Emerald Assurance Network

Blockchain-supported Captive Insurance and Risk Assessment Intelligence

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Abstract

Emerald Assurance Network will disrupt insurance as we know it.

Emerald Assurance Network (ECAN) is a new type of captive insurance service that is mediated on a decentralized blockchain platform. It uses smart risk mitigation and assessment, leveraging technology to evaluate risk while providing real time processing of claims globally. Using automated premium payment and captive capital contributions and utilizing its own crypto-currency and smart contracts, Emerald Assurance Network has the potential to revolutionize the insurance industry.

As a new global captive insurance provider, Emerald Assurance Network will commoditize the B2B and B2C business in the following verticals: Supply chain/Logistics/Transportation, Manufacturing, Energy, Healthcare, Cannabis, Communications, Agriculture and Education. The network will provide immediate risk assessment leveraging the latest technologies and Artificial Intelligence of learned and predictive behavior analysis. The system will introduce a new crypto-currency which will be used to pay premiums and receive rewards for reduced risk behaviors. The far-reaching entanglement of the risk will include many as of yet not understood behaviors. The ECAN network can become the world's largest captive insurance company using intelligent predictive behavior. ECAN will provide its services, technology and IP publicly to all existing insurance companies as an alternate revenue source. The disruptive nature of ECAN will force other insurance companies to follow suit or compete. The hope and goal is that the benefits of partnering with ECAN will outweigh the desire to compete as the network and technology will be patented and open to all. The captive aspect of the insured will primarily benefit the participants and secondly the company. In this way the insured have a vested interest to keep the ECAN network operational as they are the primary benefactors of the captive.

Risk computations will be computed using *homomorphic encryption* and *indistinguishability obfuscation, utilizing Artificial Intelligence risk learning algorithms.*

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Introduction

Problem

The traditional insurance industry, being one of the oldest business opportunities in the commercial marketplace, has not kept up with the times; in part because it is a model where its profits are best served by traditional practices, the threat of extensive litigation, and the basic operating premise of "loss mitigation". It is still based on old norms and antiquated assessment tools. While some progress has been made in the implementation of big data mining, it is lagging behind many other industries as it is trying to catch up.

Over the past 35-years, within the traditional insurance industry, many lines of coverage have been ceded to the Captive Insurance Industry; a Captive is a way an operating entity can "augment its existing traditional coverage and share in the profits from good risk management practices"; in practice, the Captive strategy sets up self- and pooled- coverage strategies, to complement traditional insurance models. Captives can be more nimble; they can provide more asset protection programs for an operating companies; they can provide more complex models for risk sharing and transfer among the operators, its clients, and its insurance/reinsurance partners; and by utilizing modern technology, they can more accurately and quickly provide real time information and options, upon which behavior of an insured can be modified in real time to mitigate and optimize risk exposure, management, and value.

Each individual puts "***itself first***", and "***others second***"; traditional insurance is based on this binary reality. Our strategy intends to disrupt these basic assumptions.

If an alternative existed whereby individuals and businesses could more actively participate in their own asset protection-- instantaneously modifying their coverages and benefits based on real time decisions and choices-- with the benefits being immediate savings or benefits; they will modify their risky behavior. A good insurance policy permits indemnification for an individual or business to make risky decisions because they have coverage against loss; while the actuarial programs price insurance coverage based on certain general variables-- based on PAST behavior and metrics, we all must pay higher premiums than necessary because current and future bad decisions are not calculated into premiums. IF each of us were able to influence in REAL TIME our insurance costs and benefits, by making better choices, would we?

The old norms of report cards being used to assess and price a student driver's insurance premium are not only antiquated but are inadequate and meaningless. Just because someone gets straight A grades does not mean that they are not a distracted driver, or a good driver, or a knowledgeable decision maker behind the wheel of a car. This model of trying to ascertain an individual's risk is long overdue for an overhaul.

The authors and sponsors are aware that the concepts and program outlined in this paper may look more like management of "business or investment risk"; but careful attention has been paid to program design being focussed on addressing "insurable risk". Specifically, while the programs appear to be based solely on individual behavior, the program design is carefully based on pooled strategies.

Proposed solution

The dawn of a new day is upon us when it comes to access to comprehensive risk management, and a new insurance revolution.

