**Functional Requirements**

* Each client will have a copy of the blockchain.
* Each client will be able to display content of the blockchain.
* Each client will be able to add data to the blockchain.
* Each client can upload raw data or update already exist data via version control.
* Each client will be able to specify the type of the data as confidential or public to upload the data.
* Each client will be able to specify total number of copies of data.
* Each client will be able to write a SQL query to request data.
* Each client will be able to access public data.
* Only permitted clients will be able to access confidential data via authentication system.
* Client will be able to list query results and select one of the results to download data.
* Depending on the location of the request and content of the requested data, the client will be able to get data from the most suitable server, in terms of distance and availability of data.
* After processing the downloaded data, the client will be able to update the data as upper version of old data.
* During an erroneous situation on a server, the client will be able to continue its operation without corruption by providing the flow of data from other servers.

**Non-Functional Requirements**

**Availability**: The system service shall be available for use 24 hours per day, 365 per year owing to the distributed architecture compared to centralized architecture via distribution and replication of data to servers and quick recovery procedure when a failure is detected.

**Continuity**: The system shall be able to handle major interruptions such as power outages of a server by continuing operation on other services.

**Portability**: Since the system will be written in a high-level programming language, it shall be usable in different environments.

**Recoverability:** The system shall restore the data in the event of corruption or loss by copying the replicated data from other servers.

**Response time:** Via distributed architecture, response time shall be decreased compared to centralized architecture by locating the request location and sending the data to requester from nearest server.

**Reusability**: The system shall be reused across multiple products to store and retrieve the data.

**Robustness**: The system shall be able to cope with the errors during execution time.

**Scalability**: The system shall be practical and efficient when applied to large input data by adding new resources such as server.

**Security:** Security problem of the distributed systems shall be resolved by encrypting the data. Only permitted clients shall be able to access to confidential data by authentication system.

**Transparency**: The block chain part of the system shall be transparent while the resources where actual data is stored shall be hidden from client.

**Usability**: %95 of the novice users can learn to operate major use cases without outside assistance.

**Resource constraints***:* To meet the work load of the system minimum hardware requirements for each machine should be:

o *Minimum disk space:* 40 GB [1]

o *RAM:* 4 GB [1]

o *CPU:* 2 cores [1]

## **Pseudo-Requirements**

* The bandwidth requirements of the blockchain must be lower than the capacities of about 75% of the network nodes in the system. (If the requirements are too high, only some of the nodes will be able to process blocks which will lead to centralization of control.)
* The timestamp contained in each block, which indicates its creation time, must have at most three hours of deviation.
* There must be a uniform access among all network nodes such that no network node must wait for another node to transmit more than one block.
* The blockchain must not accept a transaction which has more data than the maximum size of a block.
* The blockchain must not accept a block which does not contain a particular key which indicates its validity.
* The time required for creating a new block must be less than 20 minutes.
* The block size must not be more than 1 MB.
* The blockchain size must not be more than 40 GB.
* The contents of the transactions must not be open to third parties.
* There must not be any method for decrypting the cryptography algorithm used for transactions except for brute force attack.
* Brute force attack to decrypt the cryptography algorithm must theoretically require at least 10000 years to execute.
* The speed of encryption algorithm must be at least 20 MB/s.
* Blocks should not be deleted or altered by the clients.
* Only authenticated clients should be able to access the confidential data.
* The user passwords should be encrypted by MD5 algorithm.
* The blockchains of each client should be notified within 2 seconds to be updated when new data added to the chain by any client.
* The time required for querying a server and returning the results must be less than 15 minutes.
* During an erroneous situation on a server, the latency of response time should not exceed 15 seconds.
* The query to request data should be written in SQL language.

[1] M. E., “System Requirements,” Remote Windows Desktop Management and Administration Software. [Online]. Available: https://www.manageengine.com/products/desktop-central/system-requirements.html. [Accessed: 07-Oct-2016].