

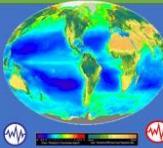


Figure 1: Eco Economic Epochs: Eco sustainable incentives for the programmable Economy



Fig 2: Eco sustainable Economic Epochs coded into a systems of systems framework

ECO Economic Epochs: Eco incentives integral to System of System SoS Frameworks

Eco Economic incentives: 

DARPA / NATO System of Systems Engineering framework

- Syntax lexicon library with 300 + use cases, thousands of message sets
- Syntax alpha-numeric brevity OPSCODES are mapped to symbol sets (A.I.)
- NATO bases are cities that transact everything described by Host Nation Agreements easily converted to Service Level Agreement smart contracts

EPOCHS: all things internet, net of money are formed using:

- (1) Epoch time cycles
- (2) Syntax (not) used / during epoch time cycles as instructions (if, then, else)

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



Fig 3: Eco sustainable incentives coded into a system of systems economic framework

TITLE: Eco Economic Epochs: Eco sustainable incentives for the programmable Economy
- It's about TIME

USPTO 13/573,002 : Adaptive Procedural Template (checklist):

USE CASE: Eco #Economic Epochs Time-Space Meter #ecology Eco incentives, consensus, interoperability, sync, stochastic UTZ Universal Time Zone harmonization for programmable money and the programmable economy.

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

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

INTERNET BUILDING BLOCKS: Time epochs / syntax are the two main internet, internet of money building blocks in coding the Artificial Intelligence A.I. powered economic system of systems / Earth Intelligence Network EIN / Web 3.0 and the programmable economy in terms of temporal consistency, interoperability, and consensus.

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. We have a

clear and present opportunity and responsibility to improve temporal, geo-spatial, syntactic - semantic consistency, interoperability among myriad programmable money memes among a federated, distributed system of systems

PROJECT BEACON: Code Eco sustainable incentives into the world's programmable economic system of systems engineering framework reusing / leveraging NATO systems of systems engineering best practice. Reuse OPSCODE brevity codes mapped to message symbol sets essential to Artificial Intelligence / human interaction (i.e., man — machine interface). The Heart Beacon Cycle Time - Space Meter USPTO 13/573,002 is an Adaptive Procedural Template: Use Case: Eco Economic Epoch Heartbeats for the programmable economy.

USE CASE: Code Eco sustainable incentives into programmable economic framework reusing / leveraging NATO systems of systems engineering best practice. Form federations of Distributed, Autonomous Organizations DAO communities, states, sovereign nations using an adaptive procedural template checklist promoting synchronization among geo-spatially and temporally dispersed groups using a common syntax – symbol set lexicon. Federated groups activities are synchronized geo-spatially across time - space to achieve synergy, synchronicity of events orchestrated from micro to macro cycles from grassroots to capitals.

1. Reuse OPSCODE brevity codes mapped to message symbol sets enabling Artificial Intelligence / human interaction (i.e., man — machine interface).
2. Apply lessons learned (bandwidth discipline, interoperability, OPTEMPO sync cycles... intrinsic to NATO SOP swords to plowshares following German military proposal use cases circa 2003.

SYSTEM OF SYSTEMS ENGINEERING: NATO has invested 30 years of mapping OPSCODE brevity codes to symbology / symbols / symbol sets contained in 300 plus message set / use cases as part of Battlefield digitization, Net Centric Warfare NET Enabled Operations NEO NETOPS. Blockchain, crypto currency developers are recreating, reinventing this decades old, tedious, time intensive, labor intensive, expensive structured data exchange... wheel. It may be stated that this project is a swords to plowshares initiative

PATENT APPLICATION USPTO 13/573,002 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 diverse peoples speaking many different languages through the universal language of symbols into Distributed Autonomous groups organized in time - space to achieve common goals among individuals organized into federated groups in DAO (s) Distributed Autonomous

Organizations - a RAND Corporation term (DoD funded Think Tank) circa 2001. Each item in the procedural template checklist links to detailed treatise (s)

The Heart Beacon Cycle Time - Space meter is a signaling, telemetry distributed systems engineering framework improving temporal, geo-spatial, semantic - syntactic sync & consensus among DAAE Distributed Autonomous Automated Economy system of systems reusing Battlefield Digitization, Net Enabled Operations engineering swords to plowshares . Eco sustainable incentives integral to an Economic system of systems SoS engineering framework used by NATO for decades. Digital Nations need an (Eco sustainable) Economic Heartbeat & a consistent syntax lexicon library. Crypto 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

SWORDS TO PLOWSHARES: The Heart Beacon Cycle Time - Space meter is a swords to plowshares DAO Distributed Autonomous Organization project using NATO's Situational Awareness system of systems engineering framework, processes, procedures and internet building blocks to establish an Ecologically sustainable Economic Heartbeat, neural network emulation for the EIN Earth Intelligence Network and heartbeat sync pulse for a Universal Time Zone UTZ supporting a one world currency. It's syntax lexicon library of OPSCODE brevity codes used in programmable money, the programmable economy is descriptive of all things internet, internet of money down to the quantum computing, quantum blockchain level. We can synchronize ourselves, our cities, towns, cyber-communities in time — space for a common purpose: shared, common, ecologically sound, responsible econometrics.

COA Course of Action: reuse of over 300 NATO cases supported by hundreds of message sets described in spread sheet row - column format populated by thousands of brevity OPS CODES mapped to symbols essential to artificial intelligence man - machine interface. NATO bases are small cities that transact most goods, commodities with its host nation. Why reinvent the syntax lexicon Rosetta Stone wheel? This is a system of systems tool to accelerate an EIN Earth Intelligence Net – see Project #UNRIG for more information

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/>

ECO INCENTIVES: Ecologically sustainable economic transactions need to be incentivized among the world's Ecological and Economic system of systems. 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 e.g., NATO's lexicon library

SPACE THE FINAL FRONTIER: 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 DARPA - NATO's structured data exchange that maps data element OPSCODES to symbol sets. Trade with E.T. / EBO's requires a consistent supply chain lexicon

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

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.

WEB 3.0 MEMES / METAPHORES: There are no levels, layers, packets, frames, bits, ether gas, hashgraphs, bytes motes, block chain blocks, pings, packets... There are only 1) epoch time intervals, 2) syntax used as if, then, else instructions. Time epoch time cycles used / not used to parse, process syntax as instructions are the only building blocks available to scale the blockchain. Blockchain scaling usually involves a discussion of "layers" when the reality is that parsing, processing syntax (OPSCODE brevity codes, shards, hashes) is passed from the genesis Epoch Time Cycle 1 to a temporal follow on epoch time cycle often involving geo-spatial, temporal separation. See Alice ruling.

