ART ECHÓ

Art, Economy and Technology

Guide on blockchain and NFT's recommendations for Policy makers & the creative sectors.

Partner

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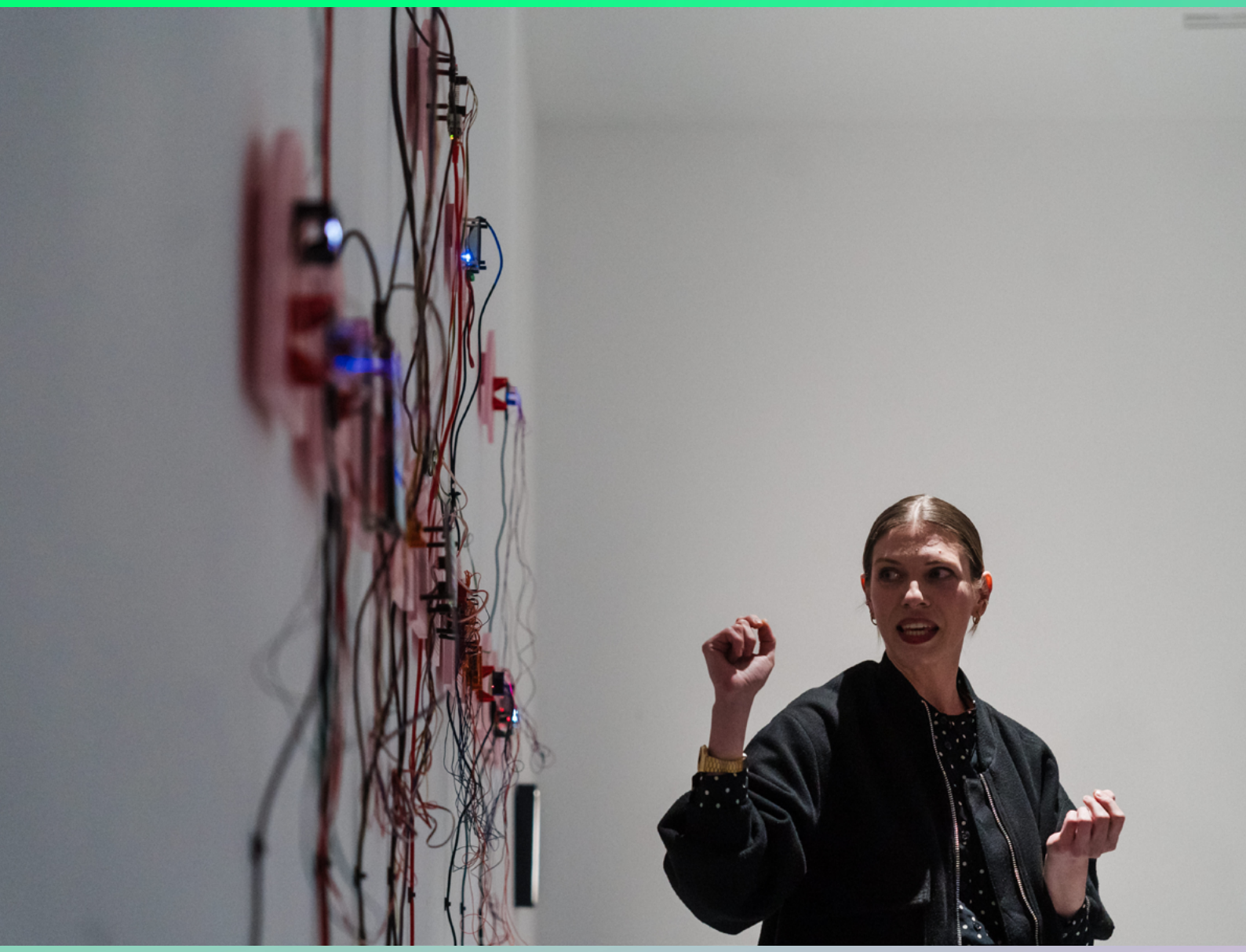


