nuco.cloud

DISTRIBUTED CLOUD COMPUTING

CLOUD COMPUTING
OF THE FUTURE

The Power of a Supercomputer in your hands. Inexpensive and easy to use!

nuco.cloud

INDEX

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May 07, 2019

2. INTRODUCTION

Computers are becoming more powerful, and an ever increasing amount of computing power is be required. Intel co-founder Gordon Moore wrote in 1965, that the number of transistors that match the size specified in an integrated circuit (and thus indirectly the performance of a processor) doubles approximately every 12 - 24 months (Moore's Law). Meanwhile, however, the development of the CPU, according to Moore's Law, is stalling because the developers have bumped into physical limits. The next big step is the new technology of quantum computers (so much in advance: no, we do not develop a quantum computer!). It is cautiously estimated that at least another five to ten years will pass before this technology is ready, if it can ever be completed.

However, there are ways to get more computing power, in the interim. Currently, these options include:

- Building your own data center,
- renting a cluster in a data center,
- Cloud solutions, such as the Amazon Elastic Compute Cloud (EC2), Microsoft Azure or Google Cloud Platform

The problem with that is that all these solutions are extremely expensive. An interim solution until the completion of a mass-capable quantum computer can be peer-to-peer cloud computing. This is where Iron Eagle Capital GmbH comes in with the nuco.cloud.

3. PLANS

3.1 THE IDEA OF THE NUCO.CLOUD

Iron Eagle Capital GmbH intends to build an IT infrastructure to develop and operate a so-called Distributed Computing Cloud (hereinafter referred to as 'nuco.cloud'). An independent blockchain will be set up in order to invoice the transactions on the nuco.cloud, and the cryptographic token 'NUCO (s)' shall be created for this purpose.

The nuco.cloud should enable anyone

- With a USER account to use the computing power in the cloud, and
- As a MINER, to provide computing power to the cloud.

USERS can acquire the computing power required for their projects via the nuco.cloud and have their projects calculated by the nuco.cloud in a user-friendly, fast and cost-efficient way. This gives the USER access to a decentralised 'supercomputer', without the hassle of having to set up or administer it.

The required computing power is made available to the network in the nuco.cloud by the totality of the devices provided by the MINERS (computers with different operating systems, as well as graphics cards and smartphones) through their idle processing potential (IPP). Nuco.cloud defines the IPP as the processing power of a computer, a graphics card, or a smartphone multiplied by the percentage of unused potential computing power expressed in amount of time. The IPP represents a huge untapped resource that will continue to grow as more and more computers, graphics cards and, above all, smartphones become available. This applies both to new devices, but also, especially to older devices that would otherwise land in the garbage and thus create an environmental burden. These devices now have a new meaning, as they can now act as part of the nuco.cloud.

The projects to be calculated are broken down into thousands of small subtasks via the nuco.cloud, distributed to the available devices and calculated there. The MINER receives rewards in the form of cryptographic NUCO-tokens, depending on the amount of devices and the processing power provided.

3.2 THE POTENTIAL OF THE NUCO.CLOUD

3.2.1 PERFORMANCE OF THE COMPUTER

Currently available models (GPUs included) have an average performance of about 3 TeraFLOPs. With just over two billion computers worldwide and an average performance of only 0.5 TeraFLOPs, this would give a total output of 2,000 ExaFLOPs.

(FLOPS = Floating Point Operations Per Second)

3.2.2 PERFORMANCE OF SMARTPHONES

By the second quarter of 2018, more than 6.244 billion Android smartphones were sold worldwide.

Assuming an average performance of only 100 GigaFLOPS per smartphone (although a Samsung Galaxy S9 already has 370 GigaFLOPS) would result in a performance of 624 ExaFLOPS. If only the 293 million smartphones sold by Samsung in 2018 were added together, this alone results in 29.3 ExaFLOPS.

3.2.3 POSSIBLE POTENTIAL

These figures alone result in an exorbitant, almost untapped potential. For comparison purposes: the currently fastest supercomputer, 'Summit', at the Oak Ridge National Laboratory in the USA has a capacity of 200,795 TeraFLOPS, i.e. 0.2 ExaFLOPS. Less than 0.68 percent of the smartphones sold by Samsung in 2018 would already be enough to reach the computing power of the Summit supercomputer - at a fraction of the cost.

4. THE REASON FOR THE NUCO.CLOUD PROJECT

The reason for the **nuco.cloud** project was that Iron Eagle Capital GmbH has been developing a data analysis programme since 2012 that required a lot of computing power. The idea of a blockchain-based use of computing power came up early on, but there was still no way to use this technology for this purpose.

Thus, different scenarios were analysed; of those, however, none was satisfactory. These were:

- Purchase of multiple workstations (also performed by Iron Eagle Capital GmbH), but 15,000 test runs of the data analysis software on both workstations together took 625 days (pure computation time).
- Optimisation in the Amazon E2C Cloud, until the price list was inspected. 128 calculating engines cost $ 65,000 to rent, for one month.

This is why the idea of developing the **nuco.cloud** came up, in 2017 / 2018. The first consideration was to build this on the basis of Stanford University's Curecoin and Folding@Home. Since various required functions were missing, this project was rejected.

5. TECHNICAL BASIS AND COMPARISON TO OTHER PROVIDERS

As a technical basis, nucocloud now uses BOINC and Gridcoin: This solution offers all the required functions such as CPU mining on Windows, Linux, MacOS and GPU mining on ATI, NVIDIA and smartphone mining on Android.

5.1 BOINC AND GRIDCOIN EXPLAINED BRIEFLY

BOINC is short for Berkeley Open Infrastructure for Network Computing. It is an open source software platform for cloud computing, that is, a globally distributed computing network to support and calculate research programmes with a need for intensive computing.

BOINC has been operated by the University of California, Berkeley since 2002 and is a constantly evolving and proven technology. To date, BOINC has been the driving force behind numerous research programmes with a need for intensive computing, such as pulsar identification, patient-specific cancer treatment, climate model simulations and much more. In December 2018, BOINC had a total of 96 PetaFLOPs.

BOINC was originally developed in 2002 for the SETI@ Home project, which is still the largest project at BOINC. Other major BOINC projects include Rosetta@ Home and the IBM World Community Grid.

BOINC was released under Github with a GPL 3.0 license.

BOINC uses Gridcoin (optional) with a blockchain-based compensation system. Gridcoin was created to reward the participants on BOINC and to thereby recruit more people as miners for BOINC. It thus represents a 'payment system' for BOINC, in which the participants are paid in Gridcoin (GRC).

BOINC was released under Github with an MIT license.

