TwisT

(Trustworthy Intelligent System)

Whitepaper | v1.2 [Alpha]

(Feature Oriented)

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1. Introduction

Blockchain is a transparent and verifiable system that will change the way people think about exchanging value and assets, enforcing contracts, and sharing data. The technology provides a shared, secure ledger of transactions distributed among a network of computers, rather than resting with a single provider. Businesses are using blockchain as a common data layer to enable a new class of applications. Now, business processes and data can be shared across multiple organizations, which eliminates waste, reduces the risk of fraud, and creates new revenue streams.

Hence, The term Blockchain is a revolution in IT industry but If we see the transparent picture then Cloud providers are just infrastructure providers aiming to provide blockchain solution to indirectly promote their own cloud. As most of corporates are getting dependent on same cloud, and they are not aware of cost metrics of running their dapps on other infrastructure and regions. Most of corporates don't have enough time, energy and money to observe the best & as a result one's thrift is affected by same.

Therefore, This whitepaper will theoretically cover needs and solutions to existing blockchain ecosystem & how Twist will help to cover major problems of decentralized applications.

Sofocle has taken point to develop Twist (trustworthy intelligent system) – a smart and agnostic blockchain marketplace that enables each participant to have their own custom blockchain as a click click go game.

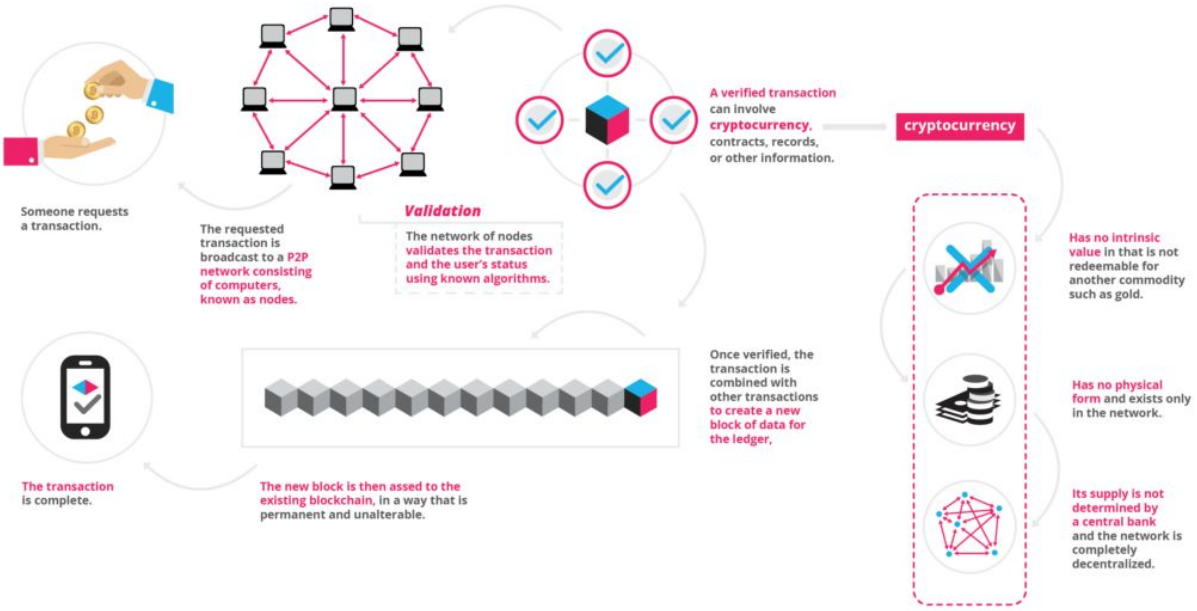
2. Blockchain as of today

Put simply, a blockchain is a ledger of records organized in ‘blocks’ that are linked together by cryptographic validation. It is a digital storage of consensus truth. The key is to understand that this ledger is neither stored in a centralized location nor managed by any single entity, hence its distributed-ness. The block validation system results in new transactions being added irreversibly and old transactions preserved forever for all to see, hence its transparency and resilience. Software that leverage on the blockchain technology are called Dapps.

For dApps behind token economics, Along with being decentralized, there are certain other features that it must have:

- The source code of the dApp should be open to all
- The application must have some sort of tokens to fuel itself
- The App must be able to generate its own tokens and have an inbuilt consensus mechanism

Smart contracts are programmed using supported programming language. i.e. Developers use a appropriate programming language which is a purposefully slimmed down, loosely-typed language.



2.1 Properties of dApps

Along with creating the smart contract, you must have an environment where you can execute it. However, there are some properties that this execution environment must have.

These properties are:

➔ *Deterministic*

A program is deterministic if it gives the same output to a given input every single time. Eg. If 3+1 = 4 then 3+1 will ALWAYS be 4 (assuming the same base). So when a program gives the same output to the same set of inputs in different computers, the program is called deterministic. The environment must make sure that execution of the smart contract is always deterministic.

