FoldingCoin White Paper

Mine Medicine, Not Hashes

Robert Ross - Founder
rross@foldingcoin.net

Jeff Moreland - AIO Developer

FoldingCoin Mission Statement

FoldingCoin Inc.[1] looks to harness computational power used in alternative digital currency blockchains to be better used for medical and scientific projects with goals of solving world problems. In doing so, FoldingCoin Inc. looks to compensate participants with cryptocurrencies built on Counterparty.

Goals of FoldingCoin Inc.

FoldingCoin Inc. was created with the intent to solve current issues dealing with digital currency mining and distributed computing platforms.

FoldingCoin Inc. Summary

- FoldingCoin Inc. is an Indiana Not-For-Profit Corporation[2] formed under the Indiana Nonprofit Corporation Act of 1991.
- FoldingCoin Inc. distributes cryptocurrencies (tokens) to affiliated participants on the Stanford University Folding@home network. The tokens are awarded proportionally, according to that participant's Folding@home credits.
- FoldingCoin Inc. looks to redirect what some consider to be wasted computational power from alternative cryptocurrencies to Folding@home participants, and to incentivize those who compute on non-profit distributed computing platforms to encourage continued support.

---

[1] FoldingCoin Inc. http://foldingcoin.net/
[2] Indiana Non Profit https://bsd.sos.in.gov/publicbusinesssearch

Table of Contents

1.0.0 - Required components of FoldingCoin

1.1.0 - digital currency Mining

Cryptocurrencies are digital systems (protocols) for exchanging value between participants on a decentralized computer network. Bitcoin (BTC)[3] is the most famous and widely adopted digital currency. Most cryptocurrencies use hard-to-solve cryptographic puzzles called "Proof of Work" to secure the operation of the network. The process of verifying the cryptographic solutions is commonly referred to as "mining".

Bitcoin introduced a "reward" system, where the miner who solves a block is awarded a small amount of the digital currency. This reward compensates the miner for contributing their hardware and electricity to securing the network. Finding the solution of a block is a vital operation to allow distributed consensus, and adds the block to the blockchain.

In the early days, one could mine a decent amount of Bitcoin blocks on standard computing hardware, most notably CPUs (central processing units) and GPUs (graphics processing unit). Bitcoin uses the SHA256 hashing algorithm for Proof of Work.

In 2013, ASIC (Application Specific Integrated Circuit) mining hardware, specializing in SHA256, began to dominate and Bitcoin mining was no longer profitable on general purpose computers. It was around this time that hundreds of alternative cryptocurrencies released blockchains to try to compete with Bitcoin. Many of these "Altcoins" used standard computing hardware from miners that had previously mined Bitcoin before the ASICs took over. Many used the Scrypt algorithm instead of SHA256. This was to allow the continued use of general purpose computers to mine the Scrypt coins as ASICs could only mine SHA256 coins. Many former Bitcoin miners moved to Scrypt coins. In early 2014, Scrypt ASICs appeared, and once again mining was no longer feasible to the non-specialized CPU/GPU miner.

The phrase "standard hardware" refers to CPUs and GPUs found in everyday consumer and corporate PCs. The energy consumption of standard hardware in comparison to ASIC hardware is not as efficient.

Many believe that altcoins are a problem because of the following reasons:

- The amount of energy used to hash these blockchains is considered by many to be a vast waste of energy
- Most of these coins die off
- These coins can be underdeveloped or become abandoned
- They end up being a scam coin
- Traded as a "pump and dump" coin
- Bring no new great innovations to Bitcoin itself

1.2.0 - Scientific Distributed Computing

digital currency mining was not the first application for distributed computing. The Internet emerged as a consumer phenomenon in the late 1990's and early 2000's. Soon after, scientific investigators found applications for distributing massively parallel computing jobs to individual

---

[3] Bitcoin - https://bitcoin.org/en/

consumers. Consumers could install software provided by the scientific investigator on to their own computer and leave the machine powered on even when not actively using it. The scientific investigators would use the leftover computing cycles to assist in solving their scientific problems.

An early example of such a system was Distributed.net[4] founded in 1997. The initial problem they investigated was the mathematical principle of the "Golomb ruler". Once the 27 and 28 mark Golomb rulers were solved, they moved on to trying to break the RC5-72 encryption standard. They remain active and expect to take 200 years to exhaust the RC5-72 key space.

