NFTs - Cryptocurrency Energy Consumption,

Environmental Concerns and Price Volatility Research

Once upon a time, blockchain, Bitcoin, NFTs, Tether, Ethereum, Solana and other types of Cryptocurrencies were invented

Technology	Year of birth
Blockchain	1991
Bitcoin	2009
NFT	2014
Tether	2014
Ethereum	2015
Solana	2017

NFTs grew up very quickly to be popular and very expensive items

Investor questions started to pile up…

What exactly was this technology, besides a lot of strange terminology?

Were cryptocurrency companies and their platforms volatile?

Did this new technology use so much energy the planet will heat up faster?

Technology	Volatile?	Bad for the earth?	Link to Crypto $ required?	Link to blockchain required?
Blockchain	No	No	No	Yes
Cryptocurrencies	Yes	Yes	Yes	Yes
NFT	Yes	No	No	Yes

The crypto crash has shocked average investors. Freshly raised questions about the dangers of cryptocurrencies are the focus of this project using data analytics tools

What is so great about NFTs?

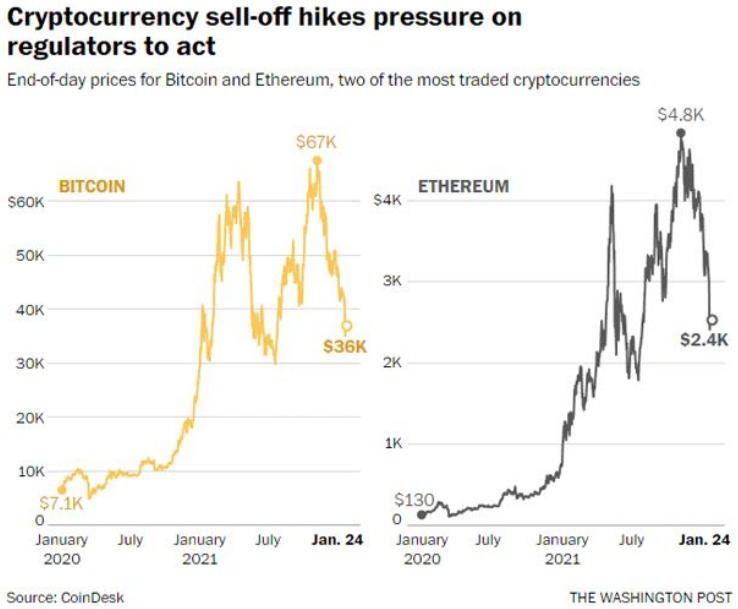
Are cryptocurrency prices volatile?

What happens to customer assets if a cryptocurrency platform goes bankrupt?

Do cryptocurrencies use an excessive amount of energy?

Which cryptocurrencies are tied most often to mint NFTs?

Is there a better business model for creating NFTs?



The slide has accelerated over the past week as investors have fled riskier bets for safer harbors.

Data Analytics Final Project Review

Purpose - to research if there are real environmental and financial concerns using cryptocurrency to mint and sell NFTs.

Background - NFTs have been linked to cryptocurrency blockchains. It is not a technical requirement to use cryptocurrency to mint and sell NFTs. This project researches environmental and volatility concerns with cryptocurrency and presents an alternative solution

Glossary - terminology for NFTs, cryptocurrency, websites tracking currency, NFT examples

References - Why do cryptocurrencies use so much energy? Charts with data

How does cryptocurrency work? Illustration

How much energy do Ethereum and Bitcoin use globally? Charts from projects

Data Analytics Tools

- Presentation - Google slides, Heroku, Github- Readme.md
- Github - Code and images https://github.com/jcsargis00/NFT-Research
- Machine Learning Model - Energy consumption using CNN LSTM, Keras
- Database - Postgresql
- Dashboard - Google Slides, Interactive tools using Dash, Flask, Python, Plotly, Yahoo Finance, dbdiagram.io, heroku
- Interactive Dashboard https://sjgnft-classless.herokuapp.com/

Github

Storage of code, data, images for analysis and machine learning model

Examples included:

- database files, csv files for tracking 8 types of cryptocurrency
- Interactive model to look at 4 different cryptocurrencies using Flask
- Model to scrape prices of 10 different cryptocurrencies for 99 days using Beautiful Soup
- Reference articles from Nature and the ACM
- Machine Learning model connected to a database or using CSV files to predict energy consumption

Machine Learning Model

Database - http://archive.ics.uci.edu/ml/datasets/Individual+household+electric+power+consumption

The measurements are of electric power consumption in one household with a one-minute sampling rate over almost 4 years. The data was collected between 12/2006 and 11/2010 every minute.

Data schema:

Date - note that date was in European format and was transformed from dd/mm/yyyy to mm/dd/yyyy for database connection.

