



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

# IJRSET

International Journal of Innovative Research in  
**SCIENCE | ENGINEERING | TECHNOLOGY**

# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 12, Issue 4, April 2023

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

Impact Factor: 8.423

9940 572 462

6381 907 438

[ijirset@gmail.com](mailto:ijirset@gmail.com)

[www.ijirset.com](http://www.ijirset.com)



# Secure System for Managing Digital Assets Using Blockchain

Anusha Yallappa Hunagund<sup>1</sup>, Divya P Garag<sup>2</sup>, Soumya Arun Joshi<sup>3</sup>, Vidya P T<sup>4</sup>,

Prof.Chandrashekhar M V<sup>5</sup>, Prof.Waseem Khan<sup>6</sup>

U.G. Student, Department of Computer Science and Engineering, Bapuji Institute of Engineering and Technology,  
Davanagere, Karnataka, India<sup>1</sup>

U.G. Student, Department of Computer Science and Engineering, Bapuji Institute of Engineering and Technology,  
Davanagere, Karnataka, India<sup>2</sup>

U.G. Student Department of Computer Science and Engineering, Bapuji Institute of Engineering and Technology,  
Davanagere, Karnataka, India<sup>3</sup>

U.G. Student, Department of Computer Science and Engineering, Bapuji Institute of Engineering and Technology,  
Davanagere, Karnataka, India<sup>4</sup>

Assistant Professor, Department of Computer Science and Engineering, Bapuji Institute of Engineering and  
Technology, Davangere, Karnataka, India<sup>5</sup>

Assistant Professor, Department of Computer Science and Engineering, Bapuji Institute of Engineering and  
Technology, Davangere, Karnataka, India<sup>6</sup>

**ABSTRACT:** Digital asset management is one of the applications of blockchain technology. In this Project, we are securing and tracking the digital assets by building a digital asset management application by creating and deploying a smart contract on a Hardhat Network created. Digital Asset Management Systems ensure that operations are only performed on a digital asset by individuals (or organisations) that have the right access rights and permissions for the asset. The digital asset is defined as the content (an image, a music file, a document, a video file, etc.) and its metadata. The metadata could be as simple as the name of the asset, the name of the owner of the asset and the date of creation of the asset, or it could be something more complex, such as extracted speech from a video (subtitles). In any Digital Asset Management system, there can be any number of users and these users can have the ability to perform various actions on the asset in the system based on the permissions they have.

**KEYWORDS:** Blockchain Technology, Hardhat Network, Smart contract, IPFS.

## I. INTRODUCTION

Digital Asset Management (DAM) is one of the applications of blockchain technology. A DAM system allows users to store, organise, search and access digital media files. These systems are used to manage all types of digital content such as images, audio recordings, and video files. In today's digitised world, data, systems, and applications are the most critical assets of the organisation. The importance and sensitivity levels of these digital assets, however, vary widely across sectors. For example, in hospitals, the most sensitive asset is the patient information that resides on the hospital systems, whereas the most critical assets for financial organisations are their digital transactions. Attacks on these digital assets can lead to huge damages to the business. Therefore, businesses need to have an effective, clearly outlined DAM strategy to analyse and protect their digital assets.

The Blockchain is a secure, decentralised, and distributed ledger system that sets up, manages and invests in digital asset management strategies in a decentralised manner. The asset management strategy helps businesses record transactions when the assets travel across numerous network systems. Blockchain in the Digital Asset Management



Strategy is of particular importance for organisations that deal with high-security data or for large corporations that run on their own validation networks. Organisations, therefore, need the help of Blockchain service providers to build a sound business case for their DAM solution. Asset management is a crucial factor for a variety of reasons, firstly the majority of the public services rely heavily on assets to support their delivery. Also, assets indirectly represent a significant amount of investment that needs to be protected. Various countries across the globe are stressing assets by over-using, under-funding and ageing. So, to put it simply asset management is a process for tracking and monitoring a company's or individuals fixed moveable assets for financial accounting, preventive and maintenance and theft deterrence purposes.

