

English

ART ECHÓ

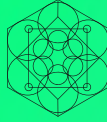
Art, Economy and Technology

Learning Guide

Partner







Learning Guide: ARTeCHÓ

We propose three themed activities based on the exhibition's themes, plus an introductory activity.

Introduction Activity: Setting a Common Ground

Activity 0: Blockchain 1.0.1

Objective:

Introduce participants to the basic concepts of blockchain, NFTs, and cryptocurrencies interactively.

Support Materials:

Lego blocks (to represent blocks)

Sticks (to represent transactions)

Small labels and markers

NFT's 101 (ARTeCHÓ guide)

Activity Steps

Introduction: Explain the basics of blockchain technology, emphasizing its decentralized nature and secure transactions.

Group Activity: Divide participants into small groups. Each group builds a simple representation of a blockchain using Legos (blocks) and sticks (links between blocks).

Discussion: Encourage discussion about blockchain's characteristics such as immutability, transparency, and decentralization.

Presentation: Each group presents their model, explaining how it works and the role of each component.

Real-World Applications: Discuss blockchain's real-world applications beyond cryptocurrency, connecting to the exhibition's themes.

Blockchain Concepts Covered

Distributed Ledger

No central authority

Transparent but anonymous ledger

Append-only ledger

Proof of work and proof of stake

Immutable ledger



Activity 1: The Materiality of Technology

THE CLOUD IS NOT JUST WATER VAPOUR /WHAT IS MY CLOUD MADE OF?

Objective: Explore the material footprint of technology on society.

We invite participants to actively and eagerly explore decentralised futures. Together, we'll trace the materials that lead us to the clouds, discover the origins of the power that fuels our digital world, and unravel the mysteries of blockchain. Can jellyfish and siphonophores help us in this quest? Join this thrilling and interactive journey to invent the future, without going off the deep end.

This activity is thoughtfully designed for children over seven years old, ensuring an engaging and educational experience for all attendees.

Duration: 2h

Materials:

Images or samples of electronic devices

Articles or videos on e-waste

Paper and pens for brainstorming

Information about the artworks

Target Audience: All ages

Activity Steps:

Discussion: Begin by considering technology's pervasive presence and material implications, such as resource extraction, manufacturing processes, and electronic waste.

Group Assignment: Divide participants into 4 groups, assigning each a specific aspect of technology's material footprint related to the artworks (e.g., rare earth metals, energy consumption, environmental impact, materiality of actions).

Research: Groups explore the assigned topics, using resources provided to discuss consequences and potential solutions.

Presentation: Each group presents their findings and the related artwork, fostering a collective understanding of technology's materiality and societal implications.

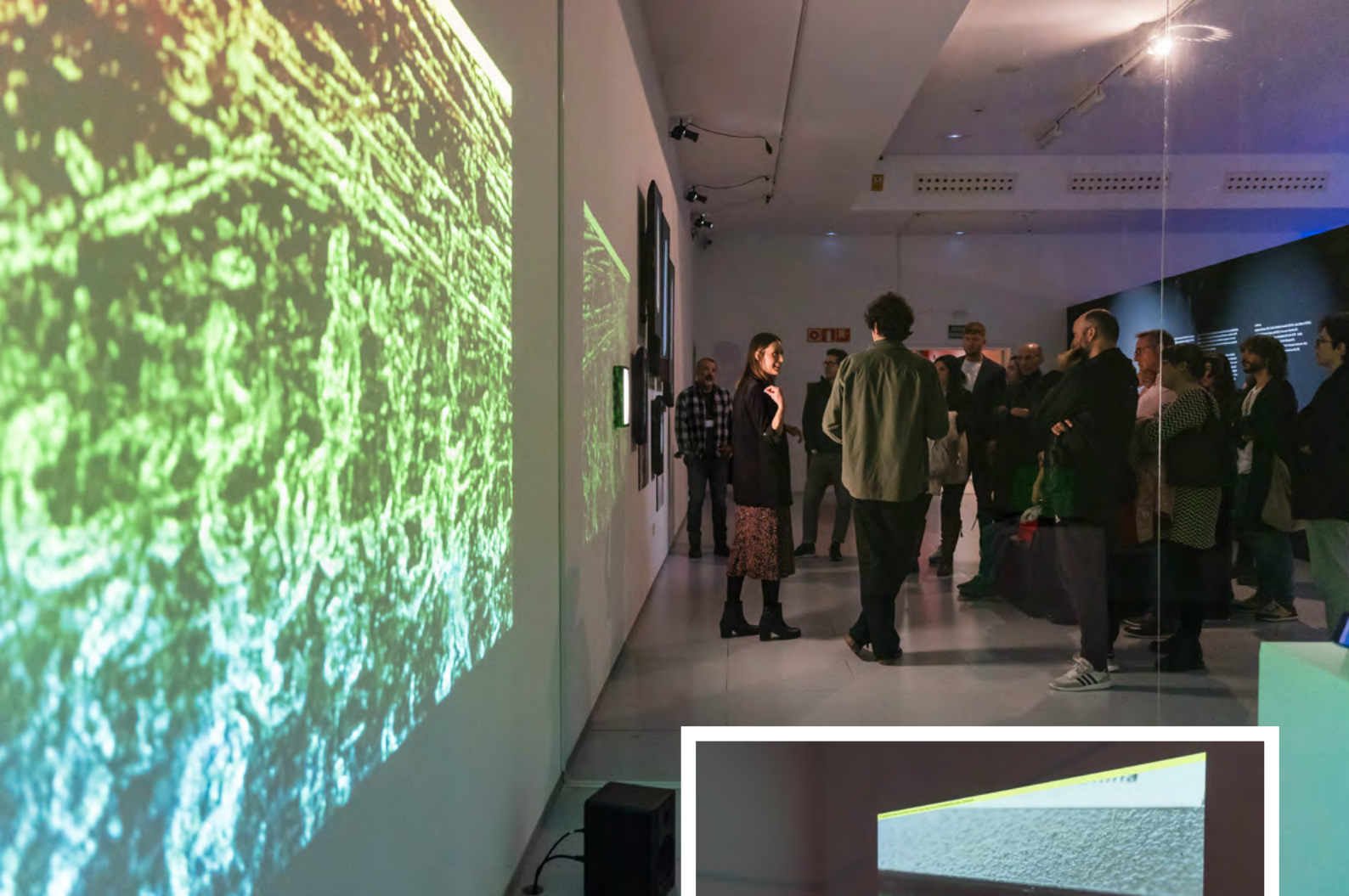
Related Artworks:

• "Datangible" by Azahara Cerezo

• "Lithium Republic" by Merlina Rañi

• "Hash Breakdown" by Silvia Heiserova

• "Bubble" by OPN Studio



Datangible (2024)
Azahara Cerezo (España, 1988)

Audiovisual feedback loop system (table with laptop, camera and projector. Variable dimensions)

Datangible is an installation that explores the supply chains behind manufacturing a standard office laptop. The work is a story divided into several video chapters found in the computer itself, which is the protagonist of its story. These files progressively expand through a hosting network (decentralised web or blockchain), functioning as a kind of spam. As it is detected that more nodes (peers) are sharing the video files, new parts of the story are uploaded randomly to the decentralised network, thus gradually expanding throughout the network. The proposal explores the material dimensions behind the electronic sector and the tensions between software and hardware decentralisation.



Glossary NFT 101

Airdrop

An airdrop of tokens is a giveaway of tokens to promote a project or reward token holders to build a stronger community and add more value and utility to the existing tokens.

(Public) Blockchain

Decentralized, transparent, and immutable distributed ledger that can be accessed and used by anyone without permission, and without reliance upon a trusted third party to maintain the ledger (e.g. Ethereum, Bitcoin, or Polygon). Transactions on public blockchains can be tracked transparently in a block explorer, e.g. etherscan.io.

Blue chip

Stable, strong, and well-recognized NFT projects.

Cryptocurrency

Digital medium of exchange secured by a blockchain-based ledger.



Litium republic XYZ (2024)
Merlina Rañi (Brasil, 1987)

Experience in the Metaverse.

This digital space in the metaverse (which the viewer can navigate through using the keyboard) gathers information about the cultural, scientific and political aspects of the well-known Lithium Triangle (a geographical area between Bolivia, Argentina and Chile) to connect art agents and scientific researchers from all over the world with the local community. This territory has salt flats containing 85% of the world's concentrated lithium in brines. The exhibition *Devouring the Thunder*, a virtual exhibition with works by Elisa Balmaceda (Chile), Faktor (Argentina) and Celeste Rojas Mugica (Chile), curated by Rañi, is also being presented in this digital *salar del Muerto*. Each artist's work introduces an element that addresses the issues of energy, ecology and globalisation. In their joint dynamic, the works bring together contemporary concerns about future ruins, the need to understand time on a human scale and the richness of an ecosystem far from being a desert.

La voz del Hombre Muerto (2024)
Videos

There is the *Salar del Hombre Muerto*, located in the north of the province of Catamarca, in Argentina. The vast wetland forms the southern end of the so-called Lithium Triangle. These four video essays trace the curatorial research, the construction of the simulated territory and the works presented in the virtual exhibition *Devouring the Thunder*, based on *The Voice of the Dead Man*, an imagined story about an unknown man buried in that place in remote times. The story of his ghost functions as an emergent narrative that unfolds as one travels through the virtual copy of this salt flat.



Glossary NFT 101

Crypto

Is Short for everything related to cryptocurrencies.