Time - no time zone, am/pm

global_active_power, global_reactive_power, voltage, global_intensity, sub_metering_1, sub_metering_2, sub_metering_3

LSTM model was built to predict household electric power consumption.

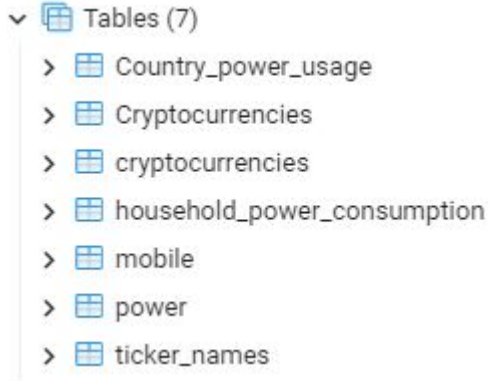
- The first year of data (resampled over an hour) was used to train the model and the rest of the data to test the model to reduce the computation time and get some results quickly.

Databases - financial and environmental

Financial data from Coin Gecko, Coin Market Cap, Yahoo Finance

Postgresql schema for crypto pricing tables and interactive charts

- Symbol - symbol for which the time series data refers
- Open - the opening price of the time period
- High - the highest price of the time period
- Low - the lowest price of the time period
- Close - This is the closing price of the time period
- Volume (Crypto) - the volume in the transacted currency.
- Volume Base Ccy - the volume in the base/converted currency



Environmental data from kaggle:

https://www.kaggle.com/datasets/uciml/electric-power-consumption-data-set?resource=download

What is so great about NFTs?

‘Finding exclusive aspects of accessible things in our lives is compelling to a consumer and could great for creators.’

NFTs don’t need crypto, but crypto needs NFTs

Natasha Mascarenhas

Image Credits: TechCrunch/Bryce Durbin

Spending millions for a digital work of art that could be screenshotted feels similar to traipsing around a strip of concrete as a tourist activity. The optics don’t make immediate sense — there’s hardly any appeal in something as accessible as a Google image or street.

That’s my best bet at explaining at least some of the confusion around the explosive rise of NFTs, or non-fungible tokens. The token, minted on the blockchain, can give digital assets a unique signifier. In other words, anyone could screenshot a piece of art, but only one of us will own the true, original piece of art. This context is part of the reason why Beeple, a digital artist, had his artwork sold for $69 million just a few days ago.

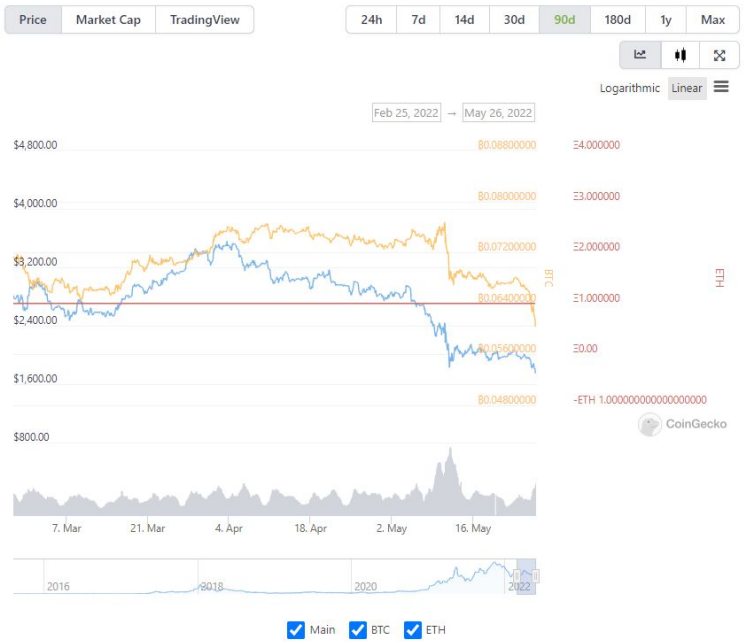
The reason this topic is coming up in a Startups Weekly newsletter is because of the impact it could have on the cryptocurrency movement, of which there is a growing tide of early-stage and late-stage startups. The popularization of NFTs, as I argued in Equity this week, could be what makes cryptocurrency finally palpable to the average human — beside the average bitcoin hoarder. Platforms that sell NFTs usually need you to use cryptocurrency (usually Ethereum) to purchase anything. Mix that with the fact that humans have an innate desire to own, protect and immortalize their assets, and you might have the perfect storm. Beeple, a digital artist, made $69 million for his work, and this isn’t just a big financing event, it’s a signal that crypto enthusiasts and crypto assets are getting to an inescapable spot in public dialogue.

