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Question Guide to BitcoinSV Hackaton Project

1.- What does the bitcoinf's current release do?

I. Mounts public data from bitcoinSV blockchain to your local machine, **no user, password, wallet or btcSV required, just the config file or txid for a config file stored in the blockchain.**

1.1 Why is this relevant?

There are huge amounts of public information constantly accessed around the globe. We focus in biological databases, Genomes, Transcriptomes, Proteomes and other types of omics data. Currently, those datasets are spread across constantly refacing websites lot of them not available anymore. In an effort to coordinate and storage this data, NCBI (USA), EBI-EMBL (EU) and DDBJ (JP) have mirrored some of their databases but they usually are out of synchronization and not 100% overlaped.

This has consequences in legacy and reproducibility of scientific and private research. BitcoinSV blockchain structure could be a answer to those problems allowing permanent record of biological information mirroring it. Tools like bitcoinf's could allow researchers safety download public biological databases.

II. Upload files to the blockchain. It requires btcSV wallet and funds.

1.2 How much does it cost, is it worth it?

To test this we have submitted to the blockchain the Human Reference Proteome, this is one protein product by every coding gene in the human genome. A total of 73920 proteins aminoacid sequences. It cost us around 0.15 btcSV for 17MiB of data. Due to their 20 aminoacid code, protein sequences contain much more information per byte than a DNA sequence, even though, based in these results uploading a complete genomes could be affordable for institutions and individuals. In other biological datasets, as for example in the case of protein 3D structures the cost of uploading to blockchain is negligible compared to the cost of all experiments necessary for generating them.

2. What future development in bitcoins would be expected?

Improving speed, performance and security

Currently bitcoins upload speed average is around 0.8kb per second. Improvements in this aspect could be achieved by splitting coins in different wallets or increase amount of transaction (around 1000 per block). Other improvement can be achieved by migrating code to C and enabling writing files back to the blockchain. Also streaming of files is planned, as the current version downloads the complete files to RAM, which will not escale with huge files.

Transparent encryption could be added without much performance impact. Currently file blocks are uploaded directly to the blockchain.

2.1 Why security is relevant?

With the adveniment of new generation sequencing technologies, the possibility of sequencing patient genomes for clinical purposes has became a reality. Currently, the way to store sensible medical records of any kind is highly debated and finally relied on trust of third party, usually a medical institution or a private company. Using bitcoinSV blockchain to store personal medical records will improve security and accessibility for patients and authorized third personel.

3. Final Thoughts

The bitcoinSV Hackathon force us to think differently about the blockchain and their uses. Clearly one of the main topics of develop in this two days was file storage on blockchain and looks like future of bitcoinsv depends on how and how much information it can store and retrieve.

On the fields or biological public databases and private medical records several interesting questions have emerged. How to create an internal blockchain ontology to formally organize biological public data sets on the blockchain? How to compare or align private biological sequences with public ones? It would be possible to use your private medical records to search across blockchain for someone with the same condition?. Really passionate questions and bitcoinsv looks like the only blockchain that can offer a brand new possibilities for those practical problems of life sciences.