DAO

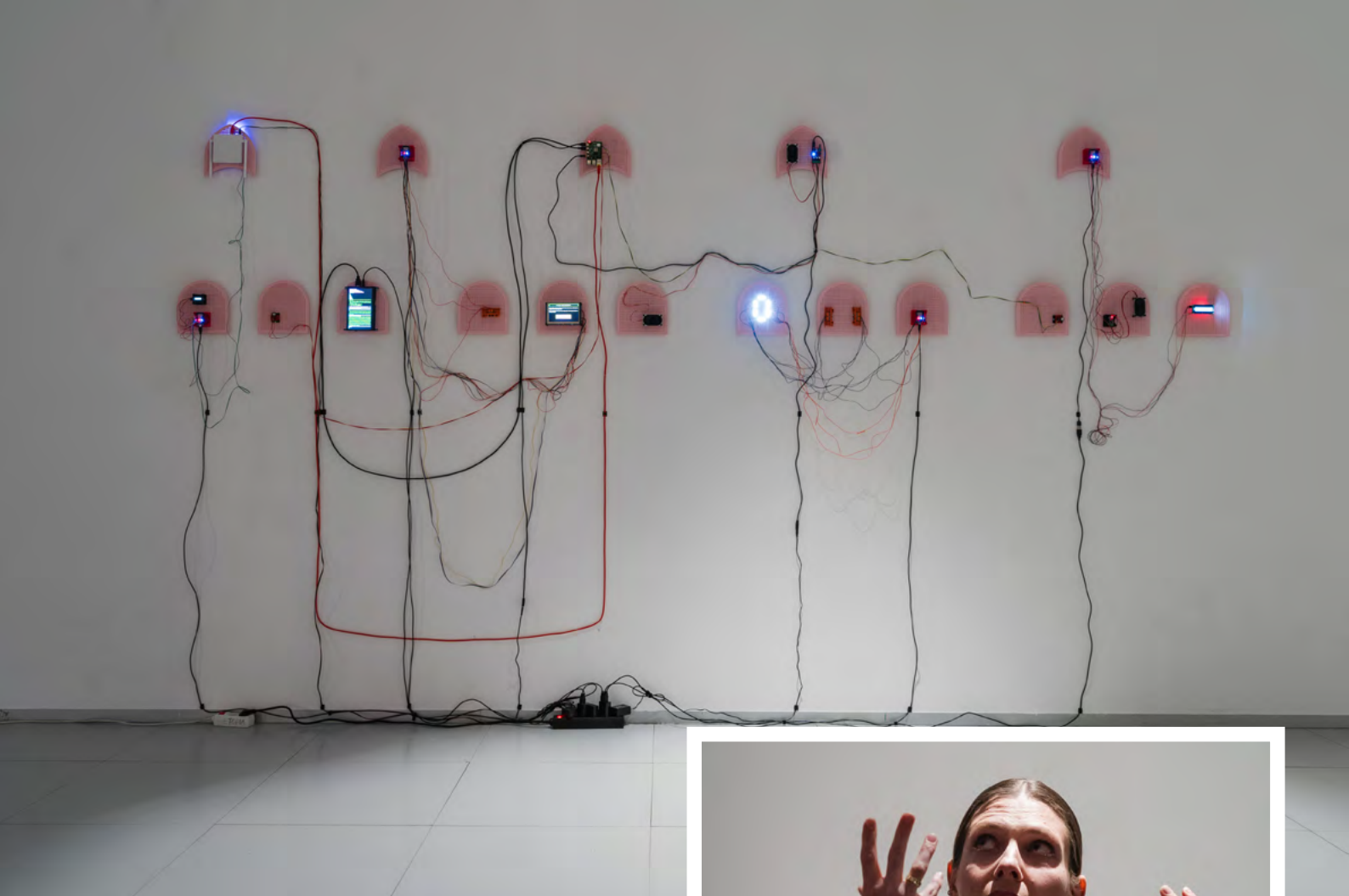
A Decentralized Autonomous Organization (DAO) is a collectively-owned, blockchain-governed organization working towards a shared mission. It has no central leadership, it's transparent and encoded on the blockchain.

Decentralization

The concept of moving the control and execution of processes away from a central entity to a distributed network such as a blockchain.

Delist

Taking down an NFT listing from a marketplace.



Hash Breakdown (2024)
Silvia Binda Heiserova (Slovaquia, 1986)

Electronic and digital assembly.

The installation presents the viewer with a series of connected nodes as a visualisation of the SHA-256 algorithm, which is part of the blockchain. Each node printed in pink contains a series of speakers and wires that connect the nodes to each other. Heiserova's work, composed of generative 3D sculptures, explores the state of feminism in 2023 (the year of the project's development). The artist proposes a specific approach, working on feminist concepts articulated in virtual space. The result we hear in the installation has been produced from virtual data related to the keyword "feminism" and, from data transformation techniques, coded sounds and synthesised voices.

The real-time operation of the piece produces possible new data inputs. The project aims to create an inclusive and diverse experience for the audience using various data sources and outputs. Furthermore, the project extends the theme of decentralisation beyond the purely technological aspect, exploring its social implications and, at the same time, highlighting the role of feminist thinking in creating decentralised technologies. This installation reveals how algorithmic processes take place by showing all the steps of the operation, materialising what is often hidden behind shiny covers and a quick performance. It's a breakdown of an algorithmic process.



Glossary NFT 101

Deploy

Sending a transaction containing the compiled code of the smart contract to make it available to users of a blockchain network.

Derivative

The creation of an NFT derivative from the original art, like an art reproduction by another artist.

Drop

Common way of announcing a new digital collectible.

DYOR

DO Your Own Research.



Bubble (2024)
OPN Studio

Interactive audiovisual installation, video and web market place.

It is a project based on speculation per se. A critique of all the products to which many cling with the promise of a quick profit. Bubble shows how speculation within the art world turns the object into something insignificant. And how it eliminates their true value by converting them only into speculative objects, stripping them of their natural beauty, criticism and meaning, being able to reach large sums of money by the action of marketing, greed and speculation, displacing their true cultural value. This project has generated 10 NFT using an AI, these NFT are quoted on a web portal (marketplace). Each time the rights to own one of them are acquired, they all increase in value by 10%. This process continues until the date on which the listing ends. This is when the obligation to sell the rights ends and the actual acquisition of the work occurs. From this moment on, the possibility of selling the NFT will be blocked for 461 days (the period it takes for a medium-sized mature tree to eliminate the carbon footprint estimated to be produced by an NFT in its creation and subsequent transactions), as a punishment for speculating with it.

Thus, buyers interested simply in speculating will be exposed to market risks, seeing their money trapped in the product, and those who simply wished to acquire the work will be able to enjoy it.



Glossary NFT 101

ERC

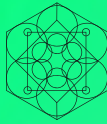
Ethereum Request for Comment is a technical specification used to propose and discuss improvements or standards for the Ethereum blockchain

Ethereum

Ethereum is a blockchain platform and a cryptocurrency itself called Ether (Eth).

Fiat currency

Type of currency that derives its value from the trust and confidence of the people who use it, rather than from being backed by a physical commodity like gold or silver (e.g. Euro, Dollar)



Activity 2: Exploring Decentralised Social and Economic Models

What if we decentralise / because blockchain is not just a cryptocurrency?