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

1. Quantum Random Number Generator: 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 described 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.
2. The NIST Randomness Beacon Broadcasts a randomness pulse every 60 seconds. Each pulse commits to a fresh 512-bit random string. Each pulse is time-stamped and signed. Beacon periodically outputs a pulse containing 512 fresh random bits, time-stamped, signed and hash-chained. For example, each pulse also pre-commits to the randomness to be released in the next pulse. The latter enables users to securely combine randomness from different beacons. The Beacon protocol also specifies the interface for users to interact with the Beacon, in order to obtain information about past pulses. A randomness beacon produces timed outputs of fresh public randomness. Each output, called a pulse, includes metadata / cryptographic elements. The main goal of the NIST Random # Beacon is to serve as a baseline for deployment of many interoperable beacons
NIST: <https://csrc.nist.gov/CSRC/media/Presentations/The-NIST-Randomness-Beacon-2-0/images-media/SciDay18-poster-beacon-v20181022.pdf>

3. IEEE article makes the case for cryptocurrencies to be based on quantum computing (Quantum Random Number Generator) rather than being “quantum computing resistant” or designed in the blind of quantum computing: “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](https://spectrum.ieee.org/tech-talk/computing/hardware/quantum-computer-error-correction-is-getting-practical)
4. The Department of Commerce funding NIST QRNB Quantum Random Number Beacon in Boulder Colorado’s stated purpose is to provide a non-repudiation service of events (transactions) at any place, time in the future. This is an absolute must have for any digital currency in my opinion. The late Bernard Lietaer of Belgium’s TRC Trade Reference Currency featuring tangible commodities (like Thomas Edison’s crop commodity based monetary option of 1921) should be the models that benefit from quantum computing and the QRNB. [LINK: https://www.nist.gov/news-events/news/2018/04/nists-new-quantum-method-generates-really-random-numbers](https://www.nist.gov/news-events/news/2018/04/nists-new-quantum-method-generates-really-random-numbers)



FUNDAMENTAL TRUTH: All things internet, net of money blockchains are formed by unicast, multicast, anycast. Programmable money's improvements are in cryptography.

INTERNET TREATISES: 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

1. IEEE 802.11AG is used for 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
2. 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

UNIVERSAL TIME - SPACE SYNCHRONIZATION: The Heart Beacon Cycle Time - Space Meter is intended to bridge humanity from our present condition to a higher consciousness described by Extra Terrestrial Groups and organizations like the Law of Time dot org with the Noosphere concept

"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: When life on Earth (the biosphere) evolves into an awakened planetary mind (noosphere)".

"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>



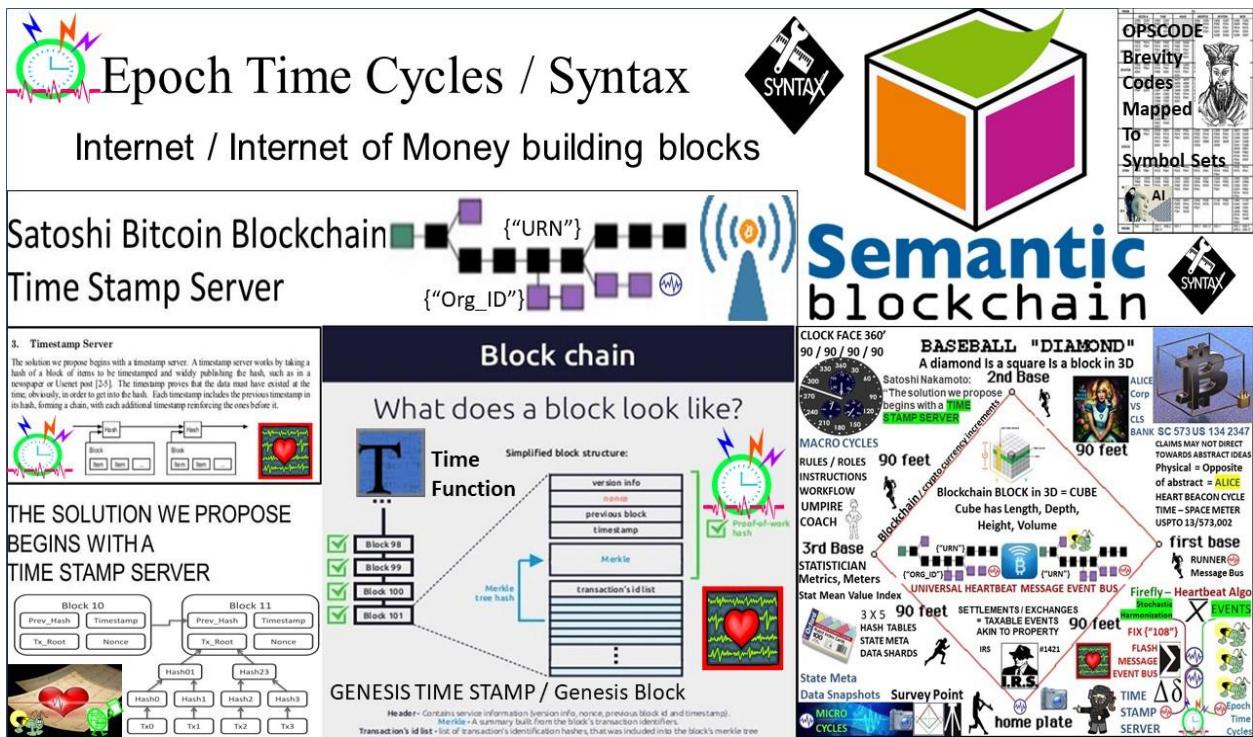


Figure 4: Epoch Time Cycles / Syntax two main building blocks for web, web of \$\$\$

