Abstract

Social, economic and environmental crises in our world are reaching critical proportions, with global systems on the verge of spiralling into irreversible decline. On September 25th 2015, the UN sent out an urgent call to action for humanity to achieve a global resolution on extreme poverty, inequality and climate change by 2030. The UN provided a framework with a set of Sustainable Development Goals (SDG's) and indicators as to how this can be achieved and measured

Initiatives, products and programs are being developed to respond positively to the complex challenge of sustainable development. A range of organisations are already striving to address the need for measuring Environmental, Social and Governance (ESG) performance. Standard

setting and rating agencies, metric catalogue providers, impact investment networks and asset managers combined, however, this still remains fragmented, confusing and expensive for willing partners to implement.

It is becoming apparent that without financial and delivery partners being able to easily and cost effectively map and track their initiatives to the SDG framework, given the tools for ease of monitoring against a standardised set and verification, and a trusted environment for collaboration across sectors and geographies, solutions no matter how great they are, will continue to be delivered in silos, stifling scalability. Crucially, there currently is no way for us to tell where we are globally in achieving a sustainable future.

This white paper puts forward World Wide Generation's blockchain based technology ecosystem called G17Eco. A combined marketplace and monitoring platform that will accelerate the financing and delivery of the UN SDG's in a partnership driven, holistic and transparent way. G17Eco has been designed in such a manner to be a collaborative backbone and value add to support current market actors, and in no way be in competition. G17Eco position's itself as a truly independent facilitator to help harness and scale expertise and innovation across the globe for the achievement of the SDGs.

Introduction

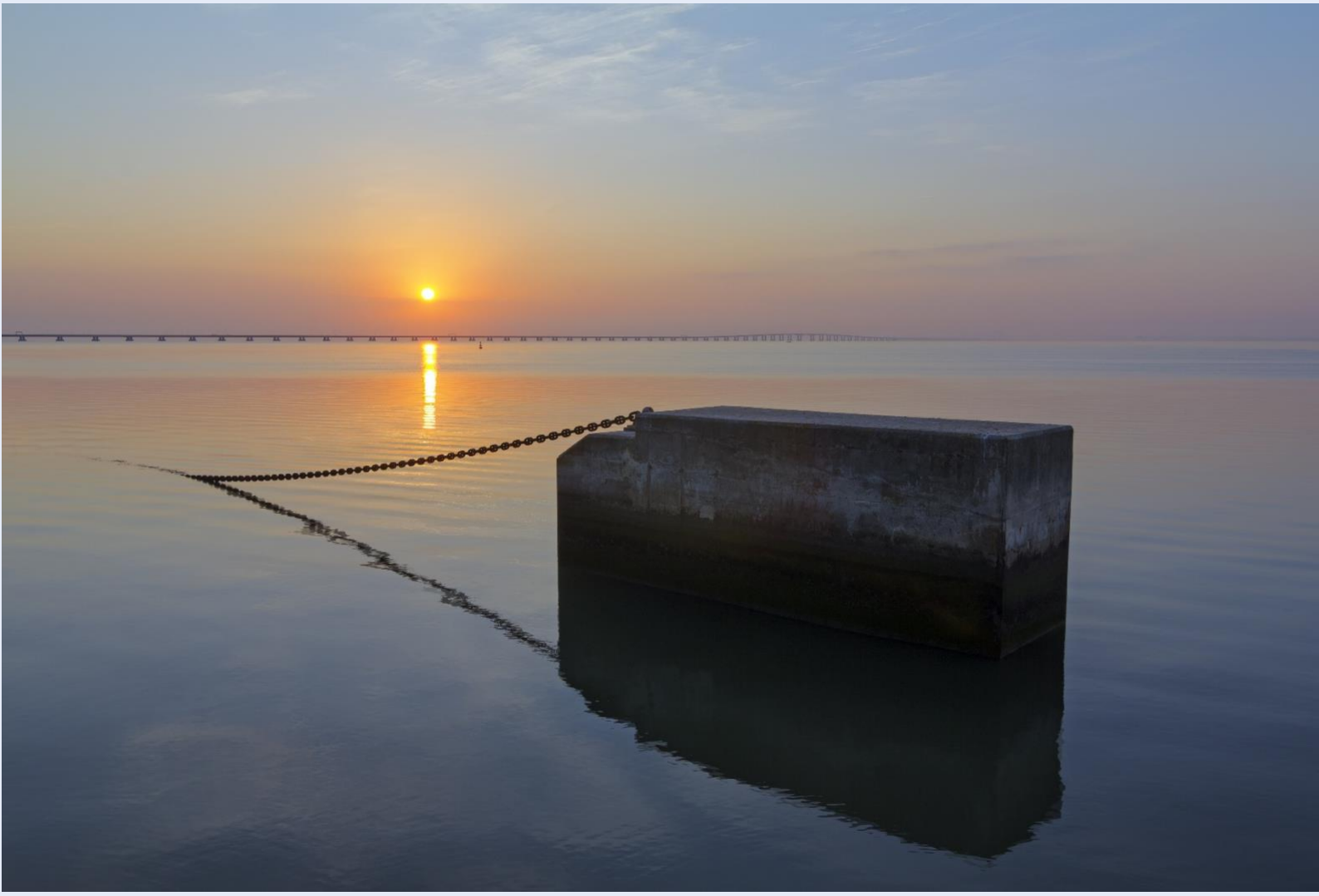
World Wide Generation (WWG), developed G17Eco, as the 'intel inside' to power its mission to unite government, business and civil society to advance a global regenerative initiative to achieve a sustainable future by 2030 together. As a generation, faced with a real threat of extinction, and continually being plunged into destruction, dramatic and urgent action needs to be taken to save humanity and our planet before it's too late.

