THE WORLD NEEDS TRUE DECENTRALIZATION

To learn more about our partners see on our website: https://www.threefold.io/public/#/partners

http://decentralization.threefold.me

Introduction

Is Liberalism dead? Is there an alternative? The world has never been more global and prosperous, but so many people are unhappy. Our too capitalistic (rational mind driven) system is destroying our planet's resources and most people ignore this sad reality and go on with their lives like everything will stay the same as has been for the last 60 years.

The world needs some healing. There is too much talk in our world and not enough action. We believe that we are not powerless. We shouldn't blame others: governments, society, politicians or other countries. We all are at the source of the problems the world is facing today, together we can do something about it.

We need a new approach, an approach which starts with ourselves and we need to realize that we can't solve problems by using the same kind of thinking we used when we created them (Darwin, Einstein, etc).

We believe we need a new truly decentralized internet, an internet not owned by some large corporations but an internet where you become the center of your own circles. This internet needs to be owned by all of us together. The goal is to make everyone the center of their own universe (we call them circles). Not as a part of a big machine or, more recently, a blockchain.

We at ThreeFold are working to create such a decentralized internet. In this document you can read more about why do we need such a solution and the introduction of our 3Bot (which is your digital avatar) as the main instrument of this decentralization.

The document you're reading now is focussed on the functions of the 3Bot (you're digital self = avatar) and how we need to become the owner of our own data and the center of our digital life on this improved internet.

We are not a rebellious group. We are a growing group of people who don't want to wait for things to change because together, we believe we can help the world to heal. We are a passionate group of people who act. We want to work with any government, financial institution, university or any organization to make this change as long as we agree on the same set of values. You can read more about our values in our "FreeFlow Nation" manifesto.

Decentralization is a new revolution.

The world right now has known a long period of relative peace (+60 years). [Liberalism](#) was the engine behind this prosperous period. Some claim that [liberalism as we know it, could come to an end](#). Liberalism is a political and moral philosophy based on liberty and equal rights (see [wikipedia](#)).

Personally we believe there is no better alternative to Liberalism. The values behind Liberalism are great but unfortunately the implementation has been very poor. The main reason for this poor result was centralization and too much focus on ultra efficient capitalism.

We believe decentralization could be the tool Liberalism needs to survive. This could be the next required step in human evolution. This revolution started with Blockchain, very interesting technology, and the first step but not going far enough yet.

Thanks to the blockchain hype, a new business trend has been created, and the current solutions are only the beginning. It's a trend where customers want to see more decentralization. People want to have more control over their own lives. They don't want to become a meaningful piece inside a big Artificial Intelligence machine.
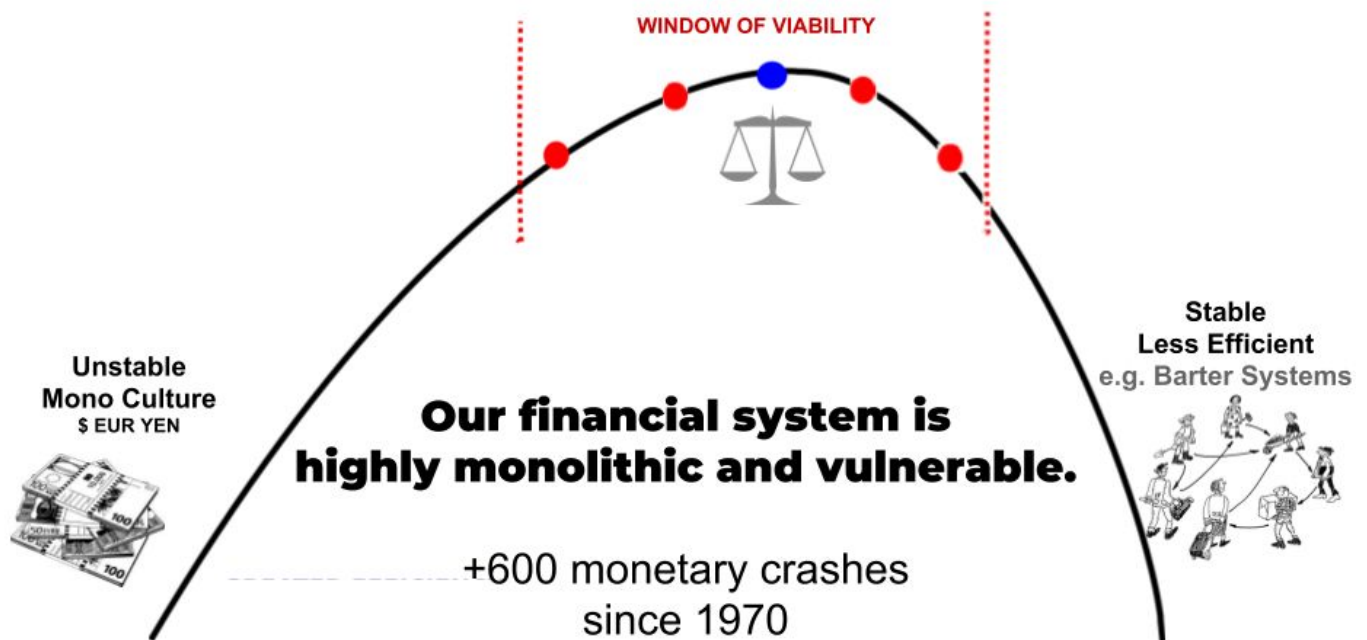
Curve Of Life: Efficiency vs Resilience

Professor and currency expert Bernard Lietaer (http://www.lietaer.com/) advocated an upgrade of our money systems as a systemic solution to our global economic, financial, and sustainability crisis.

One of the ideas he advocated is how every system in the world balances between efficiency and resilience. In nature, resilience is several times more important than efficiency.