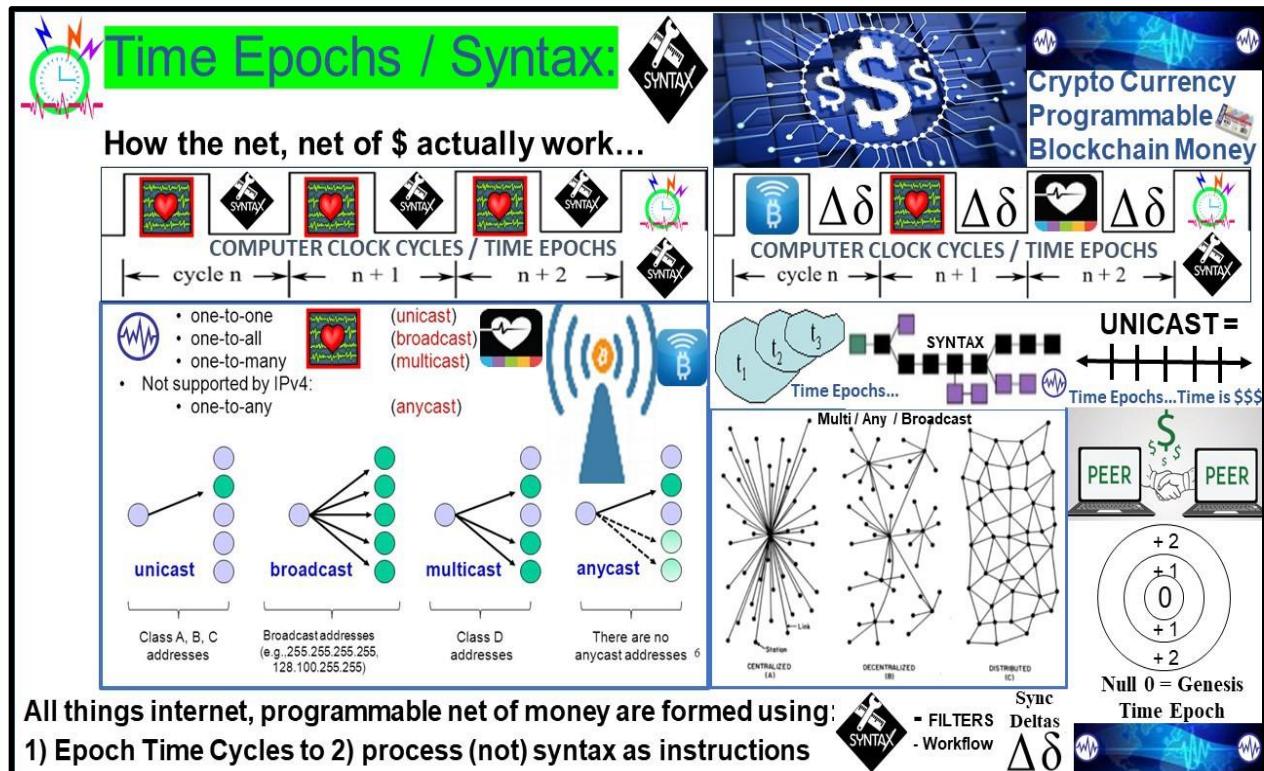


Figure 5: Time Epochs / Syntax: how the internet actually works: Unicast / Multicast IP

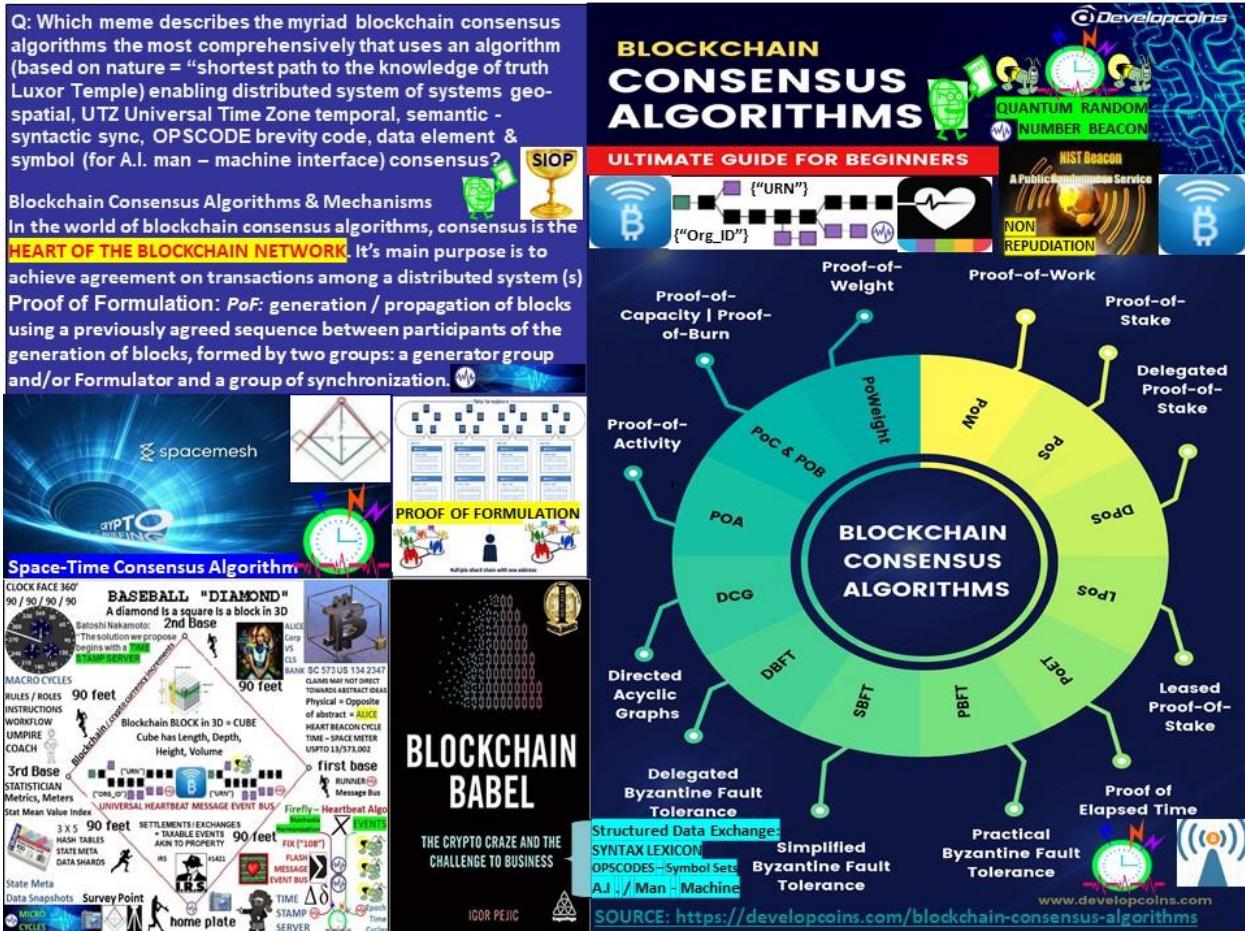


Figure 6: Heart of the cryptocurrency / blockchain world: consensus algorithms

Given myriad cryptocurrency / blockchain memes, metaphors i.e., "hashgraph" "Ether gas" "Polka "dots" blockchain theme variation projects are creating new data elements and syntax lexicons.