➔ *Terminable*

In mathematical logic, we have an error called “halting problem”. Basically, it states that there is an inability to know whether or not a given program can execute its function within a time limit. In 1936, Alan Turing deduced, using Cantor’s Diagonal Problem, that there is no way to know whether a given program can finish in a time limit or not.

This is obviously a problem with smart contracts because, contracts by definition, must be capable of termination in a given time limit. So the environment must be able to halt the operation of the smart contract.

➔ *Isolated*

In a blockchain, anyone and everyone can upload a smart contract. However, because of this the contracts may, knowingly and unknowingly contain virus and bugs.

If the contract is not isolated, this may hamper the whole system. Hence, it is critical for a contract to be kept isolated in a sandbox to save the entire environment from any negative effects.

3. The Need

3.1 Business lags with blockchain

Currently we have observed that following are the lags in using blockchain to power up the business:

- Scalability
- Development & Testing Time
- Cost Saving Recommendations
- Security
- Automatic Assistance
- Care of Law, Audit and Legal Things
- On The Fly Support
- Easy IOT Integration

➢ Combing all together

3.2 Need for whom?

In principle such as system can be easily envisioned. Everything, that happens to data, whether transport, processing or storage of data is entered into the blockchain.

Afterwards what happened to data, who accessed the data, where it went and how that data was governed can be verified by anyone who has access to the blockchain. In essence the blockchain freezes the compute platform in time and users of the platform can verify that the platform is in the correct state in real-time.

Such a system would give complete traceability for the cloud, entities who are either using or administrating the cloud can be held responsible for their actions, regulators get to audit all processes and everyone involved can verify what happened when.

Of course a reasonable question to ask would be whether such as system could be built in reality. Even a modest petabyte cloud easily implies billions of data transactions every second that would need to be entered into the blockchain and distributed out to the edge. The implied network, storage and compute requirements would make it impossible to scale.

Now here's a thought - imagine if that blockchain wasn't just for one cloud - but for all clouds, and all data - every transport, compute and storage of data across all networks in the world. Imagine what such as a system would imply for global society. It would transform our society from one that is trust based to one that is truth based, i.e. humans can choose to trust each other, but they can also prove what happened using the blockchain.

4. Solution

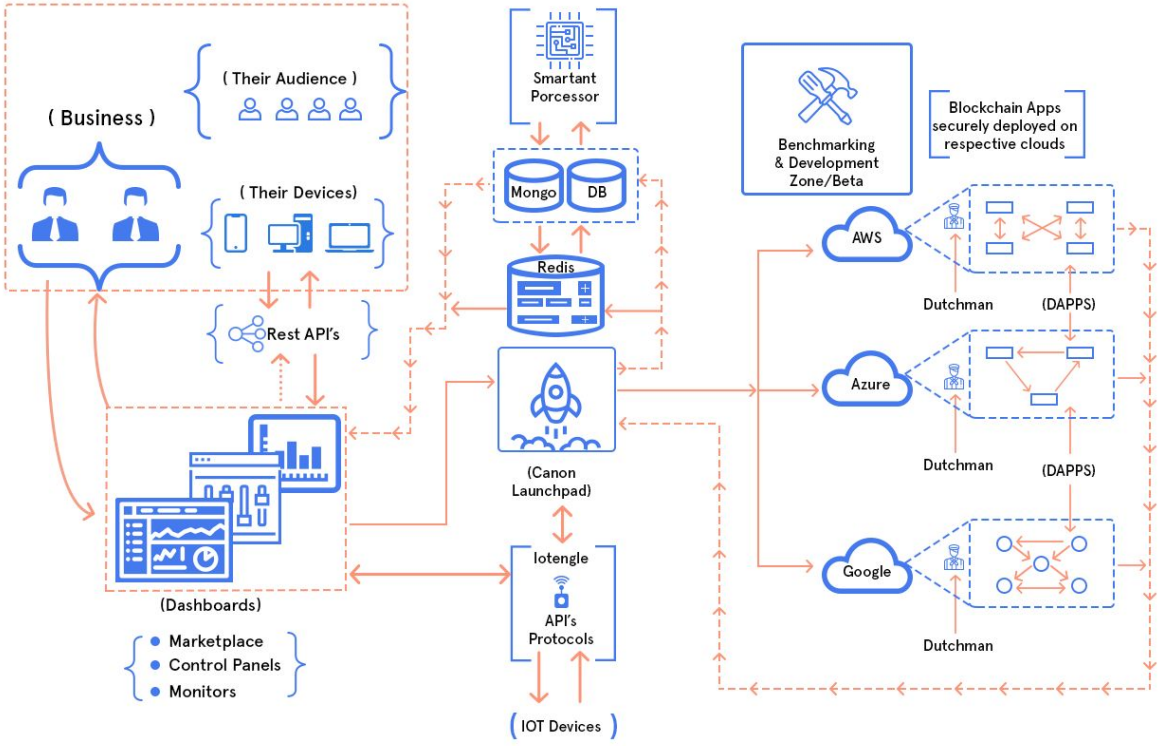
4.1 Overview

This platform is a blockchain multiverse. It is a smart, intelligent and automated platform to launch blockchain based applications on variety of infrastructures.