Foreword

ARTeCHÓ is a European initiative aimed at unlocking the potential of emerging blockchain technologies for the art ecosystem. It was created by five European institutions: SERN – Startup Europe Regions Network, Zaragoza City of Knowledge Foundation, Meet Digital Center, Baltan Laboratories, and the Frankfurt School Blockchain Center (FSBC). Over the past 24 months, alongside 15 participating artists, their mentors, and a wide range of experts, academics, technicians, and researchers, we have explored the possibilities of decentralized technologies for the creative industries. This exploration went beyond the NFT craze, focusing on organizational opportunities, ecological and societal impacts, and new creative possibilities. This document summarizes the findings in two parts: the first part is directed at policymakers, while the second is aimed at the creative sectors.

The Web3 and cryptoart sectors emerged quickly during the past years. As it always happens with rapidly evolving tech landscape, some hardliners won't see the need for regulation in this digital and decentralized space. However, regulators and policymakers are responsible for protecting both consumers and artists. While blockchain technology traditionally stands for decentralization and autonomy, the regulation of digital assets is necessary to address the risks for everyone involved and protect markets. Policymakers should collaborate with industry stakeholders and develop mechanisms to detect and prevent such practices, similar to traditional financial markets. Policymakers are actively addressing the challenges associated with NFTs, striving to define their legal status, tax implications, and consumer protection measures. However, ambiguities in regulations can lead to uncertainty within the industry.

New regulations may focus on enhancing investor protection and preventing money laundering. Policymakers must balance between promoting innovation and safeguarding consumer interests. Policymakers should nurture an environment that encourages innovation and technological advancement. Research and development in blockchain technology should receive support and investment. The protection of consumers and investors should be prioritized in regulations. This includes ensuring transparency, enforcing copyright laws, and preventing fraud. Collaboration with industry stakeholders and continuous dialogue are crucial for informed and balanced policymaking. In the landscape of cryptoart, regulators and policymakers act as stewards, working to facilitate growth and innovation while safeguarding the interests of artists, collectors, and investors. Balancing these dual roles in the digital art ecosystem is a responsible task, requiring careful consideration and adaptability.

Recommendations for policy makers

The main risks regulators need to consider:

Financial risk: NFT prices exhibit high volatility, and investors are exposed to significant losses. The value of an NFT can decrease if the market demand disappears.
Regulatory risk: NFT regulations are still evolving, potentially introducing new requirements or restrictions on marketplaces and participants.
Money laundering: The decentralized and unregulated nature of crypto assets makes them an option for money laundering. On the other hand the transparent nature of blockchains can make money laundering very difficult. Money laundering in cryptocurrency aims to hide the illegal source of funds and convert them into untraceable cash through exchanges. According to Chainalysis this is highly concentrated in a few services and even more so in specific deposit addresses within those services (Chainalysis, 2023).
Liquidity risk: NFTs are unique, and lack an established market. Sellers may have to accept substantial losses if they need to sell quickly.
Custody risk: NFTs are typically stored in digital wallets, subject to the risk of loss or theft if a wallet is compromised.
Smart contract risk: NFTs and marketplaces rely on smart contracts. Any flaws in these contracts can result in losses.
Wash trading: This deceptive practice artificially inflates an asset's value through simultaneous buying and selling. It's a manipulative tactic that can mislead other investors. Legally, wash trading is prohibited in many jurisdictions. While blockchain's decentralized nature makes it challenging to prevent such activities, it's a risk for both NFT marketplaces and participants, artificially inflating prices and potentially causing financial losses.

Decalogue for Policy Makers on NFTs in the Contemporary Art Ecosystem

1

Regulations need clear definitions: Clarify any technological concept appearing in the regulation and keep up with the ever evolving technical advancements and changements.

2

Balance Innovation with Consumer Protection: Develop regulations that protect consumers and artists from financial risks, money laundering, and fraudulent activities while promoting innovation. This balance is crucial to ensure a safe yet progressive environment for the NFT art market.