DoD-NATO's structured data exchange (mapped to symbol sets for A.I / man - machine interface) took decades to achieve #consensus across its system of systems engineering family of interoperable systems FIOS.

SIMPLE solution: The Standard Interface for Multiple Platform Link Evaluation (SIMPLE) is a **military communications protocol** defined in **NATO's Standardization Agreement STANAG**. The SIMPLE standard specifies the distributed transfer of a simulated scenario/synthetic environment using the **IEEE Distributed Interactive Simulation (DIS)** protocols. DIS is a government/industry initiative to define an infrastructure for linking simulations of various types at multiple locations to create realistic, complex, **virtual** worlds for the simulation of highly **interactive** activities. The SIMPLE is not limited to use for simulation and integration, and is finding applications beyond its original purpose: [LINK](#)
[http://en.wikipedia.org/wiki/SIMPLE_\(military_communications_protocol\)](http://en.wikipedia.org/wiki/SIMPLE_(military_communications_protocol))

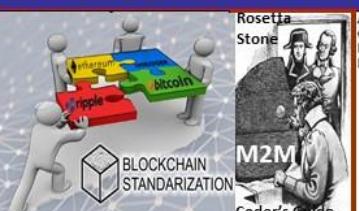
ALPHA-NUMERIC BREVITY CODES										CODE GUIDE		Information Elements Roles																
FROM	GCCS-A		C002 C203			C002 C203			C002			ATDS		MCS		• COI Determination Org Interaction												
ASAS	C002	C203	F002	F014	F015	F541	S201	S309	C203	F014	F541	S305	S309	C002	C203	E400	F002	F015	F541	S201	S309	S507	• Search and Discovery					
	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											INFOCON		S 4 3 2 1		• Ontologies STANDARDS												
	A423	C203	C505	F002	F014	F015	F541	S201	A423	C400	C505	F002	F014	F541	S201	C203	C400	D630	E500	F002	F014	• Taxonomies REFERENCE						
	MCS		SIOP					Rosetta Stone	A423	C400	C505	F002	F014	F541	S201	"SYMBOLS RULE THE WORLD"		• Metadata Attributes / Filters					{“Org_ID”}{“URN”}					
						M2M		HEARTBEAT		FFUDN: Field Format Unit Designator #					FFIRN Field Format Index Reference #					FILTERS								
MESSAGE CATALOG 300 + Use Cases										Data Elements: entity, attribute, relationship equivalents		MESSAGE = K00.99		BY Form Field Position & NUMBER		STRUCTURED DATA		EXCHANGE	Message Sets	“SYMBOLS RULE THE WORLD”		HEARTBEAT		MESSAGE = K00.99				
Object Categories										Information Categories and Examples		STRUCTURED DATA		EXCHANGE	Message Sets	CDL Contract Description Language		YAML		SYMBOL		OPERATIONAL NODES / ACTIVITIES						
OOB	SYNTAX LEXICON		lat/long	spd/hdg	country / alliance, type/class	readiness	targeting, reacquiring	COA {"Java JS"}	Machine Trust Language MTI		ER Model	Class Diagram	Relational Database	Object DBMS	XML DTD / Schema	TADILs	MTF	11.4 - Classification	11.8 - Kinematics	SYMBOL	Friend	Neutral	Hostile					
Infrastructure	Comm, power, transportation, water/sewer		network, grid	throughput, flow rates,	name, part-of relationships	BDA, op levels	repair, broadcasts	YAML	ER Model	Entity	Class	Table	Class	Element	Message	Message	11.4.1 - Category	11.8.1 - Pos / Vel / Acc (PVA)	2525C	Partner		Competitor						
Sociological	Culture, religion, economic, ethnic, government, history, languages		temples, historic structures	Attribute	Attribute	Field / Column	Attribute	FFRN / FFN / FFUDN	ER Model	Attribute	Class	Table	Class	Child Element or Element Attribute	Message	Message	11.4.1.1 - Confidence Level	11.8.1.1 - Acceleration	11.4.1.2 - Alternative	11.4.1.2.1 - Alternative	11.4.1.2.2 - Evaluated D PURCHASE CODES	11.8.1.1.1 - Angular	11.1.2 - Linear	1 - Estimated	1.2.1 - Observed	1.2.2 - Predicted	1.2.3 - Generated Data	
Geophysical	Terrain, weather, climatology, oceanography, astrometry		feature lat/long, alt/dpth	Domain Value	PURCHASE CODES	Instance, Value	FEDERATE	FUD	ER Model	Domain Value	PURCHASE CODES	Instance, Value	FEDERATE	DUI	FUD	FUD	11.4.1.3 - Specific Type	11.8.1.3 - Surface	11.4.1.3.5 - Surface	11.4.2 - Platform / Point / Feature Type	11.4.3 - Specific Type	11.8.1.4 - Vertical	1.4.1 - Horizontal	1.4.2 - Vertical	VA Confidence	1 - Bearing Angle	2 - Bearing Angle Rate	3 - Covariance Matrix
																	11.4.4 - Type Modifier	11.4.5 - Unit										

Fig 7: Syntax Lexicon library 300 + message sets / data elements mapped to symbols

NATO has invested 30 years of mapping OPS CODE brevity codes to symbology / symbols / symbol sets contained in 300 plus message set / use cases as part of Battlefield digitization, Net Centric Warfare NET Enabled Operations NEO NETOPS. Blockchain, crypto currency developers are recreating, reinventing this decades old, tedious, time intensive, labor intensive, expensive structured data exchange... wheel.