Objective: Investigate new social and economic models enabled by decentralization.

We invite participants to investigate new social and economic models by exploring the works of Decentralised Futures. This workshop will engage its participants into open discussions and reflections on how we could apply the concepts of decentralisation and transparency to our organisation, society, and our lives and communities. All voices and insights are crucial in this process. How could we organise communities in a non-centralised way? What benefits and challenges would we face by adopting distributed decision-making systems? How could we guarantee the security and integrity of our processes? What implications would decentralising have for us? These are some of the questions we encourage you to explore together.

Materials:

Whiteboard or flipchart

Markers

Articles or case studies on decentralized organizations

Diagram of networked play by Paula Nishisima

Activity Steps:

Overview: Start with an overview of traditional centralized systems and their limitations.

Examples: Introduce examples of decentralized models like DAOs or peer-to-peer networks.

Brainstorming: Facilitate a brainstorming session where participants envision new social and economic structures enabled by decentralization.

Sketching Ideas: Encourage participants to sketch ideas on the whiteboard or flipchart, discussing key features and potential benefits.

Discussion: Discuss the feasibility and implications of these models, considering governance, trust, and scalability.

Artwork Connection: Relate the discussion to the exhibition's artworks, exploring how artists imagine and critique existing and potential decentralized systems.

Related Artworks:

"Dropstream Economies" by Carlos Monleón Gendall

"Cnidarian Chimerical Phase Space: A Vitalist Materialism

Mapping of Cnidarianness" by Ianis Dobrev

"An Atlas to Track Crypto-Colonialism" by Cesar Escudero Andaluz

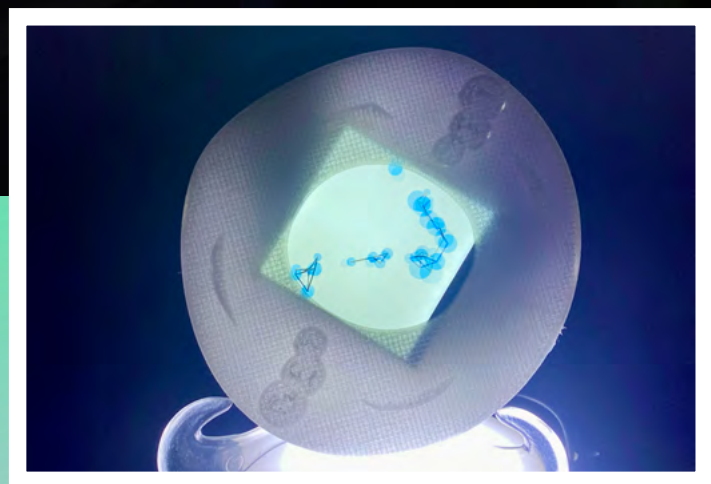
"Networked Play" by Paula Nishisima



Dropstream Economies (2024)
Carlos Monleón Gendall (España, 1983)

Video on screens and Raspberry Pi, moulds in oyster concrete.

This installation represents a significant stride in a longstanding commitment to ecology and water resource management. The three screens offer compelling visualisations of riverbank metabolism data. Monleón's project harnesses the power of blockchain to record the course and flow circuit of a river, creating a series of tokens that record the flow of nutrients, pollutants, and other health indicators. This innovative approach encourages society to prioritize the river ecosystem, viewing it as a common good to be recovered and protected. The proposal goes beyond traditional environmental management, modelling smart contracts on the behaviour of river ecosystems and using oracles to communicate between these contracts and remote sensing systems. It maps all the actors involved in river life, from irrigation communities to riparian forests, flora, (micro)fauna, humans, and industry. The aim of the work is to use technology to inspire new ways of thinking about the relationship between the uses and life of the river. To this end, the artist creates prototypes based on trading terminals to monitor the life cycles of rivers. This groundbreaking methodology of visualisation and management of ecosystems through blockchain has the potential to empower the various communities and entities that participate in the regeneration of the ecosystem, making visible those responsible for its deterioration.



Glossary NFT 101

Floor price

The lowest price available to buy an NFT.

Gas fee

Fee to complete a transaction on the blockchain e.g. Ethereum.

Generative art

The process in which the artist designs a system or set of rules and then creates new aesthetics and possibilities with the help of an algorithm.



Networked Play (2024)
Paula Kaori Nishijima (Brasil, 1987)
Projection and online videogame.

Networked Play is an artistic research project that delves into the dynamics of living systems, mathematical graphics and philosophical enquiries. Initially, it presents an online game whose narrative revolves around guiding brine shrimp (*Artemia*) to blend into the ocean, reflecting on our role within a larger collective context.

It refers to the notion that, within a network, the collective effect is greater than the sum of its parts. In collaboration with Dr. Prof. Tobias Seidl (Westfälisches Institut für Bionik, Bocholt/DE) and Claudia Kruschel (marine ecologist, Berlin/DE), Paula Nishijima investigated the swarming behaviour of *Artemia*, which formed the framework for the narrative of the online game Networked Play. The sequences of the experiments conducted with *Artemias* in the laboratory were transformed into the video installation presented in the exhibition.



Glossary NFT 101

WAGMI

Short for "we're going to make it." An optimistic and supportive term used in the NFT community.

Holders

Owners of certain Tokens.