The value and importance of digital assets have risen dramatically over the last few years. The question is how to manage these assets in the most advantageous way. The Blockchain is a secure, decentralised, and distributed ledger system that sets up, manages and invests in digital asset management strategies in a decentralised manner. The asset management strategy helps businesses record transactions when the assets travel across numerous network systems. They carry Intellectual property ownership, attribution, and many other features with them during every transaction. Blockchain technology protects the transfer of the ownership of digital assets and also protects the assets from misuse by checking the integrity and identifying people who are using them. According to Don and Alex, Blockchain geeks, "Blockchain is an incorruptible digital ledger of economic transactions that can be programmed to record not just financial transactions but virtually everything of value." Because of its capabilities, Blockchain should be an integral component of every Digital Asset Management Strategy.

## II. LITERATURE SURVEY

In Shu-Ching Chen [1], the security mechanism of blockchain suffers more vulnerabilities when it is being attacked and when managing multimedia data. It remains challenging to secure multimedia data and protect data integrity. Research in privacy-preserving multimedia data management needs to be further studied to enable using and analysing multimedia digital assets in the decentralized system without personal information leakage.

According to Atul Banotra et al. [2] Blockchain holds a guarantee for protection and security in devices. Blockchain is an appealing innovation for tending to the referenced security and protection. In the Blockchain innovation it supplants many heritage approaches, manual moves made in asset management.

According to Jean Lozano [3], DAMs have evolved significantly and now, in many cases, facilitate the management of the entire lifecycle of digital media assets from womb to tomb, from media asset creation to archival. In every stage of the life cycle, the ownership and attribution of the media assets may change. This is where Blockchain technologies come in.

García-Barriocanal et al. [4], in the case of secure data distribution and management solutions propose the use of a decentralised blockchain based solution for metadata supporting key functions and discuss its implications towards management and sustainability of digital archives.

According to Jun Wang et al. [5], Blockchainbased applications can improve the present techniques of contract management, supply chain management, and hardware renting individually by solving two main issues. These issues are trusted among buyers-suppliers in contract management, and transparency and traceability of products ought to be featured as the reason for further improvement. By using a public and private distributed ledger, users tried to solve these issues up to some extent.

In Zyskind et al. [6], the ongoing increment in revealed occurrences of reconnaissance and security ruptures trading off clients' protection raises doubt about the present model. The researcher makes use of the decentralization property of the Blockchain so that the user can control its data instead of the third party. He executes a convention that transforms a Blockchain into a computerized access-control administrator that does not require trust in an outsider. From a security point of view, analysts created different systems focusing on protection concerns concentrated on close to home information. Information anonymization techniques endeavour to secure identifiable data



### III. METHODOLOGY

The main concept of our project is file uploading, storing, retrieving and sharing. The user connects to Ethereum wallet Metamask through a react app as a front end which will communicate with the blockchain and deploy the smart contract on it. The file is uploaded directly to pinata by generating a hash value which will be stored in it, allowing us to access all of the files we have uploaded and it can be retrieved from DApp.

Our project's smart contract is responsible for four tasks. Upload the files, store the file hash value in the blockchain, display the uploaded files on the DApp and share the files.