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Fig 8: Syntax Lexicon library 300 + message sets / data elements mapped to symbols

The Heart Beacon Cycle Time - Space meter is a swords to plowshares DAO Distributed Autonomous Organization project using NATO's Situational Awareness system of systems engineering framework, processes, procedures and internet building blocks to establish an Ecologically sustainable Economic Heartbeat, neural network emulation for the EIN Earth Intelligence Network and heartbeat sync pulse for a Universal Time Zone UTZ supporting a one world currency. It's syntax lexicon library of OPSCODE brevity codes used in programmable money, the programmable economy is descriptive of all things internet, internet of money down to the quantum computing, quantum blockchain level. Reuse 300+ NATO cases supported by hundreds of message sets further described in spread sheet row - column format populated by thousands of 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 it's host nation. Why reinvent the syntax lexicon Rosetta Stone wheel



Figure 9: Proof of Stake / Eco Economic Epoch Heartbeat Cycles Time – Space Meter

Proof of stake is a type of consensus algorithm by which a cryptocurrency blockchain network aims to achieve distributed consensus. In PoS-based cryptocurrencies the creator of the next block is chosen via various combinations of random selection and wealth or age.

Proof of Stake (PoS) concept states that a person can mine or validate block transactions according to how many coins he or she holds. This means that the more [Bitcoin](#) or [altcoin](#) owned by a miner, the more mining power he or she has.

Bitcoin miners mine or validate block transactions based on the amount of coins a miner holds. When a transaction is initiated, the transaction data is fit into a block with a maximum capacity of 1 megabyte, and then duplicated across multiple computers or nodes on the network. The nodes are the administrative body of the [blockchain](#) and verify the legitimacy of the transactions in each block.

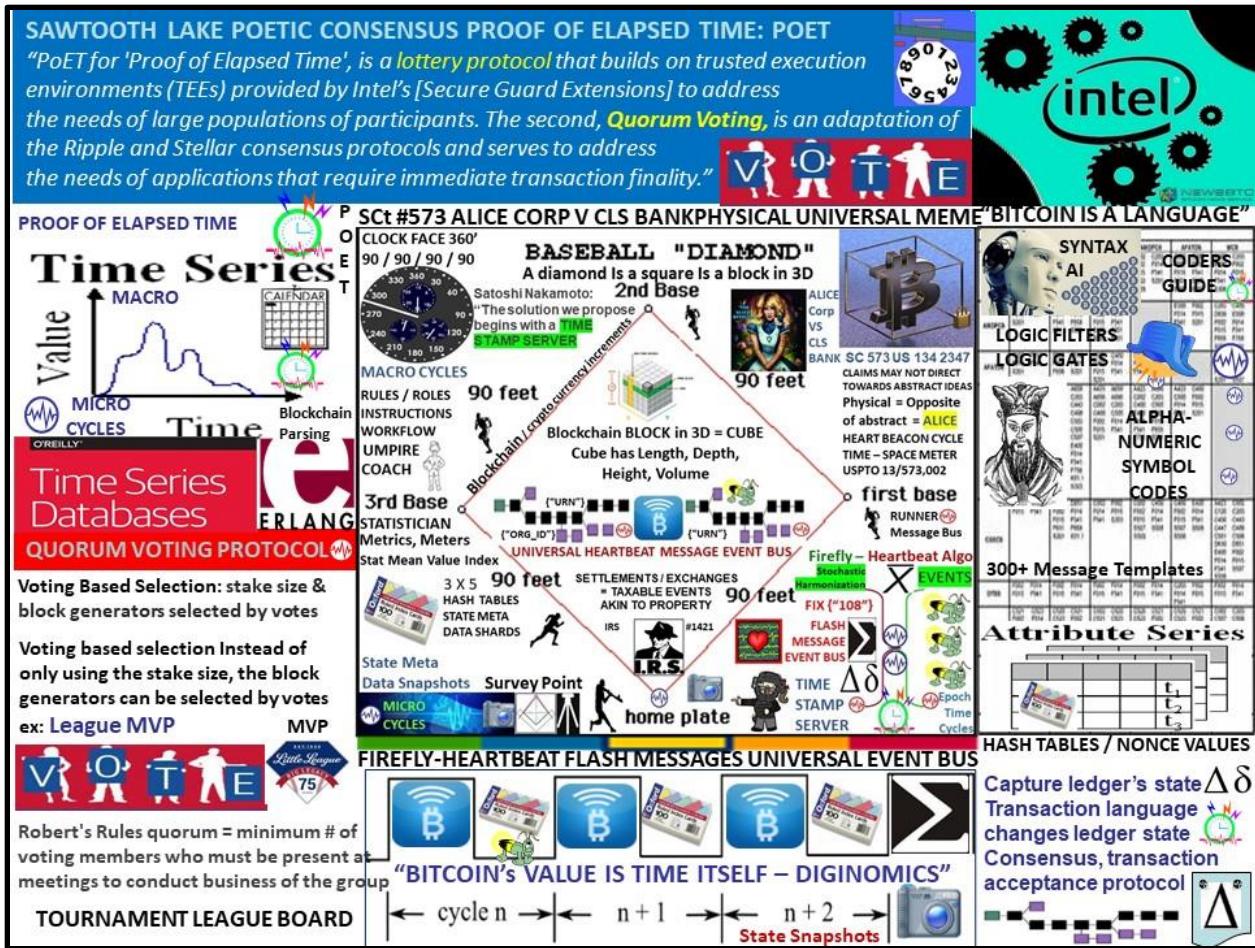


Figure 10: Proof of Elapsed Time POET / Epoch Heartbeat Cycles Time – Space Meter

Proof of elapsed time (POET) is a [blockchain](#) network consensus mechanism algorithm that prevents high resource utilization and high energy consumption and keeps the process more efficient by following a fair lottery system. Based on the principle of a fair lottery system where every single node is equally likely to be a winner, the POET mechanism is based on spreading the chances of winning fairly across the largest possible number of network participants.

POET algorithm working mechanism: Each node in the network is required to wait for a randomly chosen time period. The first one to complete the designated waiting time wins the new block. Each node in the blockchain network generates a random wait time and goes to sleep for that specified duration. The one to wake up first – that is, the one with the shortest wait time – wakes up and commits a new block to the blockchain, broadcasting the necessary information to the whole peer network. The process repeats for next block discovery.