3

Ensure Transparency and Traceability: Promote the use of blockchain networks that provide clear, immutable records of transactions and ownership. This enhances authenticity and trust within the art market, benefiting artists and collectors alike.

4

Support Decentralization and Autonomy: Advocate for blockchain platforms that eliminate intermediaries, giving artists greater control over their work and interactions with collectors. This decentralization enhances security and reduces censorship risks.

5

Leverage Smart Contracts for Fair Compensation: Encourage the implementation of smart contracts to automate payments and royalty distributions. This ensures artists are fairly compensated each time their work is resold, promoting long-term financial stability.

6

Facilitate Global Market Access: Support initiatives that expand the reach of artists to global audiences. Reducing traditional barriers can help artists gain exposure and opportunities on an international scale.

7

Prioritize Digital Preservation and Immutability: Promote practices that ensure the long-term preservation of artworks and their transaction histories on the blockchain. Advocate for decentralized storage solutions like IPFS or Arweave for durability and accessibility. IPFS is suitable for use cases that require flexible, collaborative, and accessible storage, while Arweave is suitable for use cases that require permanent, secure, and immutable storage.

8

Encourage Community Building: Foster the development of communities around artistic projects that grow around blockchain platforms. Support mechanisms that allow direct public engagement, collaborative funding, and other participatory activities.