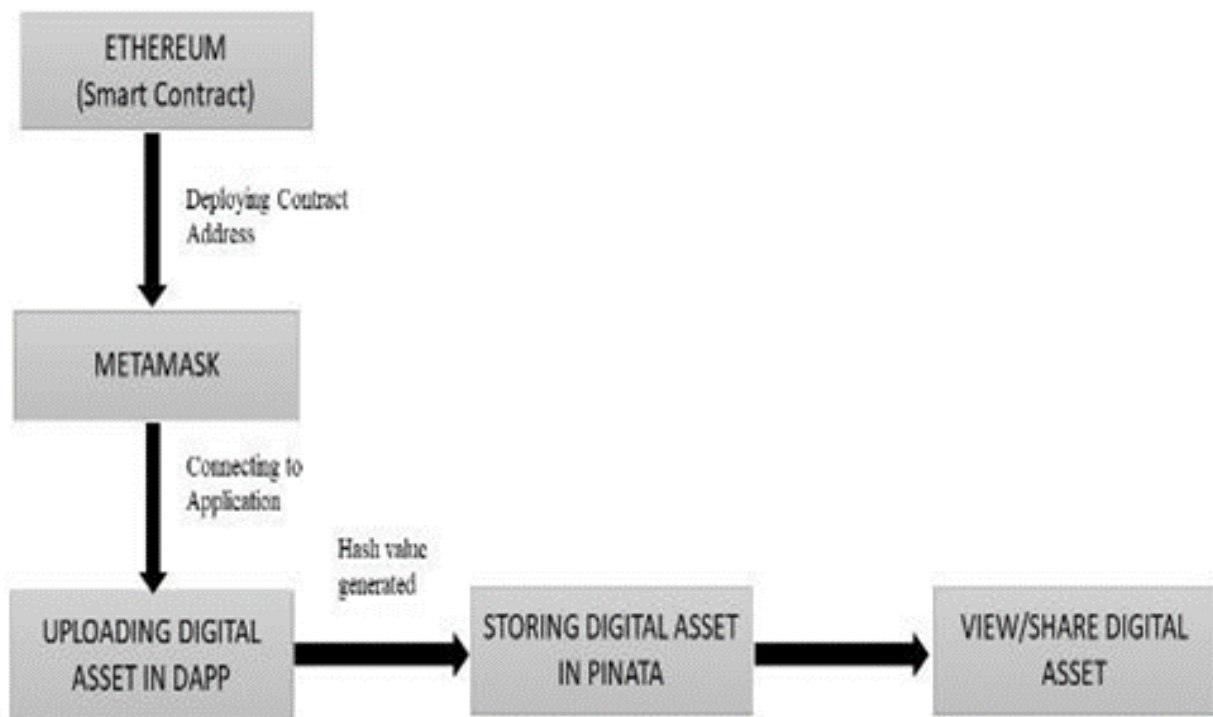


Fig (a) WorkFlow

### IV. EXPERIMENTAL RESULTS

Figures show the results of managing and securing Digital assets based on blockchain technology. Fig(a) shows the interface of Digital Asset Management Website(b) shows the metamask wallet containing information of user account(c) shows the transaction of Ethereum coins from user account (d) shows the uploading of Digital assets by confirming metamask transaction (e) shows the interface of Pinata where Digital Assets are stored by generating Hash value (f) shows the sharing access of digital asset.