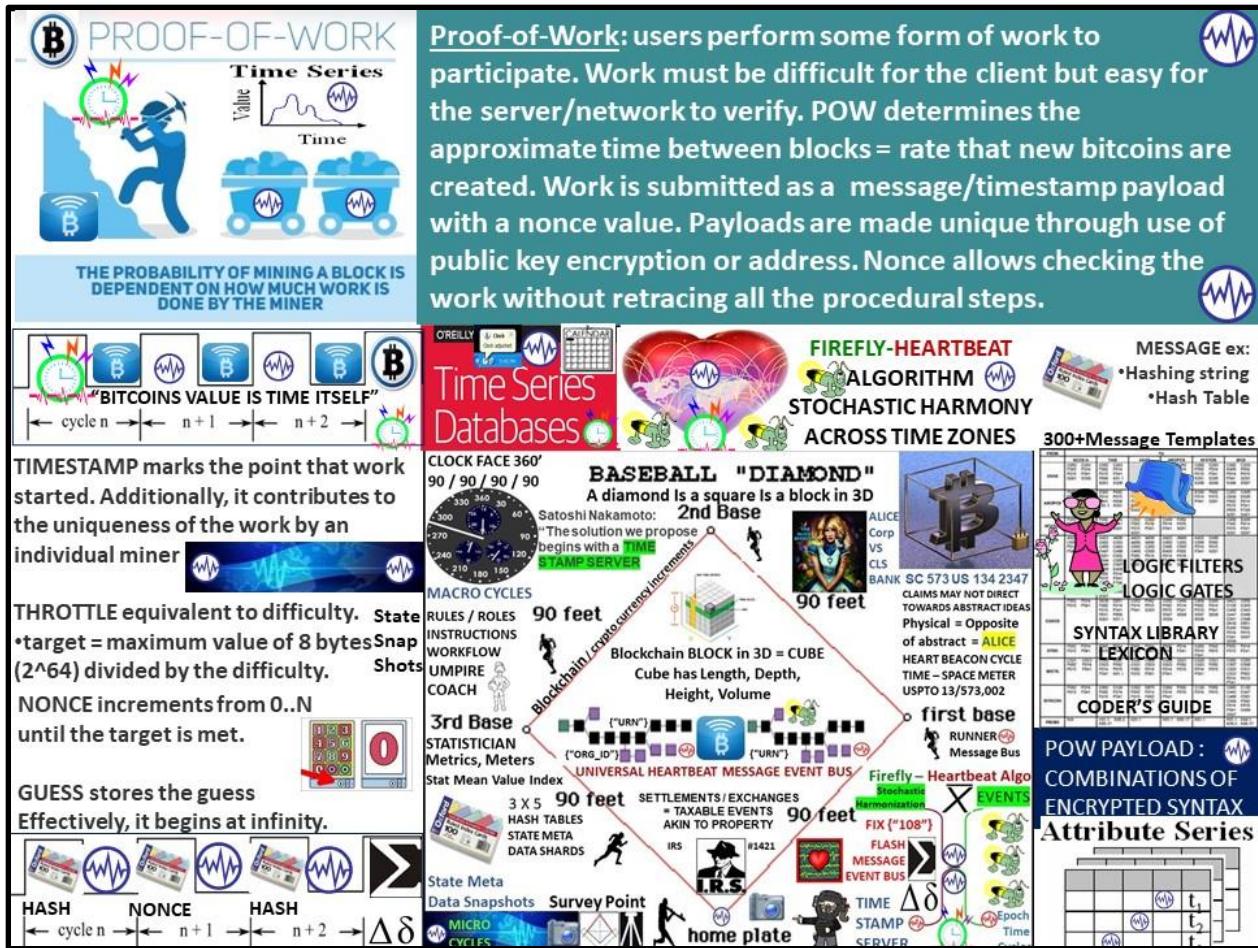


Figure 11: Proof of Work / Eco Economic Epoch Heart Beacon Cycle

A **proof-of-work** (PoW) system (or protocol, or function) is a consensus mechanism. It deters denial-of-service attacks and other service abuses such as spam on a network by requiring some **work** from the service requester, usually meaning processing time by a computer. The way that users detect tampering in practice is through **hashes**, long strings of numbers that serve as proof of work. Put a given set of data through a hash function (bitcoin uses SHA-256), and it will only ever generate one hash. Due to the "avalanche effect," however, even a tiny change to any portion of the original data will result in a totally unrecognizable hash. Whatever the size of the original data set, the hash generated by a given function will be the same length. The hash is a one-way function: it cannot be used to obtain the original data, only to check that the data that generated the hash matches the original data.