Ownership as a way for a decentralized network to become mainstream is its own meta conversation, and I’ll be clear that the blockchain and NFTs have a long way to go before they are truly equitable, accessible and hit their stride. But, it’s hard to not to let your mind wander about the opportunities here.

It’s more than a screenshot, it’s about the potential of pixels having more meaning than they ever did before. And it’s more than a strip of concrete, it’s the Hollywood Walk of Fame. Finding exclusive aspects of accessible things in our lives is compelling to a consumer and could be great for creators.

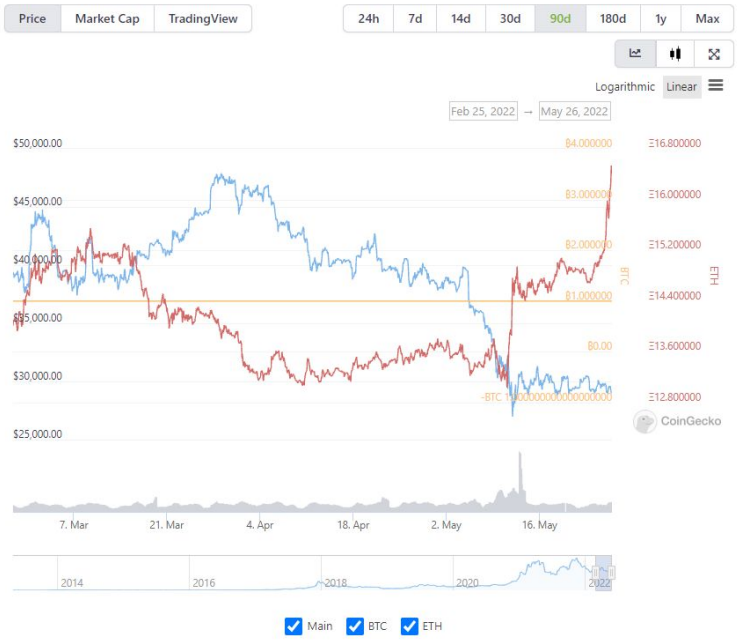
Are cryptocurrency prices volatile?

Ethereum Price Chart (ETH)



1h	24h	7d	14d	30d	1y
0.5%	-8.8%	-12.4%	-9.8%	-36.8%	-38.5%

Bitcoin Price Chart (BTC)



1h	24h	7d	14d	30d	1y
-0.2%	-2.6%	-4.4%	-0.2%	-23.8%	-26.3%

Dashboard Datasources

Datasets:

https://github.com/jcsargis00/NFT-Research/tree/main/Resources/data

ERD Diagram:

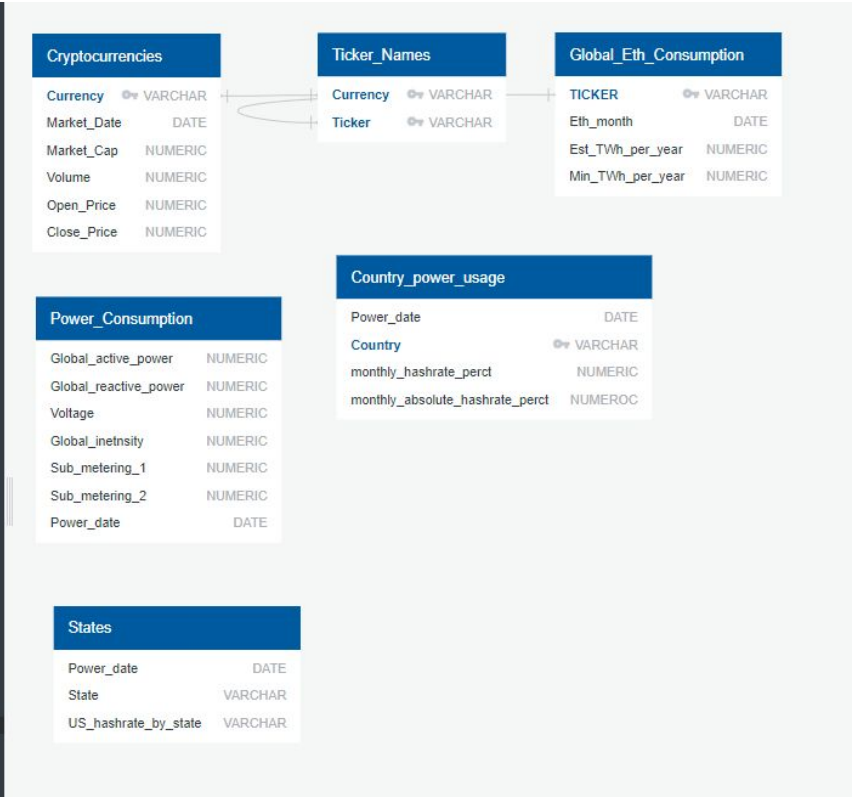
https://github.com/jcsargis00/NFT-Research/blob/main/images/erd.PNG