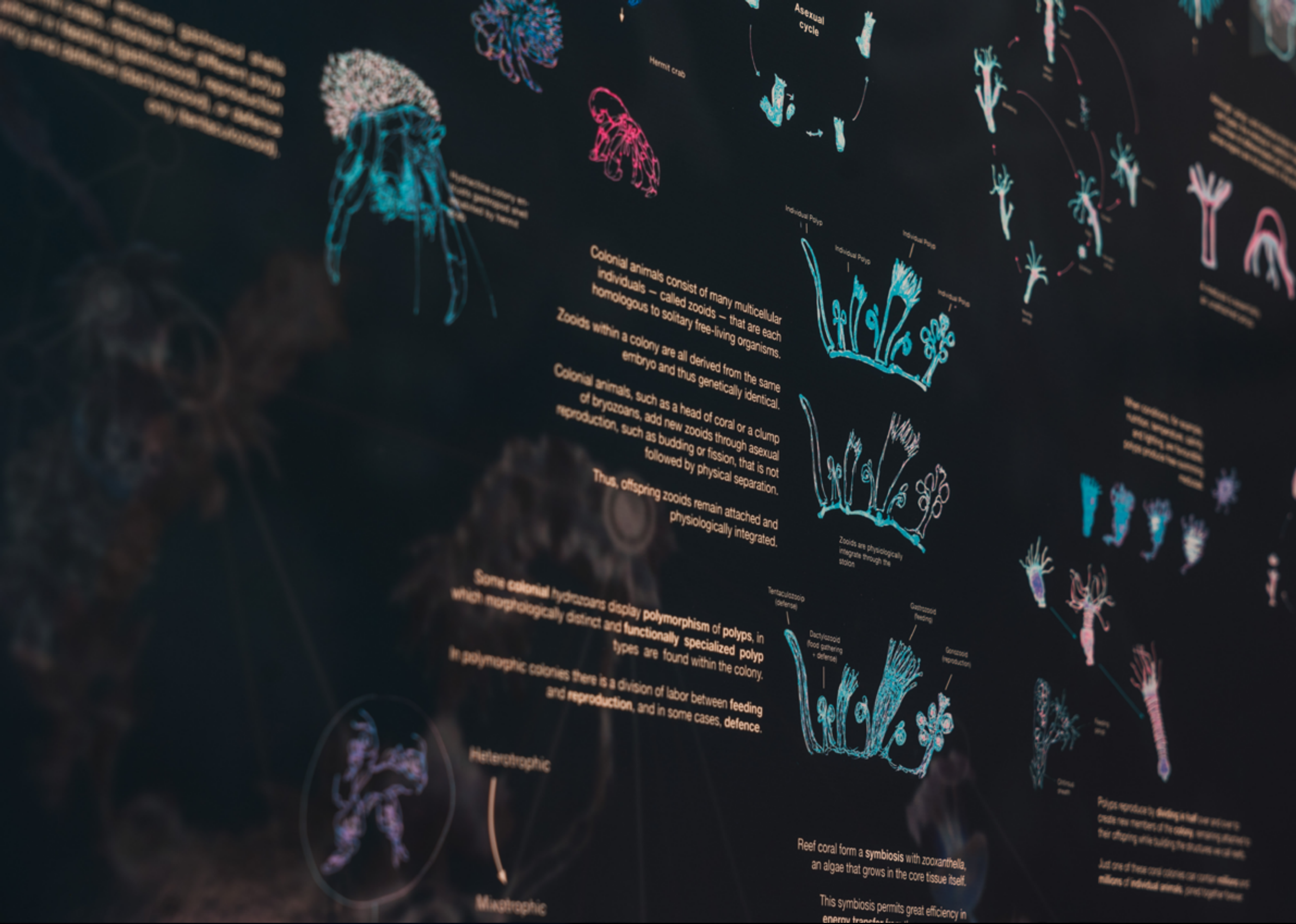
9

Educate on Blockchain Network Selection: Provide guidance on choosing the appropriate blockchain network based on factors like decentralization, environmental impact, and network optimization for NFTs. This helps artists and managers make informed decisions suited to their needs.

10

Avoid Common Pitfalls in NFT Implementation: Address misconceptions about NFT storage and content rights. Emphasize the importance of understanding the technical complexities and the need for specialized advice to prevent errors and misunderstandings.

By following these recommendations, policymakers can create a supportive and balanced framework that encourages innovation while protecting the interests of all participants in the NFT and contemporary art ecosystem.