In addition to Distributed.net, two other popular platforms have dominated the grid computing and distributed computing communities: Berkley's BOINC[5] and Stanford's Folding@home[6]. These systems have gained mass adoption in the little under two decades they have been operating. Between them, these networks have hundreds of thousands of participants, combined contributing millions of computational FLOPS. Today it can be seen that these projects are still larger than most supercomputers and have an immense combined power of somewhere between 80-100 PetaFLOPS[7] (the largest single supercomputer is 33 PetaFLOPS and number 2 is 17 PetaFLOPS[8])

1.3.0 - Folding@home

Stanford University started the Folding@home project (FAH) in October 2000. The project runs computational algorithms, to simulate the way protein molecules fold in the body. Protein folding is central to healthy biological processes. Cancer and Alzheimer's (among others) are well known medical conditions that arise when proteins misfold. Scientists and medical researchers alike investigate why the proteins fail to fold properly and how medicines can be designed to correct the process. Stanford provides the data output from the FAH program to these researchers in order to help understand how to solve the misfold issues.

Simulated protein folding is a problem that can be solved by many computers working in parallel. When a donor joins the FAH project, they register an account, install a program, and FAH begins downloading "work units" to their computer. Work units are "bite sized" protein folding problems that the FAH researchers want to learn more about. From this research many scientific papers have been written and can be found here[9].

As a donor finishes a folding problem and submits the solution to FAH's server, they are assigned more work units. Modern day computers have CPU speed, memory capacity, and graphics performance that would have been hard to imagine years ago. The FAH software takes advantage of all this newly developed hardware.

The faster one's computer completes work units, the more "credits" one can earn. FAH's public

[4] Distributed.net http://www.distributed.net/Main_Page
[5] Berkley's BOINC http://boinc.berkeley.edu/
[6] Stanford's Folding@home http://folding.stanford.edu/home/
[7] Distributed Computing Power http://en.wikipedia.org/wiki/List_of_distributed_computing_projects
[8] Most Powerful Supercomputers http://www.top500.org/lists/2014/06/
[9] FAH White Papers http://folding.stanford.edu/home/papers

[statistics system](#)[10] keeps "score" of all work submitted and credits earned by all donors. But these credits carry no value themselves, beyond "bragging rights".

1.4.0 - Counterparty and User Created Assets

In 2014, many extensions to the Bitcoin protocol emerged, commonly referred to as "Bitcoin 2.0" systems. Bitcoin 2.0 systems use the distributed blockchain technology pioneered by Bitcoin to extend the network in novel ways that were not envisioned by Satoshi Nakamoto and the early Bitcoin Core developers.

[Counterparty](#)[11] is an example of a Bitcoin 2.0 system that allows users to create their own assets, along with a complete suite of additional financial tools, within the Bitcoin blockchain. A user or project with a unique value proposition can use Counterparty's open source technology to create a digital currency asset. The user created assets are often generically referred to as "tokens" or simply "assets". A digital currency project can use and distribute the tokens in support of their value proposition in nearly any way they see fit.

Since Counterparty is built inside of the Bitcoin blockchain, it requires a Bitcoin transaction for all actions taken with these assets. This is accomplished by inputting the data from these assets in the 140 bytes of unused data that each Bitcoin transaction allows.

1.5.0 - Tokenly Bitsplit Distributor

The crypto startup [Tokenly](#)[12] created the Bitsplit distributor that allows someone to distribute a mass amount of these tokens by simply uploading all the recipient addresses and total amount of tokens they are to receive in a CSV format. Then the distribution server automatically sends the allocated amount of the token to the address in which is in the same row as the amount.

2.0.0 - Genesis of FoldingCoin Inc.

By July 2014, a group of miners were looking for ways to use their legacy mining hardware for useful purposes, while staying part of the digital currency movement at the same time. This became FoldingCoin Inc.

FoldingCoin Inc. created an asset with a "Proof of Fold" concept to verify contributed computational power. Participants contribute their cycles to medical research on the Folding@home platform instead of a "Proof of Work" or "Proof of Stake" algorithm on a traditional Altcoin blockchain. This makes the energy to receive the token reward go towards something more meaningful than an alternative blockchain to Bitcoin's blockchain. Thus the power is not considered wasted, as it goes towards medical research.