Understanding parts of his work help to explain how the world became what it is today. It's the result of a period where efficiency was everything. It gave us the fastest evolution ever achieved in only 100 years but it's not sustainable. His findings can be applied to anything: nature, money, technology, society, ...
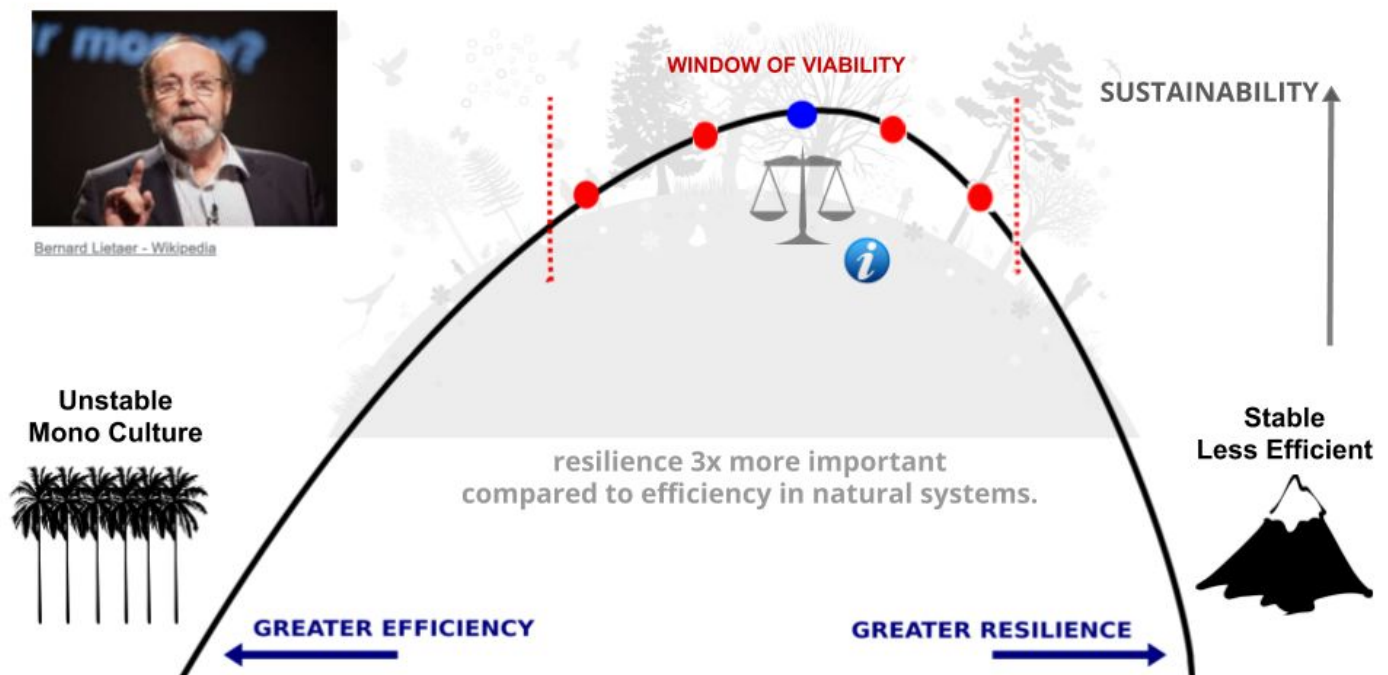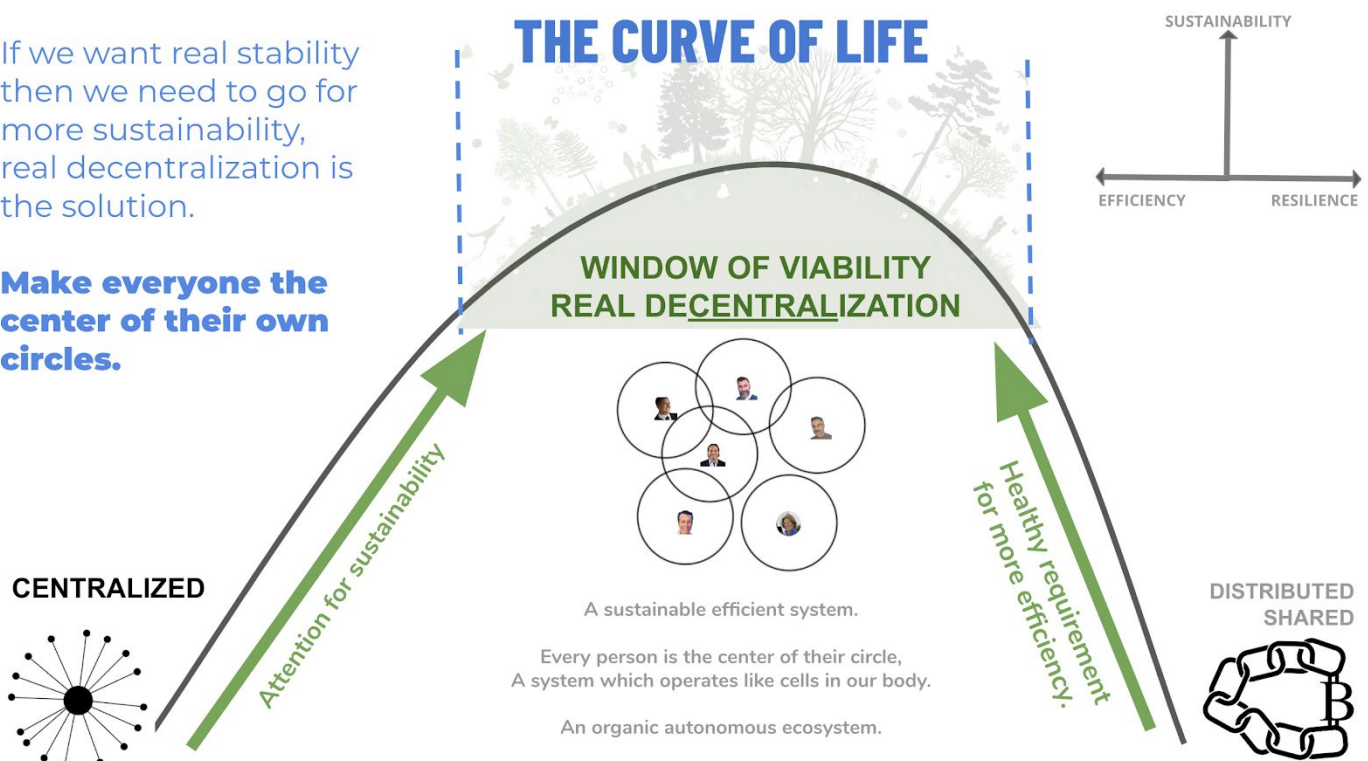

A super efficient system like a monoculture such as pine wood will be not very resilient. These types of forests are very susceptible to sickness and fire, while on the other hand, a mixed forest of trees is much more resilient but not so efficient.

WINDOW OF VIABILITY

**Unstable
Mono Culture**
$ EUR YEN

**Our financial system is
highly monolithic and vulnerable.**

+600 monetary crashes
since 1970

**Stable
Less Efficient**
e.g. Barter Systems

Our money system is a monoculture, it's very efficient (money being created out of nothing) but also very vulnerable. There were more than 600 monetary crashes since 1970. Most cryptocurrencies today are also monocultures and therefore unstable by design.

If we want real stability then we need to go for more sustainability, real decentralization is the solution.

Make everyone the center of their own circles.

THE CURVE OF LIFE

SUSTAINABILITY

EFFICIENCY   RESILIENCE

**WINDOW OF VIABILITY
REAL DECENTRALIZATION**

Attention for sustainability

Healthy requirement for more efficiency.

CENTRALIZED

**DISTRIBUTED
SHARED**

A sustainable efficient system.

Every person is the center of their circle,
A system which operates like cells in our body.

An organic autonomous ecosystem.

New systems are required for money, internet which live in the window of viability.

# We need a complementary decentralized Internet.

"We can't solve problems by using the same kind of thinking we used when we created them"

Einstein

We need a digital backbone to create our FreeFlow Nation. Today we have the internet connecting us all but unfortunately, it's too expensive, power hungry, centralized and not scalable enough.

Microsoft Azure   Google Cloud   amazon web services   Alibaba Cloud

Non Scalable, Power Hungry & 100% Centralised
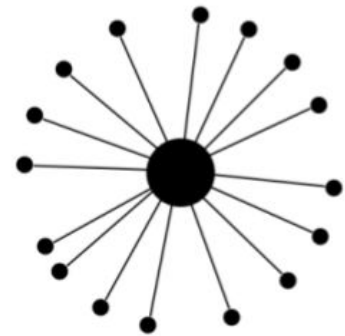
⚡ Data centers are built only in energy dense areas because they **consume huge amounts of energy.**
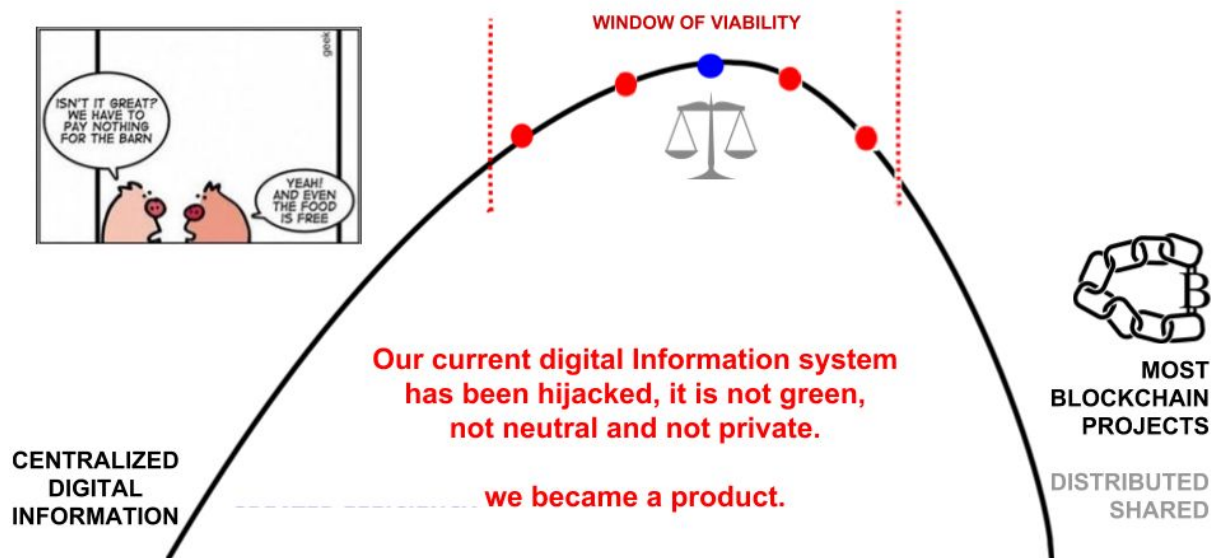

Today's capacity is generated by hyperscale data centers. Such infrastructure is **not scalable nor energy efficient.**

- Microsoft Azure
- Amazon Web Services
- Google Cloud Platform
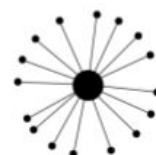
## Internet gets its capacity (compute & storage) from less than 20 "Cloud Vendors".