For a detailed description of the underlying technique of BOINC, reference is made to the following elaborations or technical documentation:

- BOINC: A Platform for Volunteer Computing by David P. Anderson, University of California, Berkeley, Space Sciences Laboratory
- Technical documentation from BOINC
- BOINC Gridpaper

5.2 DIFFERENCES BETWEEN THE NUCO.CLOUD AND BOINC / GRIDCOIN

The technical differences between the nuco.cloud and BOINC are relatively small, as the nuco.cloud is based on BOINC technology, as explained above. Two differences will be explained below.

5.2.1 REMUNERATION OF MINERS

BOINC is a computing cloud designed for purely scientific purposes (see https://boinc.berkeley.edu/projects.php). They set up a scientific project there and the MINERS (called 'Researchers' at BOINC) can choose which project they provide with computing power.

Due to the purely scientific background of BOINC, the MINERs there are not paid by the project creators (USER) with tokens that they could possibly exchange with other crypto currencies to Fiat currency, for example, to cover their electricity costs for mining. Gridcoin was developed for the remuneration, whereby the MINER earns Gridcoin, 'only' through the mining from the Gridcoin Blockchain, and not in return from the project creators (USER). At BOINC they only have to bear the costs of creating their project. Since the Gridcoin itself has no payment function in BOINC, the demand is rather low. This leads to low prices for corresponding crypto-exchanges. Accordingly, Gridcoin currently barely covers the electricity costs for MINERs.

In contrast to BOINC, Iron Eagle Capital GmbH intends to make the computing power of nuco.cloud user-friendly and cost-efficient for non-scientific projects, for example for companies and private end-users. The nuco.cloud should be able to calculate data from any open or commercial area. To do this, the USER must first acquire NUCOs and spend them in the nuco.cloud in return for processing power. Again, unlike BOINC, USERs have to pay the MINERs to calculate their projects with NUCOs. Due to the commercial approach, the nuco.cloud is much more profitable for MINERs. In the nuco.cloud, in addition to the mined NUCOs from the blockchain of the nuco.cloud, the MINER receives the same amount of NUCOs from the USER, which receives processing power from the cloud.

5.2.2 EASE OF USE

At BOINC, the projects of the USER have to be individually programmed to get the required computing power.

This will be much easier with the nuco.cloud. For the USER, after completing his project, it will look like he can start to run the programme of his choice over the nuco.cloud, on his own PC by DropDownMenu (with Win: right mouse button -> 'open in nuco.cloud') in the nuco.cloud. The nuco.core then automatically distributes the project in encrypted data containers to the MINER, which in turn computes it and sends it back to the creator of the project. The computer of the USER acts as server here.

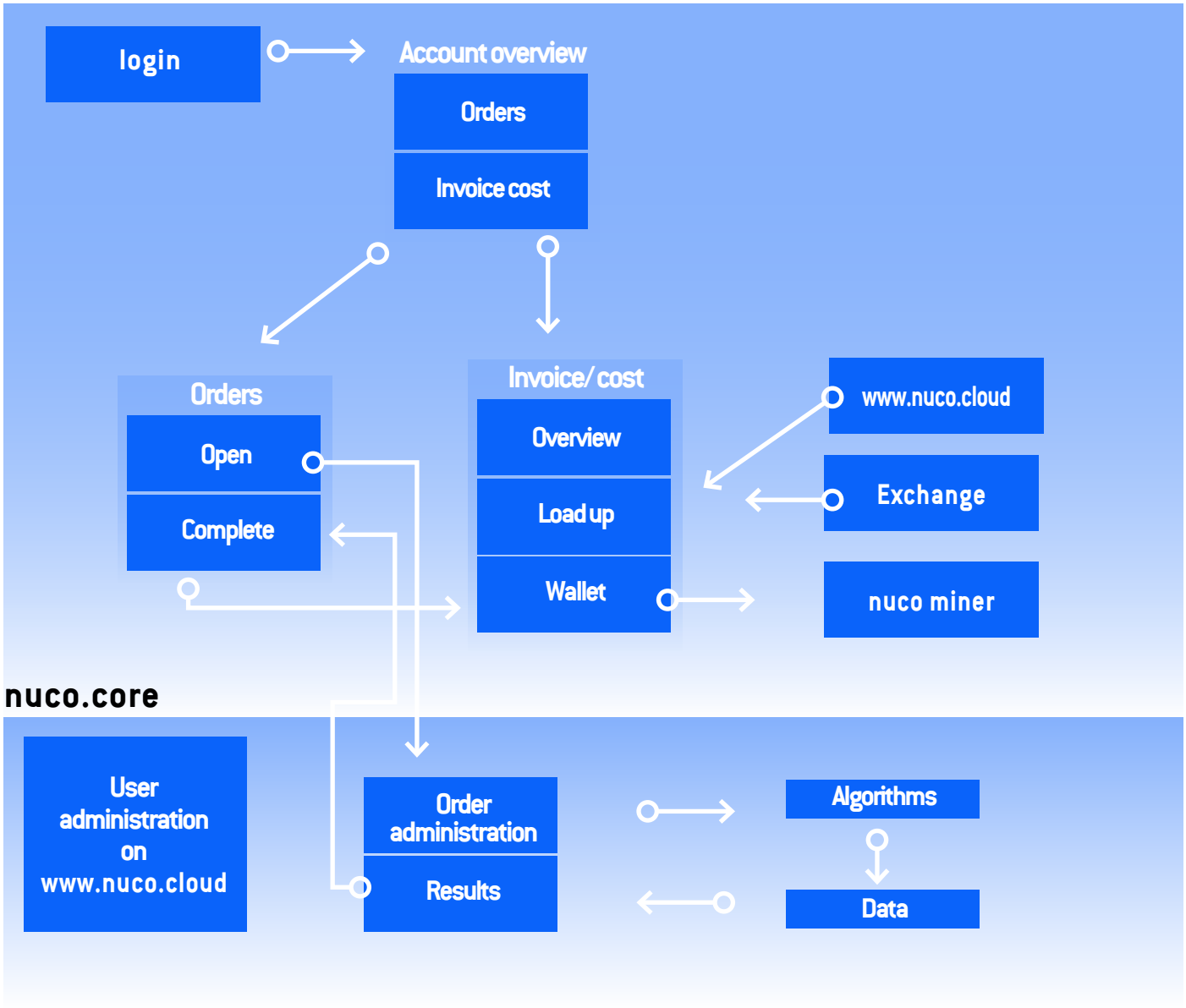
The nuco.cloud should be as user-friendly as possible for the USER. The procedure for computing a project should look as follows, for the USER:

1. The USER starts the programme on his computer via a drop-down menu (Windows: right-click on the programme -> 'Open in nuco.cloud')
2. For example, as soon as the USER's computer reaches more than 50% load, the computer divides the project into several small sub-projects (containers)
3. Distribution of containers to the MINERS via the cloud
4. Calculation of the containers by the MINERS
5. Returning the computed containers to the USER
6. The USER's computer compiles the results of the computed containers into a total result