Since Counterparty assets share the Bitcoin blockchain, this allows the legacy mining equipment from Altcoin mining to be redirected towards medical research, since the Bitcoin miners are already covering the security and hashing rate of the Bitcoin blockchain.

---

[10] FAH Team and Donor Stats http://fah-web.stanford.edu/cgi-bin/main.py?qtype=userstats
[11] Counterparty http://counterparty.io/
[12] Tokenly https://tokenly.com/

2.1.0 - Choosing the right distributed computing platform

FoldingCoin Inc. researched many scientific distributed computing projects that would allow for the use of the legacy mining equipment, and pros and cons were found for each. Many factors had to be considered:

- **Common hardware:** The hardware most commonly used for Bitcoin and Altcoin mining was AMD/ATI GPUs. AMD/ATI GPUs outperform Nvidia GPUs when it comes to SHA256 and Scrypt hashing. Folding@home (FAH) also performs very well on AMD hardware.
- **Easy:** Ease of setup for the general computer user was also evaluated. FAH was the most polished here creating a simple "download and go" program that runs in the background of a PC with simple to use settings.
- **Large user base:** Besides the Bitcoin Network, FAH is the largest distributed computing platform in the world, harnessing nearly 50 PetaFLOPS of computational power. With more users on the FAH platform, it makes it easier to gain awareness about the new token reward system.
- **Strong development team:** FoldingCoin wanted to find a platform that had a solid development team and mission. FAH is superior when it comes to overall production and security. Since FAH is a stand alone project on the platform, the developers of FAH spend all their time focusing on bettering the FAH platform, without the worries of developing and maintaining other distributed computing projects. FAH has also gone to great lengths to provide solid security of download and uploads of the protein data files. FAH only interacts with the installed FAH program and no other files or data on a personal computer[13].
- **Non Profit:**The platform chosen must be a non profit platform with goals of bettering humanity. Without the platform being a non profit, this would create issues of building profit on top of an already profitable platform. FAH is a 501(c)3[14] company with all the data available to medical and scientific researchers upon request.

FoldingCoin decided to direct their efforts towards integrating with Folding@home.

2.2.0 - Already existent "cause" coins

There are also some existing digital currency projects such as CureCoin and GridCoin that had involvement in scientific distributed computing, but these run their own separate blockchains. FoldingCoin decided that with the advances in Bitcoin 2.0 systems, there was no longer a compelling need for a separate blockchain. A separate blockchain did not contribute anything novel to the project, but rather would require more focus for the developers. They would have to put time and resources into the creation, hash rate, and security of a brand new blockchain and wallet interface. This would take away time and resources building and developing a community.

---

[13] FAH Security Measrues https://folding.stanford.edu/home/faq/#ntoc45
[14] Folding@home 501(c)3 https://folding.stanford.edu/home/donate/

2.3.0 - Creation of FoldingCoin

FoldingCoin is a cause coin built on Counterparty. Distributed on a schedule, FLDC is given to those that donate cycles to Folding@home based on their individual contributions.

An initial announcement forum and call out for developers to join the team was posted in early July 2014 in a forum post at LetsTalkBitcoin! which can be found here[15].

The ease of both creating Counterparty assets and accessing the FAH public stats allowed for a manually computed proof of concept. The first weekly distribution of "FLDC" tokens was on July 14, 2014, to eight folders paying from a folding time period of July 6th - July 13th.

The project gained traction and the proof of concept showed this would be a viable venture. The distribution method that had been manually calculated was reduced to a set of scripts that can be run from a server. Also with the addition of the Tokenly Bitsplit distributor, FLDC could be automatically distributed to any amount of Counterwallet addresses without having to manually send them out one at a time. With the combination of these two features, FoldingCoin Inc. was able to start paying out FLDC to the donors on a daily basis and began this on August 11th 2014.

Due to higher BTC transaction costs and additional Folders joining the network, the FoldingCoin project began to distribute consistently on a monthly basis instead of a daily basis beginning in 2016.

2.3.1 - FoldingCoin (FLDC) asset details

Only 1 billion tokens will ever be created
This is a hard cap. The asset has been locked and there is no way for anyone to ever issue more of them.

100 million tokens will be designated for development rewards

The FoldingCoin team has designated 100 million FLDC to be paid to those who contribute necessary work and code to the project based on the project's needs. This is constantly updated and can be found on the FoldingCoin website[16] what we have paid, and what we are looking to pay out for work needed.

