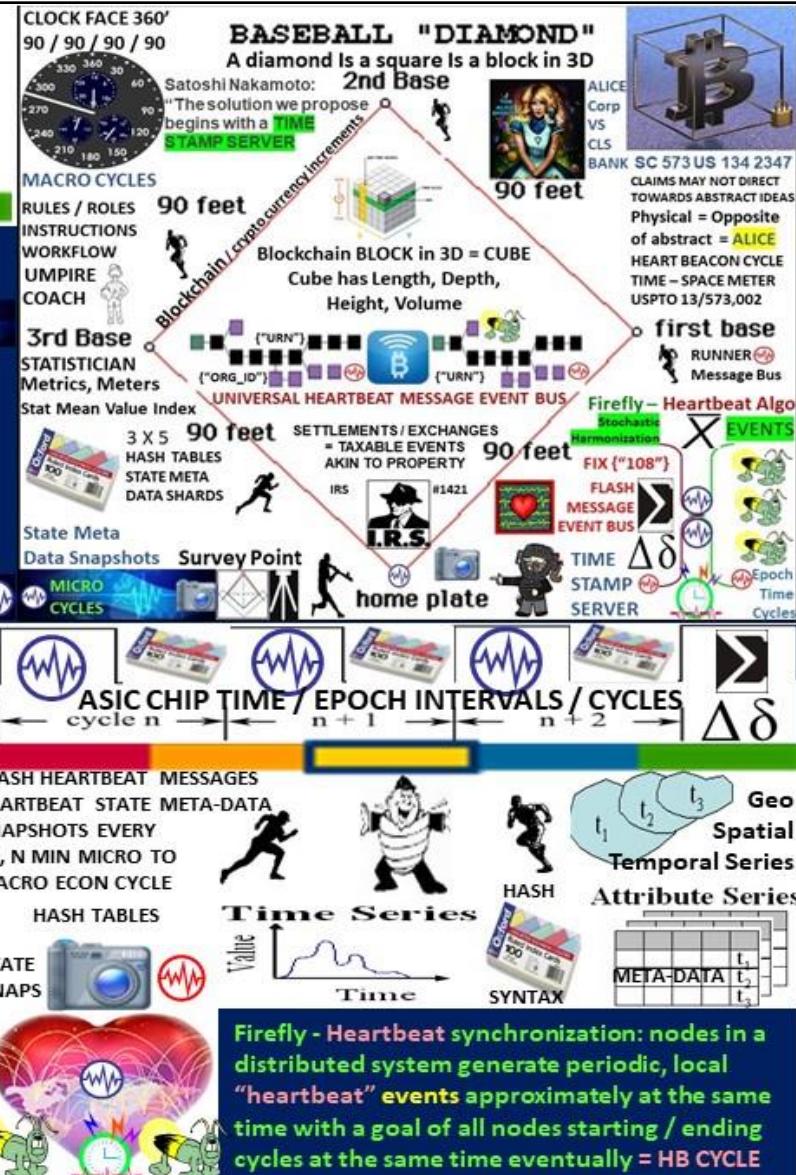


Figure 55: State Channels / USPTO 13/573,002

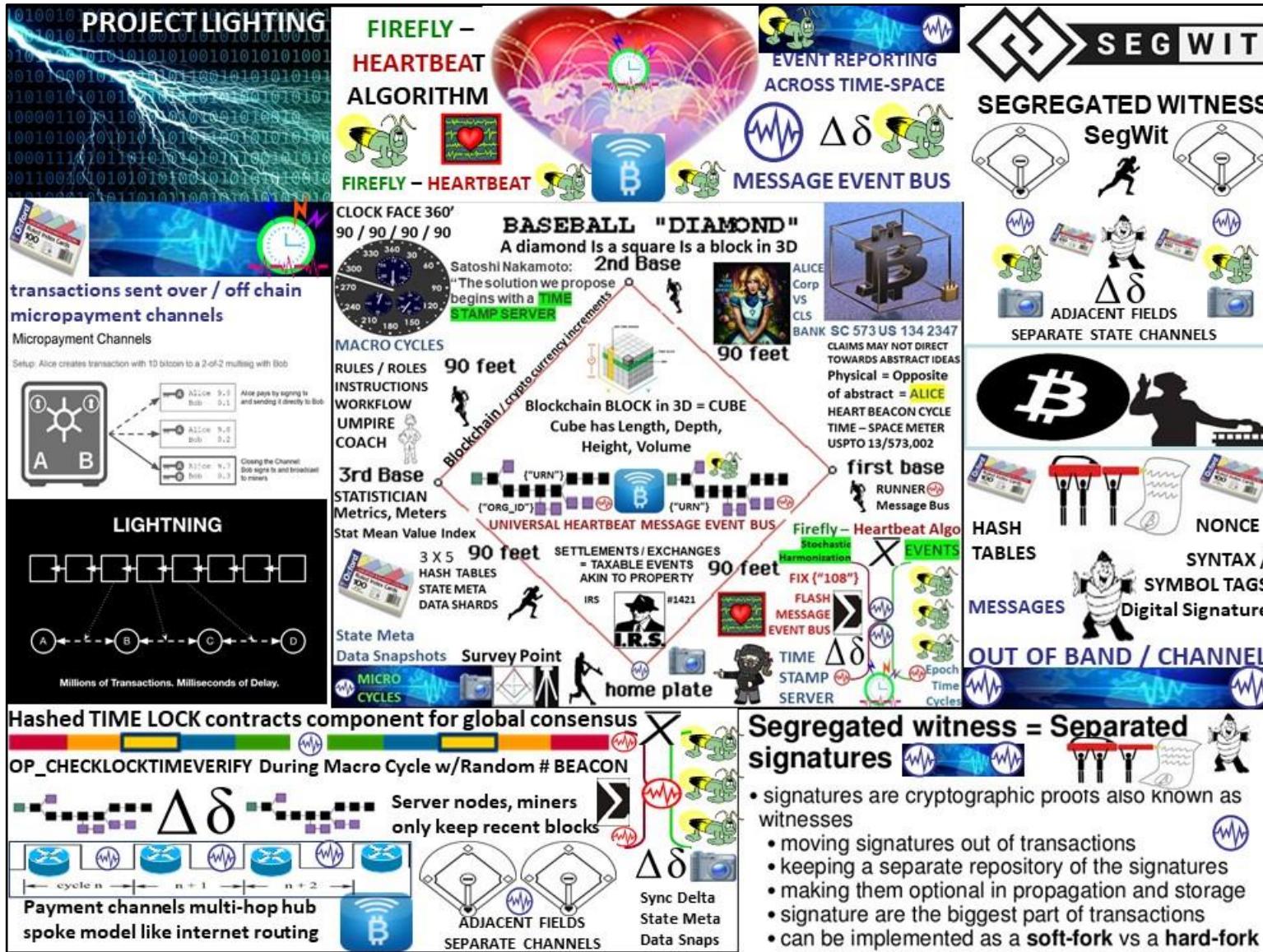


FIGURE 56: Segregated Witness / Project Lightning Consensus / USPTO 13/573,002

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

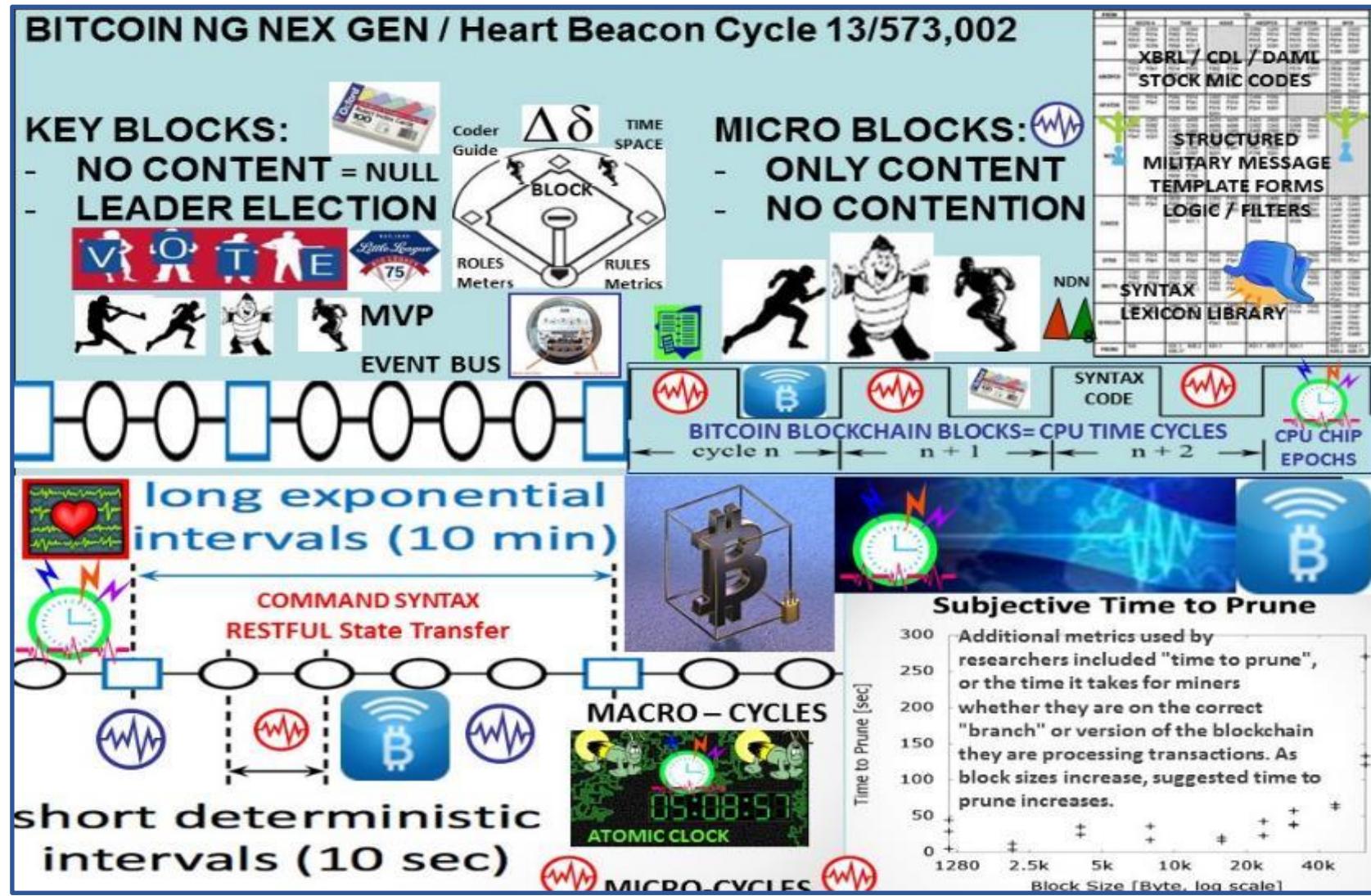


FIGURE 57: BITCOIN NG NEXT GENERATION / USPTO 13/573,002

DON: DECENTRALIZED ORACLE NETWORKS



Explicit Staking

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

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

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

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

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

ALERT LEVEL > NEWSCAST ZONE

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

TIME OUT



DISTRIBUTED AUTONOMOUS ORGANIZATIONS DAO

Heart Beacon Cycle

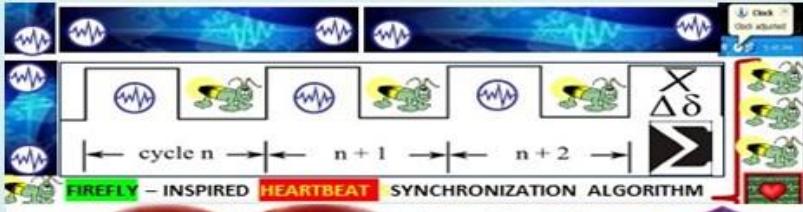
FEDERATE / TRADE FEDERATIONS

Linear Sequential Meme

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



FIREFLY – INSPIRED HEARTBEAT SYNCHRONIZATION ALGORITHM



HEART BEACON CYCLE STATE META DATA SNAPSHOTS

IoT Microsoft Orleans

TIME-SPACE EQUATIONS ALGORITHMS BLOCKCHAIN PARSING

ERLANG

The current standard time zones covers the globe throughout the world in 24-hour cycles, with zones that are one either 32 hours ahead or behind Coordinated Universal Time (UTC). However, these time zones are decided upon by individual governments, without overall coordination and can cover up to four hours ahead UTC.