Industry's 1st & only autonomous blockchain cloud platform to simplify operations and enable customers to focus on applications with Twist service control, monitoring, and minimal-downtime patching.

We are giving a proactive marketplace to easily deploy your solution from list of multiple existing products having their dynamic secure smart contracts.

Twist possess marketplace where one can choose the best according to requirement and then can deploy on the fly with amazing features.



(Alpha Architecture For Twist)

4.2 Features Overview

Twist features following to power up the dApps:

- ➢ Easy & Configurable Network Deployments

- Live Optimization, CleanUp & Updates
- On the fly Sandbox environments.
- Auto Maintenance
- Smart Assistance Wizard
- Cost Saving Recommendations & Triggers
- Prioritizes txn peers for optimum performance
- Highly Modularity
- Smart Contract Marketplace
- Provides Governance Layer.
- Easy Logging for distributed components

4.3 Detailed features

On detailed features, Twist will cover following:

- Provides easy interfaces to configure your existing dApp onchain parameters & permissions for your network e.g. number of txns per blocks, peers for consensus building,selecting seed nodes, etc.
- Performing independent checks and manual reconciliations is time-consuming and costly for everyone, and still leaves open a risk for error that could result in steep fines.
- Providing easy benchmarking utilities which gives actionable intelligence to achieve peak performance of the solutions.
- You can analyze the details of each of elements and discover which specific peers are clogging up your solution.
- Provides efficiency to your network by purging old objects with proper consent.
- Keep the ecosystem up to date with all security fixes & optimization suggestions.
- Use activation tools for new networks, members, smart contracts and transaction channels. Multi-party workflow tools also available, providing member activities panel, integrated notifications and secure signature collection for policy voting.
- These are on chain permissions which are limited to specific blockchain or specific solution as owned by individual. giving an easy protocol to handle governance in easy manner.

4.4 Sawtooth Specific Features:

Sawtooth is highly modular and therefore it made us believe to give great customization experience to Block-Ops. On Common twist will cover following features by help of sawtooth:

- ➢ Automated native sawtooth environment setups considering selinux & best security checkpoints.
- ➢ Automated genesis creation for new networks & easy to join functionalities for existing networks.
- ➢ Monitoring the sawtooth blockchain. i.e. Using twist one can monitor blockchain, transactions, validations & activity with interactive webpanels.
- ➢ Alarming & auto-recovery of services: Validators, TP's, RestApi's,
- ➢ Monitoring availability of all validation nodes and visual modelling of current network.
- ➢ Predicting the failures . i.e. After user's consent smartant will process analytics on collected logs. to predict the future failures and show the best time saving recommendations.
- ➢ Smart network architecture, connecting peer VM"s/Instances through internal IP's & RestApi's with secure gateway to reverse proxy through 127.0.0.1:(8008|4004). Showing real-time accessible ports and n/w throughputs.
- ➢ Easy Export & Import Private Keys.
- ➢ Interoperability with fabric for major products.
- ➢ Smart Assistance on writing Seth Contracts.
- ➢ Recommendations during creating policies , roles , protobufs, Txn payload .
- ➢ Option to AutoTest Txn processor and benchmark before launch.
- ➢ Sawtooth Bridge, i.e. Keeping secp256k1 key in cold storage, which will securely bridge the private key input from hardware device. only when its plugged in.
- ➢ Giving access to authorized Developers to safely use following commands from Twist Block-Ops Dashboard: sawtooth* , sawset* , poet * , intkey * , settings-tp* .
- ➢ Smart individual wizards for secure deployment of Public, Private and consortium network.
- ➢ Easy subscription to events, Twist will smartly Forward ZMQ/Protobuf events to whatsapp/hangouts/telegram.
- ➢ Showing architecture and network throughput to dashboard.

➢ Scoreboarding Txns on Block-Ops DashBoard, based on average. Also Marketplace will show the average txn/sec throughput to next product based on avg max of existing products.

4.5 Modular Legos / Supported Components

4.4.1 Supported Cloud Platforms:

- AWS
- Azure
- Oracle
- Google

4.4.2 Supported SDK Languages:

- NodeJs
- Python
- C
- GoLang

4.4.3 Multiple User Dashboards

- Launchpads
- Analytics
- Maintenance
- Support

5. Conclusion

The vision of Sofocle is to build a trust-free and distributed business ecosystem platform to enable transparent information flow, efficient collaboration, and high-speed intelligent automated value transfers.

Therefore, The Twist is the platform to carry out this future ecosystem with robust blockchain core infrastructure, matching infrastructure services, proper governance and economic design, growing community and business engagement.

About Sofocle

Sofocle Technologies is dedicated in developing distributed ledger software solutions for enterprise . Major domains of Sofocle are Finance , Insurance & SupplyChain solutions. Sofocle Intent to helping everyone with best of our computer engineering, maths & cryptography to innovate with cutting-edge blockchain solutions.

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