The USER must acquire NUCOs via the website (www.nuco.cloud) before calculating its project. The NUCOs are then automatically deducted from his nuco.wallet. The calculation basis for this is the above-mentioned formula to be developed (see section '6.1 Calculation power customer as nuco.user').

nuco.user im nuco.client + nuco.core

nuco.client



5.2.3 OVERVIEW OF DIFFERENCES TO BOINC / GRIDCOIN

	nuco.cloud	BOINC / Gridcoin
Purpose	Commercial and scientific	Scientific
The MINER receives coins from	Customers and the Blockchain	Blockchain
User friendly for the USER	Yes	No

5.2.4. ADVANTAGES AND DIFFERENCES WHEN COMPARED TO OTHER COMPETITORS

- The nuco.cloud will be much more user-friendly than the competitors' solutions (see section '5.2.2 Ease of use' and section '5.5 Additional components of the nuco.cloud')
- The security is guaranteed for both sides (MINER and USER):

a) For the MINER, in that the cloud cannot import any malicious code onto the host.

b) Further, for the USER, because the MINER has no insight into the code or the project to be computed, because he only receives a small data container for the computation.

- Because of this protection nuco.cloud does not need any insight into the code of the project (unlike competitors, for example Golem).
- In contrast to all competitors, each of which is to be understood as a marketplace based on smart contracts for computing power, the nuco.cloud is a real cloud. With enough NUCOs available, it is possible to use the entire computing power of the nuco.cloud for a single project. This does not work for the competitors because of how their solutions are structured. At this point, the USER must decide whether to have his project computed at either MINER A, MINER B or MINER C. However, he can not 'interconnect' the MINERs. This results in the problem that a large number of the calculations are unnecessarily calculated several times over. The nuco.cloud is different, and the calculations are done collectively by the cloud.

Properties	nuco.cloud	DFinity	Golem	IEX.ec	Tatau
Real Cloud	Yes	No	No	No	No
Pure Marketplace	No	Yes	Yes	Yes	Yes
Based on smart contracts	No	Yes	Yes	Yes	Yes
Want insight into the code	No	No	Yes	No	No
The MINER receives coins from	Customer + Blockchain	Client	Client	Client	Client
tried and tested technology foundation	Yes (BOINC)	No	No	No	No

5.3 WHY MINE AT THE NUCO.CLOUD AND NOT ELSEWHERE?

For most other cryptocurrencies, especially Bitcoin, effective mining only works with ASICs, but no longer with GPUs, let alone with CPUs. Furthermore, mining is not possible via smartphones.

Many cryptocurrencies now only use proof-of-stake and smart contracts. This means, there is no more mining by providing computing power.

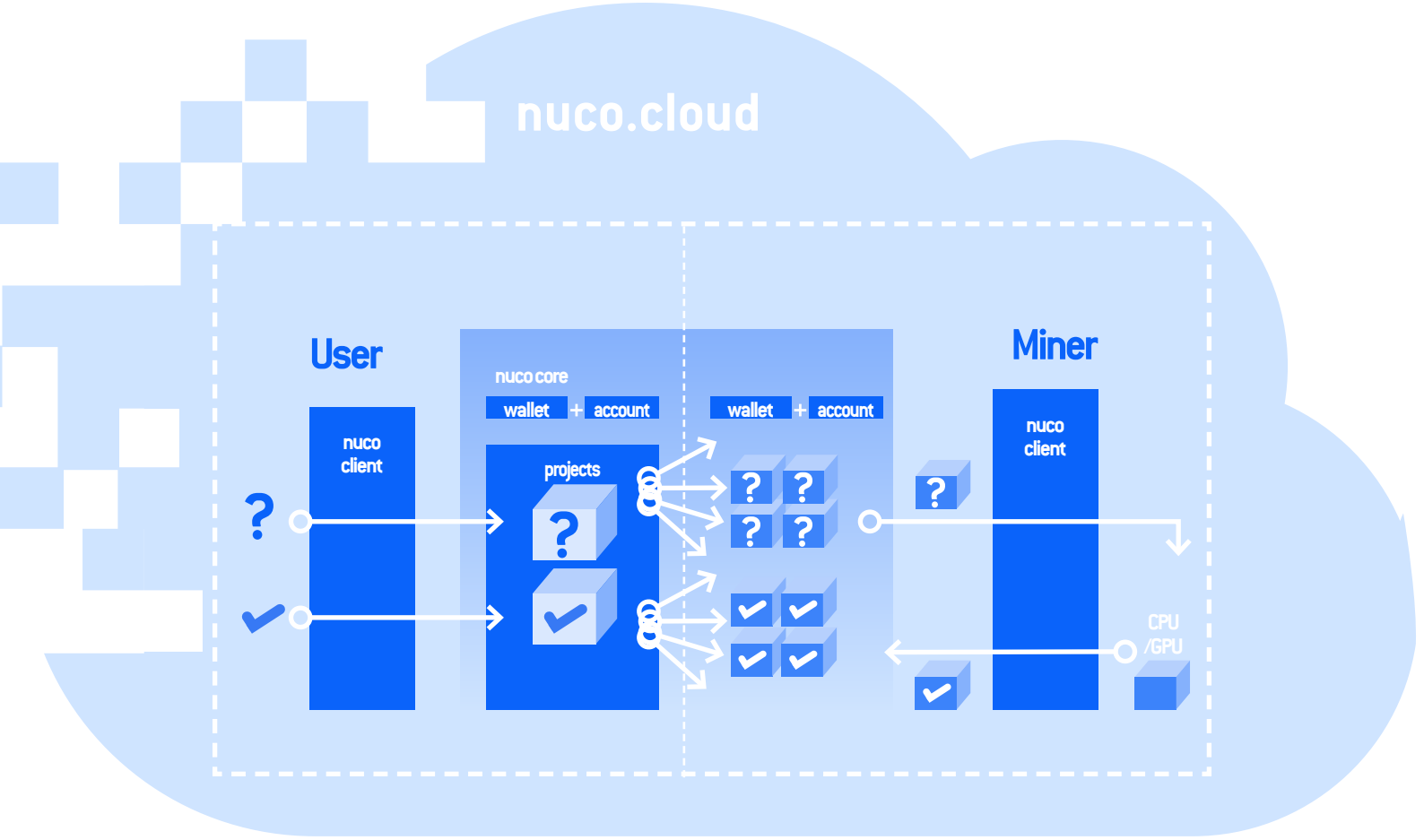
In the nuco.cloud, the MINER receives, as already described, both the NUCOs that the USER pays for the calculation of his project, and the same number of NUCOs from the Cloud - thus twice the amount of NUCOs as the pure traditional mining, as we know it so far.