EVENT BUS

FIREFLY EVENTS FLASH MESSAGES SYNC TO CLOSEST HEARTBEAT EPOCH

FIREFLY HEARTBEAT ALGORITHM

$\Delta\delta$

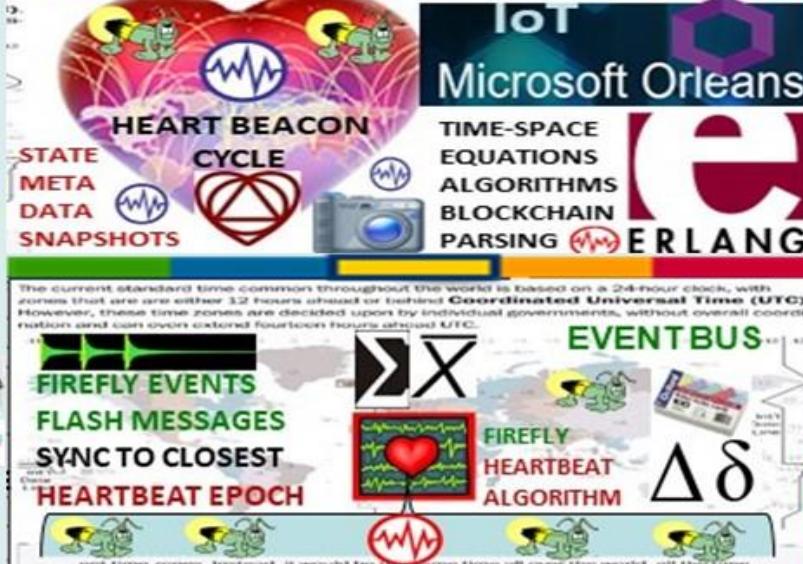


Figure 58: Decentralized Oracle Networks / USPTO 13/573,002

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

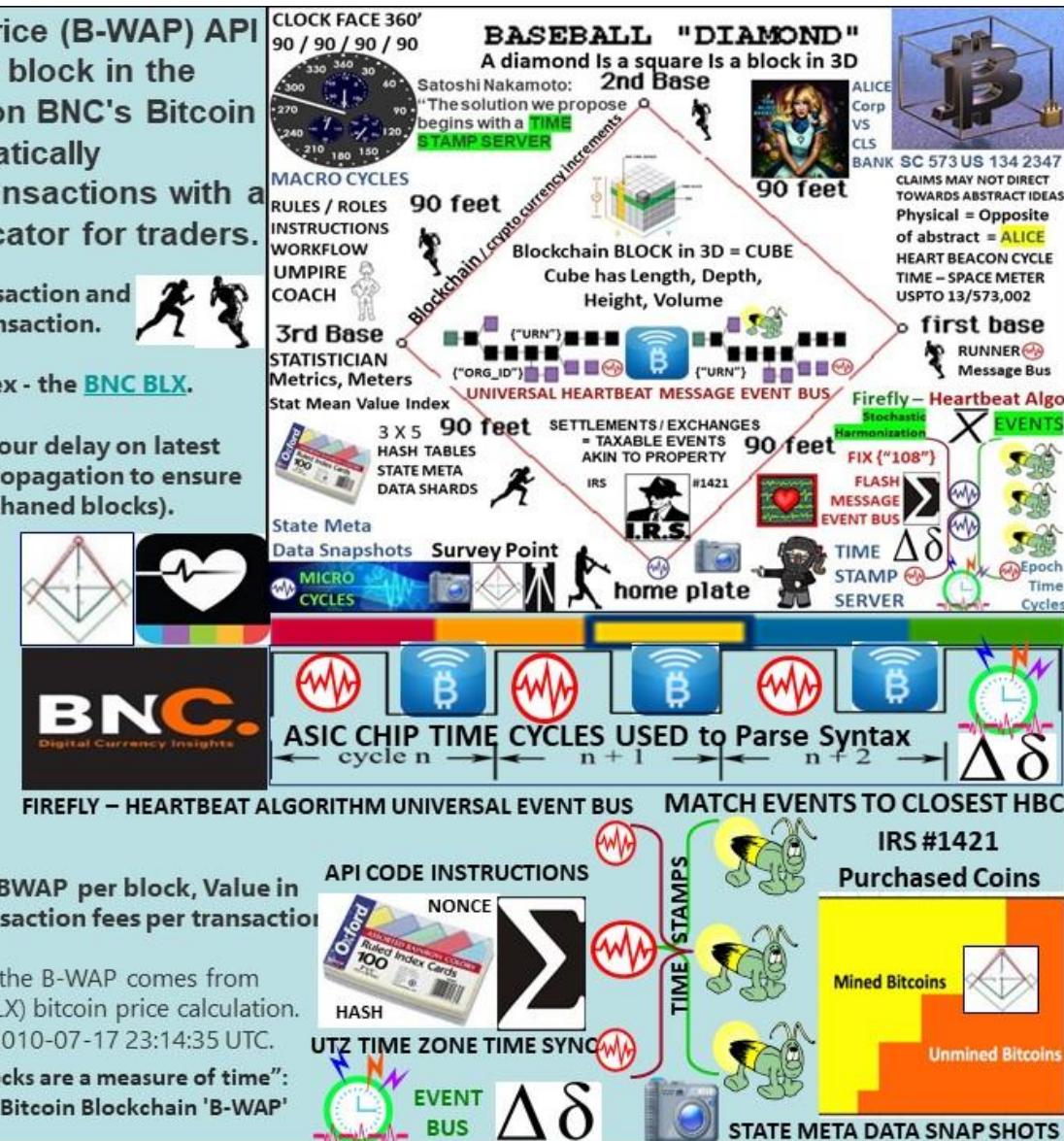


FIGURE 59: Brave New Coin B-WAP Consensus / USPTO 13/573,002



FIGURE 60: DASH / USPTO 13/573,002



FIGURE 61: ETHEREUM – CASPER / USPTO 13/573,002

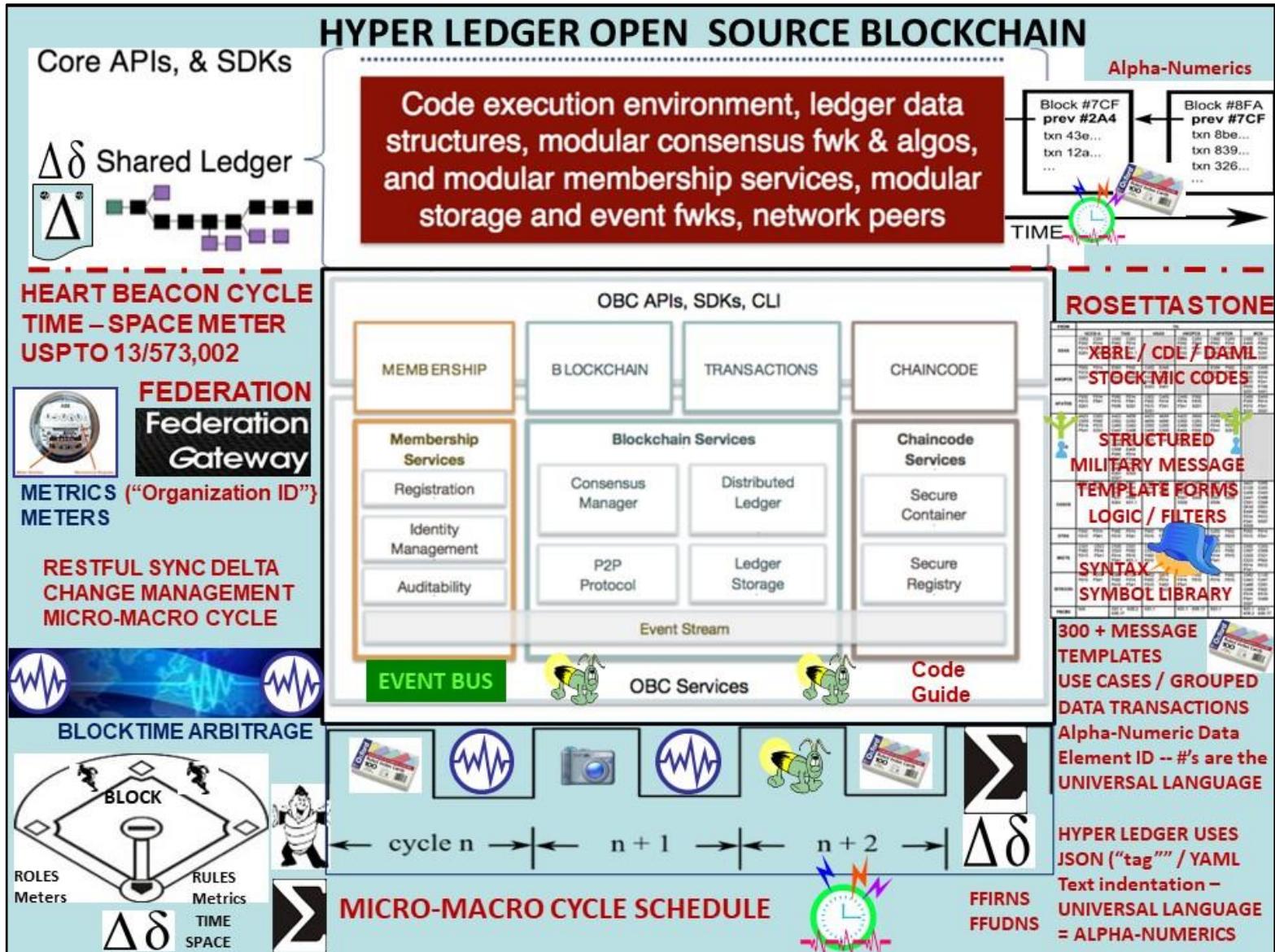


FIGURE 62: HYPERLEDGER FRAMEWORK / USPTO 13/573,002

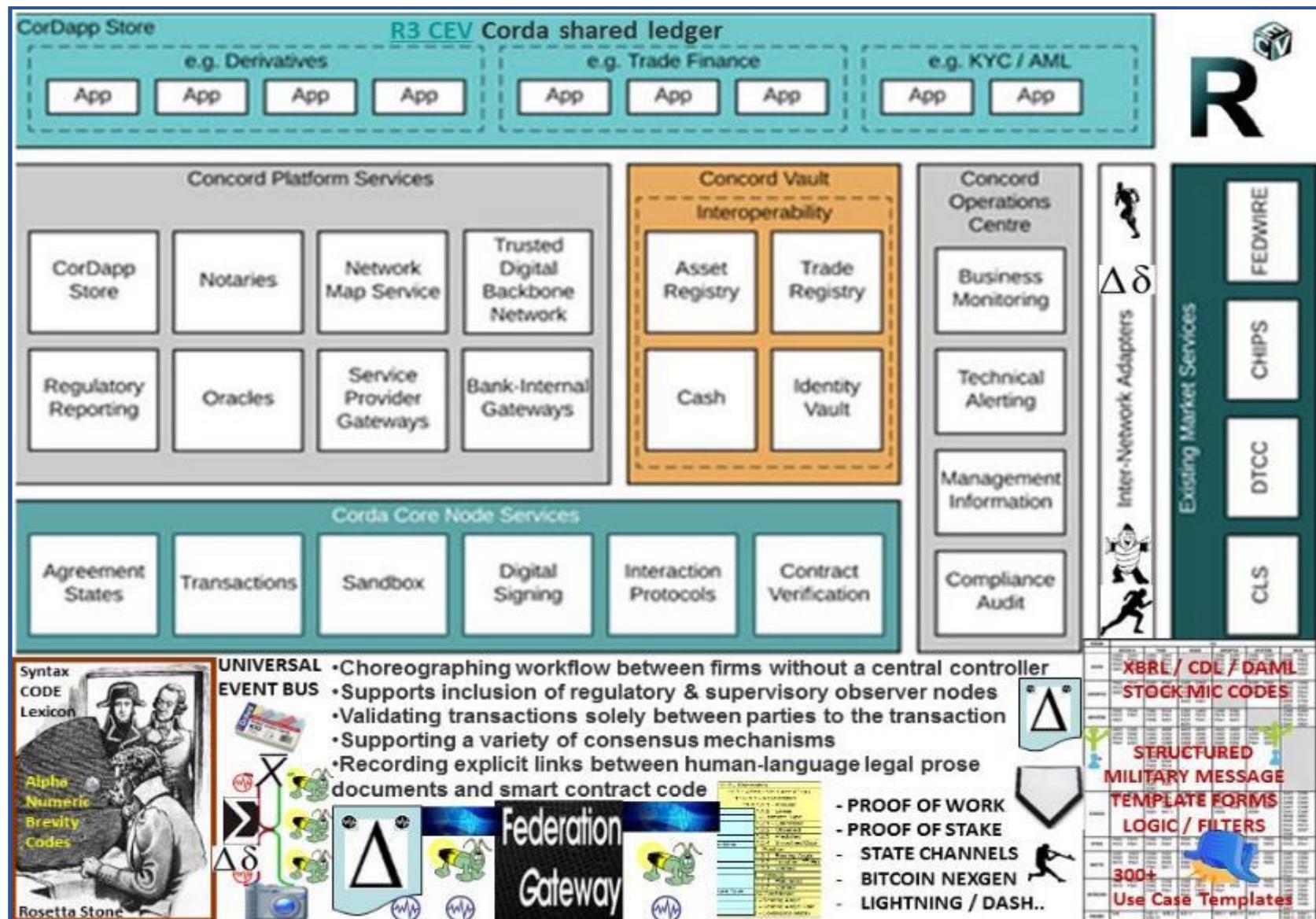


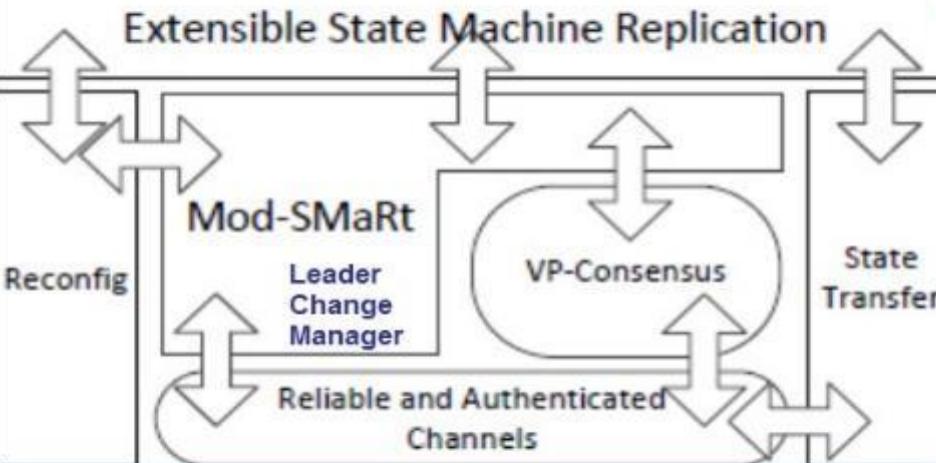