The Whitepaper outlines the key features of the G17Eco Platform, and how this solution addresses 3 factors which has and will continue to stifle our ability to achieve sustainable development at scale 1) Silo Delivery 2) Fragmentation and 3) Distrust.

G17Eco creates a home for all the SDG initiatives and ideas to thrive and achieve scale, by harnessing the policy power of government, the resource power of business and the convening power of civil society. WWG is forming a global collaborative alliance including governments, industry, investors, IGOs, NGOs and thought leaders committed to the SDGs to become beta members of G17Eco.It is only through leveraging combined funding, resources, technology and knowhow that we will advance solutions to our world's toughest problems and return the economic, social and environmental dividends that we all hope for.

WWG has leveraged the capability of technology to streamline the process to effectively map to the SDG's, standardisation and capability to reference thousands of metrics and a global monitoring and data collection features that will help us accurately measure the impact we are having against the SDG targets. Using cutting edge cryptography and consensus algorithms large-scale human cooperation crossing national boundaries can be organised and governed with no central authority. Blockchain technology has created a trust machine and

with this technology a better world can be built. WWG invites you to join us in this crucial mission.



G17Eco Features

Proprietary Blockchain Technology Private Distributed Ledger

Breakthrough open source Blockchain protocol allows low cost and seamless system integration among users.

Standardisation and Automation

Capability to onboard any initiative, fund or stakeholder and map to the SDGs. The automated framework, has been created through a rigorous one-year study in consultation with over 80 metric providers and frameworks. However, if a G17Eco member has existing frameworks and theories of change, the framework is being developed in such a way to respond to referencing those metrics and mapping it back to the SDGs. Includes front end analysis for members to demonstrate risk and cost reduction.

SDG Monitoring and Evaluation

Our Universal Trackers (UTrs) are automated monitoring bots that collect data and send alerts to stakeholders and auditors if their interaction is required. The data and assets that the UTrs collects are stored directly onto the blockchain. Machine learning algorithms take the data

and references the metrics and sustainability formulas to provide the data analysis and visualisation back to the appropriate member in the ecosystem.