The captive insurance market is innovating at every step of the risk management process by incentivizing the right kind of human behavior-- and visionary corporate behavior-- which is based on optimization of resources through asset protection. With the Emerald Assurance Network we are breaking new ground; our program is based on disruptive technology to the benefit of the premium-paying insured, who will demand innovation and better policies, more responsive terms and programs, for the insurance coverage they receive.

With the advent of new technology, we should be able to both assess risk on a perpetual and almost instantaneous basis, and adjust premiums through innovative programs to reward good decisions from the insured. Through Captive Insurance programs, The Emerald Assurance Network wants to adjust premiums in almost real time-- allowing individuals and businesses who make good decisions to be rewarded for their risk management. This can be done with many types of insurance were monitored and tracked behaviors can be analyzed to determine the risk probability of a claim-- with the premiums being adjusted accordingly to represent individual choices. Many of these geo positioning technological advances can adjust the insurance premium requirements; in other cases, Apps can allow commercial decisions to benefit in the same regard.

Through the Emerald Assurance Network in Phase I, Captive Insurance offerings will be available for various direct industry verticals with the focus on industry sectors relating to:

- Real Estate
- Professional and Medical Liability
- Medical and Pharmaceutical
- Power/Energy/Chemical Industry
- Transportation
- Innovative Good Government Solutions
- Logistics
- Education (Primary and Secondary)
- Agriculture
- Communications

We want to revolutionize how insurance is bought, sold and participated in globally by allowing simple rate comparisons as the ENT crypto-currency will be universally accepted all over the planet.

Proposed system overview

Captive insurance in the Blockchain

Through the various Program Verticals, for the first time participation can be organized and grouped; the pricing and sale of these individual risk pools are where the captive participants can choose how they will participate-- in a marketplace where the level of insurance coverage may vary, and a range of premiums they choose to pay for will result in immediate lower/higher benefits from successful participation--depending on the path and premium chosen. In the following sections, with the pilot programs selected, we will show how this flexible, variable coverage and pricing structure for the first time is available to clients and participants.

Critical to the success of this program is immediate and seamless options offered by Blockchain-- versus the lengthy and fraud-fraught programs offered currently based solely on Fiat currency and typical policies. By paying in the newly minted crypto currency of ECAN coins, the Programs can be designed and implement immediately, with ease and the compliance assurance that bypassess the labor intensive policy-claims process. The insured can choose all aspects of the specific coverage--which assets they want to tie to their insurance premiums, and combine both hard assets and crypto coin credits, for a mixed payment option providing premium flexibility never before possible in the insurance business.

Emerald Network Credits

We propose the creation of a new crypto-currency for use in the Emerald Assurance Network. The launch of the Emerald Assurance Network is one of pure innovation with its own issuance of a cryptocurrency called Emerald Network Token (ENT) to facilitate instantaneous payments utilizing the Ethereum blockchain. ENT will be created as ERC223 credits on the Ethereum blockchain. This standard is an improvement over the ERC20 standard - the additions allow smart contracts to receive and hold credit balances and improve transaction behavior related to credit transfers between smart contracts.

By minting Credits in the initial ICO we will create a new market opportunity which can be utilized globally. While the initial list of Programs highlighted in this Paper has its consumer activity based in the United States, that will not be the case upon completion of the ICO, with implementation beginning worldwide by the end of the second quarter of 2018.

Other existing insurance companies can also choose to accept our Credits and can connect to our network over the freely provided and distributed API as we will develop both programs and reinsurance opportunities globally. The incentive to participate through the ECAN versus development of copycat programs is noteworthy; each ECAN Program will be based on the IP and innovation we will utilize in each ECAN Program developed. While copycats will certainly launch efforts to replicate the unique approach (and try to infringe on our patent, versus simply participating as another program of ECAN), the barriers to entry of participation will be so low they should simply choose to participate in ECAN as we are planning to make the information available for free to all who choose to develop new applications and Programs across the world..

System implementation

A programmatic approach to insurance contracts

The earliest risk-pooling insurance contracts were structured similarly to, and enforced under the same legal principles as, loans. Indeed, let's start with a simple loan for a purchase of goods with no interest where the Holder (the creditor) can call in the loan any time between days **t1** and **t2**:

```
loan(goods, principal, penalty, t1, t2) =
   counterpartySecurity =  pledge(allGoods(Counterparty))
   with to Counterparty getTitle(goods)
   loanPayment(principal, t1, t2)
   with when breachedPerformance(loanPayment)
      to Holder foreclose(counterpartySecurity, penalty)
loanPayment(principal, t1, t2) =
   when withinPeriod(t1,t2)
      when choiceOf(Holder)
         to Holder principal
```

Source: A Formal Language for Analyzing Contracts - Nick Szabo, Satoshi Nakamoto Institute

This markup language and programmatic approach to insurance contracts can now be automatically executed without any human interaction by a smart contract if the conditions are met.