FIGURE 63: R3 Consortium CORDA / USPTO 13/573,002



FIGURE 64: 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.

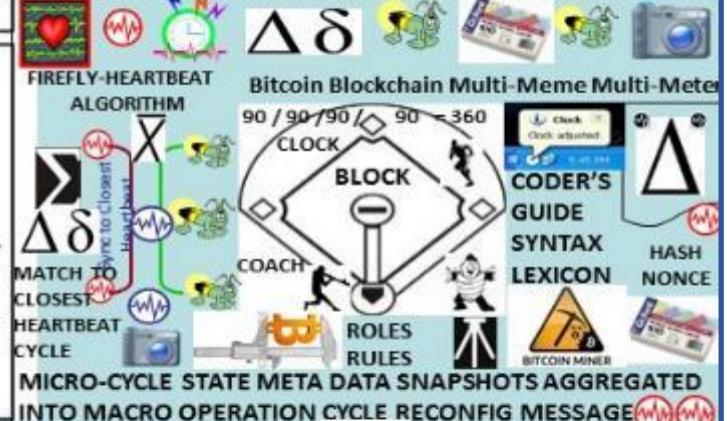
USPTO 13/573,002 HEART BEACON CYCLE TIME-SPACE METER

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



- BUILDING BLOCKS:**
- TIME CYCLE EPOCHS
 - SYNTAX INSTRUCTIONS

- LINEAR, SEQUENTIAL
- GEO SPATIAL, TEMPORAL

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 65: 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

• Privacy </Org_ID>
 - Users should fully control their data. Users have freedom to reveal as much personal identifiable information as they want, when they want