More than 80% of today's internet capacity is centralized and controlled by just a handful of company's

Current internet systems are efficient (controlled) centralized systems, they can be hacked easily (are hacked) and are not private. They are positioned left on this curve. On the curve of life you would find the current internet at the left side.

The ThreeFold decentralized "Internet" & "IT" system is sustainable.

Everything is a balance between efficiency and resilience (see above). In our current society, the focus is too much on efficiency which has lead to too centralized systems. Centralized systems are too fragile (boom-bust cycles) and can lead to abuse as well (we became a product in centralized data management systems e.g. Facebook, ...).
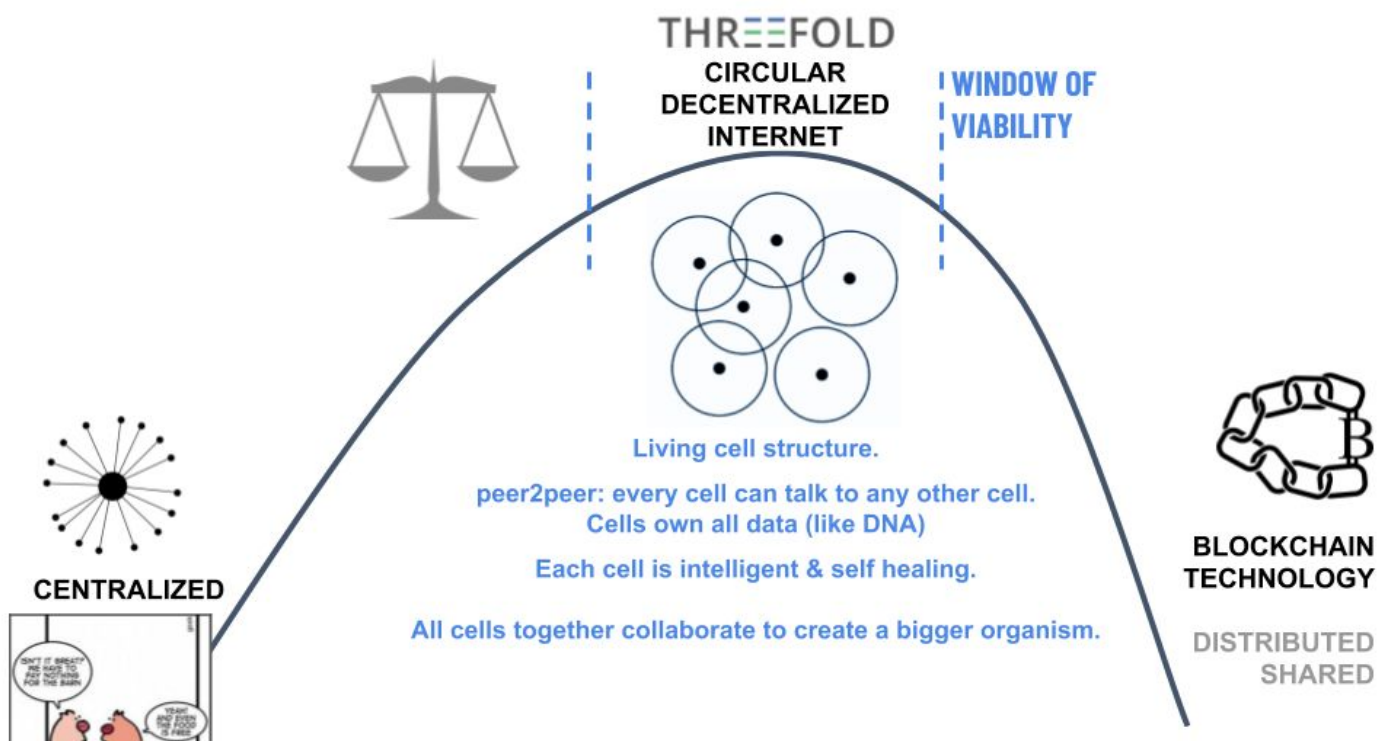
The current centralized systems or the current Current Blockchain systems are at the outer sides of this curve.

A new system is needed with the right balance between centralization and distribution; this is the true form of decentralization. We believe the right form is like a circle where we (or any legal entity) are the "center" of the de-**central**ized world. Blockchain technology is used inside your center of the circle (which we call a digital avatar) as well as finding consensus in between the circles (digital avatar). The combination of both concepts makes a sustainable, viable solution possible.

This solution would sit in the sustainable part of the curve of life.

CENTRALIZED
AS WE KNOW "IT"
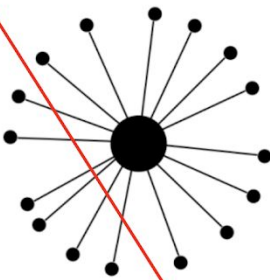
Centralised Data:

- Star/Pyramid systems⁻
- People driven.
- Centralized Data
- Often Power Hungry
- Can Be Slow & Unscalable
- Expensive
- Most Efficient

CIRCULAR
THR≡≡FOLD

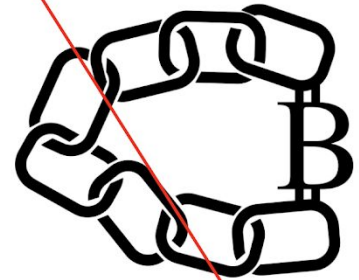### Living Grid Of Intelligent Cells

- Distributed (peer2peer)
- Real Decentralization
- 100% guaranteed private
- Green (10x power savings)
- Unlimited Scalable / Fast
- Affordable for everyone
- Efficient
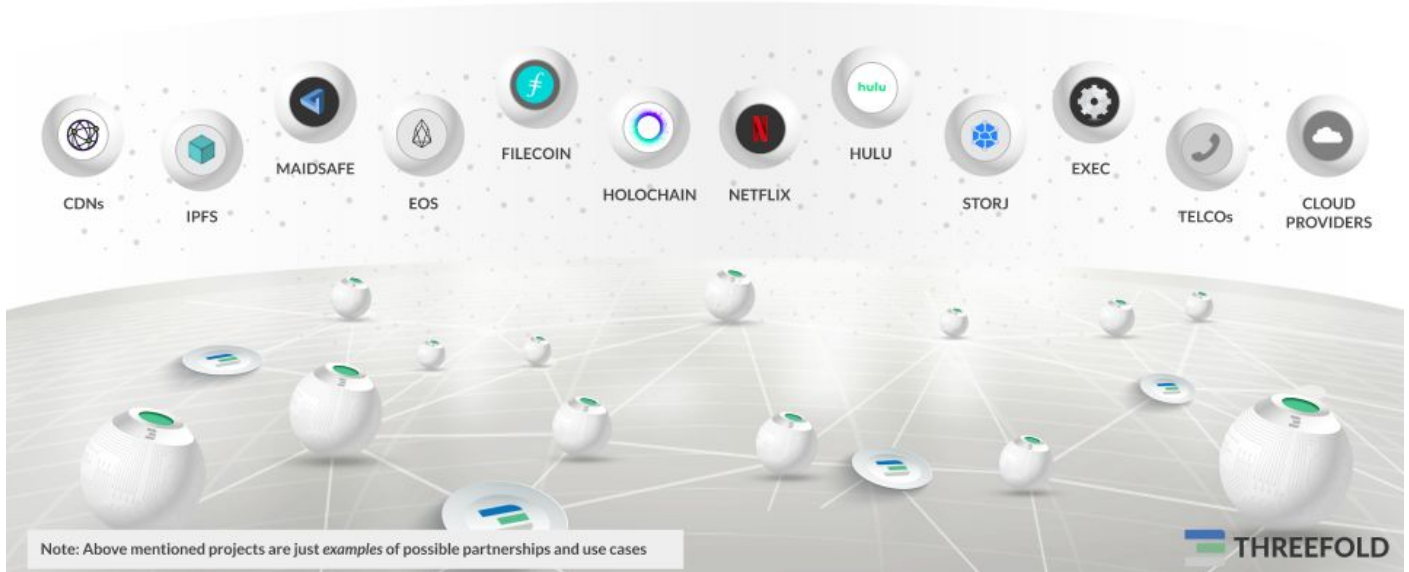- Self Healing