Tokens will be distributed according to a half-life schedule
The Half Life will proceed as follows:

- Initially of the 900,000,000 FLDC, daily distributions are 500,000 FLDC
- Once 450,000,000 FLDC are distributed, daily distribution becomes 250,000 FLDC
- Once 675,000,000 FLDC are distributed, daily distribution becomes 125,000 FLDC
- Once 787,500,000 FLDC are distributed, daily distribution becomes 62,500 FLDC
- And so on. This halving occurs every 900 days

There are no fees
There will be no service fees. Stats on who was paid will be updated to the website regularly to

---

[15] FoldingCoin Inc. Ann Forum http://letstalkbitcoin.com/forum/post/asic-proof-altcoin-on-counterparty
[16] FLDC team and Payouts http://foldingcoin.net/resources/fldc-dev-team/

keep the issuer in check and to insure that all payments have been received. Distributions will continue so long as the FoldingCoin project has the funds to maintain the payments. Donations are raised to keep the project going.

Won't ASICs just attack this?
In order for an ASIC to contribute folding power to earn FLDC, one would have to get a hold of an Anton SuperComputer which is an ASIC specifically for protein folding and this doesn't seem possible anytime soon. And if it was to be created, this would help bring more computational power towards FAH, so can only be a good thing.

2.3.2 - FoldingCoin Distribution Calculator

FoldingCoin Inc. uses PHP code running on a commercial hosting provider to calculate how many FLDC tokens to award to each folder. The code runs once a day and tracks the FAH credits earned by each folder in the 24 hour period since the previous day's snapshot. For merged Folding participation, the code allows anyone to export a CSV file of a custom start date, a custom end date, and the amount of tokens you wish to distribute within the selected time frame. The export calculates the total tokens each participant should receive within that time frame.

Folding@home Public Statistics
Folding@home (FAH) [provides a text file](#)[17] listing every folder on the network and how many credits they have folded at the moment text file was produced. This file is placed on FAH's public website for anyone to download, and is updated once an hour.

Daily Snapshot
Once a day, FoldingCoin Inc.'s snapshot code downloads the FAH daily user summary text file and searches line by line to find those folders who have set up their folding software according to the FoldingCoin Inc. instructions

- In the initial release of FLDC, anyone who wanted to get the tokens had to join FAH team 226728 and set their FAH user name to their Counterwallet Bitcoin public address. This scheme worked very well for the initial roll out and is still fully supported to the present day for the original Folders. It will not be advertised heavily as it is not recommended and further developed code has replaced this model.
- Responding to feedback from existing folders on FAH, in October 2014 a method was devised where a FAH user would not have to change teams, and could have a more friendly identifier than just a Bitcoin address. The new scheme works with any FAH team. A folder indicates the address to award their tokens by setting their FAH software to:
  username_FLDC_CounterwalletAddress
  The snapshot code looks for "_FLDC_" and uses this to determine FLDC folders. Here is an example of a real Folder:
  PookTwo_FLDC_16muW9htJAYrrXrKN8BwWTmT6cgXscXDzJ
- Regardless of which scheme the folder used, all affiliated folders get their up-to-date

---

[17] FAH Donor Text File http://fah-web.stanford.edu/daily_user_summary.txt.bz2

FAH credit quantity written to that day's FLDC "snapshot" in the MySQL database.

Calculation of Tokens to Award

After the snapshot, a separate process runs to calculate token award amounts:

- Each folder in the current awarding period's snapshot is read.
- The code determines if the folder's address is a valid Bitcoin wallet address. If their Bitcoin address is not valid, there is no point in including the folder in any further calculations that awarding period. There would be no way to send them their FLDC tokens. These invalid FAH credits are simply disregarded.
- For each valid folder, their credit count in the previous awarding period's snapshot is determined, and subtracted from the current awarding period's credit count. This results in a "delta". The delta shows how many FAH credits have been earned by that folder on that days work.
- The FoldingCoin team then waits for the month to end. On the first Saturday of the following month, the FoldingCoin team runs a report from the previous month of every day. The report adds up all the "deltas" from each day of the last month showing a total FAH credit for each participant.
- The list of valid folders is then read and that folder's delta is multiplied by that awarding period's FLDC amount per FAH credit, and this determines how many FLDC tokens go to each address.
- The awarding period's list of valid folder addresses and corresponding FLDC token amounts is rendered as CSV formatted data suitable for entry into the Tokenly Bitsplit and exported to the FoldingCoin developers.
- All of this calculated data is available on the [FoldingCoin Inc. distribution summary](#)[18] webpage.
- All [mass distribution addresses](#)[19] can also be found on the website with each individual Bitcoin transaction associated with each payout
- Anyone can run these reports from the FoldingCoin statistics page.