Bitcoin: OpenBazaar transactional currency

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



OPENBAZAAR.ORG
 BLOCKCHAIN ARBITRAGE

SLA
 CLOSER = < \$
 CLOSER = < CO2

COMMODITIES
 ECONOMIC HEARTBEAT

STAT MEAN VALUE PULSE
 REAL WORLD ASSETS RWA

STAT MEAN VALUE INDEX
 CONTRIBUTIONS TO STATISTICS

Price Indexes in Time and Space
 Methods and Practice

SchellingPoint

FIGURE 66: OpenBazaar / USPTO 13/573,002

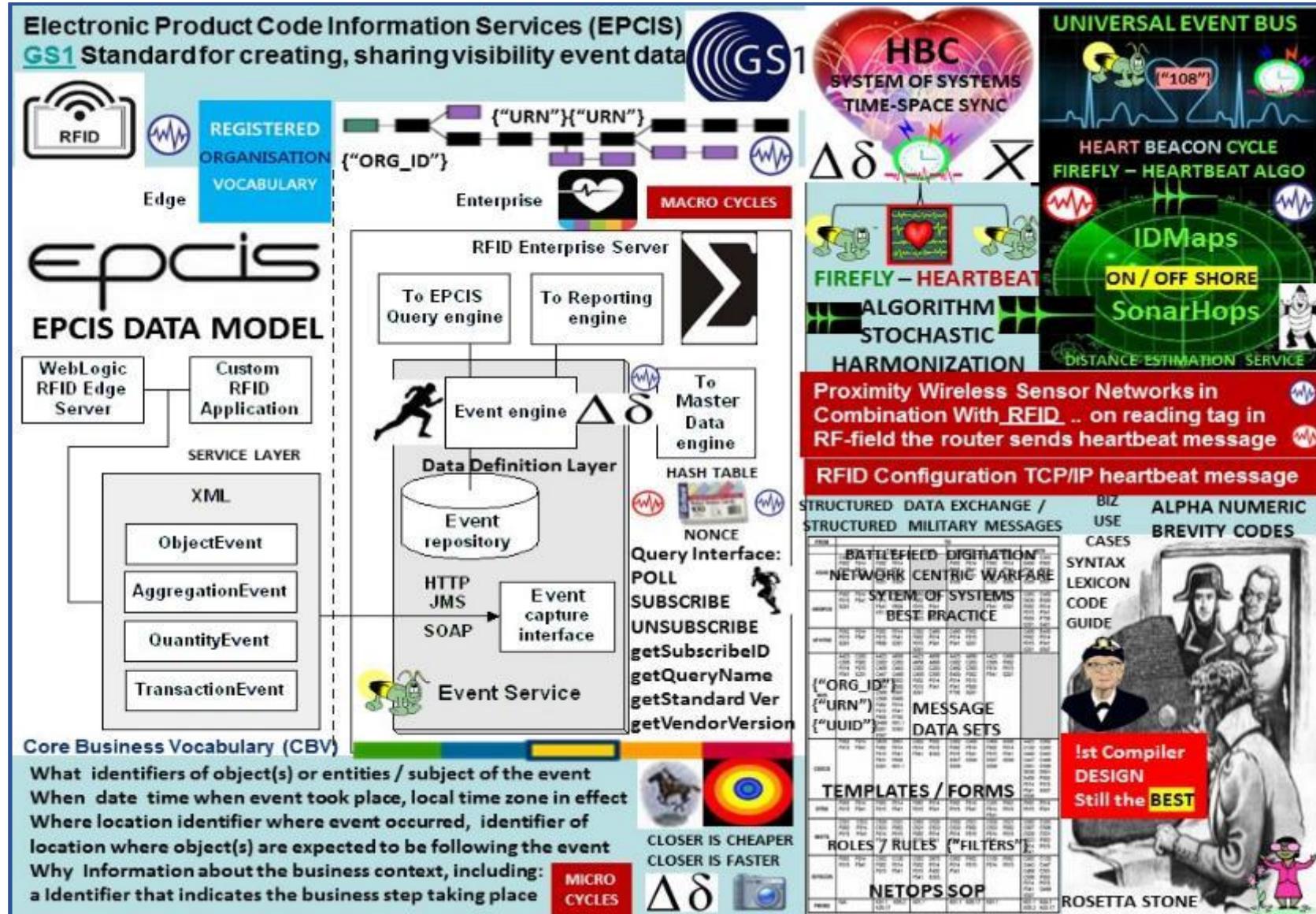


FIGURE 67: EPCIS RFID / USPTO 13/573,002



Figure 68: HASHGRAPH DAG Directed Acyclic Graph / USPTO 13/573,002



Figure 69: FEDCOIN – WORLDCOIN STABLE COIN / USPTO 13/573,002 ECONOMIC HEARTBEAT



Programmable
Money Transactions
Intrabank settlements

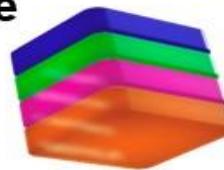


PROTON A CHAIN Virtual Machine

CONTRACT C CHAIN Smart contract

PLATFORM P CHAIN Meta Data

EXCHANGE X CHAIN Cross blockchain



Universal @names Identity / Governance / Resources / Staking

Snowball Consensus Algorithm
preference := pizza
consecutiveSuccesses := 0

while not decided:
ask k random people preference
if >= α give the same response:
preference := response with >= α

if preference == old preference:
consecutiveSuccesses++

else:
consecutiveSuccesses = 1

else:
consecutiveSuccesses = 0

if consecutiveSuccesses > β :
decide(preference)

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

Delegated Proof of Stake {"Org_ID"}



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

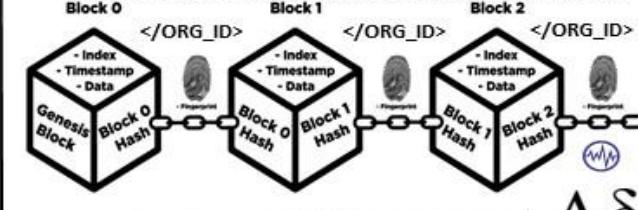
DAG Acyclic Graph Parameters:
n: number of participants
k (sample size): between 1 and n
 α (quorum size): between 1 and k
 β (decision threshold): ≥ 1

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

- 1) EPOCH TIME INTERVALS
- 2) SYNTAX (not) used in epochs



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



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



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



Figure 70: Federal Reserve FedNOW Metallicus / USPTO 13/573,002



UNICOIN

Digital Capital Exchange

Unicon: IMF CBDC legal tender settlement coin

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

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

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

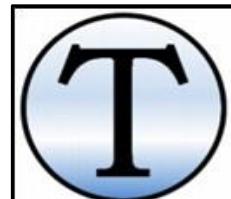
Figure 9: Unicorn Global Localization of a CBDC Public Monetary System



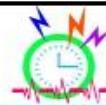
Figure 71: World Bank IMF Unicon STABLE COIN / USPTO 13/573,002



Figure 72: Unicoin STABLE COIN CBDC / USPTO 13/573,002 TERRA TRC / UTZ- UTC



TRUTHCOIN Nullius in Verba: “On the word of no one”



Three ideas combined

HOW TRUTHCOIN WORKS:

1) Tradable Reputation

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

2) SVD Cross-Validation

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

3) Strategic Use of TIME

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



2. A kind of ‘Future Wikipedia’

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

3. A software protocol

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

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

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



Figure 73: Truth Coin: Nullius in Verba On the word of no one / Future Wikipedia

How 'Bitbanks' Could Solve Bitcoin's Volatility Problem

$MV=PQ$ Money x Velocity = Price x Quantity

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



MACRO
ECONOMIC CYCLES

X
Q = QUANTITY



Figure 74: Volatility Problem Solution / USPTO 13/573,002



Figure 75: NEO Net Enable Operations / NEO Distributed Smart Economy / USPTO 13/573,002