DISTRIBUTED/SHARED
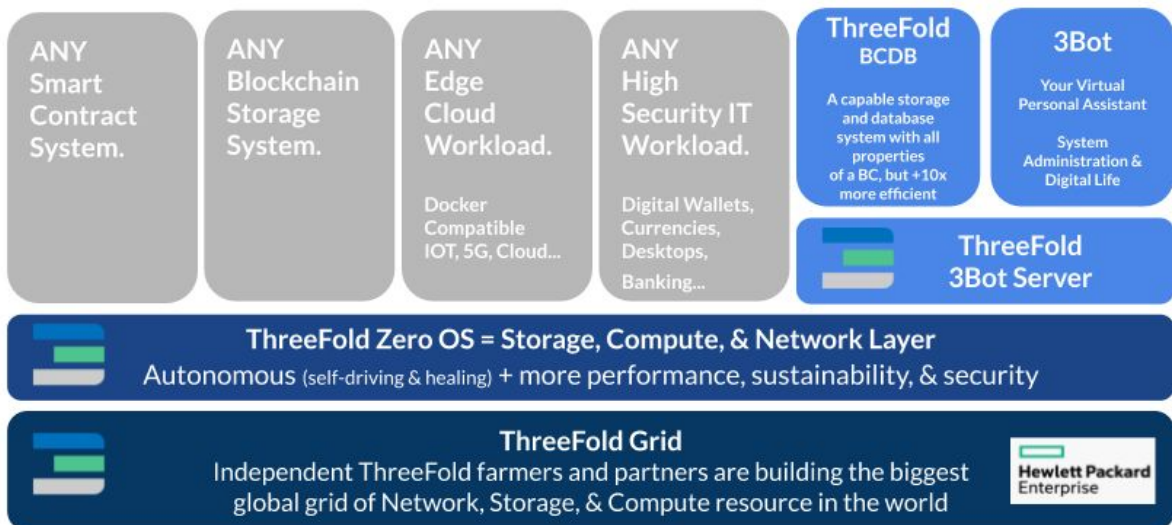## BLOCKCHAIN PROMISE

Shared Data:

- Distributed
- Most Still Centralized
- Shared Data
- Power Hungry
- Slow & Unscalable
- Hidden costs
- Inefficient

WE ARE THE COMPLEMENTARY
UNIVERSAL LAYER

SELF-MANAGING, DECENTRALIZED, STORAGE & COMPUTE

CDNs   IPFS   MAIDSAFE   EOS   FILECOIN   HOLOCHAIN   NETFLIX   HULU   STORJ   EXEC   TELCOs   CLOUD PROVIDERS

Note: Above mentioned projects are just *examples* of possible partnerships and use cases

THREEFOLD

THREEFOLD NETWORK
UNIVERSAL LAYER FOR BLOCKCHAIN & CLOUD

ANY Smart Contract System.	ANY Blockchain Storage System.	ANY Edge Cloud Workload. Docker Compatible IOT, 5G, Cloud...	ANY High Security IT Workload. Digital Wallets, Currencies, Desktops, Banking...	**ThreeFold** BCDB A capable storage and database system with all properties of a BC, but +10x more efficient	**3Bot** Your Virtual Personal Assistant System Administration & Digital Life

ThreeFold 3Bot Server

ThreeFold Zero OS = Storage, Compute, & Network Layer
Autonomous (self-driving & healing) + more performance, sustainability, & security

ThreeFold Grid
Independent ThreeFold farmers and partners are building the biggest global grid of Network, Storage, & Compute resource in the world

Hewlett Packard Enterprise

THREEFOLD

Is Blockchain the holy grail for decentralization?

Blockchain has been painted as the holy grail of decentralization, it's a fantastic tool for certain use cases like smart contracts, digital ledger and money but we believe it's not the right tool for creating a platform where people can become owners of their digital destiny:

Why

- Non Efficient for decentralized apps and storage: Power hungry, Slow and Unscalable, inefficient in the usage of IT resources (too many copies of data, …).
- Not decentralized ([taxonomy report](#), [decentralization vs distributed](#), [hackernoon](#), [blockgeeks](#))
- Private blockchains do not exist ([hackernoon](#), [coindesk](#))
- Greed has been [too much of a driving factor](#) on certain blockchains.
- Often misunderstood & hyped ([the verge](#))

Many people believe Blockchain is the solution to decentralization, but the way how we use blockchains today is not realistic. Example today Ethereum blockchain is already 1 TB in size and it's only the beginning. The current way of using Blockchain technology is too inefficient (too many copies, power hungry, long lookup times, …)

Understanding the graph from Bernard makes all of this very logical, because blockchain technologies are at the right side of the curve they are very reliable (resilient) but not efficient, and that is what we see today.

Basically it's the typical cycle, centralized system gets too efficient/centralized, people want something else they go to 100% distributed (blockchain) and now the world will hopefully look for more balance between the two and that is where believe the circular decentralized solution comes in.

ThreeFold Decentralized Internet
Status of the decentralized internet today?
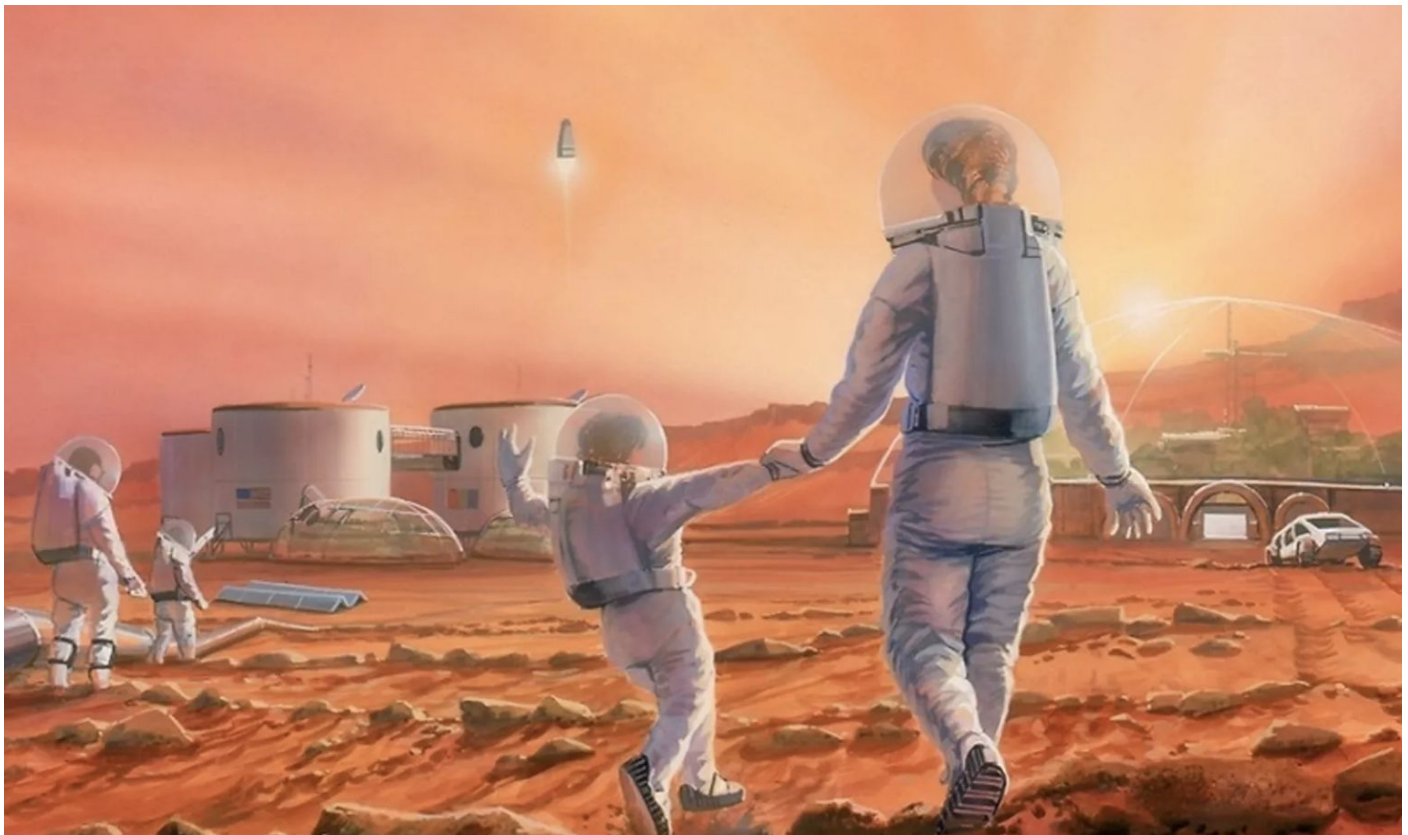
Does this system exist today? Also at ThreeFold, we are not there yet **but we are very close.**
Probably further advanced compared to any other startup or technology vendor.
We had to re-invent a blockchain, an operating system, and a self-healing autonomous IT system.