Tokenly Bitsplit Distributor

The FLDC team has leveraged Tokenly's Bitsplit from the start. Tokenly has authorized FoldingCoin Inc. to use their automated distributor. This was a great improvement over the manual transactions that were done during the proof of concept stage. The way that the Tokenly Bitsplit distributor works is as follows:

- The title of the distribution is submitted, FLDC uses the method "FLDC December 2016 Payout" but this title can be anything
- The Counterparty asset that is to be distributed is entered.
- A CSV file can be imported containing the receiving Counterwallet addresses in the first column and the amount to receive in the second column OR it is pasted into the entire list with each address having a comma after it then the amount of asset it should receive putting each address on its own independent line

---

[18] FLDC Daily Summaries https://fldc.tech/new/reports/
[19] FLDC Distribution Payouts http://foldingcoin.net/distribution/

- The distributor then tallies up how much of the selected token must be sent to a specific BTC address and the amount of BTC that must be sent to that same address to distribute all the assets
- Once the distributor has these funds it will automatically distribute to the addresses and the specified token amount
- Every distribution address that FoldingCoin Inc. has sent out since the beginning, can be found on the distribution webpage[20].

2.3.3 - Merged Folding

The FoldingCoin Inc. team members have received requests from other Counterparty Projects asking how it was done and how they can follow the same model for their token.

Since Folding@home tallies up statistics (credits) based on the amount of computational power each individual participant contributes, FoldingCoin has the ability to incorporate multiple Counterparty tokens into the open sourced distribution calculator[21] based on individual missions of the respective token. These include:

- Projects looking to develop a new coin for a particular service but not wishing to develop their own unique blockchain could use this methodology to distribute their tokens to their participants.
- FoldingCoin only distributed tokens to participants of the Folding@home project, which leaves many other distributed computing projects without a token to be used as an incentive. One could be created and distributed on FoldingCoin Inc.'s platform to entice participants.
- Existing Counterparty projects can run promotional or a token giveaway on the platform as a way to advertise their project.

Following the same distribution methodology from the above section, FLDC participants can now earn the additional tokens[22] that are looking to distribute on the FoldingCoin platform.

With more tokens being added to the FoldingCoin Inc. distribution family, more adaption is gained for Folding@home, FLDC, Counterparty, and the respective token, all at the same time. Tokens distributed on the platform this way will receive recognition from the FoldingCoin website as being distributed on the platform, but since this is open for anyone to distribute on, no direct endorsement will come from FoldingCoin unless otherwise stated. The FoldingCoin project will take this on a case by case situation.

Each token will have its own distribution methodology. What that means that the tokens' developers will choose when and how much to distribute. They will also have their own unique way of cutting that distribution amount down should they desire. FoldingCoin Inc. is setup to allow anywhere between daily to monthly distributions and all variations in between.

TOKEN Distribution
FLDC will continue to be distributed monthly by FoldingCoin Inc. We allow the TOKENs built on

---

[20] FLDC Asset Distribution addresses http://foldingcoin.net/distribution/
[21] FoldingCoin Inc Distribution Calculator https://github.com/FoldingCoinNet
[22] Merged Folding Tokens http://foldingcoin.net/merged-folding/

our platform to decide how often they wish to to do their distributions. This can be done by setting a start and end date. The TOKEN team must have a Tokenly Bitsplit login and account in order to do these distributions. Registration links are provided on the FoldingCoin website.