Using oracles to interact with the real world

Smart contracts exist and operate in an isolated space similar to a walled garden, they cannot fetch external data on their own. In order to support the contracts with data from the real world, we will create so-called oracles, software running on separate servers that are able to interact with the contracts.

Because every node runs every calculation, it's not practical (and presently impossible) to make arbitrary network requests from an Ethereum contract. Oracles fill this void by watching the blockchain for events and responding to them by publishing the results of a query back to the contract. In this way, contracts can interact with the off-chain world.

This introduces obvious trust problems. A decentralized contract that requires trusting a single outside data source is a bit of a contradiction. This can be mitigated by having multiple independent oracles respond to the same queries to form a consensus.

Source: John Weldon - Building an Oracle for an Ethereum contract

By implementing multiple data sources and multiple Oracles, we increase trust and reduce risk of providing false information to the contract's decision making algorithm. For example, multiple financial data sources would be polled and parsed for the requested stock price. The smart contract would wait for multiple results to be passed before utilizing the stock price in the business logic processes. Oracles can be programmed and maintained separately and they will collect, store and provide the data needed to operate the Emerald smart contracts.

Life cycle of a Contract - Oracle interaction:

1. The Contract emits an Event on the Ethereum network, broadcasting the request and a return function that the Oracle should execute (the 'callback')
2. The Oracle polls the network and watches for these contract events
3. Upon event trigger, the Oracle queries the requested data source
4. The Oracle submits an Ethereum transaction and calls the 'callback' function passing the data as parameter

Using this communication cycle and various sender validation techniques, real world data can be asynchronously passed into the Ethereum blockchain and processed by the receiver contract. We are now able to pass data about real world events almost in real-time as they occur, such as current stock prices, geographic position of a specific device, weather at a specified location or landmark, status variables of another program in the Emerald system, client information from the corporate database etc.

Target industries and Program Verticals

For the purpose of this initial paper, the following Program Verticals have been chosen for pilot projects:

Real Estate Prof/Medical Liab Medical/Pharma Good Gov. Utilities Transportation Education Communications Agriculture

While there are unlimited numbers of Program Verticals that can be developed, and an unlimited numbers of projects within each Program Vertical, the First Phase of Implementation represented in the above table is sufficient for the first phase of development. As will be noted, while the Program Verticals are organized for the reader's convenience, as the attached case studies will show, there is both "geographic and regulatory overlap" that occurs; while in the traditional insurance industry this would create havoc with regulators and policymakers, it is seamless again with the ENT.

Technical implementation

Insurance industry interoperability

The Emerald system will implement standard ACORD XML document interfaces to communicate with all standards-compliant companies and organizations in the insurance industry.

Fraud detection

Using the innovative capabilities of the underlying Neo4j database system, Emerald Assurance Network will efficiently and proactively monitor and detect possible fraud circumstances, fraudster rings and participants.

The impact of fraud on the insurance industry is estimated to be $80 billion annually in the US, a number that has been growing in recent years. From 2010 to 2012, questionable claims in the U.S. jumped 27 percent, to 116,171 claims in 2012, nearly half resulting from faked or exaggerated injury claims. In the UK, insurers estimate that bogus whiplash claims add $144 per year to each driver's policy.

See more at https://neo4j.com/blog/insurance-fraud-detection-graph-database/

Participant / end user reward mechanisms

Participants are required to register to the Emerald system as individuals in order to receive rewards for participating in any of the programs currently active in the ecosystem. A person may be participating in any number of programs and receive rewards from each. The rewards are sent to the person's credit balance in exchange for completing specific risk-mitigating actions or behavior. An example scenario is outlined below:

A government entity has a running Emerald Program and a road construction project. We may ask commuters to leave for work during predefined intervals, for example earlier or later than usual. By positively affecting traffic conditions and reducing congestion, the system is proactively changing the probability of an insurance claim related to the road construction. Additionally, by suggesting alternative routes the Emerald Network can distribute traffic to nearby routes, thus decreasing the risk of accidents. The end user application running on the smartphone will collect current location data from the individual's device and reward them in credits based on their compliance with the suggested actions.