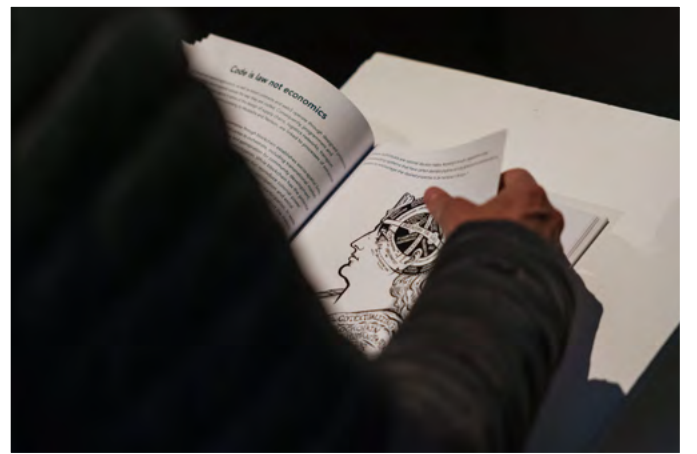
Liquidity

Measure how quickly an NFT can be traded or exchanged in the market.



An Atlas to Track Crypto-Colonialism (2024)
César Escudero Andaluz (España, 1983)
 A0 Print and book (21 x 21cm)

The aim of the work is to present an online atlas to understand how crypto-colonialism affects life on a planetary scale. Blockchain's impact on the Earth has ecological, social and economic consequences. The distributed promise of blockchain relies on a network of miners established at a geographical point, moving along wires and across borders. This project aims to highlight the damage and scars (planetary resource scarcity and energy consumption) of those places suffering from the expansion of crypto-economy experiments conducted by companies and governments to extract economic benefits. The exhibition includes a physical copy of the book resulting from the research and an explanatory poster atlas.



Glossary NFT 101

Marketplace

Centralized or decentralized platform to mint, buy and sell tokens.

Metadata

Contains information such as title, description, creator, artwork or media file, and other relevant data. May be saved on-chain or on centralized or decentralized storage solutions.

Metaverse

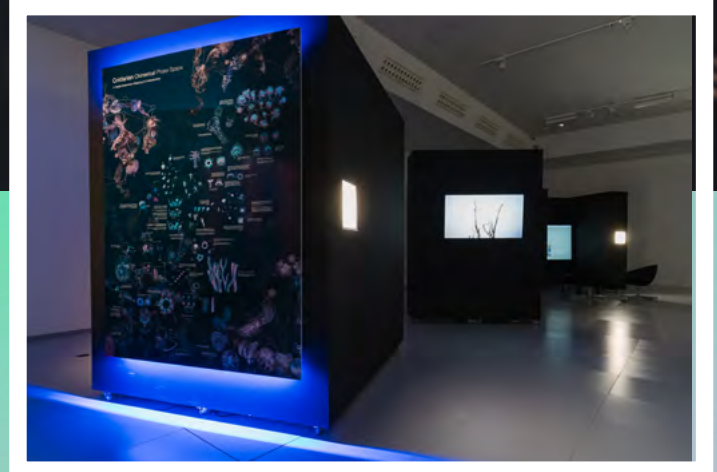
Virtual universe where users interact in shared immersive space.



Cnidarian Chimerical Phase Space: A Vitalist Materialism Mapping of Cnidarianness (2024)
Chimerical intelligence lab
 Digital print (200x150cm).

Globalized human economies have propagated a Western growth model centered on consuming natural resources and commodifying life. This model relies on a digital epistemology using financial language to quantify human economic development, where money, a man-made technology, represents societal values and facilitates global cooperation. However, this anthropogenic system doesn't align with biological realities, leading to unsustainable and energy-intensive economic structures. Market behaviors prioritize individual short-term gains, which, despite some arguing for market intelligence, leads to collective patterns that don't benefit society at large. This anthropocentric view disconnects human economies from nature, driving civilization towards a crisis affecting all life forms. To address this, it's imperative to harmonize capitalist and biospheric metabolisms, redesigning the cognitive structures shaping our economy.

The human reading of the world is in rupture with the ecological nature of reality's continuum. In fact, language, mathematics or the scientific method operate by measuring, quantifying and comparing different elements; in other words, those processes need to differentiate parts of the universe into individuated objects. The financial imaginary is a direct manifestation of this perspective that perpetuates the paradigm of individually profit-driven dynamics. This project intends to propose an alternative mapping of life forms into transcorporeal individuation of Cnidarianness. Cnidarians are jellyfish, corals, anemones and siphonophores. They are colonial animals with decentralised nervous systems which produce the substrate of their own environment and are embodied in their aquatic milieu. They serve as a case study for the mapping of alternative mathematical spaces, and, in turn, for postcapitalist financial imaginary.



Glossary NFT 101

- Minting**
NFT minting is the process of creating a unique digital token on a blockchain to represent ownership of digital content.
- NFT - Non-Fungible Token**
Unique digital token that represents digital ownership on a blockchain.
- PPF**
Profile picture; this type of NFT is gaining popularity, and holders are now using these on their social media profiles.



Activity 3: Inventing the Future Beyond NFTs

How blockchain can re-shape our future?

Objective: Come and discover the future...or invent it.

Participants will delve into the world of blockchain, NFTs, and cryptocurrencies. Discovering how this technology reshapes the art market, payment systems, and shared decision-making. Immersing in a world of screens, cables, nodes, to share innovative ideas while exploring the alternative uses of blockchain with 13 international artists. The exhibition & associated learning program is a great chance to understand the technology revolutionizing digital art. tive sectors. Inspire participants to think creatively about blockchain applications beyond NFTs in the crea

Duration: 1h30

Materials:

Whiteboard or flipchart

Markers

Images or descriptions of artworks

Articles or case studies on blockchain applications in creative industries

Target Audience: Children aged 10 to 16

Activity Steps:

Introduction: Introduce the workshop theme and showcase relevant artworks.

