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Decentralized Science (DeSci)

Decentralized science is the study of how to use decentralized technologies to promote collaboration, transparency, and trust in scientific research.

It seeks to create a more open, equitable, and secure research environment for researchers, institutions, and the public.



Decentralized Science

Distribution of funds is determined by the public using mechanisms such as quadratic donations or DAOs.

You collaborate with peers from all over the globe in dynamic teams.

Sharing laboratory services is made easier and more transparent using Web3 primitives.

New models for publishing can be developed that use Web3 primitives for trust, transparency and universal access.

Traditional Science

Small, closed, centralized groups control the distribution of funds.

Funding organizations and home institutions limit your collaborations.

Sharing laboratory resources is often slow and opaque.

You publish through established pathways frequently acknowledged as inefficient, biased and exploitative.

Decentralized Science

Funding decisions are made online and transparently. New funding mechanisms are explored.

You can earn tokens and reputation for peer-reviewing work.

You own the intellectual property (IP) you generate and distribute it according to transparent terms.

Sharing all of the research, including the data from unsuccessful efforts, by having all steps on-chain.

Traditional Science

Funding decisions are made with a long turnaround time and limited transparency. Few funding mechanisms exist.

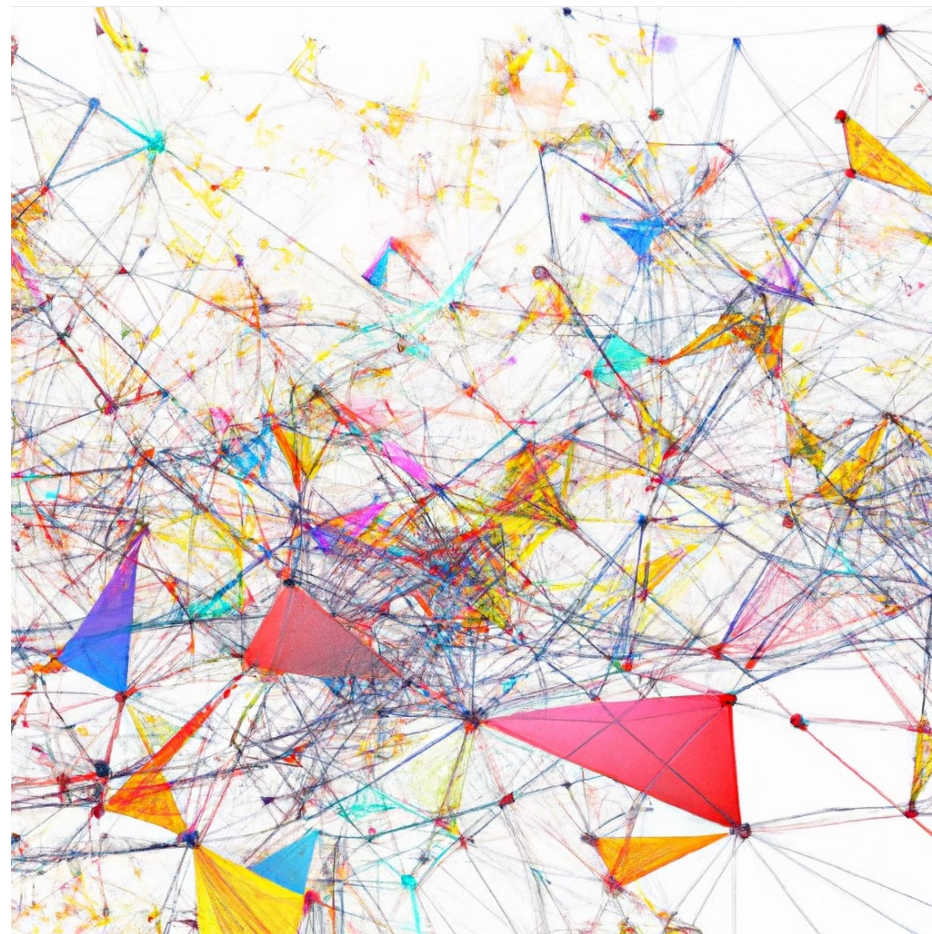
Your peer-review work is unpaid, benefiting for-profit publishers.