This concept can become the smart city standard as self driving cars become the norm.

End user application

A smart phone application developed and maintained by Emerald will be the primary method of registration and interaction with the system from the end user's perspective. During registration, the user will agree to share various information collected in electronic form by the application using sensors built into their mobile device. This includes but is not limited to acceleration or deceleration, speed, geographic coordinates, heading, elevation, time of day, step count. The handling and storage of such information will be according to all privacy rules and regulations.

Following a registration process, a person may receive invitations to join specific projects based on their interests or he/she may browse current programs and join according to personal preference.

The registration process should be fast and easy and the risk assessment and typical lengthy form filling can be done with a few simply taps of your cell phone screen. The goal is to make the use of the system, simple, fast and intuitive..

Setting up a captive for a group and underwriting the risk will be automated and set into contract in one business day. The first step in sponsoring a captive is the feasibility study, to which the Sponsor should expect approximately ten hours (10) of time from the proper staff to complete. The entire set-up timetable could be accomplished, and a program operational in as little as a month from completion of the initial assessment and execution of the feasibility study contract.

WHO CAN SET UP A CAPTIVE, AND HOW IS IT ESTABLISHED?

Almost any operating entity that has risk that cannot be properly served by the commercial insurance industry can establish a captive. The types and structure will be different from company to company, but the steps of establishment are the same:

1. Contract with a Captive Development Group for a Feasibility Study
2. Select a Management Company to Administer the Program
3. Determine the types of Policies and Programs you will implement
4. Properly Fund the Captive with Capital through the ECAN
5. Begin Operations

The timetable from commencement to implementation can range from as little as 30-days, to as much as 100-days, depending on the types of program, and structure determined to best fit the need of the owner.

What are the necessary parts of a Captive Program?

OWNERSHIP: As a general rule, the owners of the operating company desiring to establish a captive insurance company, are also the owners of the captive insurance company. While certain structures permit certain exceptions to this structure, the "Sponsor" of a captive insurance company is a mirror image of the operating company.

FEASIBILITY STUDY: An early contracted activity for each prospective captive program is completion of a feasibility study for the Company. The first feasibility studies for clients operating a captive utilizing blockchain and credits is underway, and will be repeated for each and every prospective sponsorship organization looking to commence a captive program. The feasibility study will determine the types, costs, and program structure for each captive applicant.

MANAGEMENT COMPANY — It is not feasible for an operating company to run its captive; as such, ECAN has secured professional management for the captive programs that are utilizing blockchain and credits. While the contracts will be similar to captive programs operated with Fiat, the management costs are expected to be minimized as a result of the innovative and efficient operating features of the medium.

REQUIRED CAPITAL AND REINSURANCE — Some prospects will be satisfied to hold and back all of the risk through their captive; others will look to reinsure their risks, to make their captive insurance company more stable and viable. ECAN will serve the role as a reinsurer for each of the program captives, with linkages internationally to sources of reinsurance.

OPERATIONS— Each year (or as often as necessary), the management company will present the captive insurance company's board of directors with contracts, financial reports, and projections and options for the upcoming year of operations. At that time, the insurance company will also review and commit its premiums for the upcoming period of time. All aspects of management of the Captive will be handled by the management company, which will benefit from a multi-year contract to provide ease and continuity of professional service to

Monetization

In each Program Vertical, the monetization program will be defined; the types and size of benefits will vary depending on how the program is structured and how the sponsors define the goals of the program. But consider the following in each category:

Real Estate:

Imagine a tenant who through his good behavior earns so many (ENT) credits from a Landlord that reimbursements for Utilities, or taxes, or insurance EXCEED the actual cost of the billed service; or

Allow monitoring of temperature settings within an apartment and for doing so they get a reward by paying less for rent, allowing the thermostat to be set to a lower temperature when away from home saves energy cost to the landlord who lowers the rent for all that participate

Imagine a company that implements so many risk management, and cost savings practices, that it actually earns more in incentives than it pays in premiums.

Professional and Medical Liability

Imagine a doctor making a single "lump sum" medical malpractice payment, which based on his/her performance, becomes a "single lifetime payment", or a lump sum payment that can generate future financial benefits; or

Imagine a patient program being offered by a doctor, whereby the PATIENT agrees to pay the DOCTOR's Medical Malpractice coverage for a specific procedure, in return for a negotiated set of benefits or compensation in the event the procedure fell short of expectations.