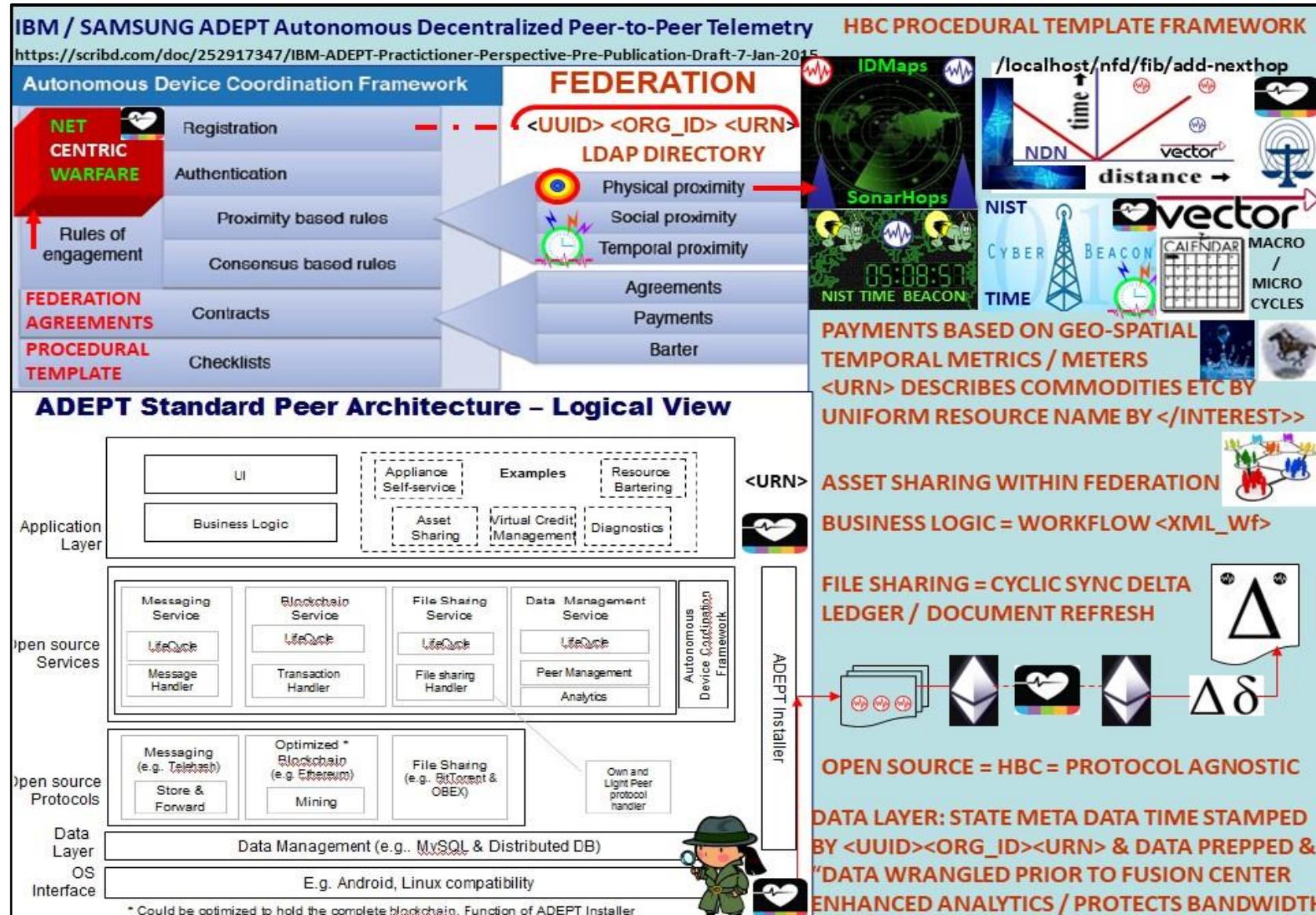


Figure 76: IBM – Samsung ADEPT / USPTO 13/573,002

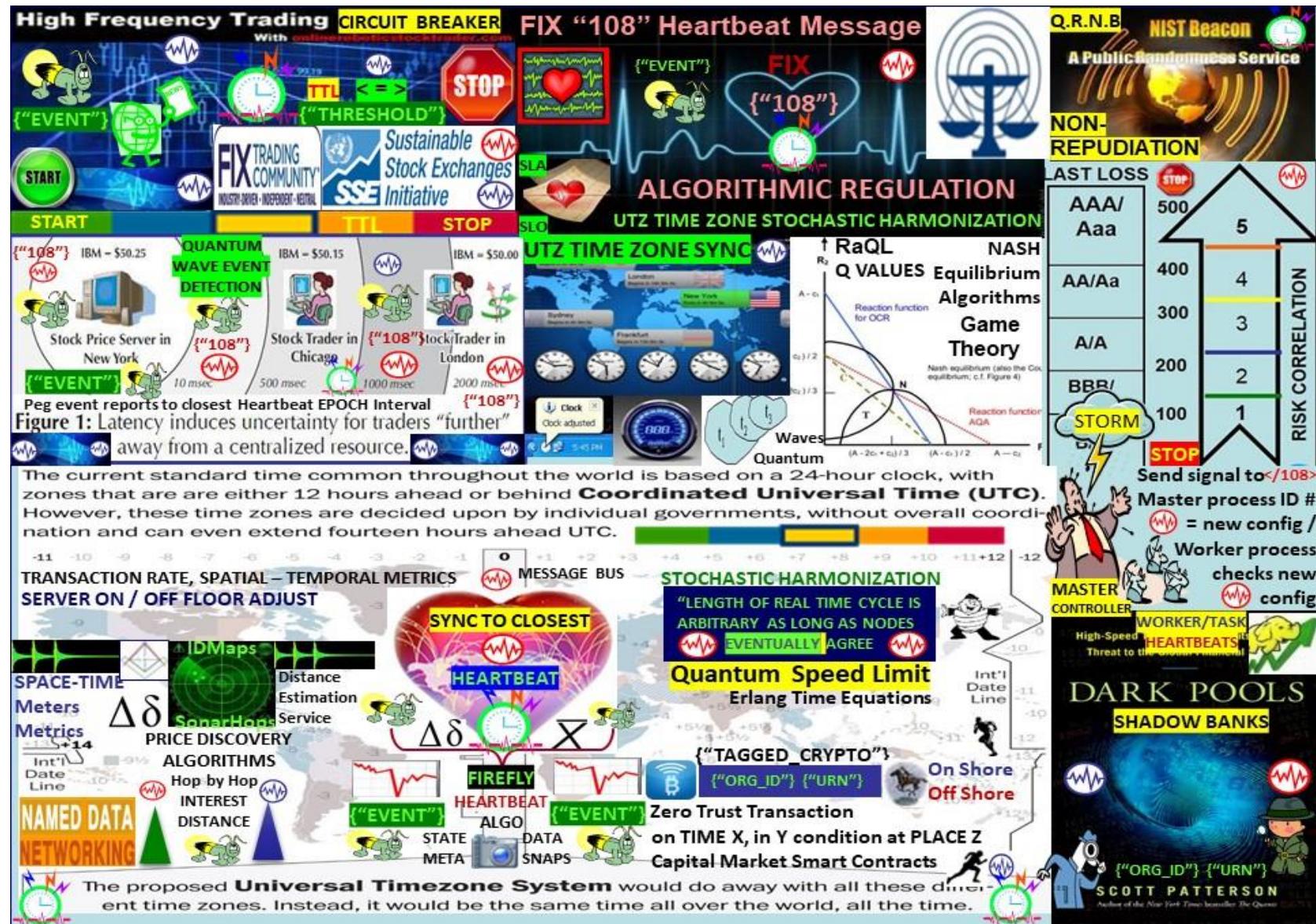


FIGURE 77: High Frequency Flash Trade Breaker HFT Algorithmic Regulation / USPTO 13/573,002



Figure 78: USPTO 13/573,002 Econometrics, Meters, Trade Federation Demurrage Fees



FIGURE 79: TRADENET / USPTO 13/573,002



FIGURE 80: NEW ECONOMY BLOCKTIME ARBITRAGE / USPTO 13/573,002



FIGURE 81: Financial Nostradamus Veritaseum / FutureMan USPTO 13/573,002

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 82: GAMIFICATION / USPTO 13/573,00