Disclaimer
FoldingCoin Inc. will only assist the respective tokens in the calculation of the respective token payouts and provide assistance to new Folders on the platform including setup and general inquires. FoldingCoin Inc. does not charge any amount financially to any tokens development team on the platform for the provided services. FoldingCoin Inc. is not responsible for any actions taken by the respective tokens' development team or payment issues regarding the respective token. You will still receive FLDC from the FoldingCoin team but any discrepancies with other token payments should be taken up with those token developers and not FoldingCoin Inc, unless the discrepancy involves a lack of FoldingCoin Inc. providing the respective token with accurate FAH statistics. This would then fall under FoldingCoin Inc.'s responsibilities. FoldingCoin Inc. reserves the right to remove any coin from our website due to lack of development, distribution payouts, or anything done in a manner that could hurt the image of FoldingCoin Inc. Though it is still noteworthy that since our platform is open that TOKEN team can still distribute their tokens if they still hold a Tokenly Bitsplit account.

3.0.0 - Counterparty Assets VS. Traditional Altcoins

Counterparty assets have significant differences from traditional Altcoins. FoldingCoin Inc. believes that the pros significantly outweigh the cons, but wishes to be transparent about the various feedback that was given. The following sections will go over arguments for both sides and rebuttals for each one.

3.1.0 - Benefits of Counterparty
- BTC miners hash the blocks for the transactions. This provides a strong foundation of security, based on cryptographic computations on the largest distributed computing platform currently in operation.
  - REBUTTAL - Since Counterparty is using the Bitcoin blockchain, no new innovative ideas such as lower transaction times are incorporated in the tokens. Unless Bitcoin is updated to address potential concerns, Counterparty runs just as Bitcoin currently does.
- Asset issuance can be locked by the Counterparty protocol ensuring that even the asset owner can't introduce more of the token into the market. FLDC was created as a locked asset[23].
  - REBUTTAL - Even with the "locked" asset feature, it is still possible for the owner of the token to take control with bad intentions to steal the undistributed tokens once they become valuable.
- As Bitcoin and Counterparty developers innovate, assets evolve with them. Since Counterparty is open source, developers throughout the community create new and innovative ideas to be applied to Counterparty. When Counterparty or outside

---

[23] FLDC Locked Asset http://blockscan.com/assetInfo/FLDC

developers create applications for Counterparty, all assets are compatible automatically. Most Altcoins have to develop their own apps and features since they have a separate blockchain. Many Altcoins do not have a high enough interest in the overall crypto community for outside developers to create applications for them.

  - ○ REBUTTAL - Many Altcoins that introduce new innovative ideas like anonymous transactions have gained strong support from outside developers.
- No direct mining is required for Counterparty assets. Token creation and transfer can be verified by third party sites such as "blockscan.com" yet still verified by the BTC Miners. For the FLDC asset, this is available at Blockscan.com[24]
  - ○ REBUTTAL - Although no resources are used to hash a blockchain, the verification system depends on the security and coding efforts put forth by the Counterparty team. Since Counterparty is an application, it could have a potential bug that could affect the Counterparty network.
- There is no exposure to a 51% attack unless it happens to the Bitcoin network itself.
  - ○ REBUTTAL - Some new Altcoins coming out have implemented a Proof of Stake concept in which the attacker would need 51% of the total coins in existence in order to potentially harm the network. This is much more unlikely than simply having 51% of the total mining power of a network in a lot of cases.
- Counterparty assets automatically get security and GUI updates from the strong Bitcoin and Counterparty developers, due to the common Bitcoin blockchain. Due to this, the asset owner can focus on adoption, distribution, applications, and economy of the coin, and not software development of the blockchain and wallet itself.
  - ○ REBUTTAL - This means that each Counterparty Asset is dependant upon third parties for updates.

3.2.0 - Benefits of Traditional Altcoins

- Every asset payment to a recipient from Counterparty assets requires 0.00006 BTC in order to be included on the Blockchain when using the Tokenly Bitsplit distributor for distributing to multiple addresses. If sending a single transaction in Counterwallet, it will cost the current miner fee in addition to 0.000078 BTC. With large numbers of recipients, the BTC costs could be an obstacle.
  - ○ REBUTTAL - That fee could potentially be lowered depending on Counterparty's willingness to change their code. It could also depend on the blockchain accepting micro transactions. The current fear is that miners would reject a satoshi transaction if Counterparty assets only get sent in a single satoshi. As Bitcoin gains value the transaction fees will naturally become lowered.
- Assets on the Counterparty network may be considered "fully pre-mined" since a decentralized blockchain is not continuing to issue new tokens upon block creation. Non-locked assets can have more tokens created at the discretion of the asset owner, instead of creating and locking all tokens at once. This causes the issue of potential mass creation of tokens once the token obtains real value.