Medical and Pharmaceutical

Imagine a patient that agrees to utilize his/her "Medical Token Wallet" to select the best Network Healthcare solutions from service providers who have capacity or services available, that their treatments could be available at greatly reduced prices, or even free; or

In specified industries like medical marijuana, where the benefits for a patient that participates in Network supply chains (like the Emerald Care Network) are so significant that the deductibles and costs of clinical visits and medical expenses are waived.

Power/Energy/Chemical Industry

Imagine a regional power provider that provides so many incentives for an individual user such that the benefits would offset their monthly costs of utility service; or

Imagine commuters who make different transportation choices, earning enough Credits to pay their monthly automobile gas and maintenance costs, or even their overall commuting transportation costs.

Transportation

Imagine an urban commuter, who earns so many (ENT) credits from a group of corporate and government sponsors-- by daily choosing to avoid an area of bridge construction, that their benefits outweigh their auto insurance or city parking fees for a year; or

Imagine forward thinking jurisdictions that are looking for ways to build financial resources to start or expand state-of-the-art public transportation systems, by incentivizing ride sharing programs, or requiring "traffic flow manipulation" on the overcrowded highways.

Imagine reducing your own car insurance by driving at times where there are fewer motorist on the highway, combined with employee flex time rewards are provided to companies and individuals that reduce congestion and accidents.

Innovative Good Government Solutions

Imagine a Solid Waste Commission that is able to pass on savings from Solid Waste or Recycling programs that allow participants to offset the costs of garbage collection with benefits from their participation; or

A government or sewage district facing significant EPA Fines or infrastructure expenses due to remediation programs, providing incentives to residents to reduce or eliminate their bills based on corrective or behavior change.

Logistics

Imagine shipping products by coordinating efficient trucking practices so that a truck is never on the roads empty but always carrying cargo, while reducing accidents as higher profitability allows for more rested drivers to work less.

Imagine implementing collision avoidance see through isle technologies that allow operators of forklifts to see through the aisles in a warehouse to reduce the number of accidents.

Education (Primary and Secondary)

Imagine locking in educational cost when your children are born, so when they start college their cost of education is known and fixed.

Imagine teachers benefiting from their students accomplishments by sharing in their company profits for the first few years for doing a good job of teaching. Each student success reflect positively on a teacher who had something to do with taking part in the student's education and who helped mold them into exemplary citizens.

Communications

Imagine sharing cell towers instead of building similar ones at a cost of $350k to $1m, side by side with other carriers and passing the savings on to to the captive for reduced rates and better service for all.

Imagine investing into new forms of communication where shannon's law is no longer an obstacle to higher data throughput, providing secure, unhackable

Agriculture

Imagine utilizing drones to count crop production, predict yields and detect pest and disease, leveraging the information to collectively do smart farming. Insure against all known pests by leveraging technology to combat problems.

Imagine investing in a farm collective as a captive and insure against fluctuating crop yields by utilizing biochar to keep moisture in the ground longer and generating reusable bio fuels, remaining from the stocks of the crop production, otherwise discarded as waste.

Clients earn monthly dividends in (ENT) credits as rewards based in energy, if proactive measures are taken towards preventative reactive costly interventions.

- Clients will pay premiums in (EAC) credits.
- Claim payouts happen in (EAC) credits.
- (ENT) Credits will be introduced to exchanges so they can be purchased for fiat money.
- example: a group of companies set up a $1M captive
- fully accountable and instantaneous - individuals are benefiting, road companies, local

- captive = big sponge. allows multiple companies to have multiple projects that are absorbed in the sponge.

As a participant in the captive, you set up a protected cell in the sponge -> micro-captive project.

ECAN is a captive itself and participants are the individuals who buy credit during the ICO.

County puts in money, employers etc. and create a cell -> People are insured by ECAN and get credits when they act according to the incentive description

Technology and Intellectual Property

The company aims to file for a number of incentivized motizable initiatives that reward to group collectively for participation in the technology captive. The initial IP revolves around artificial intelligence as it relates to learning previous case histories in an effort to assess the risk with various captive insurance initiatives. Secondly the technology IP will be based on risk mitigation and reward as it relates to incentivized low risk alternatives, including technology and behavior that can be corroborated and confirmed by the system. The final aspect of the IP will encompass immediate reward mitigation for desired behaviors which transfer value to the participants for appropriate behaviors that include reducing the probability of accidents and claim payouts.