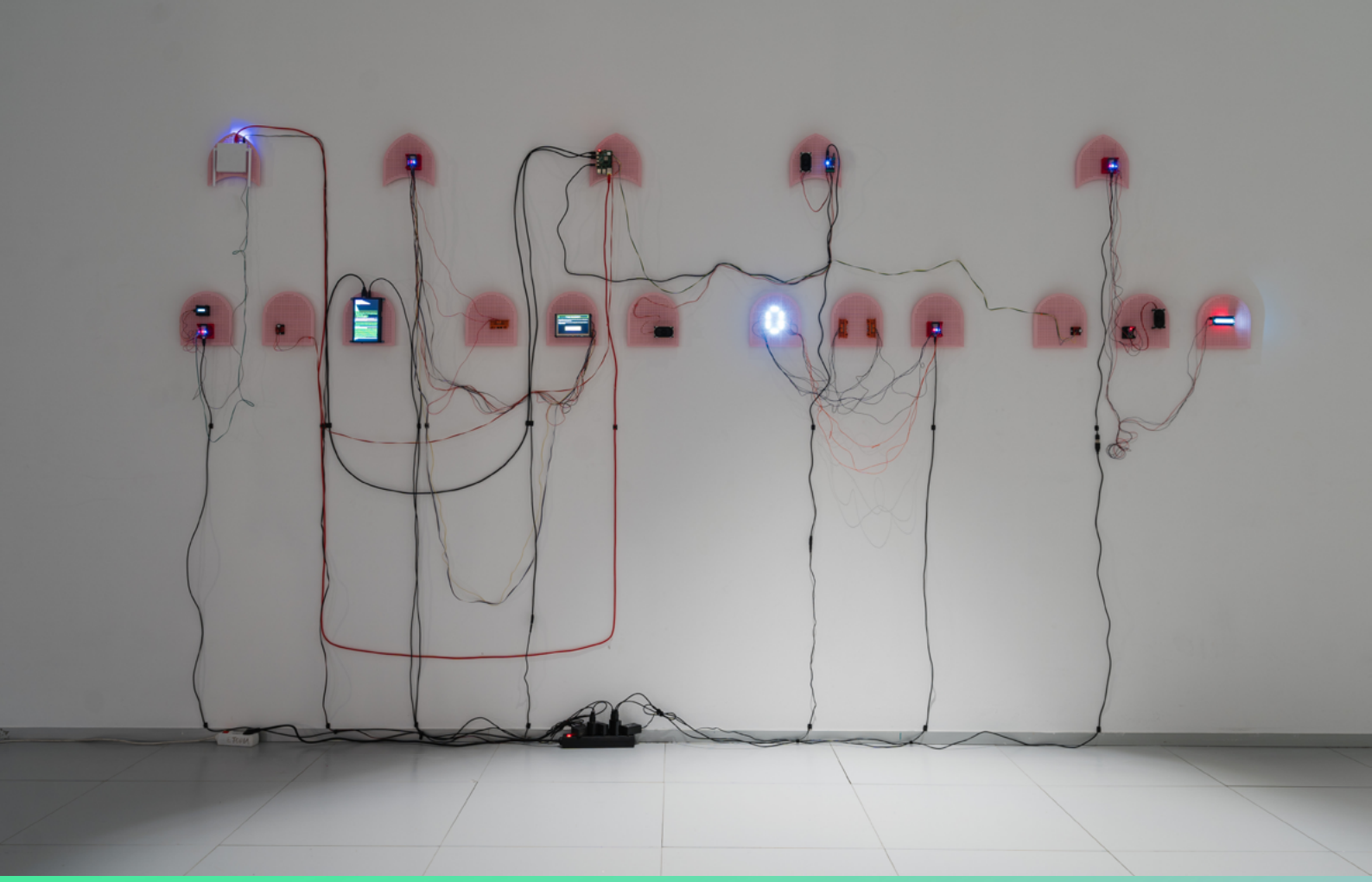


Asexual cycle
Colonial animals consist of many multicellular individuals — called zooids — that are each homologous to solitary free-living organisms.
Zooids within a colony are all derived from the same embryo and thus genetically identical.
Colonial animals, such as a head of coral or a clump of bryozoans, add new zooids through asexual reproduction, such as budding or fission, that is not followed by physical separation.
Thus, offspring zooids remain attached and physiologically integrated.
Some colonial hydrozoans display polymorphism of polyps, in which morphologically distinct and functionally specialized polyp types are found within the colony.
In polymorphic colonies there is a division of labor between feeding and reproduction, and in some cases, defence.
Heterotrophic
Mixotrophic
Reef coral form a symbiosis with zooxanthella, an algae that grows in the core tissue itself.
This symbiosis permits great efficiency in

Artechó a guide on blockchain and NFT's with recommendations for the creative sector.

Reasons to use Blockchain Networks in the Contemporary Art Ecosystem:

- **Transparency and Traceability:** Blockchain networks provide an immutable and transparent record of all transactions, allowing the tracking of the origin and ownership of artworks and ensuring authenticity and transparency. Blockchain records can be read through chain explorers for each network like Etherscan, Solscan, Polygonscan. However, practically, not all users utilize these tools due to their complexity. These tools require some technical knowledge for proper reading. Some marketplaces provide more user-friendly records that allow verification of the most critical data in the network related to each artist's or collector's NFTs.
- **Decentralization and Autonomy:** Blockchain technology enables significant decentralization, eliminating the need for intermediaries to verify and manage transactions. This gives artists and cultural managers greater autonomy, allowing them to interact directly with collectors and audiences without relying on third parties. This decentralization also contributes to greater security and resistance to censorship, as transactions and ownership of artworks are immutably recorded on the blockchain. Moreover, decentralization ensures that power and control are not concentrated in a single entity but distributed among multiple network nodes, strengthening integrity and durability.
- **Smart Contract Functions:** Blockchain platforms allow the use of smart contracts that automate payments and the distribution of royalties, ensuring that artists receive compensation every time their work is resold. They also enable the creation of complex applications that offer exclusive benefits, such as access to exclusive content, physical events, pre-sales. The applications are limitless and can be developed through Web3 technology, which allows users to interact in a decentralized manner with blockchain network information from their web browsers using a wallet.
- **Global Access:** Blockchain technology facilitates access to a global market, allowing artists to reach collectors and audiences worldwide without the traditional barriers of galleries and auction houses. Although adoption is currently limited, it is likely to grow over time due to the intrinsic advantages offered by the technology.
- **Immutability and Digital Preservation:** Artworks and their transaction history are permanently recorded on the blockchain ledger, ensuring the preservation and integrity of the data over time. It is important to note that the content of each artist's work in an NFT is not stored on the blockchain itself. Instead, it is usually stored in two ways:
  - Centrally on a personal server or clouds like Amazon Web Services.
  - Using decentralized protocols like IPFS or I2P that allow decentralized storage of the artwork. This is the recommended way to use with your works, as it theoretically allows unlimited data durability.
- **Community Creation:** Blockchain platforms can foster the creation of communities around artistic projects, where followers can directly support artists by purchasing NFTs, participating in projects, and other collaborative funding mechanisms.



