Situation of the technology based on the problems

Problem 1 Content Moderation

Mastodon and PeerTube has multiple instances run by individual communities or hobbyist. This decentralized nature makes it more difficult to implement and enforce content moderation policies consistently across the entire network. **Decision making on regarding content moderation depends upon individuals unlike centralized applications, consensus mechanism.**

When we say decentralization brings freedom of speech, inequality, no censorship kinds of freedom on the table,but such freedom brings their own troubles and fewer tools to address them

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In **PeerTube**, ability to remove videos(suppose illegal, violent,bad videos) completely depend upon policies and guidelines established by instance administrator. Even If video is removed from one instance, there is a chance that video can exist on another instance as it is the nature of peertube that videos can be replicated and distributed across multiple instance. **As instance operate independently, it is extremely challenging to remove the videos from entire PeerTube network. But instance level block can limit the visibility & reach of videos**

Steemit blockchain based blogging uses user driven moderation, flagging & reporting and reputation system where steemit assigns score to each user based on their activity and similar to **Quora** it has upvotes and downvotes system which increase and decreases visibility of content based on the votes. This is how Steemit does content moderation. **It largely depends upon users so content moderation decision can be subjective and bias depending upon person to person.**

Decentralized platforms have diverse communities managing instances and they have different perspectives and priorities. Disagreement regarding content moderation can take arise.

Problem -2 *Immutability of data can be a handicap*

Farcaster:- Fully popular decentralized application, but not all data that is stored by Farcaster is on blockchain, as blockchain servers as a transaction layer rather than storage layer. It depends upon decentralized storage and external system or component to retrieve and store data. As it is difficult to store everything on blockchain as it is immutable DS comes into picture but it has its own small limitations, decentralized storage **provides data integrity, privacy & resistance to censorship but complete 100% immutability is difficult to achieve** . Decentralized Storage.

Similarly many protocols and Dapps uses decentralized storage system instead of Blockchain directly due to it's immutability, scalability, cost of storage limitations to store data

FIIECOIN , STORJ, AREWAVE, SIA etc. are decentralized storage system used by these protocols or Dapps. Due to the nature of the design these decentralized storage, there is no built-in mechanism for directly deleting data from the network. These methods may make the data harder to access, ensures data availability but they do not guarantee complete deletion or removal of data from the network. **It may be challenging to ensure complete eradication.** Removing accessible reference and metadata and tags could a possible option to remove data.

To prevent DApps from illegal, harmful, botnets and bad actors it quite difficult due to the decentralized and distributed nature of DApps still content moderation that can involve manual human moderators to flag inappropriate contents, reporting mechanism(users can report content), collaboration with authorities, establishing community guidelines are the possible methods to that are being currently used and can be used to deal with bad actors.

For example, STEEMIT a blockchain-based blogging and social media website. To delete and remove bad content from it users can do many things like contact Steemit support, community flagging and many ways. However, these steps can help mitigate the visibility of bad content, the decentralized and immutable nature of blockchain-based systems means that the content may still exist on the blockchain and be accessible through other means.

In mastodon decentralized social media, data is stored in multiple instance(servers) managed by difference communities and they communicate with each other using ActivityPub protocol. Chances are the instance can get compromised.

Problem -3 User Adoption

According to statistics, some popular decentralized apps and their users approximately:-

- MASTODON DECENTRALIZED SOCIAL MEDIA:- **4.5 million accounts**
- PEERTUBE:- **150000 + users**
- EVENTCASTER: Not more than **1 million**

Similarly, there are ample amount of decentralized applications built on top of various protocols like mastodon and peertube is built on top of ActivityPub protocol, eventcaster is built on top of Farcaster protocol.

As compare to centralized applications, these users are very less.

For example,

- Youtube has more than **2.1 billion users**,
- Instagram has more than **1 billion users**,
- Facebook has more than **3 billion users**.

Main problems why user adoption is challenging for decentralized social apps

- **User experience**:- Users are accustomed to the user friendly interfaces and seamless experiences provided by centralized applications. Even people who are not from technical background. They're super comfortable in using this apps and user base is growing day by day while in DApps these things are improving gradually. People are **habituated** in user centralized apps.

- **Monetization(Money)**:- Centralized social media apps offers monetization opportunities. Those people who have more than 1 million subscribers or followers on youtube, instagram, facebook are making ample amount of money as compared to normal corporate employee. ***Decentralized social media apps faces challenges to provide similar opportunities and rewards, which makes it challenging to attract & attain users.***
- **Large user base:**- Established social media have an amazing large user base as they've been on the market for users. This thing makes it for decentralized apps even if after offering so many benefits to attract users.
- **Awareness**:- People have limited understanding of blockchain technology and DApps especially people who don't have technical background. ***People prefer platforms who are popular have a simpler and more user friendly interface.***
- **Multiple instances:**- Some decentralized social media applications are composed of multiple instances(for ex:- Mastodon) each instance has its own rules, moderation, policies and guidelines. ***This lead to inconsistency in user experience and it can affect user trust and adoption.***

To increase the user adoption for decentralized social media applications platforms needs to address all these issues to attract a broader user base.

Problem 4 Scalability

It is bit difficult to scale ethereum decentralized apps as it is It's a peer-to-peer (P2P) network. It helps them to set up a decentralized business. As ethereum currently uses "proof of work" POW technology for validation of transactions(POS can come into picture in future). However, as the networks grows, the harder it for attackers to attack the system. But the drawback is as network grows, each nodes stores even more data and more nodes will participate in the transaction validation process it's quite difficult to scale DApps based on ethereum. As network can become congested and overloaded.

PeePeth a blockchain based social network alternative to Twitter powered by ethereum blockchain faces a scalability issue. Slower transaction confirmation time, high gas fee when the network is congested can hinder the scalability of the system. ***As all the post are stored on blockchain which offers data integrity and availability but the post can never get deleted as it is on ethereum blockchain. Users can unpin post from their profile but it will never be removed from the blockchain.***