Initial coin offering early adopters rewards

By setting in motion the exchange of Ether for ECAN credits which will be minted in a limited number during the ICO, provides Emerald Captive Assurance Network participants the ability to control the inflationary aspects of its currency. Additionally the limited supply of ECAN credits when used in conjunction risk reward behaviors provides a convenient way to reward participants with a transfer of value in real time. Furthermore by only accepting ECAN credits for premiums the company hopes to drive the value of the ECAN credits up, as Emerald Captive Assurance participants who want to self insure can only obtain ECAN credits from those that have them or from an Exchange that is willing to provided them in exchange for fiat. By creating this limited supply the value of the ECAN credit is likely to increase as more companies and individuals choose to participate. Probably most important to mention is that since it is a virtual cryptocurrency the tax ramifications of a new insurance class of credits is not regulated by any organization and or government and as such is purely subject to the good faith of its participants, whose incentive is to use them as they are likely to provide tax shelters from traditional risk mitigated fiat based highly regulated insurance laws. The fact that Emerald Assurance Network is domiciled in the ether of space and not on any given continent, offers it a unique opportunity to be essentially domiciled in international waters without country jurisdiction or boundaries typically associated with captive insurance initiative. Furthermore the technology whose purpose is to provide unbiased risk mitigation and payout will be designed to programatically pay out claims when all for the conditions of the smart contract are met without and third party involvement. This approach to self

insurance incentivizes the behaviors of those involved to do all they can to avoid any real accidental instances when claims would need to be paid, as their own ECAN credits would be at risk and as such their incentives to behave in all ways possible to reduce the possible accident would be rewarded as opposed to filing false claims that would be costly and counter advantageous for the counterparty or the group as a whole.

Development roadmap

In the initial phase of development interested parties will be availed of the new user interface to sign up and stay informed as to the group's progress. The registrants will be notified as soon as their opportunity to participate or become part of a captive group will be made available.

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Phase 1: Proof of Concept – 12 months

Emerald Assurance will lay the foundations of the system and begin development of the underlying technologies, such as the Ethereum smart contract code, database design and user interface specification. The captive smart contract creation will be systematically expanded to include the captive pool participants with automated underwriting and comparative risk assessments based on similar contracts.

The team will proceed to develop a proof of concept application and API environment to demonstrate the viability of the proposed approach.

Phase 2: Core Development and Pilot – 12 months to 18 months

Good behavior will be rewarded and catching insurance fraud using the latest predictive big data analysis tools will reduce false claim payouts. Leveraging encouraged behaviors will reward captives and its members for taking care of its own risk mitigations. developing the risk pooling protocol for insurance could yield a whole new way of looking at risk.

Building onto the strong foundation of the previous phase, Emerald Assurance will continue work on the system and improve features based on advisory and industry partner feedback.

Phase 3: Public release – 18 months to 24 months

The Company will release the first version of the end user application that allows clients to interact with the system and submit data. By this time, the main storage and backend access components are operational.

Phase 4: Monetization and industry acceptance

While continuing development, The Company will sign interoperability agreements with insurance, marketing industry companies in all target verticals and sign them up as ecosystem participants.

Phase 5: Legally binding smart contract enforcement

While continuing to facilitate the ability to tie real estate property titles into a legally binding asset class used to develop automated programmatic payouts when policy and payment when the micro captive is created.

Emerald Network (ECAN) Credits Sale

Emerald Assurance Network will conduct a ECAN credits Sale in order to raise the funds necessary to develop and operate the system.

Purpose and use of ECAN credits

The (EAC) credits sold during the ICO Sale will have value on the platform as they can be used to set up captive projects on the platform. The Captive project participants will earn rewards in ECAN credits too for reduced risk behaviors, thus guaranteeing ECAN credit "currency" circulation.

ECAN credits, can also be used to pay insurance premiums and earn rewards for participating in projects launched on the ECAN platform.

ECAN credit distribution to founders and and board advisors. ECAN credits will be minted in 3 ICO offerings. The firs ICO will mint 400M credits into existence. Each credit can be further subdivided into 18 decimal places. The fixed number of credit from the initial ICO will contain inflation by the very nature of a limited number of credits minted. The ICO raise will be used to fund the development effort and put forth the technology participants can use to form their own captive groups.

The ⅔ balance of the credits remaining in cold storage will be offered up in 3 years and 3 years again in a ⅓ increments. The total number of ECAN credits that will be minted will be 1.2 billion. Each ECAN credit is fungible.