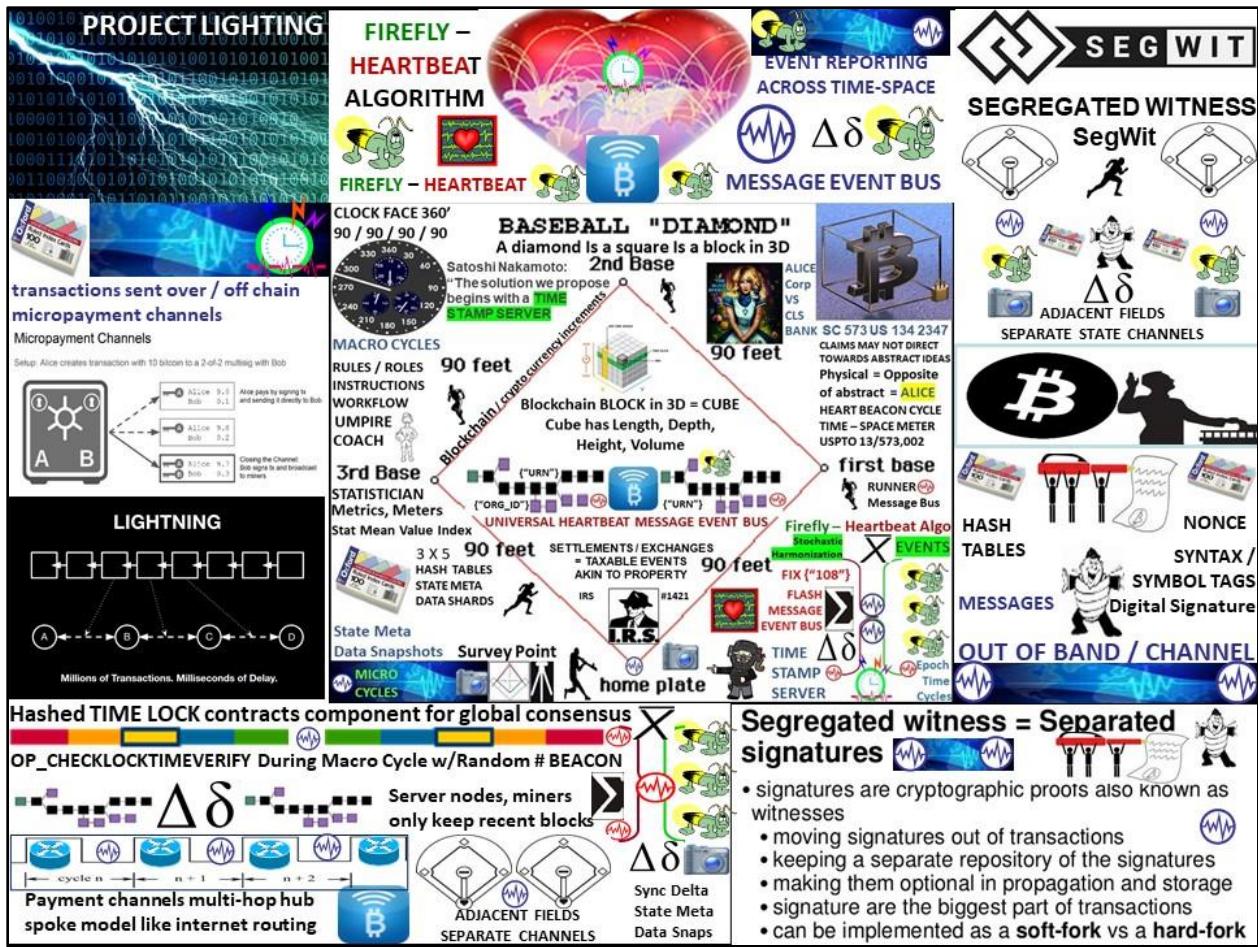


Figure 12: Project Lightning / Segregated witness / Heart Beacon Cycle

Lightning is a decentralized **network** using smart contract functionality in the **blockchain** to enable instant payments across a **network** of participants. The **Lightning Network** is dependent upon the underlying technology of the **blockchain**. Lightning Bitcoin/**blockchain** transactions uses a native smart-contract scripting language Lightning is a "Layer 2" payment protocol that operates on top of a **blockchain**-based cryptocurrency

SegWit is the process by which the block size limit on a **blockchain** is increased by removing signature data from **Bitcoin transactions**. When certain parts of a transaction are removed, this frees up space or capacity to add more transactions to the chain.

Segregate means to separate, and Witnesses are the transaction signatures. Hence, Segregated Witness, in short, means to separate transaction signatures.

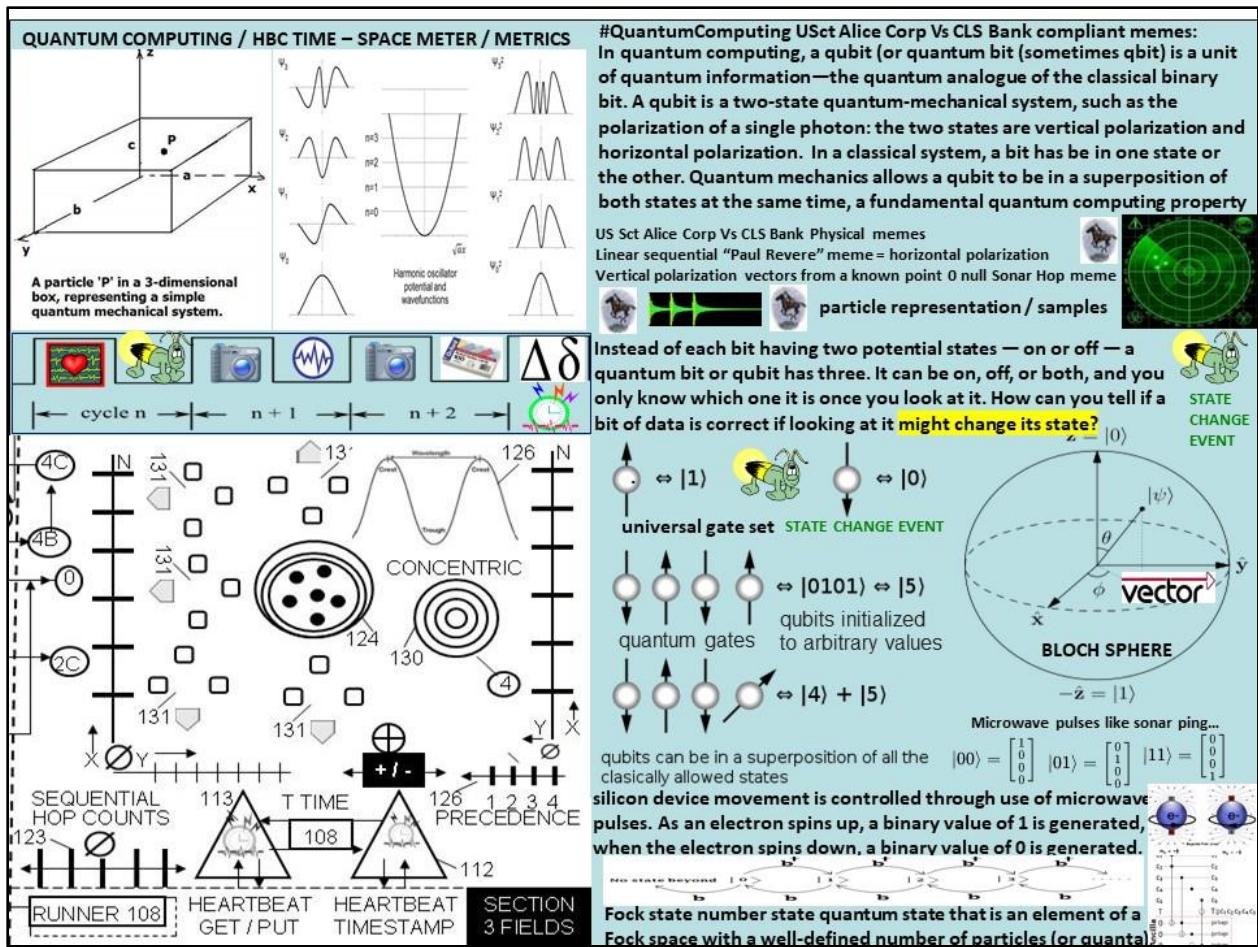


Figure 13: Quantum Computing / Heart Beacon Cycle Time – Space Meter

Quantum computing is the use of quantum-mechanical phenomena such as superposition and entanglement to perform computation. Computers that perform quantum computations are known as quantum computers. Quantum computers are believed to be able to solve certain computational problems, such as integer factorization, substantially faster than classical computers.

In a **quantum** Turing machine, the difference between it and the original tape Turing machine 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.