Discussion: Discuss blockchain's potential to revolutionize aspects of the creative industries beyond NFTs.

Group Brainstorming: Divide participants into small groups, assigning each an artwork or example to brainstorm alternative blockchain uses inspired by the artwork.

Idea Development: Groups develop their ideas into concrete proposals, considering practical details like technology requirements and sustainability.

Presentation: Each group presents their proposal, using visuals to illustrate their concept.

Feedback: Facilitate a discussion on the proposals, encouraging feedback and constructive critique.

Conclusion: Summarize key insights, encourage continued exploration of blockchain technology, and provide resources for further learning.

Related Artworks:

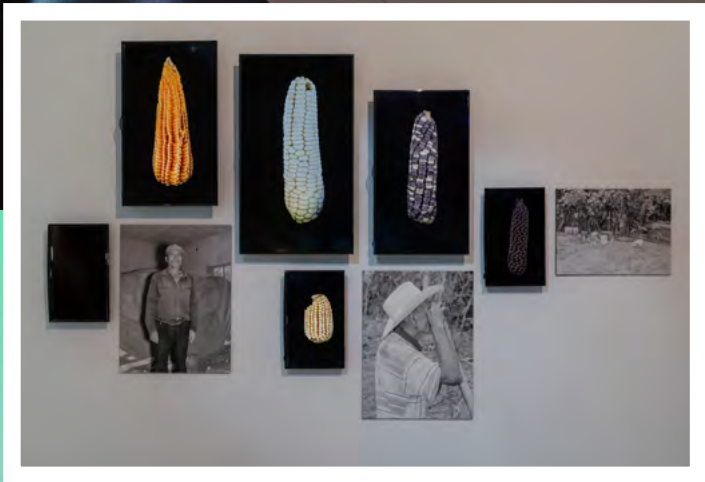
"Maíz" by Cristobal Ascensio

"Videogame Fango 1000" by dmstfctn collective

"QNFT" by Hrvoje Hilst

"The Merge" by Michele Bazzoli

Film by Peter Kærgaard Andersen



Maiz (2024)

Cristóbal Ascencio Ramos (México, 1988)

Video mural composition and digital prints.

The cultivation of maize in Mexico has a strong cultural and economic value. There are 64 varieties of maize in the country, each with specific traits and characteristics. These plants have played a crucial role in Mexico's history, culture and economy. Their rich diversity has been adopted and maintained thanks to the efforts and practices of environmentalists, farmers and indigenous populations. All this is against the impositions of big agribusiness, which in its quest for quick profit tampers on the biodiversity of traditional crops and indigenous varieties to sell patented seeds. In this installation, we are faced with an NFT collection of 3D models of each of the different varieties of maize.

The artist has involved experts from the maize industry, agriculture and cultural heritage to create these models. In this choral research, photogrammetric techniques have been used to create a perennial visual archive of this heritage that will be stored in a distributed and secure way thanks to the blockchain.

Glossary NFT 101

Rarity

One of the crucial factors to determine the value of an NFT. Each NFT has unique and different properties or traits.

Roadmap

Explains and shares future actions for the NFT project and allows the community to see what's coming.

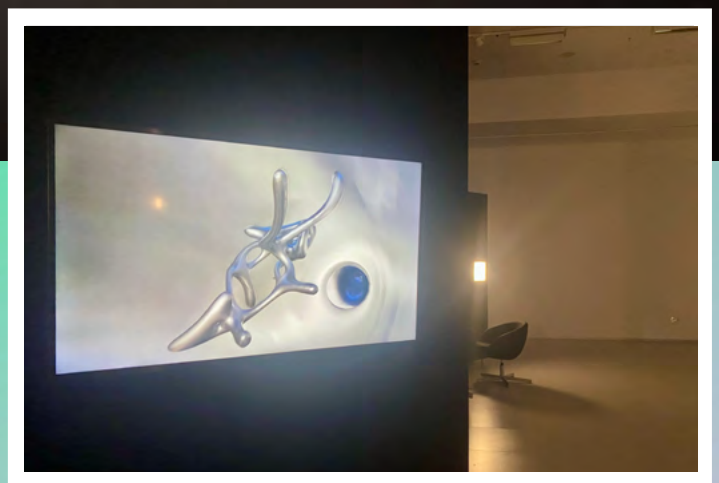
Royalties

NFT royalties are a percentage of revenue paid to the original creator of an NFT each time it is sold, providing ongoing compensation for their work.



The Merge (2024)
Michele Bazzoli (Italia, 1996)
Video and interactive webplatform.

It is an immersive art experience that combines sculpture, graphic novel and NFT. The merge is an explorable environment combining digital and partially animated scenes of a hybrid dimension where humans and non-humans merge. Users can increase the proposed explorable areas by purchasing the available digital artworks (NFT). These grant their owners exclusive access to additional regions, personalised experiences with rewards and other features. This project seeks innovative ways to make art practices economically and environmentally sustainable by creating an immersive digital art world while generating value in the domestic market by allowing collectors to participate actively in art creation. The merge proposes a chimerical scenario, in the current context and under Western forms of economy, with the addition of a new anthropogenic agent, AI. The project is in the process of development.



Glossary NFT 101

Rug pull

Fraudulent practice in the crypto space where the creators of a project suddenly exit or abandon the project, taking with them the funds invested by users, resulting in financial losses.

Secondary market

Trading of previously minted NFTs through NFT marketplaces, allowing for the exchange of ownership of digital assets after their initial minting.