Customised Visualisation, Reporting and System Integration

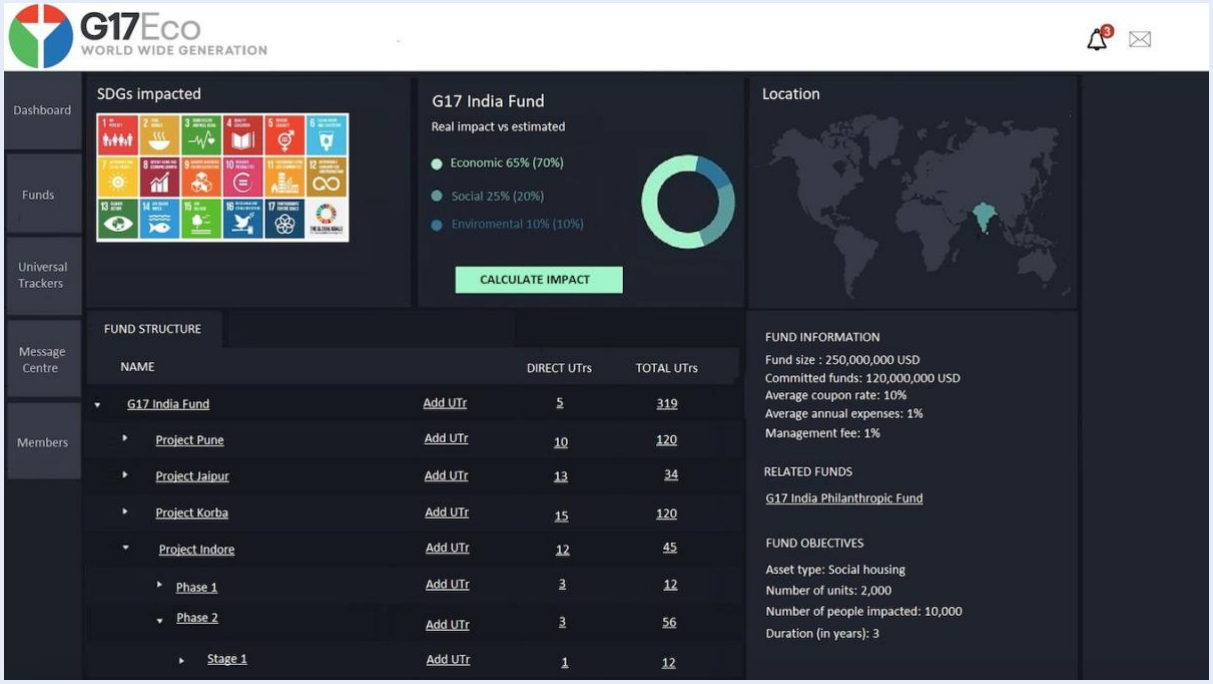
Customisable technology which is both transparent and immutable. The platform provides customisable dashboards for a wide range of stakeholders which are fit for purpose and suited to their requirements. G17Eco also delivers a scorecard to indicate the environmental, social and economic impact of initiatives, this will aid in the promotion of more holistic solutions being designed for the SDGs.

Trusted Market place

Access to multi sector and cross boarder partnerships, market share, SDG Investment/program pipeline, vetted financial and delivery partners, deal finder capability matching objectives to likeminded partners. A single ecosystem better aligns partners and strategies for exponential growth.

Global SDG 2030 target tracking

Provides big data intelligence against the 2030 Target, this enables analysis for directing future investment and collaboration needs. Enables the UN, governments and world leaders to track national and global progress and supply/demand deficits. Most importantly it provides the visualisation for the public at large to be updated, engaged and involved in the regeneration of our world.



G17Eco blockchain protocol design features

G17Eco is built on a powerful distributed ledger technology protocol. It is the first open source and sustainable blockchain protocol as it does not require the mining of coins for its operation, meaning no reliance on expensive, high energy consuming mega data centres for hosting the network. It is a single ledger updated simultaneously in multiple locations. As data is written to one ledger it is approved and confirmed by all locations.

It is decentralised, aware of its environment and location, enabling complex regulation and compliance rules to operate independently and work harmoniously between separate jurisdictions. It is the first in a new generation of distributed ledger technologies to offer fast, low cost solution for agile development teams. Unlike ordinary cryptographic solutions the process of transmitting secure data between peers is simplified. The protocol allows for API's and connectors to common accounting packages and has the ability to communicate with a growing landscape of reporting and CRM systems and other blockchain protocols.

Transparency

Transparency facilitate the immediate transfer of documents or financial transactions by checking the rights of the counter party before entering into an agreement and without the need to rely on a trusted third party. As an example, if a financial transaction needs proof of a specific part of a project, established funds can be released without the need of a third-party involvement. This proof can be written directly into a smart contract and establish that certain conditions of a project need to be met prior to the release of funds taking place. This proof can extend to requirements such as certifications, photos, documentation or minimum criteria to qualify to bid on a certain project. This type of capability can lead to an increase investor confidence when monitoring the stages of projects and assurance that certain requirements have been carried out.