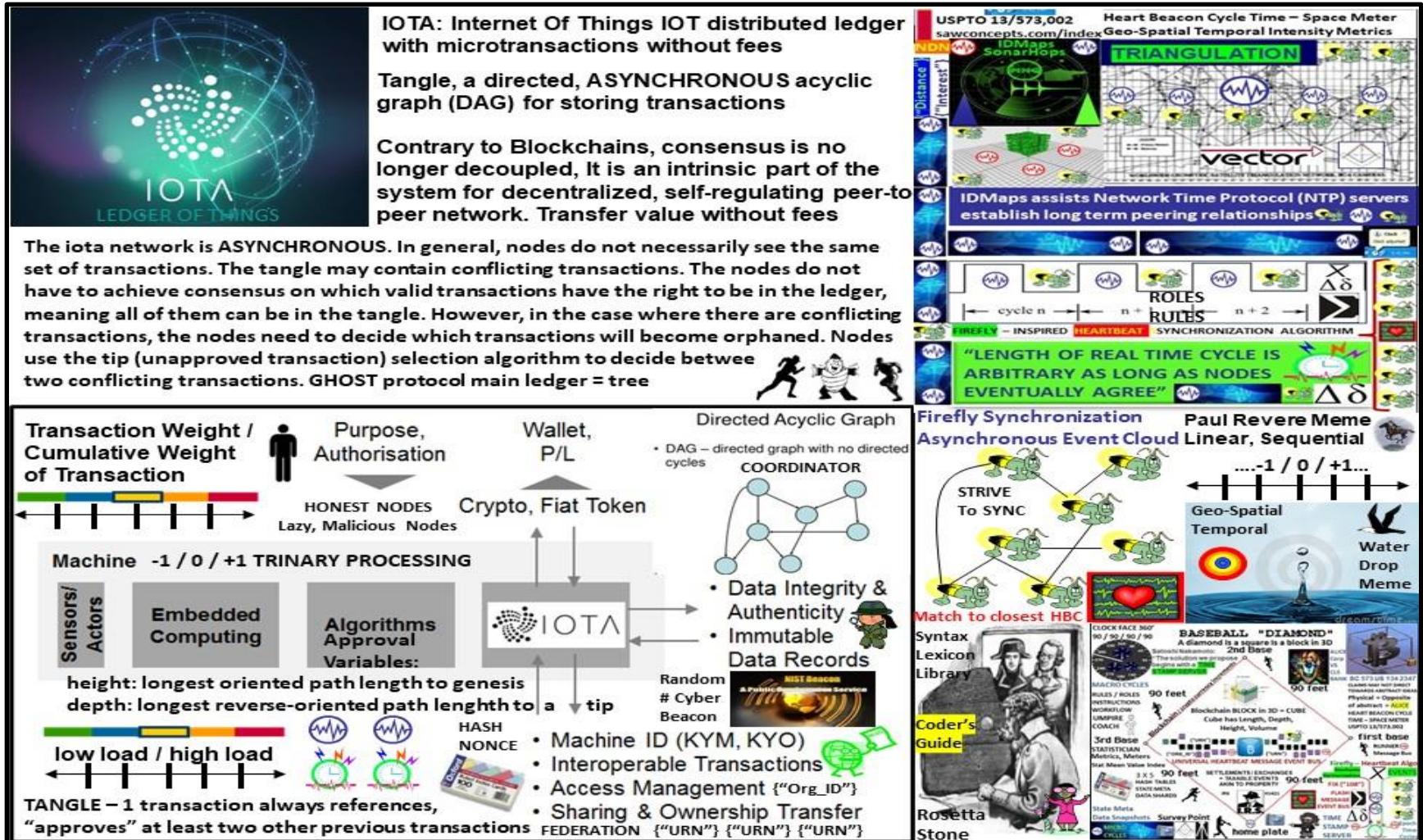


FIGURE 83: IOTA TANGLE DAG / USPTO 13/573,002

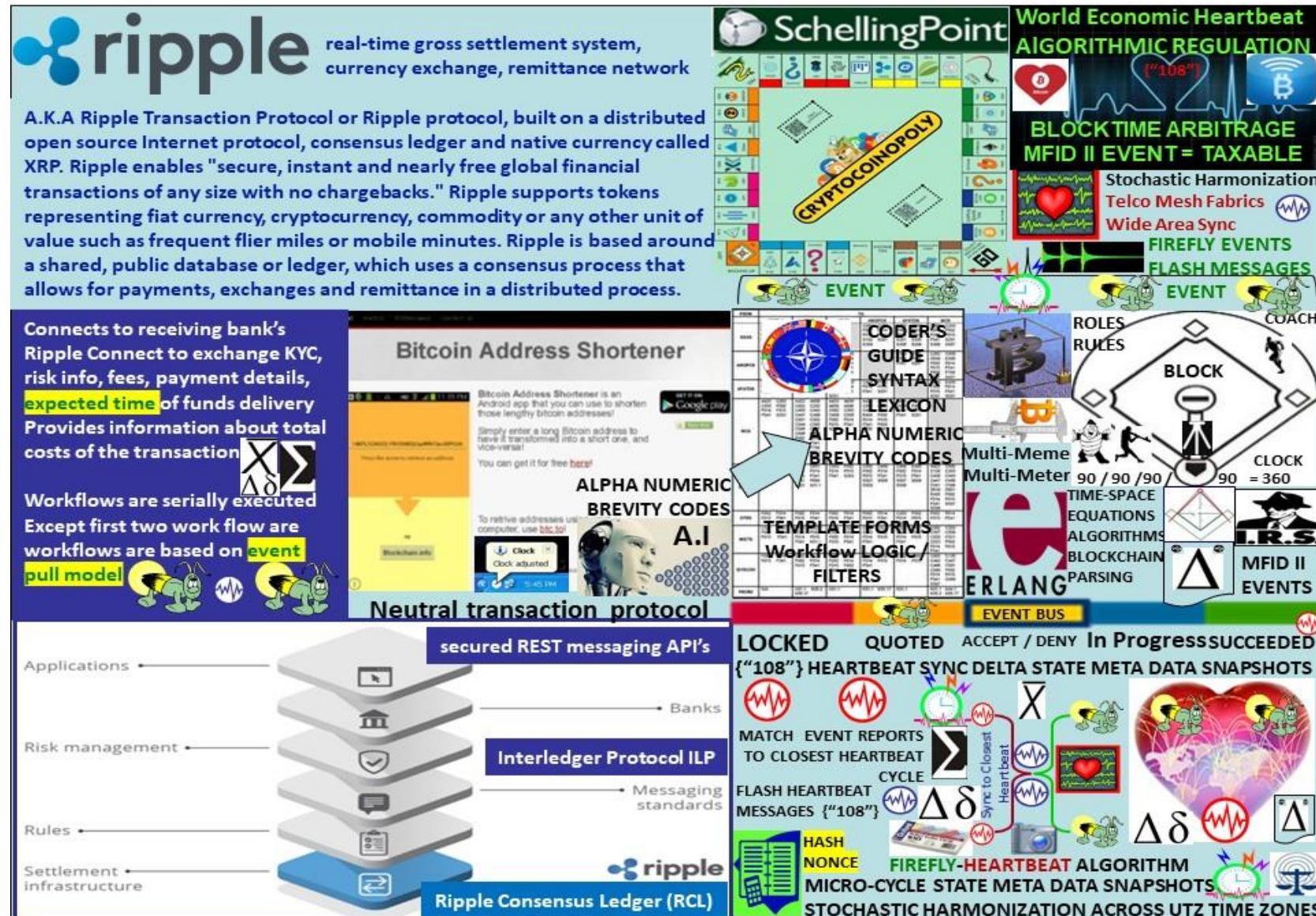


FIGURE 84: RIPPLE XRP Real Time Protocol / USPTO 13/573,002

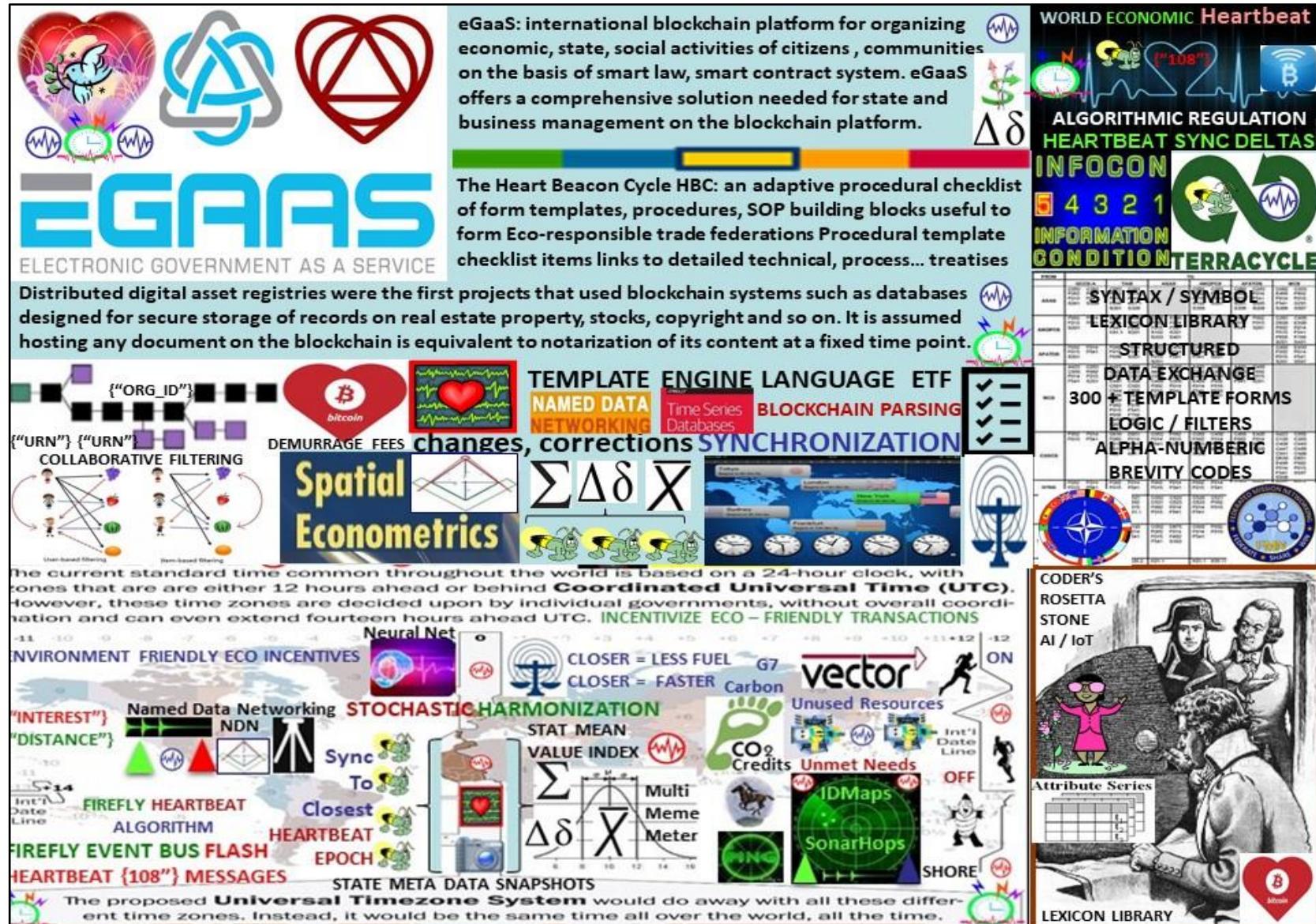


FIGURE 85: E Government as a Service E-GASS/ USPTO 13/573,002 Synergy



Figure 86: GNOSIS / USPTO 13/573,002



Figure 87: Cryptocurrencies main issues / resolutions



Figure 88: USPTO 13/573,002 Application key events / concepts



FIGURE 89: USPTO 13/573,002 Amendment Timeline

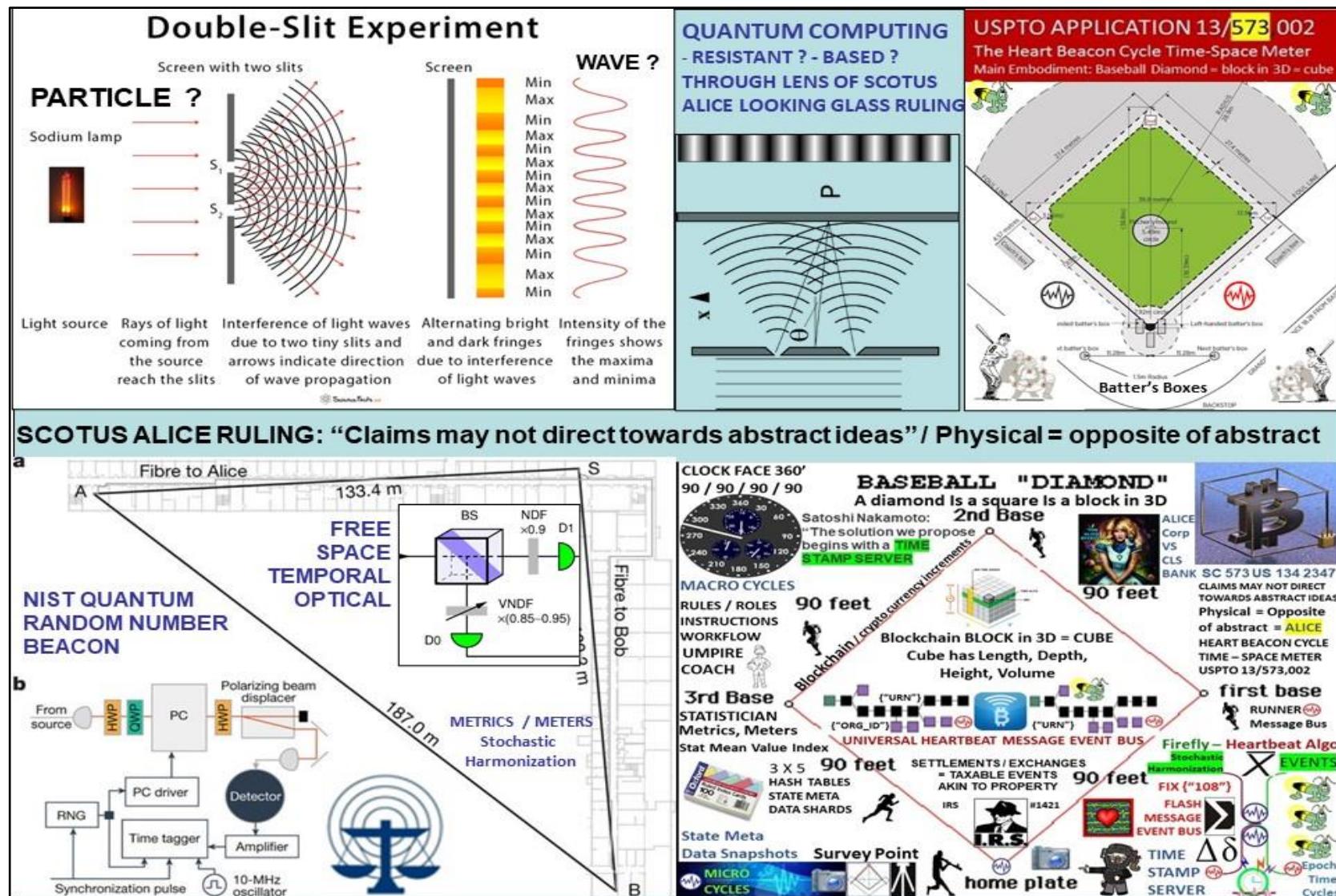


Figure 90: Double Slit experiment particle - wave duality / USPTO 13/573,002

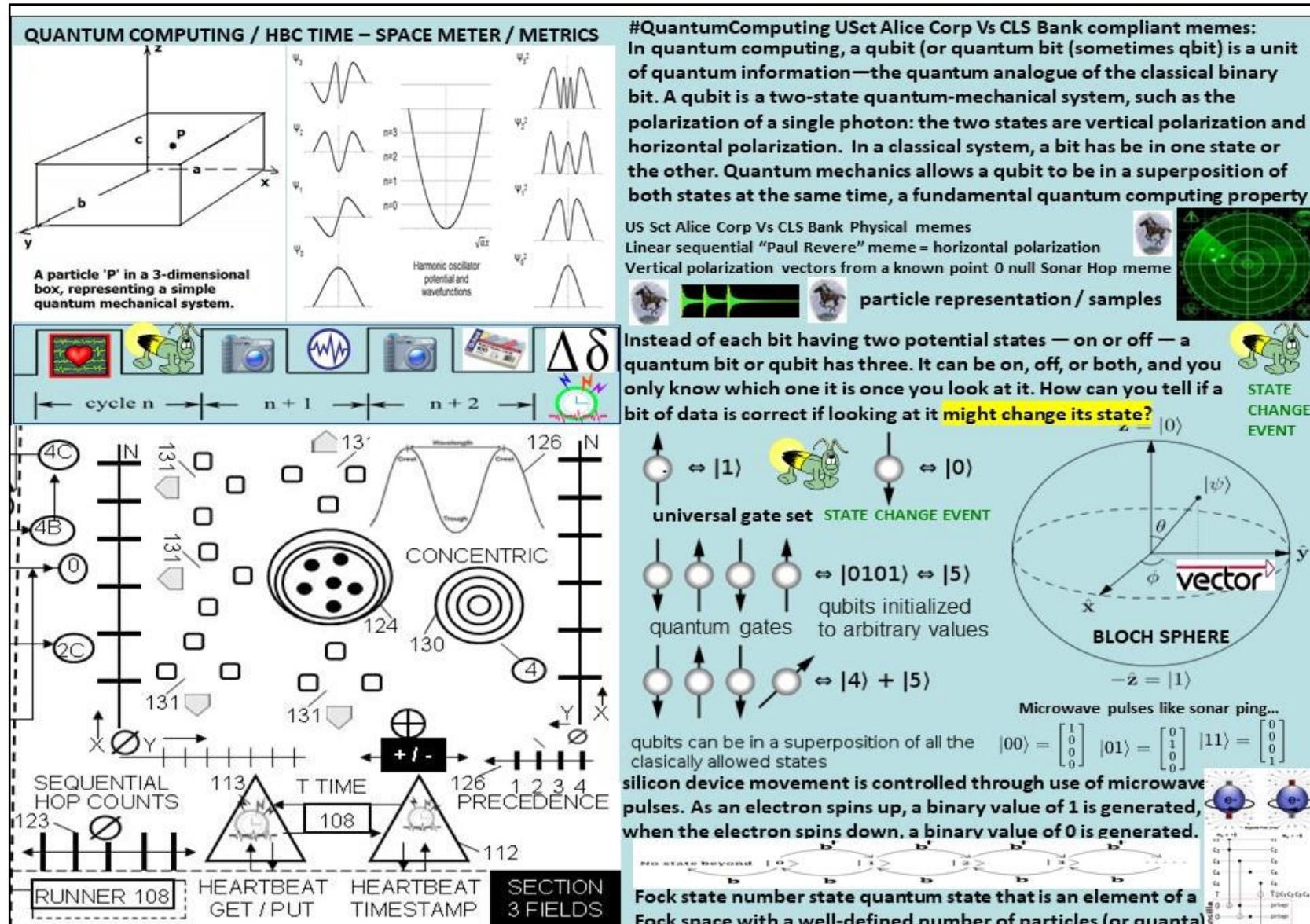


Figure 91: USPTO 13/573,002 Graphic supporting Quantum Computing Space – Time



Figure 82: QUANTUM COMPUTING / USPTO 13/573,002

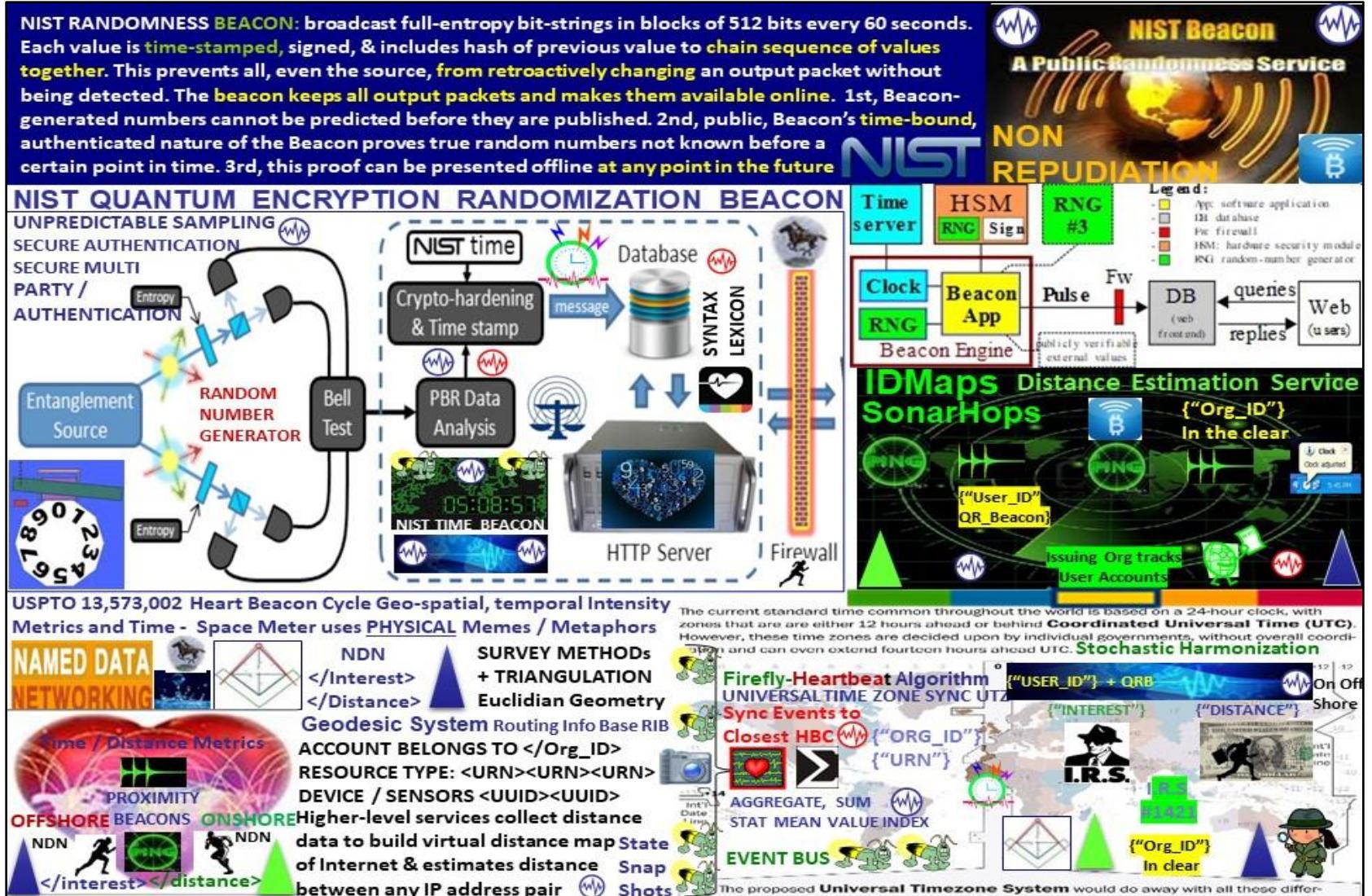


Figure 93: NIST QRNB Quantum Random Number Beacon / USPTO 13/573,002

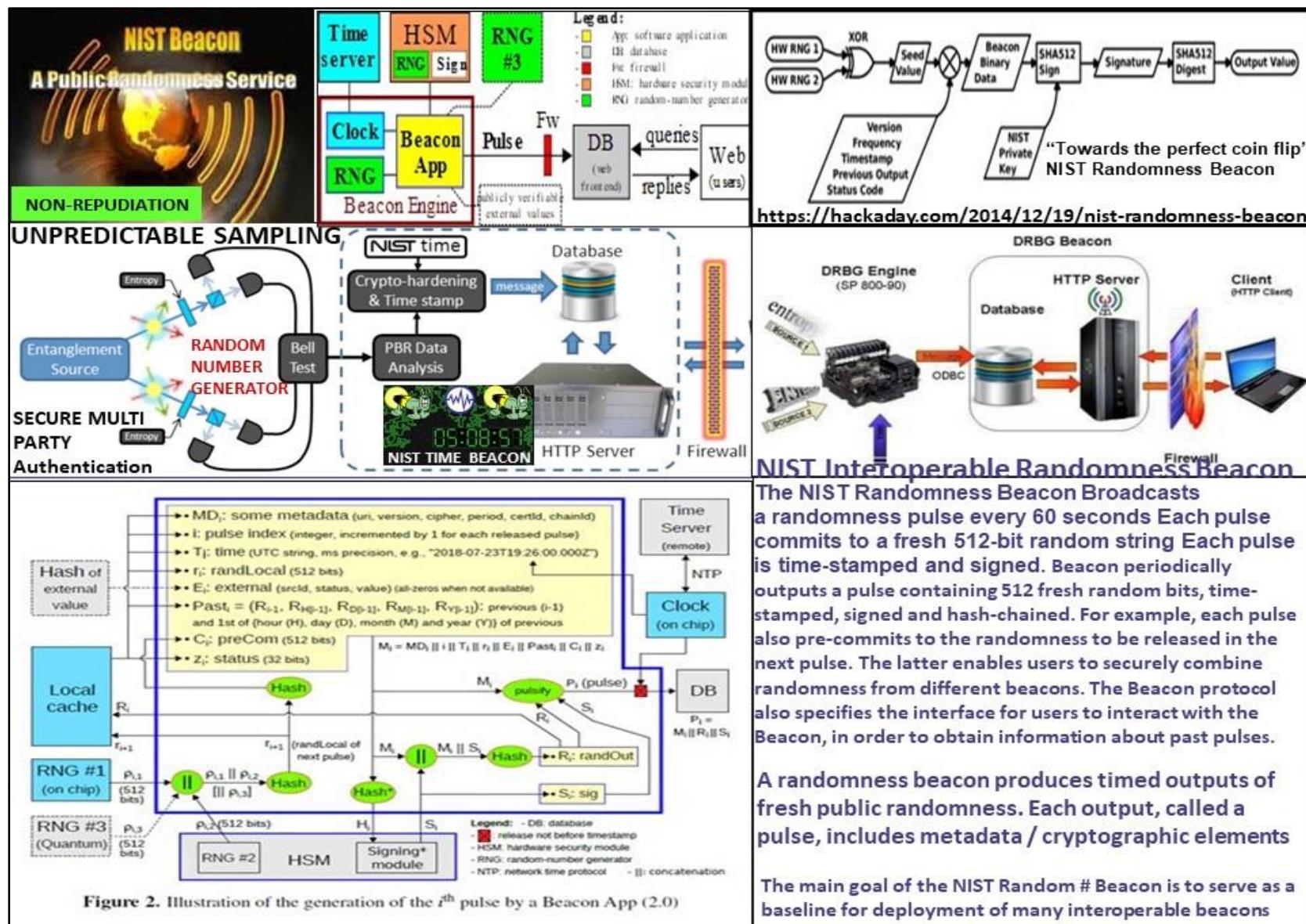
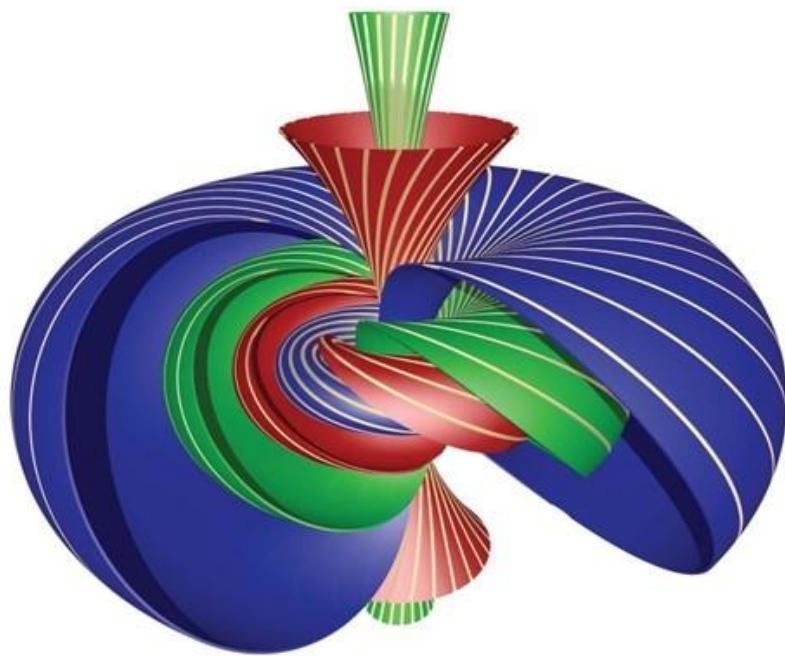


Figure 94: NIST QRNB Quantum Random Number Beacon Text Description