Your home institution owns the IP you generate. Access to the IP is not transparent.

Publication bias means that researchers are more likely to share experiments that had successful results.

DeSci use cases

- Publishing
- Reproducibility and replicability
- Funding
- IP ownership and development
- Data storage, processing, access and architecture



bloXberg



bloxberg Key Points

1. Bloxberg is governed by an association of academic institutions.
2. It's a permissioned blockchain for privacy and security.
3. It's energy-efficient, using Proof of Authority (PoA) consensus mechanism.
4. It's interoperable with other blockchain networks.
5. Bloxberg has potential use cases for research data, publication tracking, and credential verification.



EBSI Key Points

- Is a joint initiative of the European Commission and the European Blockchain Partnership.
- Is a network of nodes that provides secure and efficient blockchain-based services.
- Built on a permissioned blockchain, ensuring security and tamper-proof data.
- Provides interoperability, allowing different blockchain-based applications to communicate seamlessly.
- Sustainable and energy-efficient, making it an ideal platform for blockchain-based services in Europe.



EC Community Key Points

- Fostering the development of a decentralized cloud computing ecosystem that can be useful for academic research due to its scalability, security, flexibility, and cost-effectiveness.
- Aiming at implementing smart contract based protocols and advanced encryption and security measures to protect research data and resources from unauthorized access or tampering.
- Pushing scalability efforts in the industry that are beneficial for academic research that involves on-demand computationally intensive tasks and large amounts of data.
- Adopting a decentralized architecture that helps to make computing resources more accessible to academic researchers with limited budgets.
- Supporting a wide range of scientific and academic research areas, including machine learning, bioinformatics, and scientific simulations.