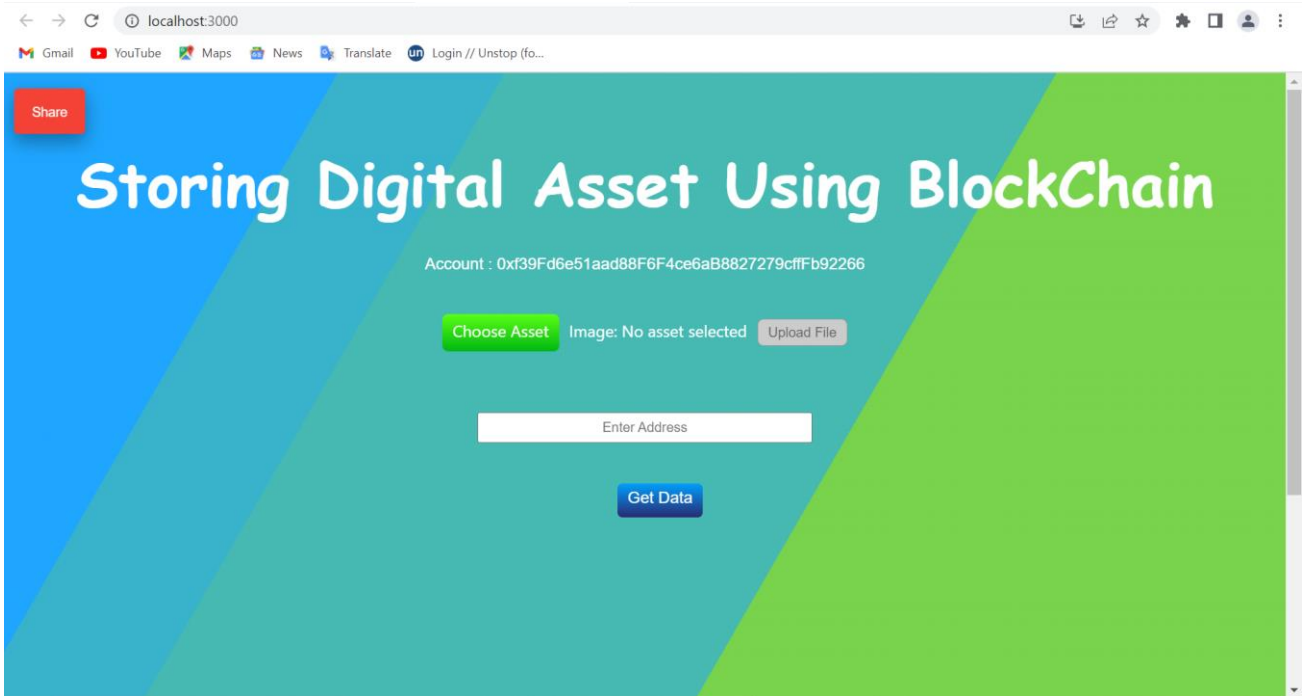


Fig (a) shows the interfaces of Digital Asset Management website

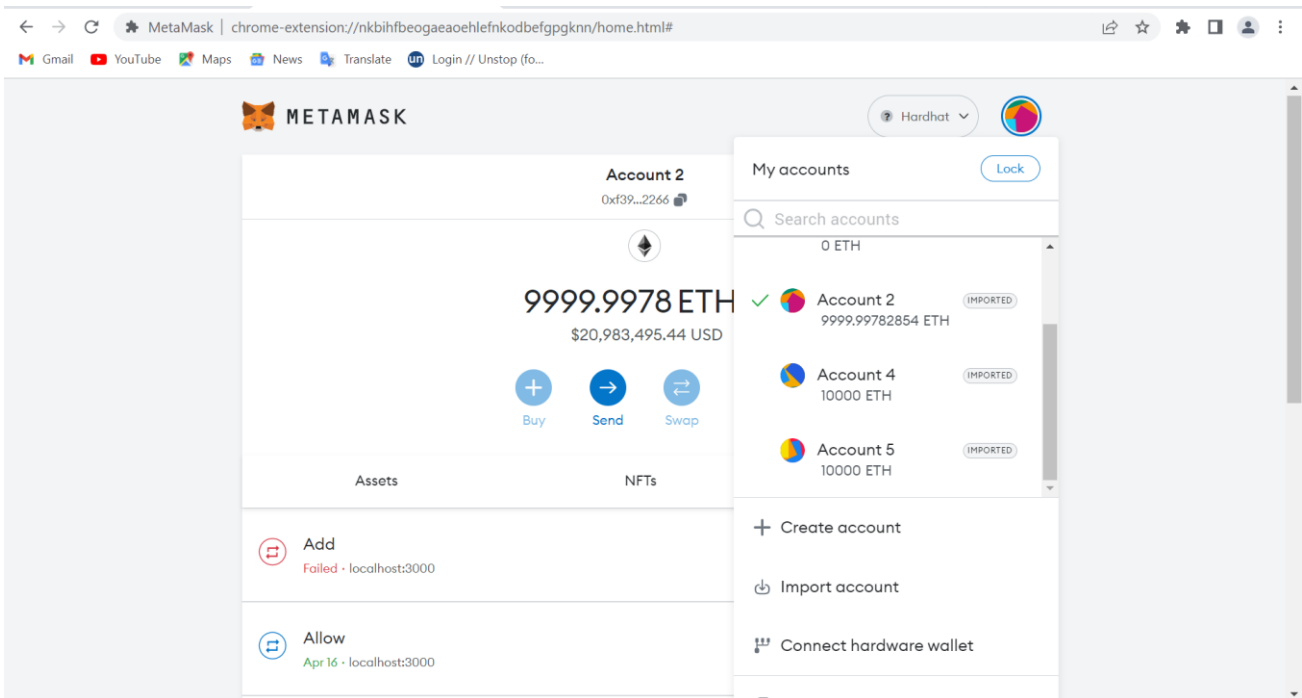