Use cases and example scenarios by market

Transportation

Auto insurance industry

For example in auto insurance by allowing us to watch and track your driving behaviors we can reduce rates substantially. Based on your driving habits we can access the probable risk for a possible claim payment by taking into account the weather, traffic on the roads, your speed and heading and part of town you are driving in. These and many other factors can now be tracked to determine if your morning commute should be done earlier or later in the morning to reduce your insurance rate. Interestingly as a result to this approach, the insurance companies may become one of the driving factors that decide who leaves for work when and by staggering the flow of traffic entice everyone to drive at differing times to reduce the amount of traffic on the roads.

The tightly coupled integration between age, sex, time of day, geographic location and destination locations, we can with technology entice others to behave a certain way to reduce the overall risk of an accident.

By leveraging the incentives drivers can make the choice to pay less or more based on their urgency and need to be at a predetermined location at a certain time.

Traffic management project - Hamilton County

Road construction management

Incentivize insurance company clients - notify about road construction and reward if person changes the time to leave to work.

The money the insurance company puts in is the portion of the participant premiums they saved in the road construction period. The insurers have an opportunity to contact their policyholders and offer them to streamline the traffic flow.

Utilities

Electrical production is already at peak capacity and with no new nuclear power plants planned in the works our electric power grid is already operating at or near capacity. Since electricity can not be stored it is a commodity which requires production as demand rises. While peek consumption happens during heat waves or extreme temperature swings, captive insurance consortiums could be setup to incentivise the use of electricity by consumers in the middle of the night when it is cheap and plentiful. Captive insurance for alternative energy producers such as wind trees and wind turbine would be utilized to reward smart energy production reducing the risk of blackouts impacting everyone utilizing the grid.

Construction

Risk assessment based on OSHA best practices and safety procedures would permit real time monitoring of construction sites by drones to assess risk and provide captive coverage. Self policing and self imposed operational efficiencies in the six sigma space would provide reduced risk and lower premiums for those companies that choose to participate. Using BIARS (balanced incentive and risk sharing) basis. The customer and the contractor share in the potential upside (project cost savings for instance) as well as the downside, helping to boost the incentive of each party to make the job successful.

Definitions

What is captive insurance?

Captive insurance has been in existence for more than fifty years, and is a commonly utilized tool in corporate culture to augment existing commercial insurance, or provide insurance for coverages where commercial policies are not available. It is an alternative to "self-insurance" wherein a parent/group, or groups, create a licensed insurance company to provide coverage for the participants for insurable risk. By constructing or participating in a Captive facility, Companies or Clients can assert more control over the forms and types of coverage they choose to take; it also avoids relying solely on accepting premiums and exclusions from traditional commercial insurance companies-- which have volatile pricing, may exclude terms and conditions that are essential to an insured-- and thus may not meet the specific needs of the policyholder. By participating in their own captive insurance programs, the insured can reduce costs, cover difficult risks, have direct access to reinsurance markets, and protect assets and increase after tax profits (versus simply protecting themselves from loss).

When a company creates a captive they are better able to accommodate the risks of clients or subsidiaries, write policies more specifically to their needs, and ultimately either return unused reserve funds in the form of profits, or invest them for future growth making their businesses stronger. Captive insurance companies sometimes insure the risks of the group's customers. Captives are an alternative form of risk management that is becoming a more practical and popular means through which companies can protect themselves financially while having more control over how they are insured. [1]

What is ACORD and ACORD XML?

ACORD is a "not-for-profit standards-setting association for the insurance industry. It is a resource for information about object technology, EDI, XML and electronic commerce in the United States and abroad. Since 1970, [it has] served as the industry's objective, independent advocate for sharing information between diverse platforms and among all data partners through the use of standards. Its mission is to develop electronic standards to enable and enhance information sharing within the industry and among its data partners. ACORD has approximately 45 full time employees. Its members and participants include more than 27,000 agents, over 60 software vendors and 1,000-plus insurance companies."

Source: http://xml.coverpages.org/acord.html

What is Blockchain technology?

A blockchain – originally blockchain – is a distributed database that is used to maintain a continuously growing list of records, called blocks. Each block contains a timestamp and a link to a previous block. A blockchain is typically managed by a peer-to-peer network collectively adhering to a protocol for validating new blocks. By design, blockchains are inherently resistant to modification of the data. Once recorded, the data in any given block cannot be altered retroactively without the alteration of all subsequent blocks and the collusion of the network. Functionally, a blockchain can serve as "an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way. The ledger itself can also be programmed to trigger transactions automatically." [2]

What is Ethereum?