Smart contract

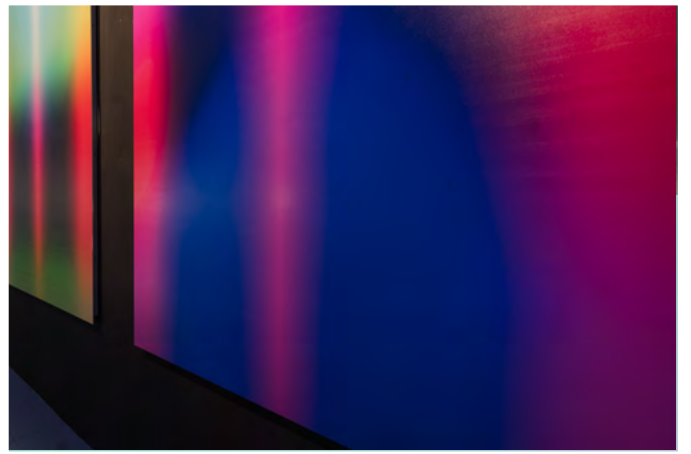
Code stored on a blockchain that automatically executes predefined actions when certain conditions are met, enabling secure and transparent transactions without intermediaries.



**QNFT's Quantum research group (QGR) (2024)
Hrvoje HirsI (Croatia, 1982)**

Direct digital print on aluminium (200x150cm).

QGR is an initiative of the artist Hrvoje HirsI in collaboration with the Institute of Physics in Zagreb, Croatia. It aims to investigate and employ the emerging quantum optics and quantum computing technologies within a sustainable business model. Its interdisciplinary approach seeks to merge art, science and technology in an experimental journey. This work aims to create an economic system based on quantum entanglement (light) as a random number generator by measuring the polarisation of entangled photons. The two light installations (The Collapse and Exceptional Point) will be extended to QNFT (quantum nft) and QRNG (quantum random number generator). QNFT is the graphical representation of sets of random numbers created by QRNG. As a result, a quantum colour chart is recreated, a metaphor for light as a physical chain reaction that gives rise to life on the planet. The title of each QNFT work consists of the prefix 'QNFT' followed by a sequence of unique numbers generated by a quantum entanglement device. The digits of this number determine the position, colour and hue within the colour gradient of the QNFT. QNFTs can be stored as a digital asset or displayed as high-quality prints.



Glossary NFT 101

Smart contract address

The blockchain address for the code that governs the execution of the smart contract (e.g. for a token)

Snapshot

A snapshot records the information in the blockchain ledger at a specific time. For example, the record includes fees and transactions.

Token

Representation of ownership stored on a blockchain which can represent various forms of value, including currency, property, or utility.



REMEMBERANCE AND DIGITAL TEMPORALITIES (2024)

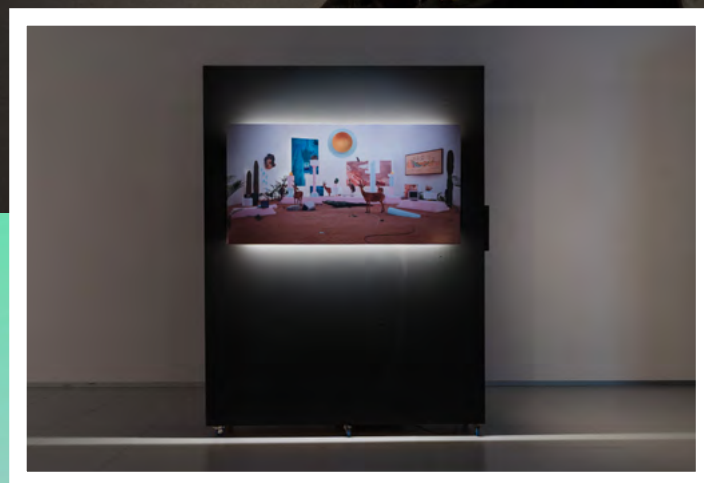
Peter Kærgaard Andersen (Dinamarca, 1988)

Digital print.

This work is based on a reflection on the temporal aspects of media, how technology interprets time and memory spaces, computer processes and archives, and the connection with minerals, Earth, and geology.

Digital contemporaneity is deeply intertwined with time. Time is saved, optimised, deleted and restored. Media technologies are also linked to memory: storage, archives, clouds, deep learning, dumpsters and digital amnesia. Digital viewing modes evoke different kinds of memories.

All of this is collected in a film, which we see in this exhibition as a frame of the film (large-format image) and part of the film's storyboard.



Glossary NFT 101

TokenID

A unique identifier that is associated with a specific NFT to distinguish individual tokens within a collection.

URI - Uniform Resource Identifier

Standardized web address that contains metadata about an NFT, such as token name, description, link to media, and other details, used to provide additional context and content related to the token.

Utility

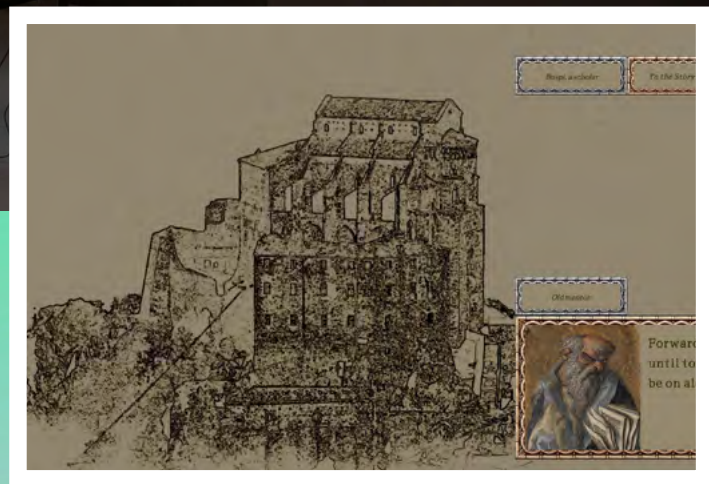
NFTs can offer use cases beyond their valuation such as membership benefits, access to gated content, communities, or real-world experiences.