Fig (b) shows the metamask wallet containing information of user account



|| Volume 12, Issue 4, April 2023 ||

| DOI:10.15680/IJIRSET.2023.1204306 |

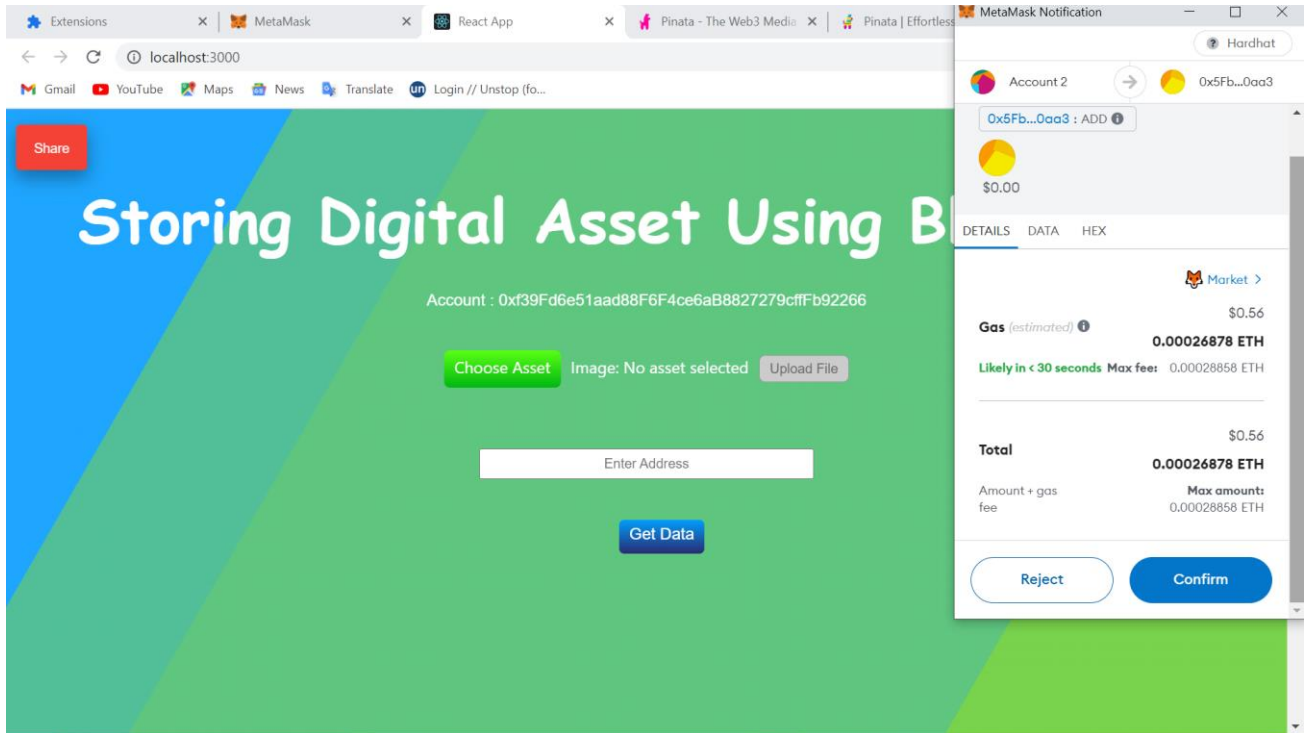