Ethereum is an open-source, public, blockchain-based distributed computing platform featuring smart contract (scripting) functionality, which facilitates online contractual agreements. It provides a decentralized Turing-complete virtual machine, the Ethereum Virtual Machine (EVM), which can execute scripts using an international network of public nodes. Ethereum also provides a cryptocurrency credit called "ether", which can be transferred between accounts and used to compensate participant nodes for computations performed. Gas, an internal transaction pricing mechanism, is used to prevent spam and allocate resources on the network. [3]

The value credit of the Ethereum blockchain is called ether. It is listed under the diminutive ETH and traded on cryptocurrency exchanges. It is also used to pay for transaction fees and computational services on the Ethereum network. [3]

What is a smart contract?

In Ethereum, smart contracts are treated as autonomous scripts or stateful decentralized applications that are stored in the Ethereum blockchain for later execution by the EVM. Instructions embedded in Ethereum contracts are paid for in ether (or more technically "gas") and can be implemented in a variety of Turing complete scripting languages.

Smart contracts are high-level programming abstractions that are compiled down to EVM bytecode and deployed to the Ethereum blockchain for execution. [3]

If blockchains give us distributed trustworthy storage, then smart contracts give us distributed trustworthy calculations. Smart contracts are one of the functionalities that sets Ethereum apart from other blockchains. [4]

What is a credit?

Ethereum credits are simply digital assets that are being built on top of the Ethereum blockchain. They benefit from existing Ethereum infrastructure instead of developers having to build an entirely new blockchain. They also strengthen the Ethereum ecosystem by driving demand for ether, the native currency of Ethereum, needed to power the smart contracts.

Ethereum credits can represent anything from a physical object like gold to a native currency used to pay transaction fees. In the future, credits may even be used to represent financial instruments like stocks and bonds. The properties and functions of each credit are entirely subject to its intended use. Credits can have a fixed supply, constant inflation rate, or even a supply determined by a sophisticated monetary policy. Credits can be used for a variety of purposes such as paying to access a network or for decentralized governance over an organization. [5]

What is Neo4j?

Neo4j is a highly scalable native graph database that leverages data relationships as first-class entities, helping enterprises build intelligent applications to meet today's evolving data challenges.

Graphs – i.e., networks – are the most efficient and intuitive way of working with data, mimicking the interconnectedness of ideas in the human mind. Neo4j is built from the ground up to harness the power of graphs for real-time, bottom-line insights. [7]

What is Storj.IO?

Blockchain-based, end to end encrypted, distributed object STORJ, where only you have access to your data. Your own insurance contracts will be stored in STORJ cloud services making it virtually impossible to dispute. The immutability aspects of the captive insurance contracts will be such that the ledger is policed by every member of the network and its integrity is checked and agreed by the network perpetually. Anyone who attempts to make change to one part of the network is immediately rejected by the majority. STORJ is a new borderless based storage platform designed to compete with traditional brick and mortar monolithic organizations such as Amazon, Google, Dropbox or Azure cloud based services on a decentralized distributed storage platform where participants are rewarded in ether for sharing their power and hardware on a distributed cloud based platform. [8]

Homomorphic encryption is a form of encryption that allows computations to be carried out on ciphertext, thus generating an encrypted result which, when decrypted, matches the result of operations performed on the plaintext. [9]

This is sometimes a desirable feature in modern communication system architectures. Homomorphic encryption would allow the chaining together of different services without exposing the data to each of those services. For example, a chain of different services from different companies could calculate 1) the tax 2) the currency exchange rate 3) shipping, on a transaction without exposing the unencrypted data to each of those services.[1] Homomorphic encryption schemes are malleable by design. This enables their use in cloud computing environment for ensuring the confidentiality of processed data. In addition, the homomorphic property of various cryptosystems can be used to create many other secure systems, for example secure voting systems,[2] collision-resistant hash functions, private information retrieval schemes, and many more.

There are several partially homomorphic cryptosystems, and also a number of fully homomorphic cryptosystems. Although a cryptosystem which is unintentionally malleable can be subject to attacks on this basis, if treated carefully homomorphism can also be used to perform computations securely.

source: https://en.wikipedia.org/wiki/Homomorphic_encryption

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