Practical recommendations for the arts sector.

1. Choose a Blockchain Network that works for Your Project:
Choosing the blockchain network can be tricky for any artist or cultural manager new to these technologies. Some factors to consider include:

1.1 Network Adoption Statistics: For in-depth verification, you can use tools like Glassnode or Chainanalysis:

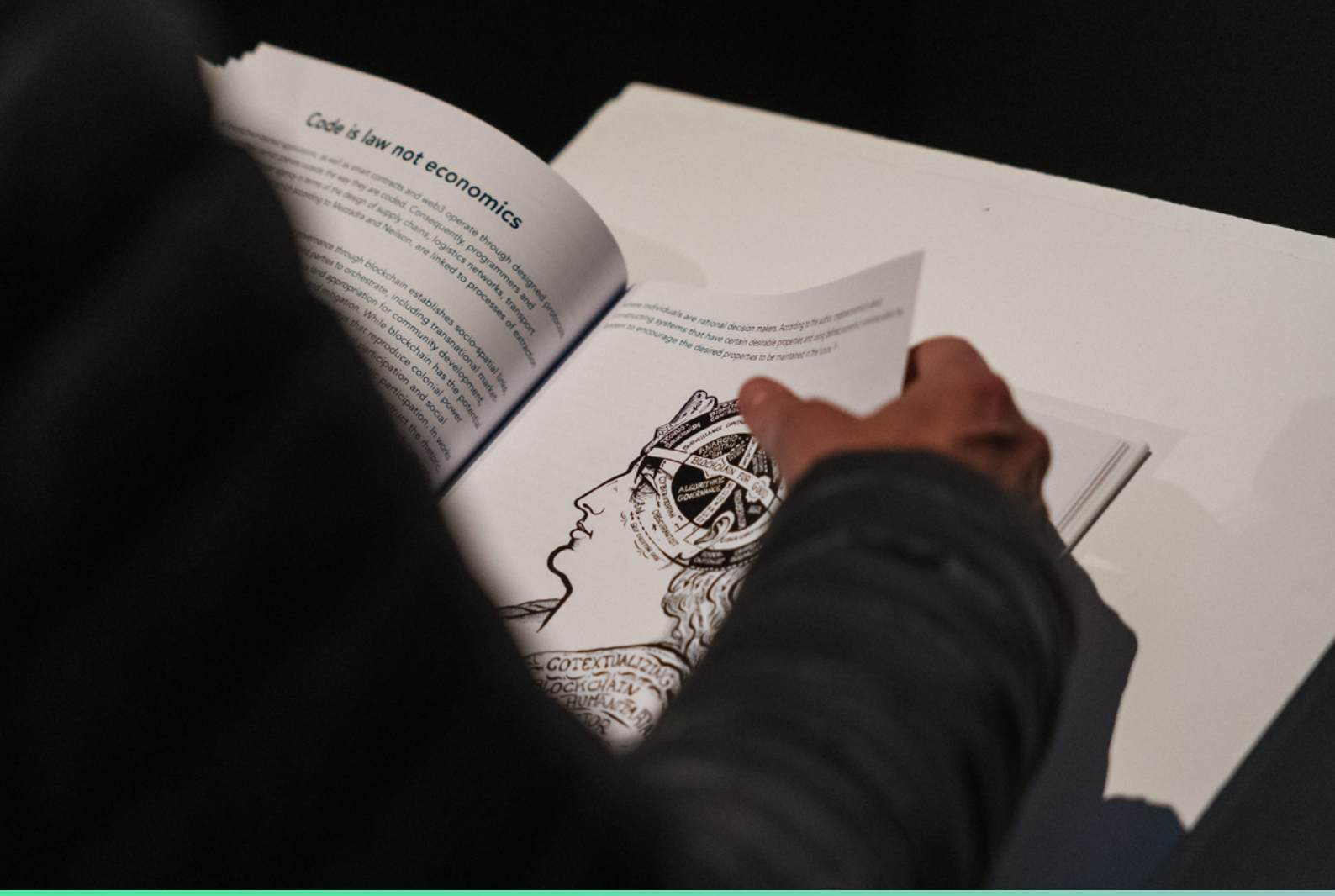
- Glassnode focuses on providing real-time data and metrics on blockchain network activities, such as user activity, transaction volumes, movements of cryptocurrencies between wallets, and mining and staking statistics.
- Chainalysis, among other functionalities, specializes in transaction investigation and analysis to prevent illicit activities like money laundering and fraud, monitor suspicious transactions, and comply with each country's legal and regulatory standards.