This applies until all tokens have been mined (see section '7.4.9 Magnitude Multiplier'). Thereafter, the MINER receives only the tokens that the USER pays for using the nuco.cloud.

The reason for the double payment is that the MINER already receives NUCOs even when the nuco.cloud has no USER, i.e. end-customers, who pays the MINER.

- Without tokens for MINING there will be no MINER, thus no computing power.
- Without computing power, no customers.

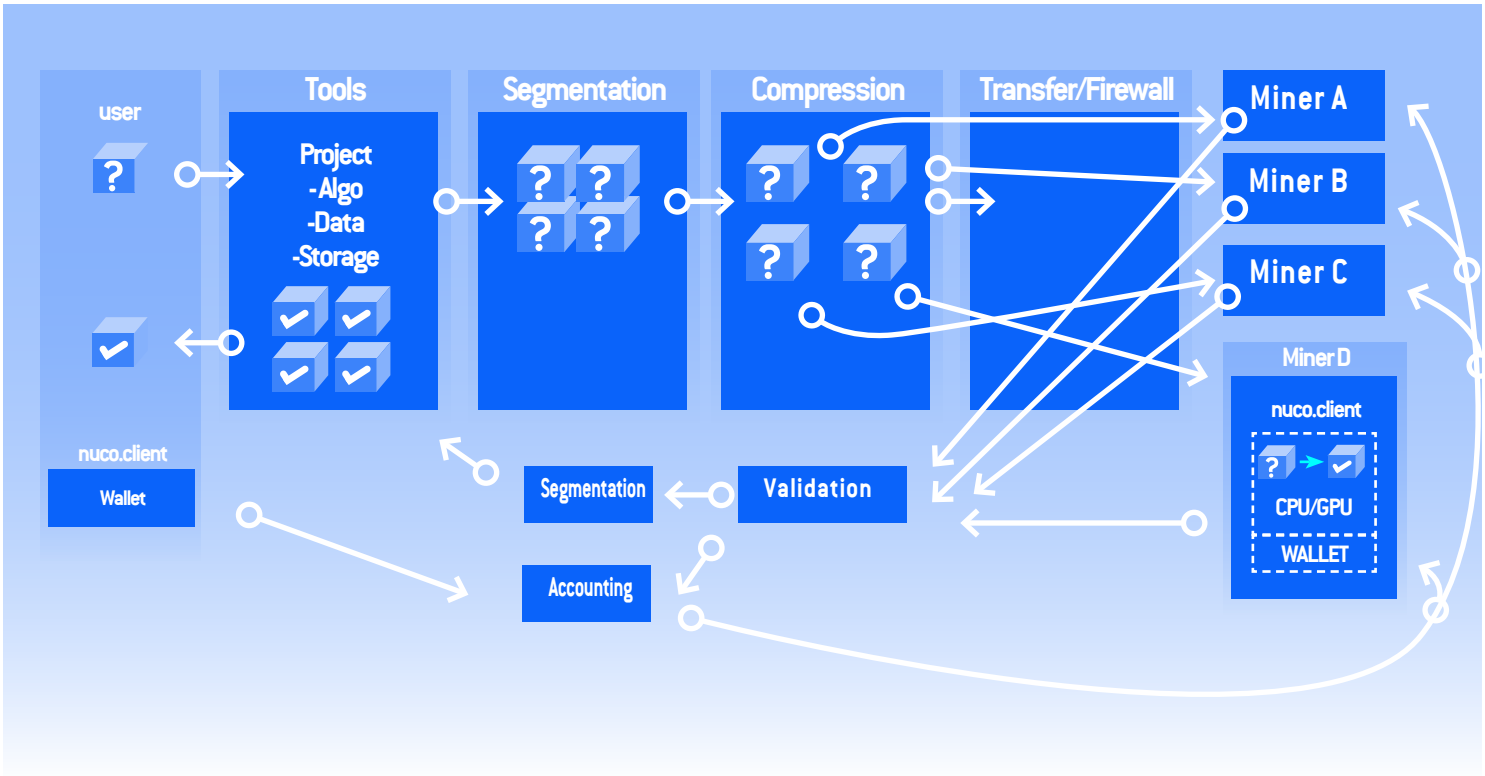
5.4 BRIEF TECHNICAL OVERVIEW OF THE NUCO.CLOUD



The nuco.cloud will consist of two main components:

- The management system nuco.core and
- the client system nuco.client

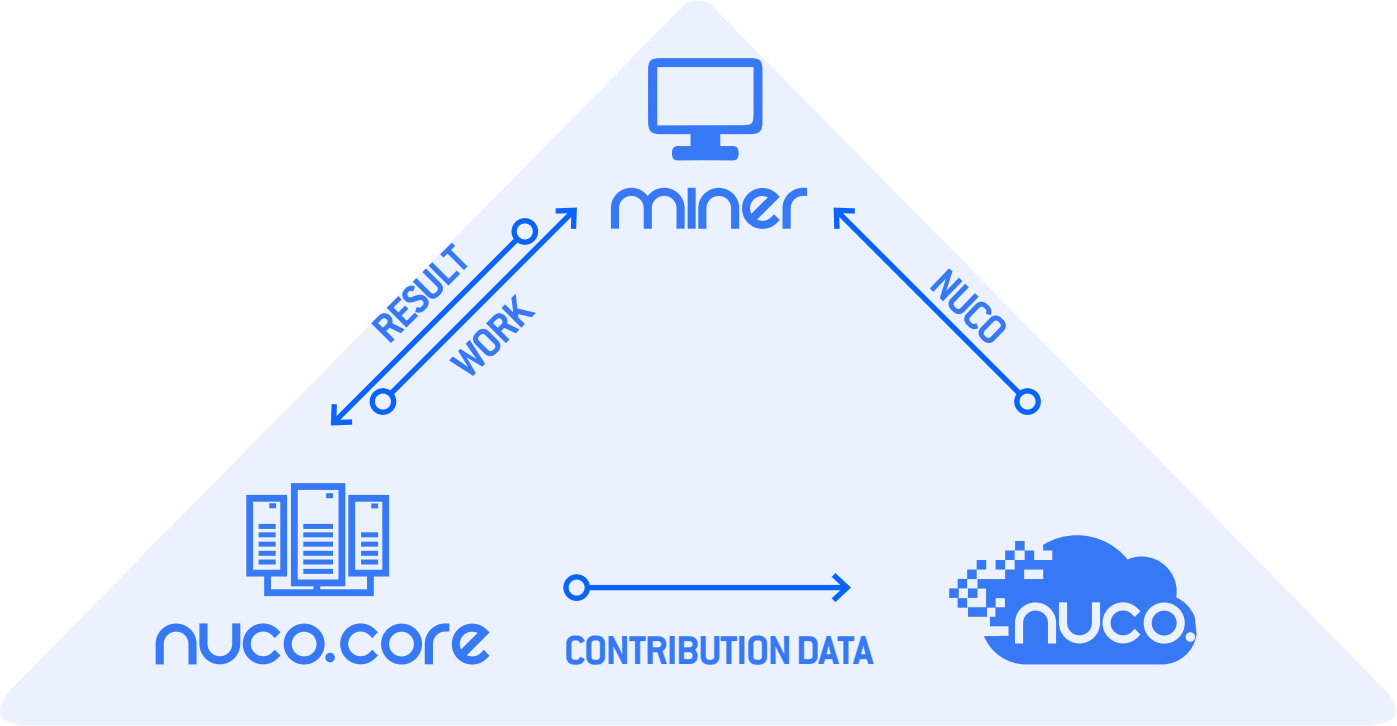
5.4.1 NUCO.CORE



5.4.2 NUCO.CLIENT

The USER enters his project to be calculated via the nuco.client. The project with its computation algorithms and basic data is stored in nuco.core on the USER's computer, which acts as a server, where it is split up into small sub-tasks. In the automated comparison between the nuco.core on the USER's computer and the nuco.client on the MINERS's devices, the sub-tasks are distributed to countless CPU, GPU and smartphone computing units and calculated there simultaneously. As soon as the computer of the MINER has completed the calculation task, the results are returned by the nuco.client to the nuco.core and validated there. Upon successful validation, the MINER will be credited with the remuneration in the form of NUCOs in his wallet.

The nuco.core compiles the individual partial results on the USER's computer toward the desired overall result and calculates the computing power, which the USER pays in NUCOs and which are subtracted directly from his wallet.



The nuco.client can be downloaded from the website www.nuco.cloud. It is recommended to use only the official version of the nuco.client and to download it only from the above mentioned website. For all others, no liability is assumed that these are also the same nuco.client as the one published by the Iron Eagle Capital GmbH .

To install the nuco.client: install it on the computer after the download, and follow the installation instructions.

The nuco.client technically consists of a front-end, the visible client, as well as the back-end, the actual application programme.

In the front-end client, the MINER can

- configure the desired computing power he is ready to make available, such as:
  - how much computing power should be provided (throttling)
  - when should the computing power be provided (scheduling)
  - what priority should the provision of computing power have in comparison to the computing power required itself (prioritisation)
- see the current status of his NUCOs in Wallet and
- transfer his NUCOs to another wallet address, such as a crypto-exchange.

The back-end application programme takes care of the background

- network communication with the nuco.core and
- assigns the computation tasks to the released CPU / GPU resources, as well as
- the feedback on the computation results.

This ensures that the nuco.client always has the most up-to-date version in order to comply with the relevant applicable encryption-, compression-, network- and firewall settings. The current version is checked each time the nuco.client is started. Using the nuco.client will only be possible if it has the most up-to-date version. If this is not the case, an update must first be installed.

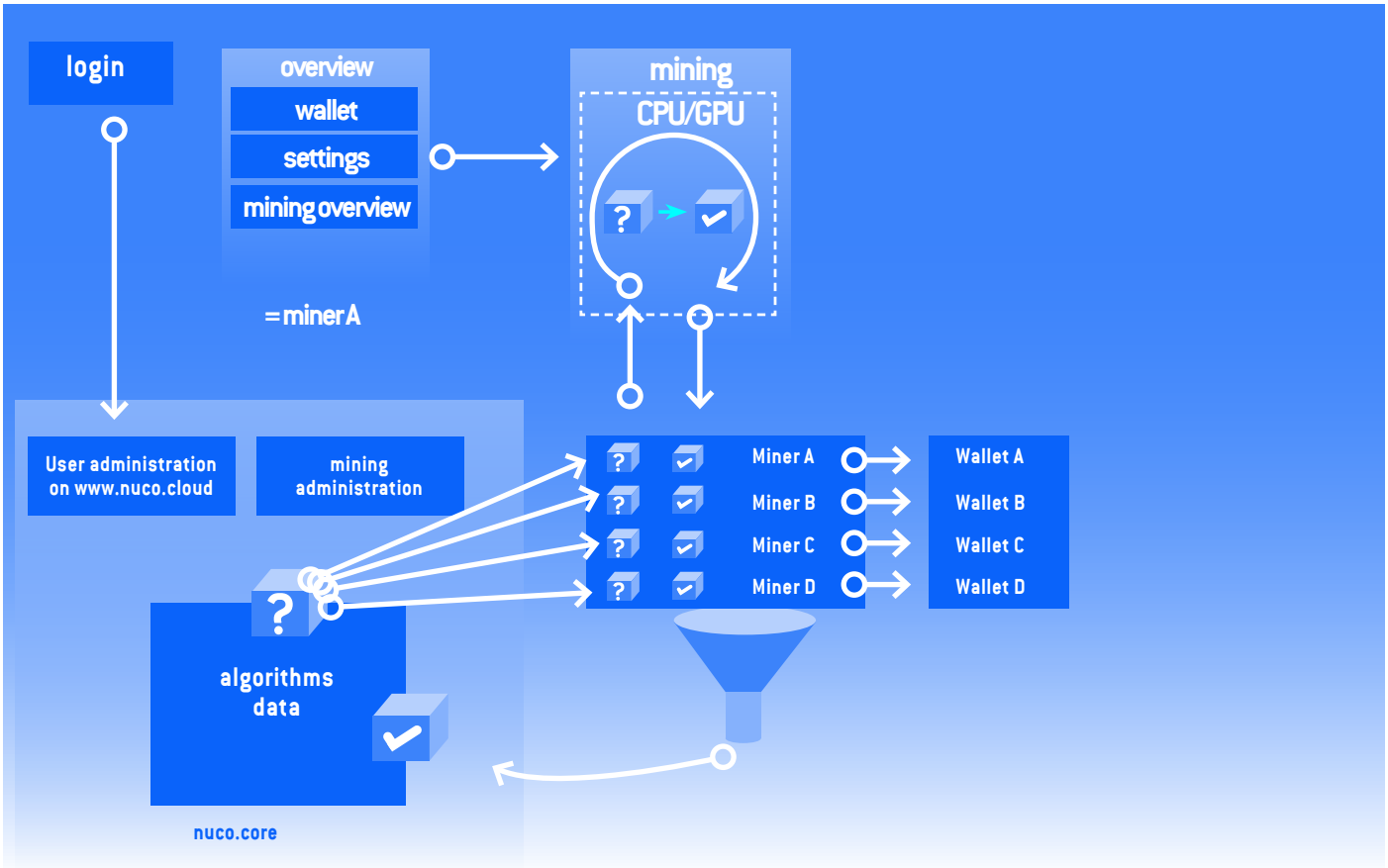
The nuco.client supports:

- Windows / Linux / Mac OS
- ATI / Nvidia
- Android

The nuco.client recognises the operating system on which the device is based and the CPU / GPUs and can be assigned the appropriate computation tasks within the framework of the specifications for MINERS by the nuco.core. These are then calculated in a separate CPU / GPU area in such a way that the otherwise remaining CPU load on the device is not disturbed.