OUR OPERATING SYSTEM:
## MOST EFFICIENT UTILIZATION OF HARDWARE

Efficient and scalable operating system that eliminates multiple layers of complexity and delivers compute and storage capacity everywhere, much closer to the source of the hardware. Its lightweight architecture makes it cost and energy efficient.

ZERO-PEOPLE =
SELF DRIVING / HEALING SOFTWARE

A major efficiency gain comes from removing the human requirement for deploying and operating IT infrastructure and services.

By end 2019 our grid will be +99% self healing. This has never been achieved in the history of IT Systems.

ZERO-OS

ZERO-ROBOT   **ZERO-CHAIN**
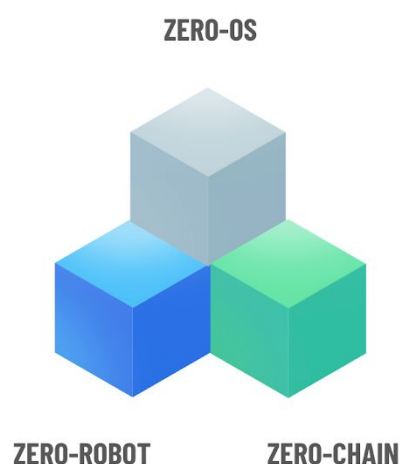
DECENTRALIZED CONSENSUS
BLOCKCHAIN PLATFORM

- More Scalable, Private Blockchain Technology
- Blockchain Dilemma Problem Resolved
- Scale & Security Go Hand in Hand
- Supercharge any other blockchain technology.
- Our own BC-DB is 50x more efficient for storing data compared to others.

But we are very close.

Our Zero-OS & Zero-Chain is usable and deployed today. The ThreeFold Grid is the first deployment of this unique technology and has been activated Q2 2018.

There are more than 18.000 CPU cores and 80.000.000 GB of storage activated with this technology.

There are 3 layers of our technology (see below), the capacity layer is available since Q2 2019. This layer allows anyone to use the grid as decentralized alternative to existing clouds. Through a blockchain you define the workloads you want and it becomes reality. The large majority of workloads running on existing clouds can run on on our TF Grid today.

Since then we have been working on new technology which is making our "digital self" 3Bot service possible. This technology is not ready for prime time yet. We are close to launching an upgrade in our TF Grid where the usage of 3Bot technology will be introduced.

ThreeFold Tech is the technology company who developed this technology. ThreeFold Tech is working with chosen technology partners to roll out commercial products. To learn more about the technology which empowers our 3Bot see our technology whitepaper (links at end of document).

The ThreeFold grid is operational since March 2019
Our version 2.0 is operational since May 2020

THREEFOLD

ThreeFold farmers have already deployed more capacity compared to the sum of all other decentralized projects together (blockchain).

Unlimited Scalability
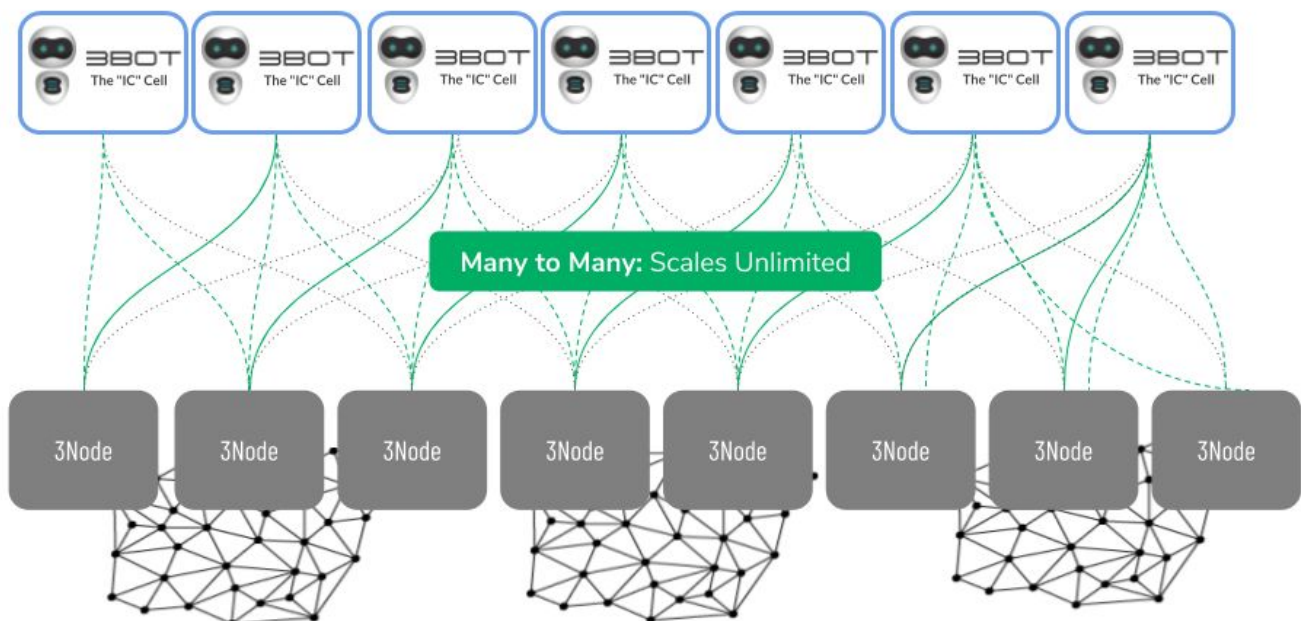
In this system the 3Bots which are the intelligent cells scale independently from the 3nodes, this creates an unlimited, scalable system. The 3Bots use the resources of the 3nodes to bring any required service to life

There are 3 ways today which allow people to buy Internet Capacity:

The ThreeFold grid delivers Internet Capacity at a price much lower than alternative centralized solutions and is much faster and more scalable compared to some newer blockchain alternatives.

The cost advantages are substantial.

From Star to circles

The problem: we became a product.