Network Popularity among Artists and Collectors: It's crucial to evaluate which networks are most used in the contemporary art world or the creative sector where your works are located. This not only helps you stay connected with the larger art community but also ensures that your work reaches the right audience. Ethereum and Tezos are currently prominent in the contemporary art world.

1.2 Level of Network Decentralization: Decentralization in blockchain networks should not be a qualitative adjective but quantitative, as decentralization must be quantified by:

- Number of Active Nodes or Validators
- Concentration of Mining or Staking Power
- Decentralization of Development
- Decentralization of Token Ownership

1.3 Network Optimization for Operating NFTs: The blockchain network you choose must be optimized for operating NFTs. This ensures the efficiency and effectiveness of your NFT operations. While the recent popularity of Ordinals, an NFT protocol on the Bitcoin network, suggests that Bitcoin could be a viable option, this network is not designed for smart contracts, limiting its functionality for NFTs. Comparing Bitcoin with Ethereum, we can see that Bitcoin is a more decentralized network with greater adoption, but Ethereum is more suitable for NFTs due to its ability to efficiently execute smart contracts. Additionally, environmental impact is a crucial factor to consider, as networks like Ethereum (with Proof of Stake) are significantly more energy-efficient than Bitcoin (with Proof of Work).



2. Take into account the Environmental Impact of your choices:

Consider the energy cost of the network, especially in networks that use Proof of Work.

Proof of Work (PoW)
Example Networks: Bitcoin
Transactions per Minute (TPM): 7
Energy Cost per Transaction (kWh): 707
Proof of Stake (PoS)
Example Networks: Ethereum, Polygon
Transactions per Minute (TPM): 1,000
Energy Cost per Transaction (kWh): 0.01
Delegated Proof of Stake (DPoS)
Example Networks: EOS
Transactions per Minute (TPM): 2,000+
Energy Cost per Transaction (kWh): <0.01
Proof of Authority (PoA)
Example Networks: VeChain
Transactions per Minute (TPM): 2,000
Energy Cost per Transaction (kWh): Minimal, not precisely quantified
Proof of Burn (PoB)
Example Networks: Slimcoin (theoretical)
Transactions per Minute (TPM): 100
Energy Cost per Transaction (kWh): Depends on the burned coin; indirect energy cost