After return delivery and successful validation of the calculation results in the nuco.core, the remuneration is entered into the wallet of the MINER, in the form of NUCOs

nuco.user im nuco.client + nuco.core



5.4.3 THE PROVISION OF COMPUTING POWER BY THE MINER

To ensure that his own computer use is not impaired, he can specify in the MINER part of the nuco.client, when, with which priority and how much of his computing power he wants to make available for the nuco.cloud. The nuco.client then subtracts the tasks that are currently suitable for the MINER device from the calculation projects currently available in the nuco.core, has them calculated in the provided CPU / GPU frame, and automatically returns the result to the nuco.core.

Each task is assigned a value, which is, after successful completion and validation, credited to the MINER in NUCOs, in his nuco.client wallet.

5.5 ADDITIONAL COMPONENTS OF THE NUCO.CLOUD

Iron Eagle Capital GmbH intends to develop the following additional programmes:

a) An installation routine that greatly simplifies installation by the BOINC project client, completely eliminating the need for virtual machine installation and command-line configuration and following that
b) a 1-Click module for ease of use (see section '5.2.2. User friendliness').

The two above-mentioned new developments will be provided by Iron Eagle Capital GmbH to the University of Californa, Berkeley for further development of BOINC.

6. TARGET MARKET

6.1 COMPUTING POWER CUSTOMERS AS NUCO.USER

For the USER, the nuco.cloud is intended to offer enormous advantages, mainly on the monetary level (see BOINC cost overview: https://boinc.berkeley.edu/trac/wiki/BoincOverview).

The formulas for calculating the required computing power and for the invoicing is still under development, as this should and must be fair for both the MINER and the USER. The USER wants to pay as little as possible for his computing power, while the MINER would like to receive as much as possible for the computation. Accordingly, the team of nuco.cloud is working on this, intensively. Our goal is to reduce the cost for the USER to approximately 10 % of the cost of what a standard cloud computing provider like Amazon would charge.

In addition, the USER does not have to worry about the setup or the maintenance, for example software updates, their recording on the server etc. If he has the appropriate programme for which he wants to create computations or which he wants to use, already on his computer, all he has to do now is run it with nuco.cloud.

6.2 TYPICAL NUCO.USER

The typical USER of the nuco.cloud can be anyone who wants to rent cheap computing power on demand. These can be

- private individuals,
- medium-sized companies, as well
- as big companies

USER can therefore be anyone who needs a lot of computing power on demand, in order to be able to calculate a project as quickly as possible.

The USER pays only the computing power that he actually retrieves, or that he really needs. The only limitation is imposed by the number of NUCOs in his wallet.

If the existing NUCOs are used up before his project is finalised, he will receive the results of his computations up until the time he ran out of NUCOs in his wallet. The USER must therefore ensure that his nuco.wallet always contains enough NUCOs to compute the project to the end.

6.3 TYPICAL PROJECTS

The USER projects of the nuco.cloud are typically computation-intensive data analysis tasks, which can be easily parallelised. Examples of this are:

- Analytical tools for financial markets
- Applications in research
- Drawings for construction
- Accident analysis calculations
- All other programmes for data analysis

Later, other areas of application, such as 3D rendering, etc. should be added.

7. TOKEN SALE

In order to finance and implement the nuco.cloud, Iron Eagle Capital GmbH is conducting a token sale in two phases:

- **Private Pre-Sale: February 01, 2019 - June 24, 2019 (3.857.000 tokens sold)**
- **Public Main Sale: May 23, 2019 - June 30, 2020**

For the token sale, ERC-20 standard tokens based on the Ethereum Blockchain (so-called 'Nuco Development Token' or 'NCDT') are being created by Iron Eagle Capital GmbH.

7.1 PRIVATE PRE-SALE

The private pre-sale has already been completed. Iron Eagle Capital GmbH has sold a total of 3.857.000 tokens. The capital thus obtained was used predominantly for the preparation of Public Main Sales.

7.2 PUBLIC MAIN SALE

The Public Main Sale by the Iron Eagle GmbH starts on May 23, 2019 and runs until June 30, 2020. The token distribution is exclusively digital. In the Public Main Sale, NCDTs are expected to be offered with the following price tiers:

- **23 May 2019 – 31 July 2019: EUR 0.08 per NCDT;**
- **1 August 2019 – 30 September 2019: EUR 0.16 per NCDT;**
- **1 October 2019 – 31 December 2019: EUR 0.32 per NCDT;**
- **1 January 2019 – 31 March 2020: EUR 0.64 per NCDT;**
- **1 April 2020 – 30 June 2020: EUR 1.28 per NCDT.**

Public Main Sale is addressed to all interested parties which are not excluded by section '1.4 Exclusion of Certain Participants'. As part of the Public Main Sales event, they will be able to acquire a certain amount of NCDTs from Iron Eagle Capital GmbH against payment of Fiat (USD and EUR) or common crypto-currencies (BTC, ETH, XRP).

The NCDTs are 'minted' upon completion of the acquisition process, at the earliest, 14 days later, using a smart contract and stored in the Ethereum Blockchain. The acquired NCDTs are assigned to the respective crypto-wallets of the acquirers, after the minting.

7.3 TOKEN SWAP

After completion of the nuco.cloud (probably end of 2022), the NCDTs will be converted into NUCOs at a ratio of 1:1 for use in the nuco.cloud (so-called 'Token Swap').

Should smaller token units prove to be more practicable for better billing of services in the finished nuco.cloud, a swap ratio of e.g. 1:10 or 1:100 etc. is also possible. This is decided by the Iron Eagle GmbH alone, taking into account the interests of the token holders.

The conversion of NCDTs into NUCOs will take place as follows:

On December 31, 2022, a so-called snapshot is expected to be taken. However, Iron Eagle Capital GmbH may - depending on the current status of the implementation of the nuco.cloud - change the deadline by either moving it forward or backwards.

A snapshot is the documentation of all tokens present at a specific time on the blockchain. This means that all wallets to which NCDTs are assigned will be considered in the token swap and NCDTs will be exchanged for NUCOs. To be considered for the token swap, the owners of NCDTs must be in possession of their private keys for the ERC-20 compliant wallet associated with the NCDTs. Token owners who do not meet these requirements at the time of the snapshot will not participate in the token swap. Non-snapshot NCDTs are no longer usable after the token swap and lose their value.

The time of the token swap and the swap ratio will be published by the Iron Eagle Capital GmbH at least two weeks in advance, via the website www.nuco.cloud, as well as via emails (if available) and social media channels.