---

[24] Blockscan.com FLDC Info http://blockscan.com/assetInfo/FLDC

- ○ REBUTTAL - With Counterparty there is no current way of doing decentralized asset creation and issuance. Although you lose the benefit of token creation from hashing a blockchain, you gain the fact that the blockchain is not developed by a underfunded dev team, but rather developed by two highly funded projects being the Counterparty platform and the Bitcoin network.
- The undistributed tokens are in control of the development team. This causes the following concerns:
  - ○ If the development team decides to use the undistributed funds for inappropriate purposes, the option is there for them to do so.
    - ■ REBUTTAL - FoldingCoin Inc. is fully compliant with US law and has incorporated as an Indiana non-profit company. This imposes certain accountability obligations on the organization. The sole beneficiary of all assets if there is ever a dissolution is Stanford University's Folding@home project.
  - ○ The undistributed tokens are only as secure as the development team makes them. If the development team lacks in security of the private keys, the funds could be hacked.
    - ■ REBUTTAL - FoldingCoin Inc. takes security of the undistributed tokens very seriously. The team has all but two weeks worth of distribution in a paper wallet and changes that paper wallet once every two weeks once another two weeks worth of funds are needed. The team has the FLDC funds to cover the amount of FLDC that could potentially be stolen from the distribution address. The creation of the paper wallets is as follows:
      - Ubuntu computer that is "air-gapped" to generate the cold storage
      - USB dummy printer connected via USB only with no network capabilities
      - BIP38 wallet encrypted
    - ■ In case of the issue if one dev is unavailable in any way, comodo secured encrypted emails of the BIP38 private keys are sent to the main developers. The password to the key is only communicated via voice call so that way even IF the email is unsecured, only the trusted Devs have the password to unlock the wallet.
    - ■ These steps will be changed to Multisig addresses once a board of directors is established for FoldingCoin Inc. requiring half of directors to sign off on distributions.
  - ○ The coin must be distributed by the dev team. Should the dev team lose interest in continuing the project, the token could die.
    - ■ REBUTTAL - By the end of the calendar year the aim is to establish a board of directors who are dedicated to the mission. It is not the aim to just select random developers from the internet either. Medical professionals are also needed on this board that understand protein folding and see the value in something like FoldingCoin Inc. to be in existence. This is one of the main reasons as to why Foldingcoin Inc.

wished to incorporate. Now that it is an incorporated non profit, it now has some accountability that has been added to it.
- ○ Automating the distribution must still be done partially done manually. With applications like the Tokenly Bitsplit distributor system, only one transaction of the total amount of tokens to be distributed needs to be sent to this address, then the server sends the appropriate amount of tokens to the designated addresses, but a dev must still be responsible for sending the first transaction to the distribution server.
  - ■ REBUTTAL - This gives FoldingCoin Inc. the chance to give a second look before distributing the funds out to the donors. Should any miscalculations be there, FoldingCoin Inc. has the ability to correct the mistakes before it is sent out.

4.0.0 - Project Value and Global Benefits

4.1.0 - Appeal to the community

Digital currency mining, as well as Scientific Grid Computing, are both great measures of user-contributed computing power.

Many Bitcoin evangelists have a problem with all the wasted energy that has gone into mining for Altcoins. The trouble with these Altcoins is that many are just a "pump and dump" coin that retains no value in the end. FLDC does productive work instead of securing a blockchain. FLDC can be more appealing since it represents a real benefit to humanity through medical research.

There are a lot of original Bitcoin miners with a lot of idle GPU and CPU hardware since early 2014 when the ASICs took over the Scrypt mining community. FoldingCoin was developed both as a way to use that hardware productively, and also to provide a boost to the Stanford University Folding@home network.

FoldingCoin can reach a large population of the general public with the sweet spot combination of FLDC and FAH. The FoldingCoin team has met many "Non Bitcoiners" who are not comfortable with computers, know nothing about cryptocurrencies and don't want to know the details, but they still want to help use their idle computer for useful medical research. FoldingCoin's semi-automated installer can help make the process easier for those people. That allows them to also generate a valuable asset on the Counterwallet platform which is much easier for the general user to use than a Qt wallet or Bitcoin Core client. This gets the general public used to the idea of digital currency with a crypto representing something productive that much of the general public can see as valuable.