Anonymity

Anonymity allows for 3rd parties such as auditors to remain anonymous in a transaction if necessary. If a specific project or stage of a project needs to be certified an attester to a specific project audit can maintain anonymity therefore increasing the independence of the validity of their evidence. This capability can avoid bribery and corruption.

Traceability & Longevity

This function allows the ability to verify the history, location, or application of any specific stage of a project by means of documented recorded identification. All of this information is stored on the blockchain and can never be selected which allows a full audit trial of actions of who did a action and why an action was done.

Flexibility

The blockchain protocol is agnostic of assets transacted and contract terms between parties, it can accept any data format, store it and track it. This feature has the ability to be agnostic in the type of data it stores and tracks. This gives vast capability to the platform as data can range from photographs satellite images, certification and documentation to financial transactions. Ultimately any type of data of data can be stored and recorded.

Immediacy

Immediate confirmation of finality on completion of any type of data transmission. Typical blockchains have a delay in the time it takes to complete data transmissions. The blockchain protocol is a private protocol and thus the time taken to complete data transmissions are immediate.

Conditionality

The ability to support strict unambiguous conditions of asset transfers. This allows for the adding of specific conditions to a smart contract. An example of such conditions are ones typically imposed by international financial institutions or regional organisations and are intended to improve economic conditions within the recipient country. This feature could be used to attach conditions to the provision of benefits such as a loan, debt relief or bilateral aid. Conditionality's may involve relatively uncontroversial requirements to enhance aid effectiveness, such as anti-corruption measures, but they may involve highly controversial ones, such as austerity or the privatization of key public services. In the case of a developer they could be tendering for a project where a condition is that a certain criterion needs to be met. If the criteria is not met this will get marked as an error in the ledger and recorded.

Totality

The ability for something to settle or fail in entirety. As certain projects or stages of projects may require certain conditions to meet this feature allows for ‘all’ those conditions to be met prior to say a financial transaction taking place.

Finality

The characteristic of transactions to be final and indisputable and impossible to retract or change.

Non-duplication

Inability to "double spend.” That is, the ability to transfer an asset only once otherwise known as immutability.

Divisibility

The right to divide and combine quantities of assets in a flexible and generic manner if permitted to do so.

Multilateral transactions

The ability to process simultaneous multilateral transactions.

Scalability

Due to its low cost of operation the G17Eco platform can scale to enormous transaction and data volumes across geographies.

Territoriality

G17Eco can record the geographic location of a transaction. This is critically important for the purposes of data protection and pin-pointing fraudulent transactions.

Workflow automation

The control of asset movements. Multiple originals of an asset can be made available across all nodes of the ledger.

Security and robust principles governing G17Eco

Private Network

G17Eco is a permission ledger primarily maintained by a network of nodes receiving, broadcasting and finally storing client data. Nodes operate independently, but are connected and aware of each other with peer to peer technology. Each node consists of two databases, two servers and memory storage. The first database stores verified data whilst the other stores failed transmissions. The first server performs identity and format verification followed by a broadcasting of correct data to the neighbouring node. The memory holds information until consensus has been reached by the majority of the nodes to transfer it to storage in their respective verified databases. The second server performs an analytical task of revising information in the verified database.

Encryption

Data transmissions to the ledger are kept private and immutable with cryptography. Clients using the network generate a private/public key pair (RSA/ECRSA encryption). Privacy is achieved by scrambling the information with the intended recipient's public key. The only way to decrypt the data is with the corresponding private key. The encrypted data is stored transparently on each node's version on the ledger. A hash representation of the recipient's public key forms the personal wallets used for pseudonymous identification. The encryption

takes place locally at the client machine, which allows using third party cloud storage and computing solutions.

Immutability

Immutability is achieved by interlinking files with hash representations (SHAT256). The hash of a previous but related file is inserted in the next to create an unbreakable chain of data feeds. This immutability restricts the rights of a clients to create, read and append. When a file is verified and saved in the database of a node, the number of sequence and the IP address of both client and node are encoded, creating a geographic timestamp.

Smart contracts

Nodes operate amongst each other with a set of deterministic and automated workflows, called smart contracts. These common rules enable nodes to verify data formats, client signatures and ownership rights to specified assets. Our proprietary protocol has a standard library of smart contracts, which will be expounded based on specific use cases. Elaborating the library of smart contracts facilitates automation.