7.4 DESCRIPTION AND DISTRIBUTION OF NCDTS AND NUCOS

7.4.1 NCDT CREATION AND ALLOCATION

The allocation is made on a continuous basis by the Iron Eagle Capital GmbH 's own issuance via a technical sales platform. The final acquisition rules are based on the Terms & Conditions for the token sale. These are available on the website www.nuco.cloud.

NCDTs are ERC-20 tokens based on the Ethereum blockchain, which are sold in the Token Sale by the Iron Eagle Capital GmbH. These entitle clients to exchange them for NUCOs at the Token Swap. The total number of NCDTs to be created is still to be determined.

Iron Eagle Capital GmbH will receive the same amount of NCDTs that will be sold at the Token Sale (ratio 0.93:1), along with Williams Marketing GmbH (ratio 0.07:1).

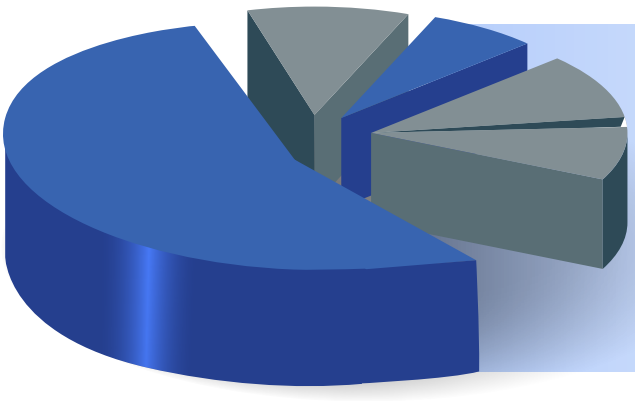
7.4.2 NUCO CREATION AND DISTRIBUTION

NUCOs are the tokens that must be paid by the USERs to the nuco.cloud and which MINERs receive as compensation for the provision of computing power.

As the total number of NCDTs has not yet been determined, the final number of NUCOs has not been determined yet, either. To determine the number of NUCOs to be created, the total number of NCDTs issued in the Token Sale (3.857.000 NCDTs in private pre-sale plus the NCDTs issued in the public main sale) is to be multiplied by a factor of 10 after the Token Sale ends. For example, if one billion NCDTs are sold in the Token Sale, the total amount of NUCOs will be ten billion.

The distribution of the NUCOs created in this way takes place according to the following relationship:

- *9.3 % Iron Eagle Capital GmbH*
- *0.7 % Williams Marketing GmbH*
- *10 % Buyers in the token sale*
- *5 % Bounty Programme (will be held until the respective award for audits, etc. by the Iron Eagle Capital GmbH)*
- *75 % will be generated by MINERs, in the future.*



75% = Miner
9,3% = Iron Eagle Capital GmbH
0,7% = WILLIAMS Marketing
10% = Generated from ICO
5% = Bounty Programm

The NUCOs of Iron Eagle Capital GmbH are stored in separate wallets, in accordance with the company shares of the shareholders, which can also be subdivided into several sub-wallets for safety reasons. Additional wallets exist for the Williams Marketing GmbH, as well as for the Bounty Programme.

These are MultiSig Wallets, where in the case of Iron Eagle Capital GmbH, at least two shareholders must approve the respective transfer. Williams Marketing GmbH may have its own NCDTs / NUCOs after completion of the Token Sale.

Through a Vesting Contract built into the NCDTs it will be ensured that both the NCDTs of Iron Eagle Capital GmbH and that of Williams Marketing GmbH may be transferred from their wallets only after more than twelve months have passed. Furthermore, as a result of the Vesting Contract, both Iron Eagle Capital GmbH and Williams Marketing GmbH may only transfer a maximum of ten percent of the NCDTs held by them per month, after the expiration of these twelve months.

This was approved by Iron Eagle Capital GmbH in the shareholder resolution on May 13, 2019, as well as in the contract with the Williams Marketing GmbH on March 04, 2019.

For the operation of the nuco.cloud the Iron Eagle Capital GmbH receives 20 % of what the NUCOs users have to pay. 70 % go to the MINERs, 10 % are donated to scientific projects. It is planned to donate this 10 % directly to scientific research projects, as the foundation for the nuco.cloud (BOINC) would not exist without researchers.

It is planned that the science projects receiving the donations will only redeem the NUCOs provided by Iron Eagle Capital GmbH for their computing power in the nuco.cloud, but may not sell them.

NUCOs are generated daily from two activities. These are:

- Proof-of-Stake
- Proof-of-Research

7.4.3 PROOF OF STAKE

With the proof-of-stake, coins / tokens are not mined, but will be minted. It is not necessary to actively provide computing power for being paid, within the framework of the proof-of-stake. All one need is the nuco.wallet, which already contains NUCOs. As a minting mechanism, proof-of-stake uses the NUCOs of the wallet owners. The more NUCOs are in it, the higher the likelihood of being able to mint a block.

The rate is 1.5% per annum, and it is generated directly from the Cloud, as proof-of-stake is already included in every block generated by proof-of-research.

For the calculation the so-called Token Age is used. This is the stake of the wallet-owner in days. For example, if the wallet owner holds 500 NUCOs for 30 days, the token age is 15,000. The higher the Token Age, the higher the payoff for staking in comparison to the desired reward. As soon as a new block is found, the Token Age begins again.

The possibility of a 51% attack was ruled out on the nuco.cloud, as this would require an attacker to make a buy-out of 51%. This in turn means that he has to own 51 % of all NUCOs. In addition to the 51%, the attacker would have to buy and hold the entire stake of all nodes, with less than 30 staked blocks.

Iron Eagle Capital GmbH will also hold no more than 51 percent of the NUCOs, as the share of Iron Eagle Capital GmbH, as described in Section '7.4.2 NUCO Creation and Distribution', is only 9.3 percent.

7.4.5 PROOF-OF-RESEARCH

Proof-of-Research (PoR) is an algorithm that combines the reward of MINERS for the computing power they provide, with a highly secure block-finding mechanism. This block-finding mechanism uses Peercoins proof-of-stake, as well as Novacoin and Blackcoin for the improvements of the same.

To link proof-of-work and proof-of-stake together and create a protocol that incorporates these two systems without wastefully handling resources, the values from both algorithms are stored in a block header. This serves the purpose of getting your reference value and a cryptographic proof.

7.4.6 PROOF-OF-NUCO.CLOUD

In order for a MINER to be able to provide computing power to nuco.cloud and be able to prove this provision or the computations it has made, it must install the nuco. client.