Fig 14: NIST Quantum Randomness Beacon / Heart Beacon Cycle Time – Space Meter

NIST's quantum-based random number generator, on the other hand, creates **random numbers** by shining an intense laser into a crystal that converts laser light into pairs of photons that are entangled, a **quantum** phenomenon that links their properties. These photons are then measured to produce a string of truly **random numbers**. Source: [PDF The NIST Randomness Beacon 2](#)

This prototype implementation 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. NIST Randomness Beacon [LINK](#)

Many in the programmable money space think quantum computing will obsolete the crypto currency #blockchain. In my opinion, the opposite is true - the programmable economy will be anchored by quantum computing - specifically NIST's Quantum Random Number Beacon / Github: <http://github.com/Beacon-Heart>

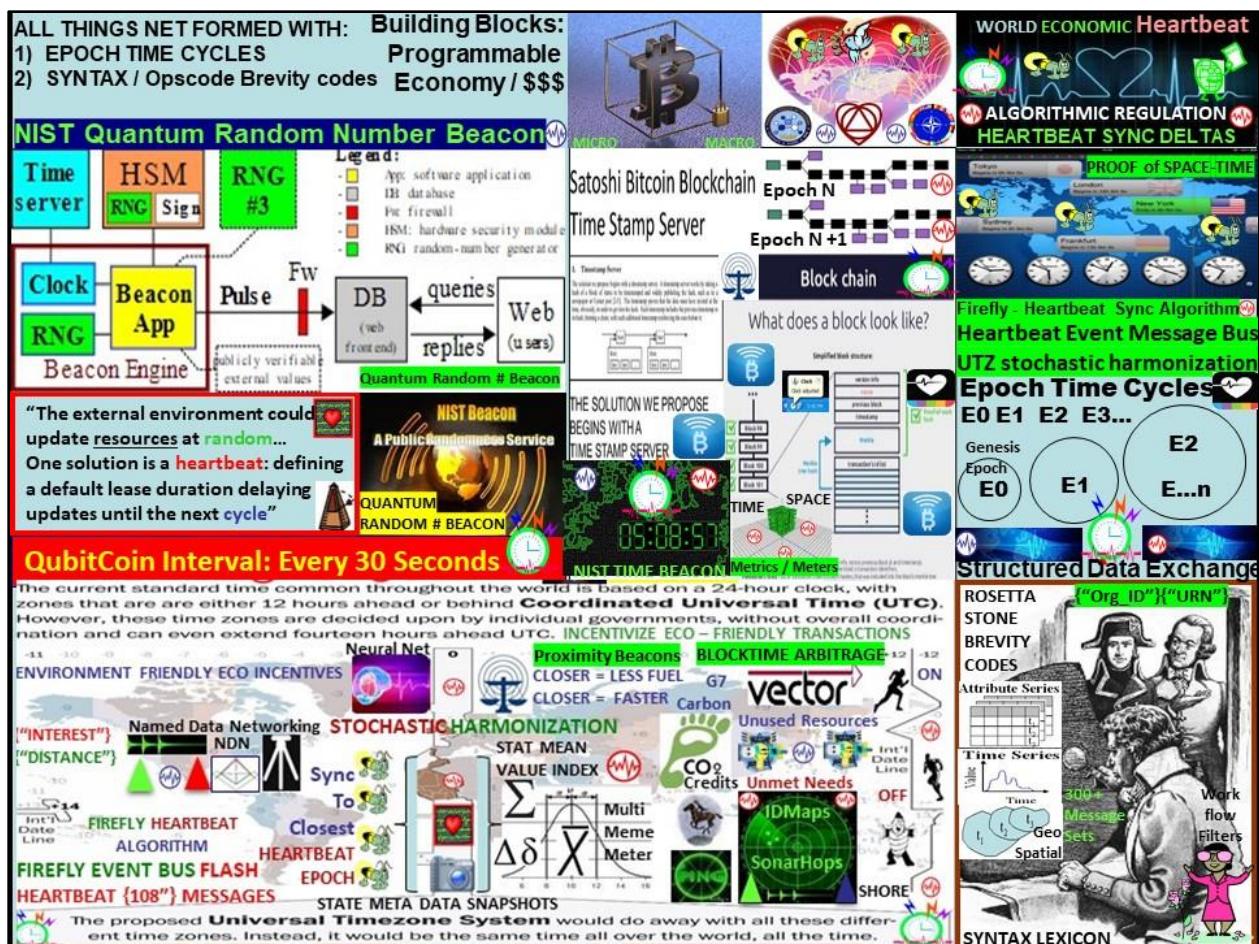


Fig 15: NIST Quantum Random Number Beacon / Time Beacon / USPTO 13/573,002

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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 Figure 11

IEEE 802.11AG is used for 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 supporting Paul Revere, rain drop in pond metaphor metrics of increases / decreases in thresholds and by intensity, duration and hop count sums



Figure 16: Synchronization across Time - Space

We can synchronize ourselves, our cities, towns, cyber-communities in time — space for a common purpose: shared, common, ecologically sound, equitable... econometrics.



FIGURE 17: One World Currency FEDCOIN / WORLDCOIN

A one world currency for the one world government will require financial events stochastic-ally synchronized, harmonized across the world's time zones and will need to represent a value index of the world's GDP Gross Domestic Product

Course of Action: Use Thomas Edison's commodity backed index recommendation 1921, Milton Friedman's K % rule, Economist Bernard Lietaer's TERRA TRC Trade Reference Currency concepts in concert with the firefly-heartbeat algorithm developed by the University of Bologna, University of Hungary = ECONOMIC HEARTBEAT FEDCOIN / WORLDCOIN



REFERENCES / LINKS

GITHUB Documents: [LINK](https://github.com/Beacon-Heart) <https://github.com/Beacon-Heart>

MEDIUM ARTICLE: "The blockchain needs a killer use case" (climate change / population increase)

LINK: <https://medium.com/coinmonks/blockchain-needs-a-killer-use-case-2f4def841883>

MEDIUM ARTICLE: Digital Nations need an Ecologically sustainable Economic Heartbeat

MEDIUM ARTICLE: Deep Thought pondering the crypto blockchain through Alice's Looking Glass: [LINK](https://medium.com/@heart.beacon.cycle/deep-thought-pondering-the-bitcoin-blockchain-through-alice-s-looking-glass-43e4e3)

MEDIUM ARTICLE: "Delusional Bitcoin Vs Fool's Gold":

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