DATA = IS THE NEW OIL …

Our data is the most important asset we have. Companies like Facebook and Google needs lots of our data to function.
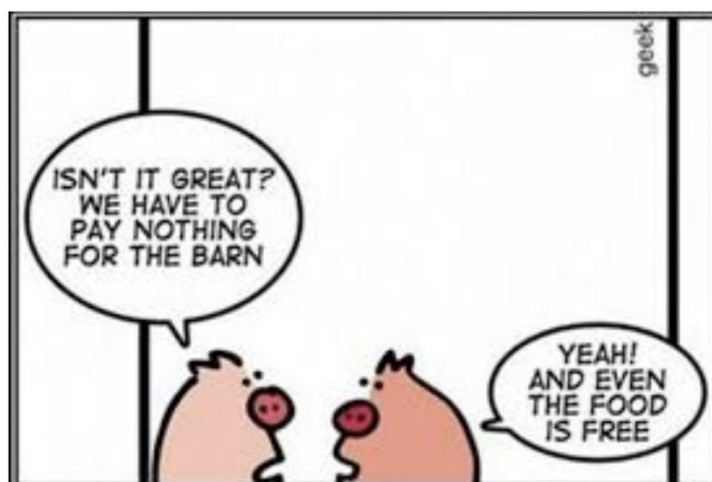
In our world, profit is the main driving force of our society, reducing us to a product in a big services machine. We no longer exist as an independent person, we exist as targets in a big Artificially Driven machine programed to maximize profit. Our data is the most valuable asset in this world.
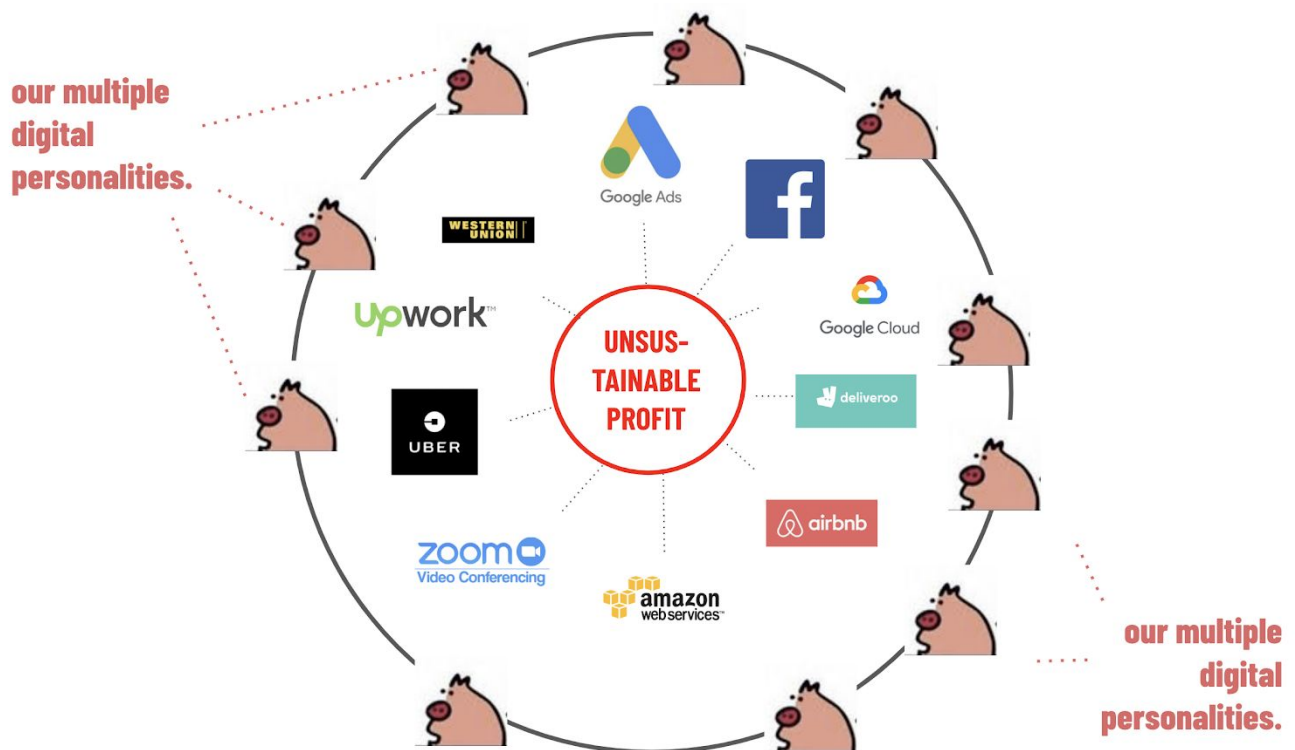
Next to the unethical behaviour of above paradigm there are also huge side effects in the way how these systems have been built.

Most of us exist more than 50 times in such a system. Each time you register for a new service you actually create a new digital identity. You only have partial control over these identities and it leads to very inefficient behaviour.

Some examples:

- Your digital life is complicated,e.g. your need to remember how to communicate with who and which tools to use, you need to learn how to use multiple tools in a lot of detail.
- Because you exist +50 times, compute & storage power required to deal with these services are duplicated 50 times. This means 50 times more world resources are used than really required.
- Your data resides on many locations and is not really managed by you.
- You're services are very centralized and as such you have to digitally travel far to reach those services, leading in less performance, more cables, less healthy technologies (5G)
- The data centers hosting these applications are huge and very power hungry, while in reality they are not needed.

The idea: we need an improved "IT" system where we become the center.

IT'S ALL ABOUT YOU

You only exist one time.

Super Efficient.

No duplication of data or Communication

You pay for what you use.

Everyone is in business now.

You're the only one in control.

Alternative Safe Social Network

Decentralized Education Reliable Knowledge

Non Blocked Untapped Video Conference Service

YOU
digital avatar

Local Easy Ecommerce Everyone Can Sell

YOUR TIME as a service e.g. coding, consultany

Safe Digital Complementary Currencies GOLD / EUR / COFFEE / TFT
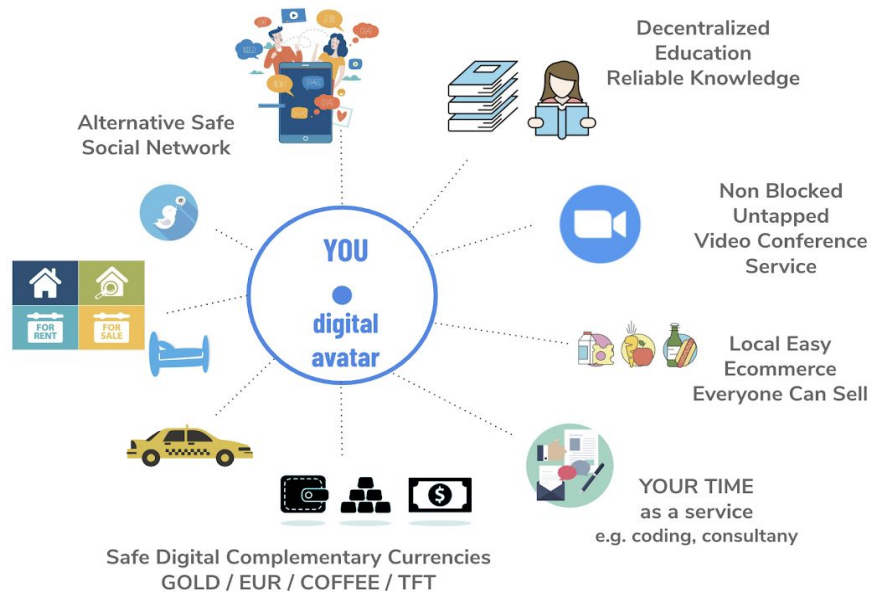
For the last couple of years blockchain was the synonym for decentralization. We believe this is not True, most blockchains are not decentralized at all. They are distributed systems but not decentralized.

Real de**central**ization is still centralized but in a different way. In our way of decentralization we believe that you need to become the center of your digital life and no-one but you can define how your data is being used.
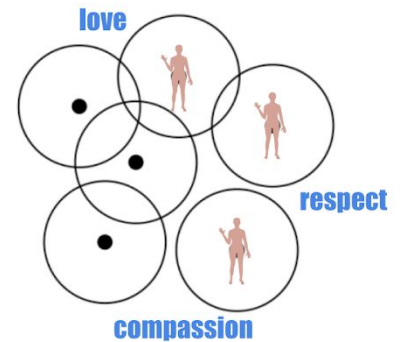
We believe every legal or human entity should have a digital avatar = our digital self. This avatar is an application running in a neutral and free internet and is online all the time and can speak to any other digital avatar in all freedom and with all efficiency. More like how cells work in our body, all together we create a functioning digital world, by collaboration rather than suppression & control.

3nodes deliver the required energy for the 3bots to function. **3nodes** are installed everywhere in the world
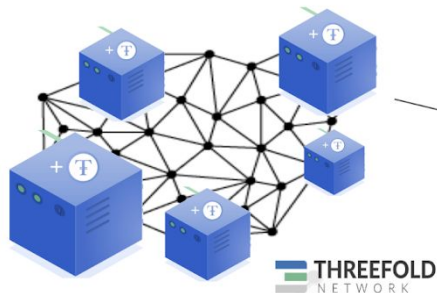
Each 3node is a computer delivering storage, compute & network capacity.