After completing the calculation, the nuco.client returns the data via the nuco.core to the computer of the USER. The nuco.core calculates a recommendation for the amount of credits for the work done by the MINER, compares this recommendation with the work of another MINER, and then approves the lower credit for each MINER. For standardisation, nuco.core calculates for each MINER, his recent average credit (RAC) individually. This is calculated from a daily average credit as follows:

RAC (new) = RAC (old) * d (t) + (1-d (t)) * Credit (new), while d (t) = (1/2) ffi (d / 604800)

t = time in seconds since the last calculation
RAC = Credits

This means that the credits that are older than one week are only half weighted if t = 0. This would be the case, for example, with the crediting of the very first credit.

Creating an accurate RAC forecast is difficult because the credits are only sporadically awarded. Based on the RAC, a so-called Recent Savings Account (RSA account) is created. This tracks a potential surplus of magnitudes. The magnitude is calculated as follows:

RAC / Network RAC * 100 * Time since last payment in days * Magnitude Multiplier
Network RAC is the average RAC of nuco.cloud, which is the total RAC of the cloud. If the calculated pay is greater than the current maximum inflow per block, the excess is stored in the RSA. The payout is made as soon as a proof-of-stake block has been found. The factor 100 ensures that a MINER's RAC must be greater than 100, before he receives an additional subsidy for each block found in his proof-of-stake participation.

7.4.7 RAC (RECENT AVERAGE CREDIT)

RAC is the average number of cobblestones per day granted in the last 7 days. This average decreases by a factor of two each week.

7.4.8 COBBLESTONES

A cobblestone (named after Jeff Cobb of SETI@home) has reached 1/200 per diem of CPU computation time on a reference computer of the 1,000 MFLOPS based on the Whetstone benchmark.

7.4.9 MAGNITUDE MULTIPLIER

The magnitude multiplier will decrease over time. This is to prevent over-validation of tokens.

The reduction of the magnitude multiplier is shown in the following table:

Year 1	01	02	03	04	05	06	07	08	09	10	11	12
MM	2.0	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.0

Furthermore, the number of coins generated from the blockchain for MINERS, which will be in addition to the coins the customer pays to you, will decrease over time as follows (Note: initially 75 % are available). There will be no numerical hardcap, so to speak, but a temporal hardcap:

Year 1	Q1	Q2	Q3	Q4
1	75%	65%	55%	45%
2	40%	35%	30%	25%
3	20%	15%	10%	5%

From the 4th Year the MINER receives only the NUCOs that the USER pays to the nuco.cloud.

7.4.10 MAGNITUDE UNIT

The ratio at Proof-of-Research is 50,000 NUCOs per 1,000 blocks produced. In order to achieve this ratio and adjust the rewards accordingly, a factor is used. This is called the Magnitude Unit and stored in the blockchain.

If the number of the generated NUCOs is too low, the Magnitude Unit increases. This in turn means that the number of NUCOs paid out for a particular magnitude also increases. If the number of generated NUCOs is too high, the Magnitude Unit decreases, which reduces the number of NUCOs paid out.

This has the effect of aligning proof-of-research payments with proof-of-stake payments. If fewer participants make their computing power available to the network, the incentive will increase accordingly.

7.4.11 COMPUTING AGE

The so-called Computing Age was created to limit the number of tokens a MINER can refill per diem. The Computing Age works much like the Token Age (see Section '7.4.3 Proof-of-Stake'). The more time passes and the more credits (see above, not tokens) are generated by computed tasks, the higher the MINER's awarded credits will be.

These credits are currently used to determine how much computing power a MINER has provided. Based on this, the formula introduced above is used to calculate the RAC and, in turn, the number of NUCOs credited to the MINER.

This is still due to the foundation of BOINC and Gridcoin, but this will be simplified in the future. In the future, the intermediate step of the credits should no longer be needed.

8. SCHEDULE / ROADMAP

- Private Pre Sale: February 1, 2019 to June 24, 2019 (3.857.000 tokens sold)
- Public Main Sale (May 23, 2019 - June 30, 2020)
- Q3 / 2019: trial version with various types of calculation (test data analysis software of the Iron Eagle Capital GmbH) including ease of use (drop-down menu, etc.) as far as possible with BOINC commercial project
- Q4 / 2019: Test run of the nuco.cloud
- Q1 / 2020: Completion of the nuco.cloud
- Q2 / 2020: Listing on regulated crypto-exchange

9. GOVERNMENT GRANT

Iron Eagle Capital GmbH received a grant from the Federal Ministry of Economics in October 2018, under the INVEST program.

10. LEGAL COMPLIANCE

At the time of writing this white paper, it can be stated:

The project was legally assessed by a law firm. The basis for the assessment is solely the German Law. The execution of the Token Sale in the manner described in this white paper is legally possible and is not subject to regulatory concerns.

11. LISTING TO EXCHANGES FOR CRYPTO ASSETS:

Iron Eagle Capital GmbH will only issue a listing of the NCDTs / NUCOs for the exchange to crypto-assets that meet the regulatory requirements. The possible listing should take place after completion of the Token Sale, expected from June 01, 2020.

12. NO PROFIT-DISTRIBUTION BY SHAREHOLDERS

The proceeds from the Token Sale are available to Iron Eagle Capital GmbH for the planned investments and the development of the nuco.cloud.

The shareholders of Iron Eagle Capital GmbH have obligated themselves by the shareholder resolution of May 14, 2019 to refraining from distributing the earnings of Iron Eagle Capital GmbH until the completion of the nuco.cloud.

13. OPEN SOURCE

The source code of nuco.cloud is published under GitHub. The underlying technology is also open source (BOINC as GPL 3.0 license, Gridcoin as MIT licence).

14. OPEN DATA

The data in the underlying billing block (but not the calculated data in the Cloud itself) is public, either through the Wallet software or via the web-based Blockchain Explorer.

However, the data calculated in the nuco.cloud remain secure and secret due to the division into small data containers, and the decentralised structure of the nuco.cloud.

15. OPEN ACCESS

Access to the nuco.cloud network and its services is systematically not restricted, in any way.

16. RESOURCES

16.1 WEBSITE AND WALLET SOFTWARE

https://www.nuco.cloud/

16.2 DEVELOPMENT REPOSITORIES

https://github.com/nucocloud/ncd-token

17. SOCIAL MEDIA

17.1 BITCOINTALK

https://bitcointalk.org/index.php?topic=5161520.0

17.2 FACEBOOK

https://www.facebook.com/nuco.cloud.distributedcloudcomputing/

17.3 REDDIT

https://www.reddit.com/user/nuco_cloud

17.4 TELEGRAM

https://t.me/nucocloud

17.5 TWITTER

https://twitter.com/CloudNuco

17.6 INSTAGRAM

https://www.instagram.com/nuco.cloud/

17.7 YOUTUBE

https://www.youtube.com/channel/UCpJuA82cjayNmuEFCwP1jpw

17.8 LINKEDIN

https://www.linkedin.com/company/nuco-cloud

17.9 VIMEO

https://vimeo.com/user98623527