Fig (c) shows the transaction of Ethereum from user account

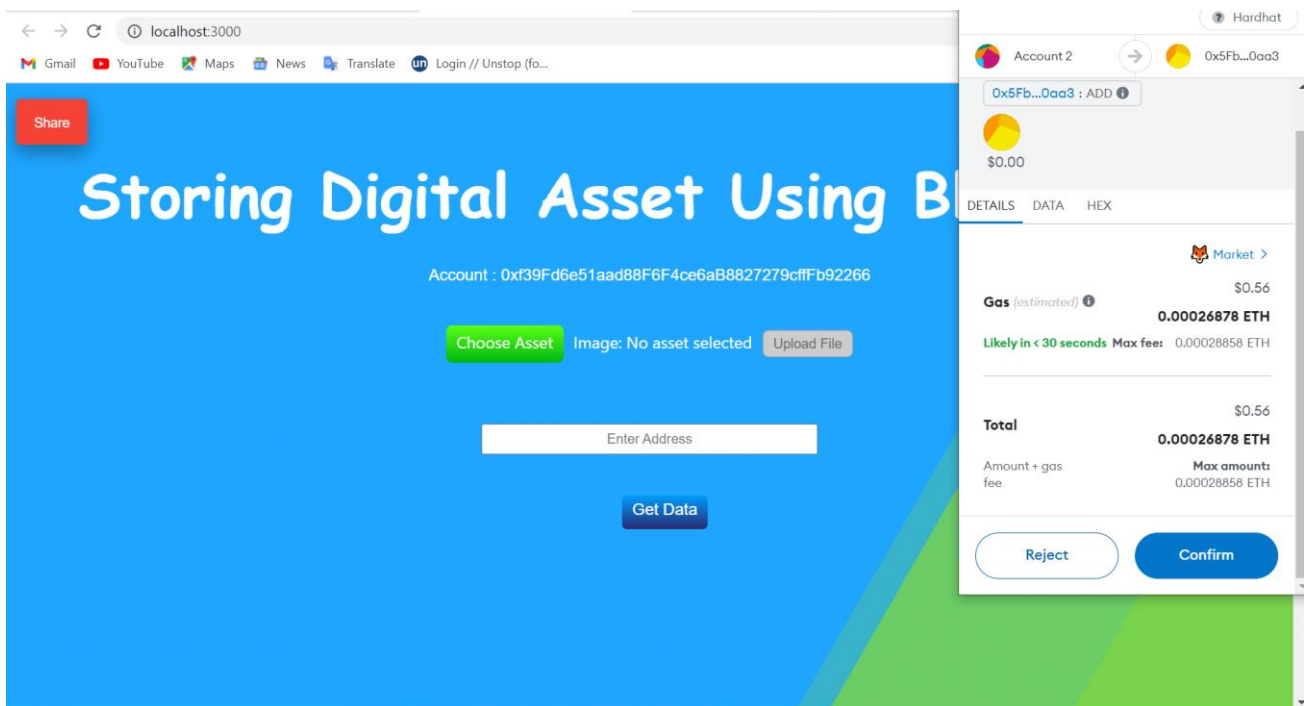


Fig (d) shows the uploading of Digital assets by