TF Farmers install & maintain the 3nodes and earn TFT (digital money) by doing so
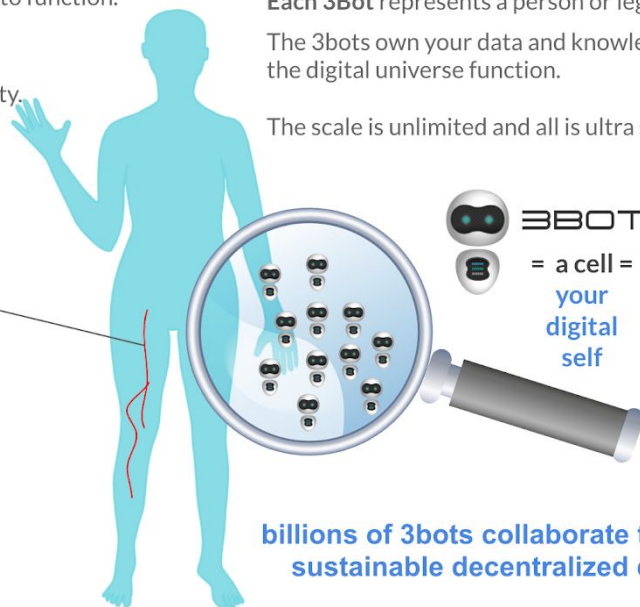
Each 3Bot represents a person or legal entity.

The 3bots own your data and knowledge required to let the digital universe function.

The scale is unlimited and all is ultra secure & private.

3BOT = a cell = your digital self

**millions of 3node's deliver the required energy**

billions of 3bots collaborate to create a new sustainable decentralized digital world.

Above described system allows every person or legal entity to communicate to each other in all freedom. All 3Bots are registered in a sort of phone book (implemented by means of blockchain technology). This phonebook allows every 3Bot to find any other 3Bot. Each 3Bot has a unique id of only 1 number. Each piece of data in this digital universe is owned by a 3Bot (company or person), also this piece of data is identifiable by 1 number. **This means that any information in the world can be addressed by only 2 numbers**. A 3Bot has a very unique way how to use the storage energy as delivered by the 3nodes and can store unlimited amounts of information which can never be lost nor compromised. This is truly groundbreaking technology much more efficient compared to any existing blockchain technology.

It's hard to comprehend how much more efficient our digital life becomes because of this architecture. The global world's information available at your fingertips at full security and authenticity. All communication is full peer2peer no centralized systems are required.

The world needs an efficient **Decentralized Information System which we call the 3Bot.** ThreeFold has created technology which can be used to develop such a system running on top of the ThreeFold grid as described in previous chapter.

From Pyramids To Circles
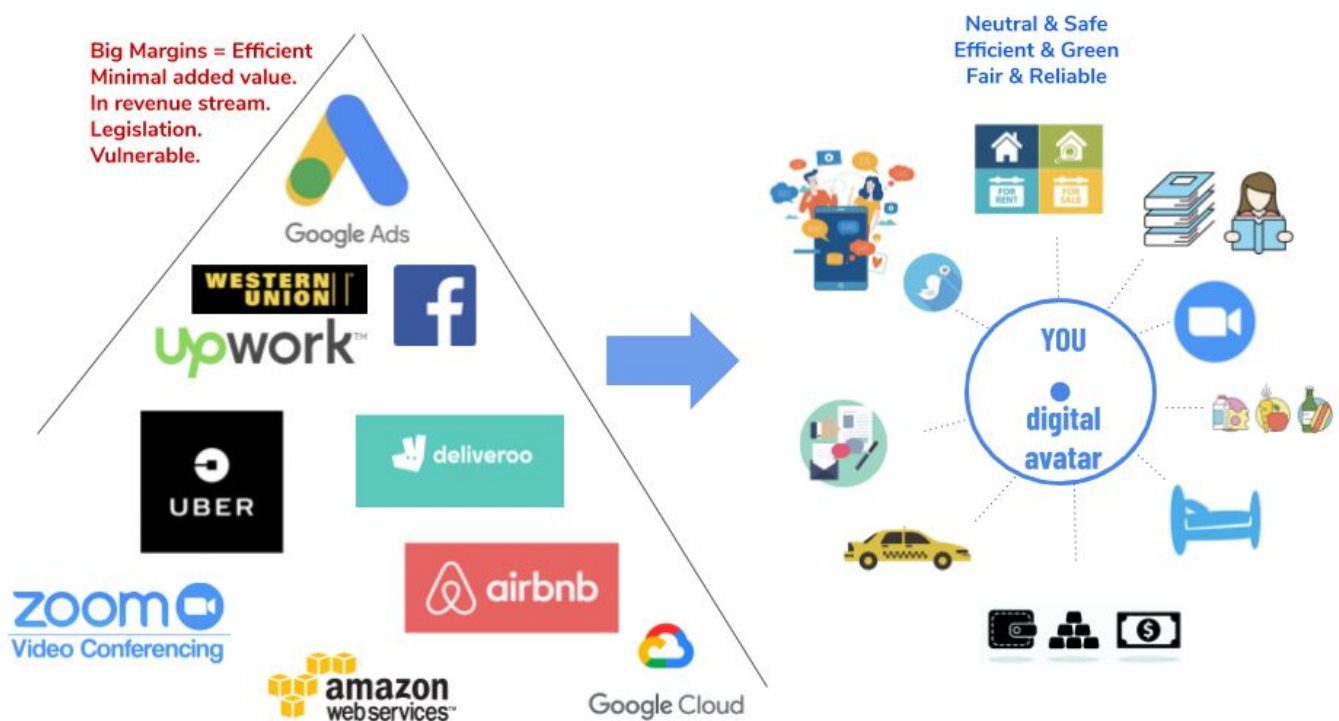
Today every service on the internet is fully centralized. As discussed earlier we have become a product.

The ThreeFold Grid system allows a different mechanism to use those kinds of services.

We call this mechanism **FreeFlow Circles**.

Our personal 3Bot acts as our digital self, it acts like our avatar. This 3Bot owns all our information and can act on our behalf. Our personal digital cell is at the center of our FreeFlow Circles.
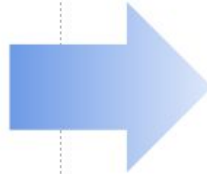
All of the commonly used applications listed in the pyramid on the left of this graphic are neither in line with the FreeFlow Nation values nor are they good for our World. Our personal 3Bot has the capability to eventually become a credible alternative to all these functions.

Multi-tenant Centralized Server Architectures Can consist out of thousands of servers. Horizontal scale out is needed for growth.

Circular Serverless Architecture

Each 3Bot has all information, knowledge and interfaces required. Developers add knowledge to the 3bots by means of DNA packages.

Security? Scale? Cost? Data Privacy?

Huge database systems (sometimes multiple types...). Many front-end (web) servers. Many application servers.

Support Standard Interfaces (Imap, Webdav, Rest, ...)

Can store upto 1 PB per 3bot. Has integrated own blockchain database.

Some examples of services which can run in a personal 3Bot (your digital self).

- You own your identity and can share in a controlled way
- You publish your own information (like facebook, Wikipedia, …)
- You are your own bank (wallet, exchange, different fiat & digital currencies, gold)
- You have access to your own private browser which runs next to your cell and allows you to browse the internet in all privacy without censorship.
- You have access to a decentralized video/audio conferencing system which cannot be blocked and is much more efficient (faster, fewer resources used).
- You can offer your services to anyone in the world and have equal chances to do so.
- You can buy services from anyone and localized to your situation (taxis, hotels, restaurants, …)
- You can plan your time in relation to your circles (scheduling)
- You have access to any information (education) and can self improve without prejudice

ThreeFold Technology

Architecture

Living Grid Of Intelligent 3Bot Cells

- Any Company or Personal Entity owns a 3bot.
- Owns **all** your data = like DNA/RNA
- Communicates (P2P securely)
- Owns and Manages money ($$$)
- Works on your behalf 24/day 7/7

3BOT
Your "Digital Self"

Has all knowledge how to deal with digital currencies & deploying any IT workload you need for your digital life.