Fango 1000 prototype (2024)
Duo dmstfctn (UK)
Online Videogame.

Fango 1000* is a fully on-chain emergent narrative game in which players compete for narrative control. The game is set around a village in the Middle Ages where a treasure containing a thousand chronicles has been found, each describing how humans of the future train a mysterious “intelligent machine” for an unknown task. Players join one of three factions with opposing worldviews and compete to tell the best story about what “intelligence” might be and what role it can play in future societies by interpreting the information in the chronicles. The best stories will live on forever; the worst will be buried. The chronicles contain data generated by thousands of players of an independent AI training game called [*Godmode Epochs](<http://godmodeepochs.com/>),* developed by dmstfctn in 2023. Each game of *Godmode Epochs* constitutes a dataset that will be used in the *Fango 1000* universe.

The Fango 1000 has been developed by dmstfctn and Paul Seidler using MUD, an open-source framework for on-chain development. As an onchain game, it operates entirely on a blockchain, meaning that every element of the game (excluding the front-end visible to players) is run solely through blockchain technology. This includes the game rules, state, and data being stored on the blockchain rather than relying on a centralised game server.



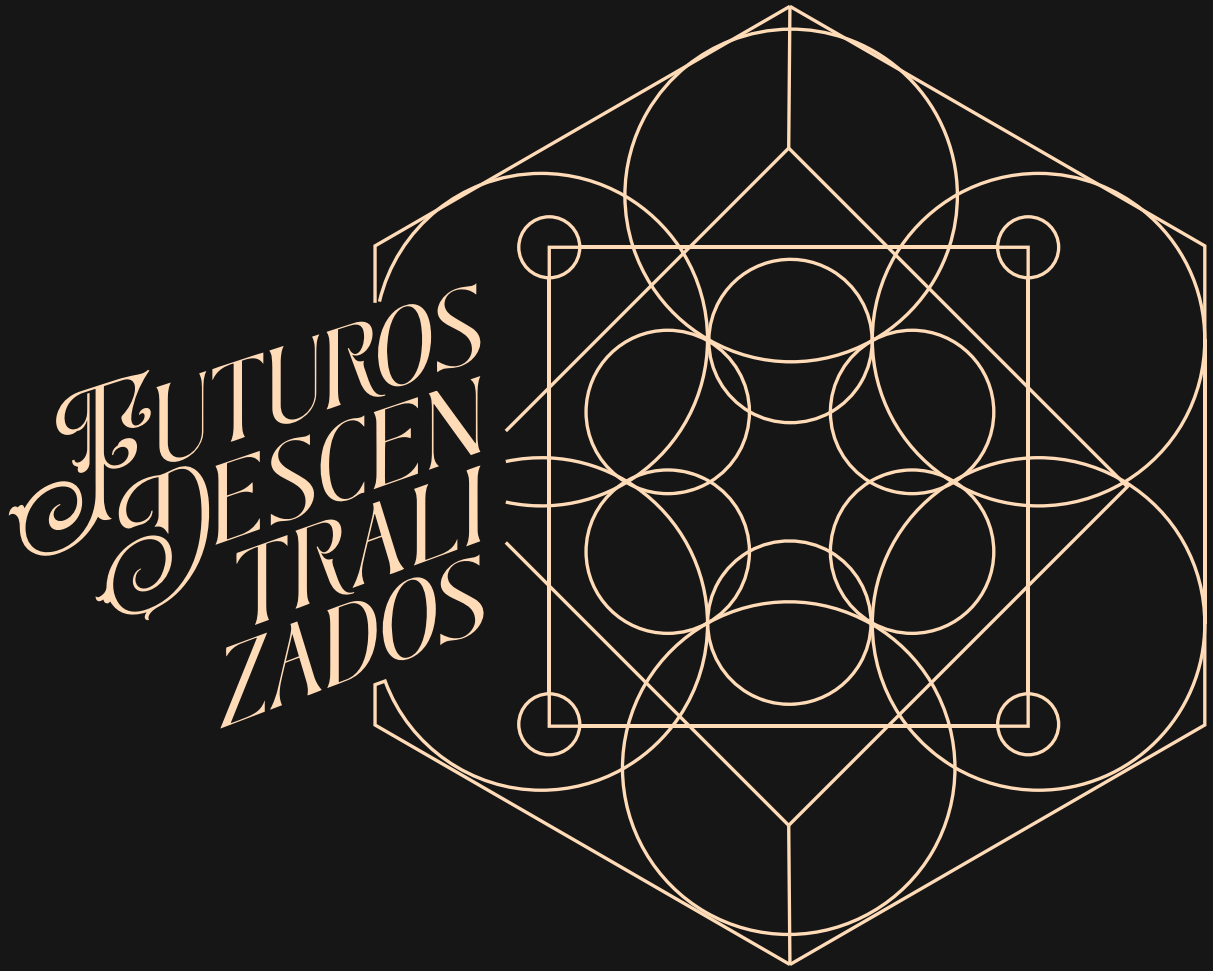
Glossary NFT 101

Wallet

Digital application or device that securely stores private keys used to access and manage crypto assets on a blockchain and is linked to a certain address.

Wallet address

Unique alphanumeric string used to send, receive, and store digital assets, such as crypto assets, on a blockchain network



ARTeCHÓ



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