Proof of Elapsed Time (PoET)
Example Networks: Hyperledger Sawtooth
Transactions per Minute (TPM): 2,000+
Energy Cost per Transaction (kWh): Minimal, specific figures not widely reported
Proof of Activity (PoActivity)
Example Networks: Decred
Transactions per Minute (TPM): 100-1,000
Energy Cost per Transaction (kWh): Moderate, less than PoW but varies
Proof of Importance (PoI)
Example Networks: NEM
Transactions per Minute (TPM): 1,000+
Energy Cost per Transaction (kWh): <0.01
Proof of History (PoH)
Example Networks: Solana
Transactions per Minute (TPM): 50,000+
Energy Cost per Transaction (kWh): Not explicitly reported, but designed to be low
Proof of Replication (PoRep)
Example Networks: Filecoin
Transactions per Minute (TPM): Depends on network usage
Energy Cost per Transaction (kWh): Lower than PoW, specific kWh not reported

Proof of Stake (PoS) and its variants, including DPoS and Proof of Importance (PoI), stand out for their low energy consumption compared to Proof of Work (PoW). These algorithms eliminate the computationally intensive mining process, significantly reducing energy requirements and making them more sustainable options for blockchain networks. PoS, DPoS, and PoA often offer lower transaction costs due to their less resource-intensive consensus processes. Study March 2024: Comparison Analysis of Blockchain Consensus Algorithms in Decentralized Public Environment: A Review. Asia Proceedings of Social Sciences.

Avoid the following common Mistakes When Using NFTs:

1. Confusion about Artwork Storage: Many cultural managers and artists mistakenly believe that artworks are stored directly on the blockchain. Storing files directly on the blockchain would be extremely costly and energy-inefficient due to the size of the files and the nature of blockchain networks. In reality, the files of the works are usually stored centrally on servers like Amazon Web Services or decentralized using protocols like IPFS or I2P. The blockchain only stores a record of ownership and transactions. It is very important to choose the storage medium well before launching your works to the market.

2. Lack of Understanding about the Content of Works: Works linked to NFTs are usually public and accessible to anyone with the link. The buyer gets a certificate of ownership on the blockchain, not an exclusive and private copy of the work. This can lead to misunderstandings about the rights and control of the content.

3. Underestimating Technical Complexity: Implementing and maintaining NFT projects can be technically complex. It is common to underestimate the need for specialized technical advice and the time required to develop competencies in these technologies, especially since works once launched on the network are immutable and so are errors

Alternatives to Blockchain

Blockchain technology was first proposed in 1982 by cryptographer David Chaum and later developed by Stuart Haber and W. Scott Stornetta in 1991. These early works laid the foundation for a cryptographically secure blockchain, and in 1992, Merkle trees were incorporated to improve efficiency. Despite these theoretical advances, it was not until the emergence of Bitcoin in 2008 that a truly practical and globally adopted application was achieved. Bitcoin not only implemented blockchain but also introduced a "peer-to-peer" transaction system without the need for trusted third parties, like banking entities.

The strength of blockchain networks lies, besides all the properties we have named, in their standardization and global use. Although we could create potentially more efficient alternative systems, their mass adoption would be challenging. Furthermore, all protocols and networks emerging within the blockchain ecosystem are merely revisions of the technological properties of previous solutions. Many will disappear, and others will prevail.
To propose an analogy, we could create a new internet that is better suited to current websites' contemporary functionalities using languages more like JavaScript instead of HTML, but the problem would be how many people would adopt it. The strength of the current World Wide Web lies in its standardization and global use. Something similar happens with current blockchain networks. Although still in the early stages, some have shown they are here to stay, thanks to their growing adoption and standardization.

Among some possible alternatives to blockchain for certifying digital artworks is digital watermarking, which allows an authenticity watermark to be embedded in a file. However, digital watermarking has several drawbacks. It does not enable decentralized transactions between people, meaning an intermediary is always needed to verify authenticity. Moreover, it is more easily hackable compared to blockchain networks, compromising the security of authenticity. It also lacks traceability and transparency, as it does not offer a transparent and immutable record of ownership and transactions, making it difficult to track the origin and transfers of artworks. Despite these drawbacks, an advantage of digital watermarking could be its ease of use compared to blockchain networks, being a more accessible and easy-to-implement technology for users without knowledge.

CREDITS

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