Ethernity CLOUD
Community

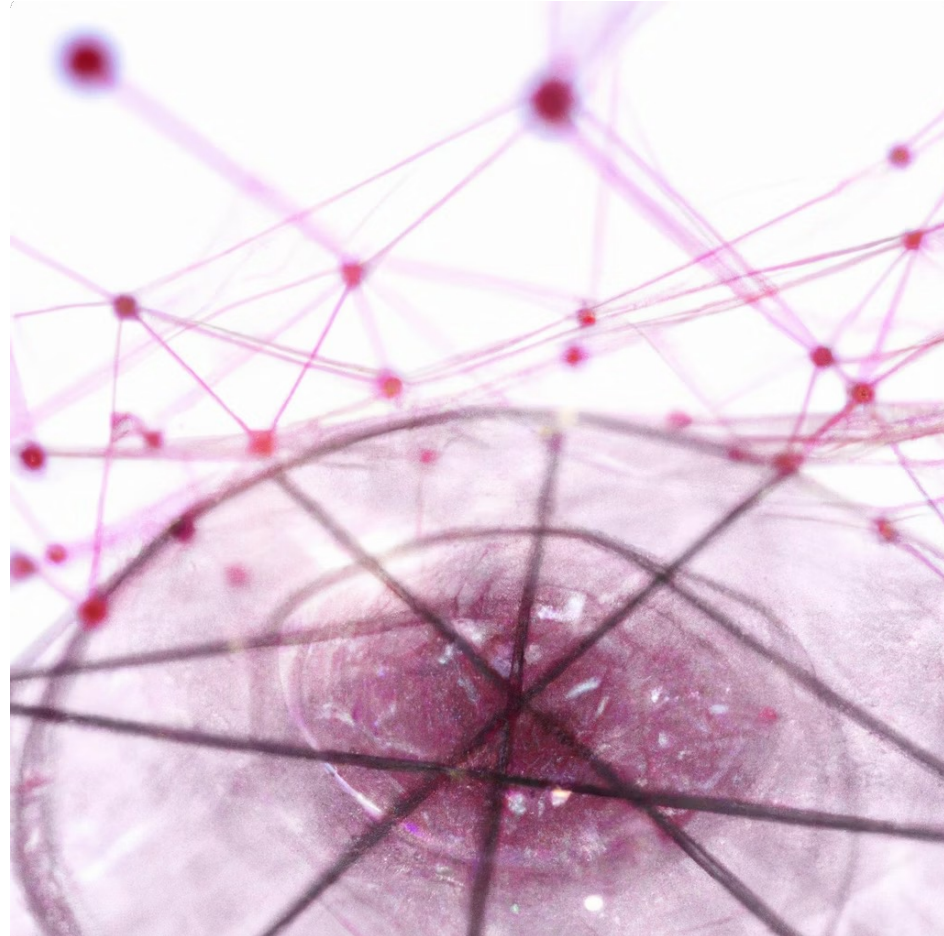
Blockchain in Decentralized Science

- Blockchain provides transparency through a public ledger, helping scientists collaborate.
- Data on blockchain is secure and trustworthy, ensuring scientific accuracy.
- Scientists can be incentivized to share research via blockchain rewards.
- Blockchain facilitates global collaboration and speeds up scientific discovery.
- Blockchain crowdfunding democratizes scientific funding.



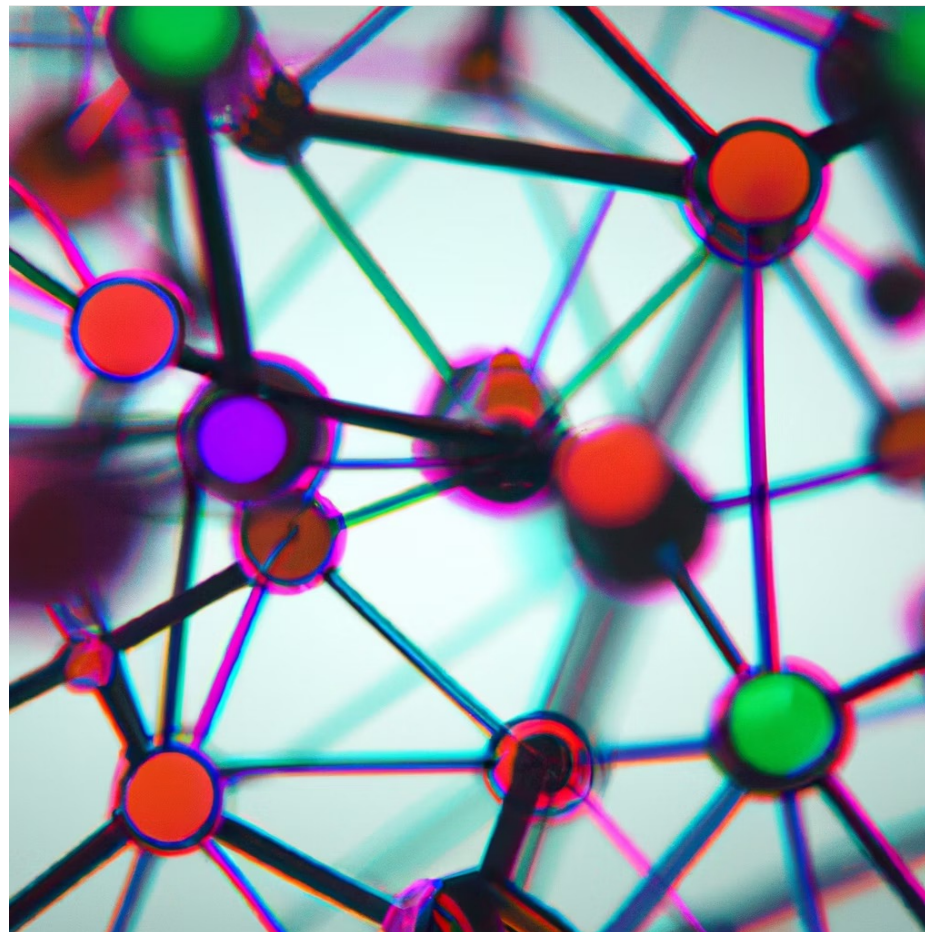
Challenges

- Motivating participation in decentralized science is challenging as it relies on volunteers and needs incentives.
- Protecting intellectual property rights in decentralized science is difficult as multiple individuals contribute, causing disputes and hindering progress.
- Funding decentralized science projects is challenging as they need funds from various sources and managing them is tough, resulting in a lack of resources for sustainability.
- Coordination in decentralized science projects is difficult due to competing interests, causing inefficiencies and delays.