confirming metamask transaction

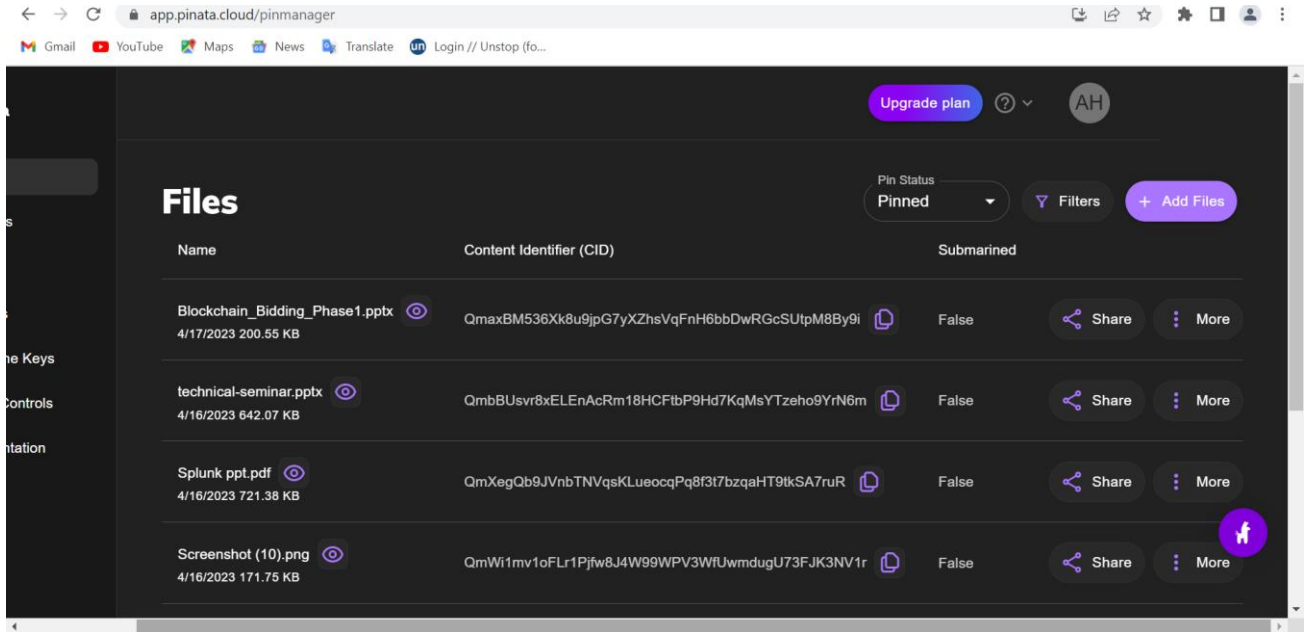


Fig (e) shows the interface of Pinata where storing Digital Assets by generating Hash value