Activity Streaming

The central advantage of our protocol is achieved by multithreading the ledger. Activity Streaming allows processing unrelated streams of data alongside each other. Consensus to accept an addition to the ledger is reached purely by democratic will of the independent nodes involved. This means that the network does not require a trust less common governance system, an underpinning crypto currency or miners to prove the truth. The protocol perceives data on the ledger as client owned information, and appends additional data with a new recorded position in an existing stream.

Stripping away the crypto currency and the open network of miners (for computing power) creates a new type of synergy within the network. Information is routed along a predefined itinerary, which enables simply passing on information to the neighbouring node. Activity Streaming creates immediacy of transmission. As such, the network's limitations with regards to throughput and scalability equate to the limits of the hardware employed. Activity Streaming natively has the added feature of enabling territoriality. The routing of information along the itinerary gives the power to a smart contract to force settlement within a specific sovereignty.

Interoperability

Our proprietary protocol was developed to facilitate the smooth transition from existing systems to the new paradigm of distributed ledger technology. Smart contracts on the ledger can be customised to mirror and enhance work processes. Similarly, it is interoperable with established business logic, and the protocol can be implemented as an expandable addition to any company's current technology stack. Ease of implementation and democratic access are ensured through the use of standard scripting languages (JavaScript and HTTP).

The global blockchain ecosystem is evolving towards a vast diversity of different distributed ledger technologies. Instead of repeating the mistake of siloing data into closed networks, the blockchain protocol was developed for inter-connectivity to the emerging ecosystem. As such it holds the potential to exchange information with any public or private distributed ledger solution.

Costs

Ordinary blockchain solutions such as Bitcoin and Ethereum utilise a digital coin to perform a transaction. This cost is used to reward the miners (the nodes) on the network system for their effort. An important aspect of building on platforms such as Ethereum and Blockchain is you cannot guarantee a consistent operational price as the cost of BitCoins and Ether is volatile. G17Eco's distributed ledger system costs are shared by the actors in network. That is, any member of G17Eco can use their own hardware or cloud to operate their own nodes, no transaction fees are required which means we have a wider scope to on board new nodes and customers. Ultimately everyone on the WWG network can share the costs and maintenance of their own nodes making the physical cost of running a large network nil for WWG.