Ultra Efficient IT Capacity

- Distributed Grid
- IT Infrastructure
  - Storage
  - Compute
  - Networking
- Source Of Energy
- No Intelligence / Reasoning
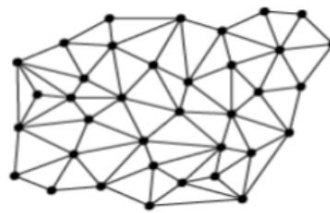
Private Or Public 3Nodes

Storage + Compute HW + TFTech SW = 3Node

Architecture: The 3Bots live on top of the grid of capacity and as such there is unlimited scalability.

The 3 layers

Information, News Education, Knowledge	Communication & Messaging	Decentralized Exchange & Wallet	Collaboration Tools

### Experience Layer: H1 2021

Any web technology can be used to create the most amazing applications. The experiences are 100% decentralized and take 10x less time to develop. Any existing web app can be converted in no time. These solutions are not delivered by ThreeFold but by our community.
Example of this = **Crystal Twin**

3BOT Personal Server System	3BOT Personal Server System	3BOT Personal Server System	SDK = System development kit

Autonomous Layer (3Bots):

Self-Driving/Healing IT technology. 100% peer2peer decentralization. Each user or legal entity has their own "3Bot's".
3Bot make everything possible on the ThreeFold Grid.
State: Beta v3 Oct 2020

3Node Zero-OS	3Node Zero-OS	3Node Zero-OS	3Node Zero-OS
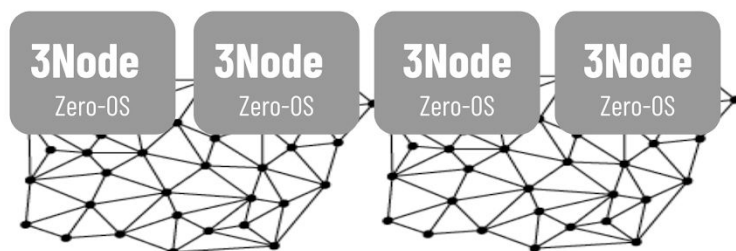
IT Energy (capacity) Layer (3Nodes):

Delivers the required storage/compute capacity for your IT solution. Any application which can run on Linux can run on our Zero-OS'es Our system provides more decentralization, security and efficiency, Compatible with docker, ... +50x efficiency savings for blockchain related workloads, 10x for storage. Includes the most efficient blockchain database and object storage technology.
State: v 2.2 Oct 2020

The system consists out of multiple layers, a technical user can create their solutions on any of those layers without needing to know about the other layer e.g. an application developer does not have to know about the capacity layer, but a low level IT expert can deploy his applications directly on the capacity layer.

Communication Flows

DIGITAL TWIN STORAGE SOLUTION:
8 BYTE GLOBAL RETRIEVAL PROCESS

STEP 1&7: watch video addr is 2 numbers A & B

STEP 3: get video from Twin using ubique id B

STEP5: Twin gets the data from X nodes on network using dispersed storage algorithm the first e.g. 10 nodes who answer together deliver the content.

Digital Twin

STEP 2: find address of video owner Twin through unique id A

STEP 6: video being streamed to user Twin.

STEP 4: Twin can verify request by using the 3Bot blockchain (authorization)

of the video owner

Twin Blockchain
Phonebook of Twins

Blockchain DB

Quantum Safe Storage Engine

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Information flow documented where a user retrieves a video from his/her phone.
Each piece of information gets addressed with only 2 numbers, which makes it very scalable.
All 3Bots are registered on a blockchain (like a phonebook) which makes it secure and efficient.
Data is dispersed over the grid onto multiple nodes providing ultimate security.
For more info read our tech whitepaper (see at the end of this document)

Some advantages for the users of this system

- More Performance
    - Decentralized Video/Voice conferencing is faster.
    - Access to information is much faster because information is closer to you.
- More Convenience
    - Because all the apps are built using the same backend system which is basically you, the convenience will be much higher. E.g. integrated payments, ...
    - Easier combination of services.
- Lower Cost of Services and Products
    - The more efficient system and elimination of certain unneeded middleman will lead to much lower cost of services or products.
    - We believe for certain services the difference can be substantial like up to 50%
- More transparency and information about the source of the service/product
    - Thanks to the 3Bot technology it is possible to track the origin of the service you use.
- Build in fair & neutral reputation system improves quality
    - The built in reputation system makes sure that quality and price are aligned.
    - The 3Bot verification mechanisms are fair and neutral
- Access to more (educational) information
    - All information at your fingertips
- Less manipulation
    - The information you get will come guaranteed from sources you trust. Manipulation should be impossible.

- Equal Rights
    - No matter where you live, you will be able to communicate & access information.
- Anyone can deliver services or products online and participate in the FreeFlow Economy.
    - No need for complex e-commerce or payment systems.

Marketing upside down
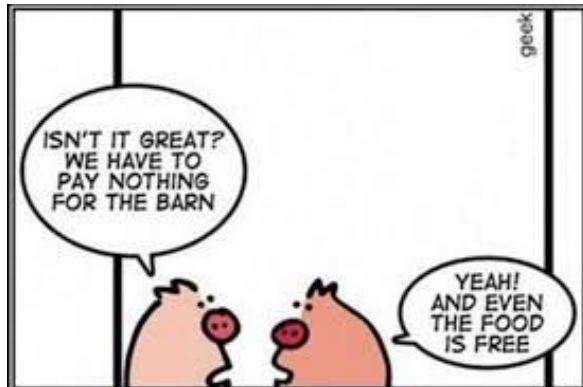
In the current systems you think to get a product for free, but actually you are a product which generates more than 1000 USD per year for the current internet companies.

In our system, you pay for the digital resources you use e.g. storage, network and compute capacity.

The person or company who wants to sell a service can broadcast their offering through opt-in marketing channels.

In our new Internet/IT system, a user gets rewarded for looking around and investigating which products or services to buy.

You choose which channels are interesting to your current needs and receives money for actually looking at the offerings. E.g. I am looking to rent an apartment in a certain location or I am looking for a web designer or … I will allow publishers to send information to me.

Result
- Merchant will pay much less for marketing his products
- The consumer will receive money for shopping which could be more than the cost of running a 3Bot.

Basically, this system puts the marketing world upside down and has benefits for consumers and merchants but not for the intermediaries which often don't have a lot of added value yet still reap most of the benefits.

ThreeFold Ecosystem

- ThreeFold Tech
    - A for profit software technology company in Belgium
    - ThreeFold tech delivers the technology used by the Foundation as open source.
    - ThreeFold tech also works with commercial partners to deliver this wonderful technology to companies, banks, governments, …
- ThreeFold Foundation
    - A non for profit organization promoting the growth of the Grid and the digital currency behind (the TFT)
- Incubaid:
    - Our Incubator: http://www.incubaid.com out of which we have been born (-:
- ThreeFold Love
    - A 100% sponsored effort to do good for the world.
    - A very practical approach to empower small communities with the benefits of our ideas.
- ThreeFold Ambassadors
    - An independent group of people promoting our ideas into the world.

We are part of a larger community called freeflow nation, see http://www.freeflownation.org website.
We are the party who wants to help the "freeflow nation" by delivering a fast internet highway which is local to everyone and cost effective to use.

It feels too much, can this really be done?

We believe this is very achievable and in fact we are already well on the way to executing on this mission. Today we already have more capacity online compared to the sum of all other blockchain projects.

We are pragmatic and our motto is to do more with less effort. Our technology allows us to be very efficient and our effort to create these services is maybe upto 100 times easier than if we would have to build these services from scratch.

We need more funding though, we are self funded today (by means of our community) and have enough to continue but we feel we can go faster and enable more companies to become part of our movement.

One of our keys to success are our partnerships and we are very grateful that they want to support our mission.

To learn more about our partners see on our website: https://www.threefold.io/public/#/partners

We are also creating an ecosystem of conscious internet partners see: https://www.consciousinternet.org/ which groups like minded projects together who have all agreed to use our neutral and decentralised grid as the basis for their projects.

There are more than 10 million people in the communities of our partners which are waiting to eventually use endusers apps which are developed using our digital avatar technology (the 3bot server).