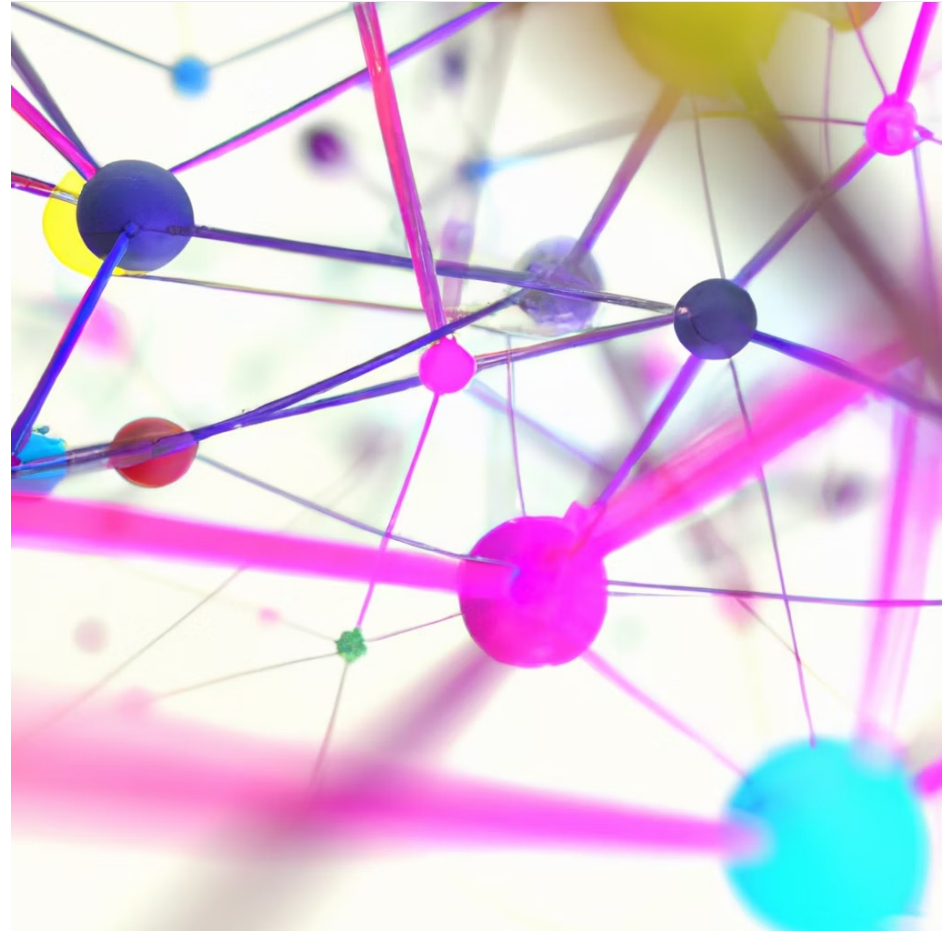
Ethical Considerations

- Decentralized science raises ethical considerations around informed consent, data ownership, and data privacy.
- Scientists and project leaders must ensure that their projects adhere to ethical standards and protect the rights of participants and stakeholders.



Conclusion

- Decentralized science has the potential to revolutionize scientific research by creating a more inclusive, transparent, and collaborative research environment.
- However, challenges and ethical considerations must be addressed to ensure the success and sustainability of decentralized science projects.



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Thank you!

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