4.1.1 - Value for crypto

Miners are constantly mining different coins. All sorts of crypto-switching programs can retarget mining equipment every 10 minutes at the most profitable coin. Then the miners instantly sell out the altcoin for Bitcoin trying to get an immediate profit. This is not a system in which a coin can become established. Many miners don't even know what coin they are mining a majority of the time. Since folding is on a different platform than mining and requires FLOPS not hashes, no

current software allows a computer to easily switch back and forth between folding and mining.

4.1.2 - Value in earning TOKENS as a bonus

The merged folding platform offers many other tokens that might be worthless when they are distributed. Over time some of those tokens may be worth more than FLDC itself. This aspect of the distribution platform appeals to gamers, collectors, and speculators that helps draw more people into folding for tokens.

4.1.3 - Value for Miners

Receiving more than one coin is a dream come true for a miner. FoldingCoin offers a single platform for miners to merge fold, or receive many coins for folding. With FLDC being the flagship token of Merged Folding, all participants will receive this token from FoldingCoin Inc. regardless of the success or failure of other tokens on the platform. This allows miners to receive many coins that they can sit on or in some scenarios exchange for Bitcoin to help pay for the mining costs.

4.1.4 - Value For Mining costs

Your cooling and electricity costs may be lower with FAH. When mining cryptos with CPUs and GPUs, the brute-force hashing requires a lot of power and heat dissipation. Whereas running Folding@home the CPUs and GPUs don't get nearly as hot or use as much power computing protein folding simulations. FAH is usually measured in FLOPS, which is a bit different than mining being measured in hashes.

4.1.5 - Value for helping small start-up coins

Developers of smaller startup coins spend most of their time trying to maintain a blockchain. Updating and securing a blockchain is a full time job. Many altcoins have neat ideas of having a coin used for something other than pumping and dumping. The success of a digital currency depends on the dedication of the development team. The Merged Folding platform will empower the ability for token development teams to not have to maintain a blockchain anymore. Time can be focused now solely on the mission of creating a token with a use and to start working on features as well. They can now be more directly involved in their token's community rather than QT wallet and source code.

- Other traditional altcoins having issues with hashing power or blockchain maintenance could make the move to Counterparty to harness the Folders' participation. These coins could hold their own burns, or FoldingCoin Inc. could help with a burn to exchange the original altcoin with the new Counterparty token.
- Many out there have great ideas for a coin, but don't want to deal with the wild west of altcoin mining. This gives them the ability to get their coin out there without having to worry about things like getting listed on an exchange, difficulty fluctuations, and blockchain security updates. They will grow with Counterparty and their distribution will help increase the available folding power.

4.2.0 - Global Benefits

The amazing thing about non-profit distributed computing is no one was compensated for their work up to this point. This made sense back when distributed computing was first developed. It was a charitable thing to donate your computing cycles for science instead of giving money or volunteer hours. The introduction of Bitcoin added a financial incentive to get more and more computational power for mining. FoldingCoin is looking to add similar rewards to increase Folding@home computational power to benefit humanity.

4.2.1 - Better use of energy for the world

There is no direct translation from one to another, but a common consensus is [1 hash equals 12,700 FLOPS when comparing the two side by side](#)[25]. The FAH grid computing network has over 100 PetaFLOPS and is known as the [world's most powerful computing network](#)[26] outside of the Bitcoin mining network.

At the time before ASICs and FPGAs started hitting the market in [December 2012, the Hash rate of the BTC network](#)[27] was at 26 TeraHASH's in mostly GPU and CPU power. Based on a rough comparison 12.7 PetaFLOP = 1 TeraHASH the potential computational power that could be added to FAH is:

26 TeraHASH 12.7 PetaFLOPS = 330 PetaFLOPS.

Imagine if that power was harnessed for molecular protein folding. Most of this power was redirected to altcoin mining after the SHA256 ASICs came out, since there was no profit motive for folding in the past. FoldingCoin looks to bring a profit motive for people to fold proteins by distributing FLDC along with other Counterparty tokens.

---

[25] Convert Hash to FLOPS
http://en.wikipedia.org/wiki/Talk%3AFLOPS#Bitcoin_.22FLOPS.22_computation_on_bitcoinwatch
[26] Most powerful DCN http://en.wikipedia.org/wiki/List_of_distributed_computing_projects
[27] Bitcoin Network Hashrate https://blockchain.info/charts/hash-rate