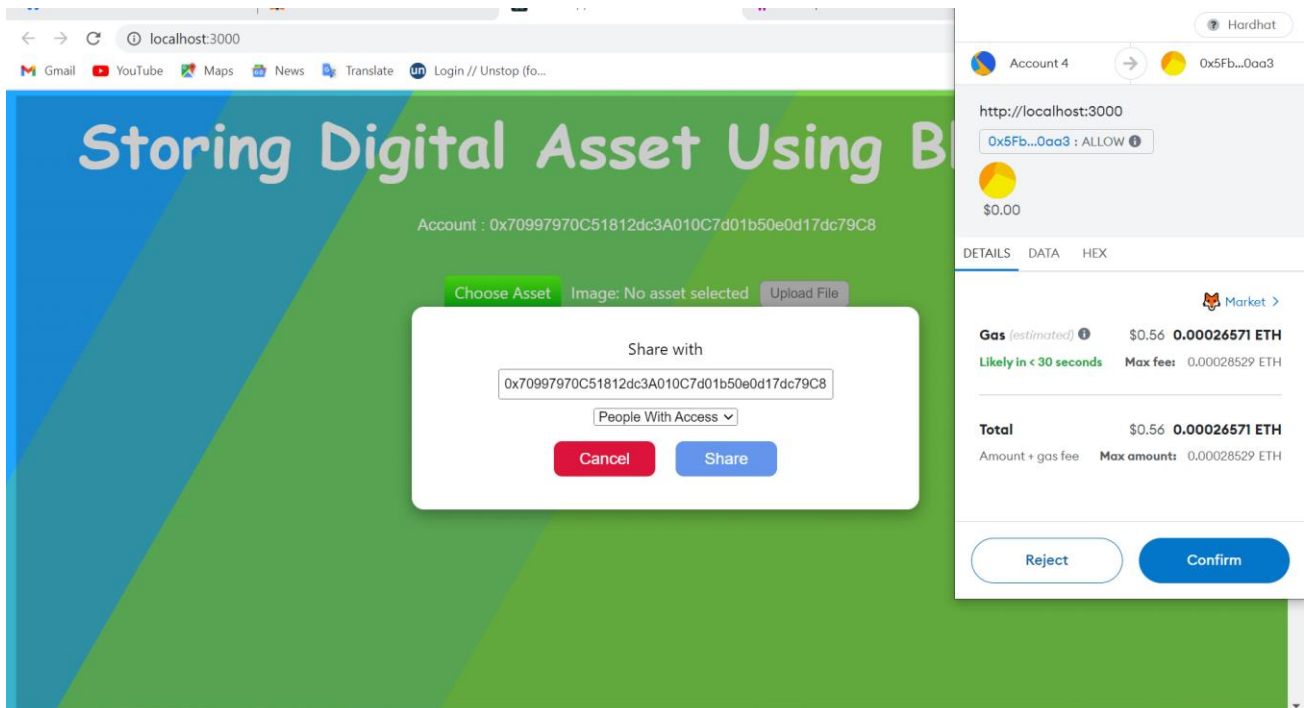


Fig (f) shows the sharing access of digital asset



## V. CONCLUSION

DAM systems are an essential tool for any organisation that needs to manage large amounts of digital media. The right solution will help you reduce costs, improve productivity and create better products by organising your files more effectively. The growing importance of digital assets has increased market interest to invest and possess digital assets. Financial institutions and other organisations are reconsidering their strategic approach towards conducting business. The entire financial market is being upended by digital assets, which is changing the financial ecology. Blockchain is also gathering a lot of momentum and forcing critical aspects of businesses to get acclimated to the changing scenario. Keeping up with the evolving digital landscape, the Indian Government has launched India's first digital asset management platform called DigiBox.

## REFERENCES

- [1] Shu-Ching Chen, Florida International University (2022) Digital Assets and Blockchain- Based Multimedia Data Management.
- [2] Atul Banotra, Swastik Gupta, Sachin Kumar Gupta, and Mamoon Rashid (January 2021) Asset Management in Data of Internet of Things using Blockchain Technology DOI: 10.1007/978-981-15-8711-5\_14 [https://doi.org/10.1007/978-981-15-87115\\_14](https://doi.org/10.1007/978-981-15-87115_14).
- [3] Jean Lozano (2020) Blockchain in the Digital Asset Management Space <https://www.mediavalet.com/blog/blockchain-digital-asset-management/>
- [4] García-Barriocanal, E., Sánchez-Alonso, S., Sicilia, M.A., 2017. Deploying metadata on blockchain technologies. Commun. Comput. Inf. Sci.
- [5] Wang J, Wu P, Wang X, Shou W (2017) The outlook of blockchain technology for construction engineering management. 6. Zyskind G, Nathan O (2015) Decentralizing privacy: Using blockchain to protect personal data. In: 2015 IEEE Security and privacy workshops IEEE
- [6] Zyskind G, Nathan O (2015) Decentralizing privacy: Using blockchain to protect personal data. In: 2015 IEEE Security and privacy workshops IEEE





**INNO SPACE**  
SJIF Scientific Journal Impact Factor  
**Impact Factor: 8.423**



**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

9940 572 462 6381 907 438 [ijirset@gmail.com](mailto:ijirset@gmail.com)



[www.ijirset.com](http://www.ijirset.com)

Scan to save the contact details