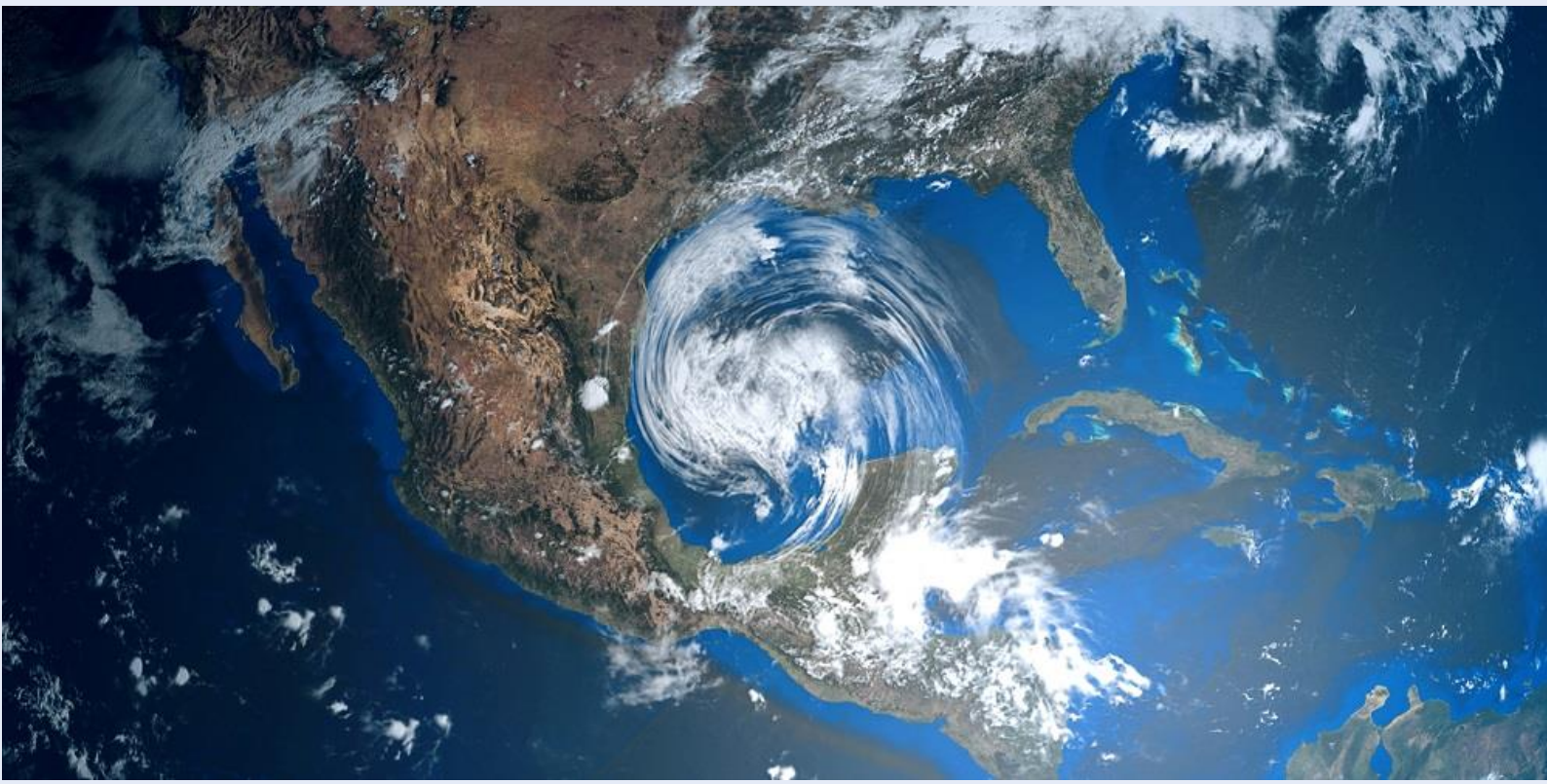
Resilience

Ensuring business continuity of G17Eco is a high priority and built into the system. The likelihood of malware infection or hardware breakdown must be reduced to a minimum. However, in acknowledging that hardware is unlikely to ever become immune to malicious cyber-attacks, our proprietary protocol takes a set of proactive defence measures.

It is up to each node to make sure it is up to date and aligned with the consensus reached by the network. Any node transmitting faulty messages or attempting to spam the network is excluded and the other nodes will from a smaller circle of trust. Infected nodes are dealt with by unplugging and rebooting. The rebooted node then self-heals by downloading the ledger from the network, and is demanded to repeat the verification of all information. This process is optimised to be quick and automatic. To mitigate the risk of operational downtime during the rebuild of the node, applications can run at the network level. Within an industry this would mean competitors will act as each other's backup. Business intelligence is however still kept confidential, as all data remains encrypted.

As mentioned, alpha nodes have second databases for failed transmissions. Further security is attained by performing statistical analytics on the error database. This function aims at proactively mitigating upcoming cyber-attacks by identifying unusual patterns of behaviour in the failed transmissions. The planned evolution of the protocol is inspired by the Internet

(TCP/IP), where a multitude of niche networks running in parallel eventually got connected. As the network grows, security can be democratised through a hybrid (private/public) expansion of the ledger. Allowing public end users to operate Observer Nodes to review and verify data. A new round of consensus review can be demanded by a democratic majority of Observer Nodes.



Conclusion

The 17th SDG is 'Partnership For The Goals'. This is exactly the purpose for the design and development of G17Eco. G17Eco is a revolutionary platform leveraging breakthrough technology, designed to accelerate and scale the financing and delivery of the UN SDGs, by bringing together government, business and civil society partners into a safe and trusted ecosystem. G17Eco has the capability, not only to turn vetted initiatives to scale but also capture and monitor thought leadership campaigns into actionable initiatives. It is only through our combined funding, resources, technology and know-how that we will solve today's critical problems. Our generation has the opportunity to catalyse a global regeneration movement to change the future. WWG is forming a global collaborative alliance including governments, industry, investors, IGOs, NGOs, thought-leaders, and the general public.

Following 2 years of initial development, WWG invites partners to develop G17Eco with us, and join us on this crucial mission.