The Hopf Fibration

Edmund Harriss



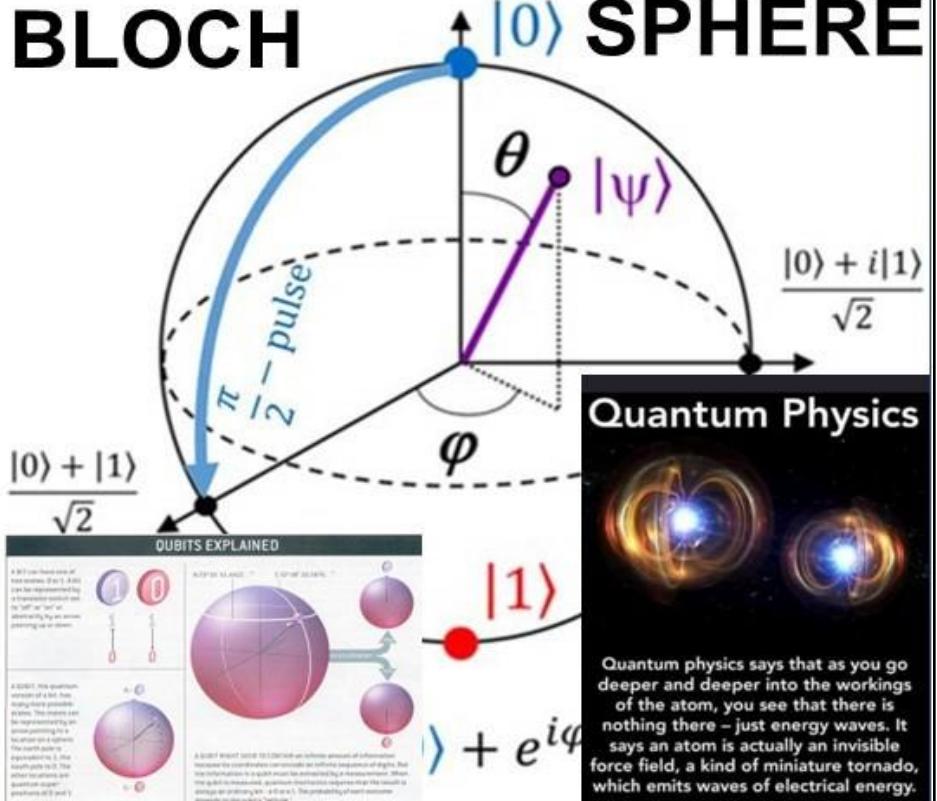
Hopf Fibration / #Bloch sphere

"the most important object in the universe"

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

Paul Revere linear - sequential hop count meme

BLOCH SPHERE



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

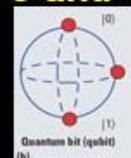
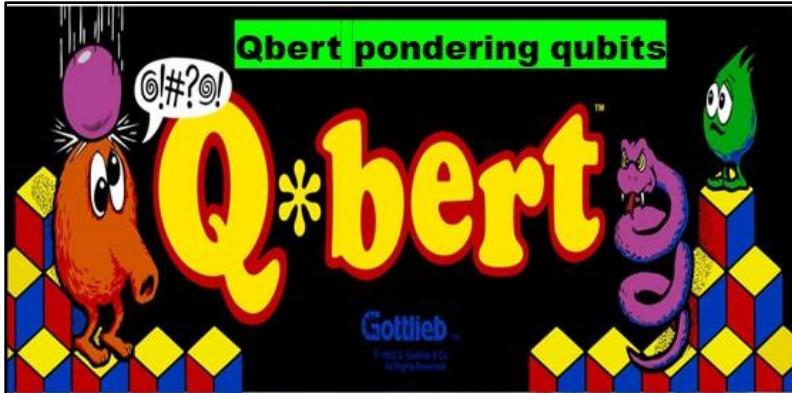


Figure 95: Hopf Fibration / Bloch sphere



Qbert pondering qubits

Qubit vs bit: Qubits are represented by a superposition of multiple possible states. A qubit uses the quantum mechanical phenomena of superposition to achieve a linear combination of two states. A classical binary bit can only represent a single binary value, such as 0 or 1, meaning that it can only be in one of two possible states. A qubit, however, can represent a 0, a 1, or any proportion of 0 and 1 in superposition of both states, with a certain probability of being a 0 and a certain probability of being a 1.

Q: ARE WE ABSOLUTELY CERTAIN QUBITS EXIST ?

Q: IF CUBITS DO NOT EXIST, THEN ARE THEY SIMPLY A WAY TO ACHIEVE GROUP THINK FASTER ???

Q: 1/3 of an event (transaction) ... really ???

A bit is a unit for measuring information

Classical bits	Quantum bits (Qubits)
Bit 1 Empty = "0" Bit 2 Filled = "1"	Qubit 1 1/3 of "0" and 2/3 of "1"
20 red beads = "0"	20 blue beads = "1"
Head = "0"	Tail = "1"
	 50% chance of landing on "0" 50% chance of landing on "1"

FIGURE 96: QUBIT = non-existant notional construct = group think contrived expected outcome



Figure 97: The Great Reset of 2021 / The Greater Reset of 2021 – 2030 – 2050 ?





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



Figure 99: Standing on the shoulders of giants



Figure 100: SCOTUS Alice Effect / USPTO 13/573,002 as Foundation Tech for DeFi / Fintech



Figure 101: #Unrig the System Project Robert David Steele / Dr. Cynthia McKinney/ USPTO 13/573,002



Figure 102: Bio Coin



FIGURE 103: SPACESHIP EARTH OPERATING MANUAL SIGNALS ANNEX K



Figure 104: Programmable money through the lens of metaphysics / USPTO 13/573,002



Figure 105: Business Card