Interactive Elements:

- Flask to display 100 different cryptocurrencies
- Interactive application link https://sjgnft-classless.herokuapp.com/
- Dash application to scrape Coin Market Cap website data for 99 days

Database ERD - financial and environmental tables

```
Cryptocurrencies
-
Currency VARCHAR pk fk - Ticker_Names.Currency
Market_Date DATE
Market_Cap NUMERIC
Volume NUMERIC
Open_Price NUMERIC
Close_Price NUMERIC

Ticker_Names
-
Currency VARCHAR pk
Ticker VARCHAR pk

Power_Consumption
-
Global_active_power NUMERIC
Global_reactive_power NUMERIC
Voltage NUMERIC
Global_inetnsity NUMERIC
Sub_metering_1 NUMERIC
Sub_metering_2 NUMERIC
Power_date DATE

Country_power_usage
-
Power_date DATE
Country VARCHAR pk
monthly_hashrate_perct NUMERIC
monthly_absolute_hashrate_perct NUMEROC

States
-
Power_date DATE
State VARCHAR
US_hashrate_by_state VARCHAR

Global_Eth_Consumption
-
TICKER VARCHAR pk fk - Ticker_Names.Ticker
Eth_month DATE
Est_TWh_per_year NUMERIC
Min_TWh_per_year NUMERIC
```



Interactive Dashboard

What happens to customer assets if a cryptocurrency platform goes bankrupt?

BARRON'S

CRYPTOCURRENCIES

Customers at Many Crypto Platforms Could Lose Funds in a Bankruptcy

By Joe Light Follow Updated May 16, 2022 5:33 pm ET / Original May 16, 2022 2:58 pm ET

Text size

Concerns arose after Coinbase said customers could be considered unsecured creditors in a bankruptcy proceeding.
Dreamstime

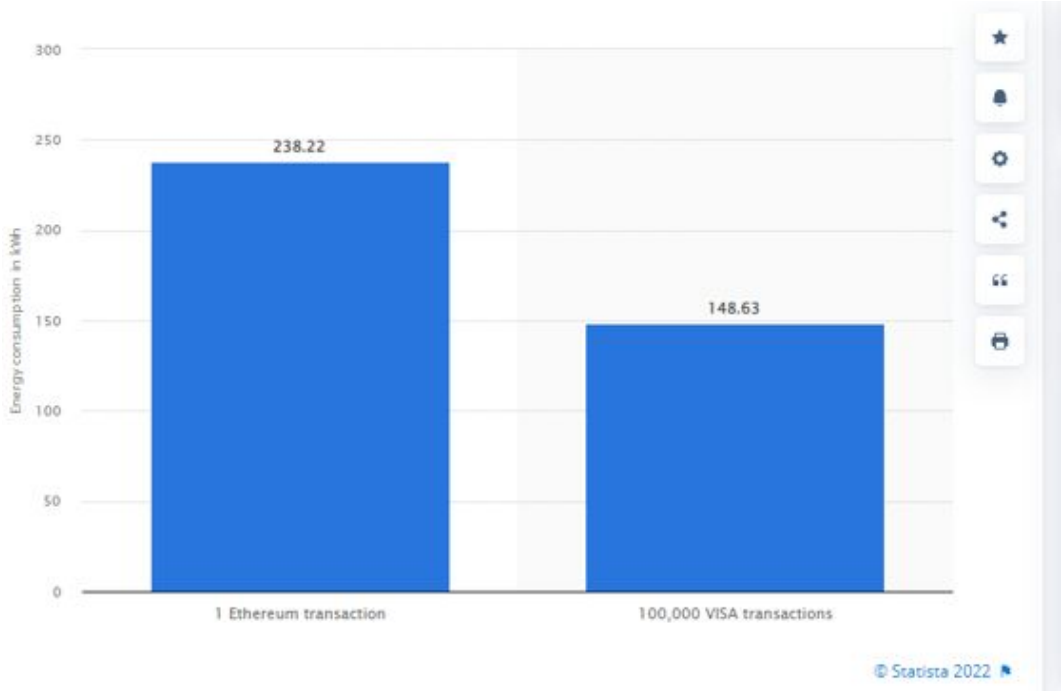
Coinbase Global COIN -9.96% ▼ shocked some of its customers last week when it suggested their cryptocurrencies could be lost if the firm were to ever go bankrupt. The truth is, customers are probably exposed to that risk on most crypto trading platforms, experts say.

The issue is that—unlike with stock accounts where brokers are required to segregate customer assets—some crypto trading platforms commingle funds from many customers, said Tyler Gellasch, who heads the Healthy Markets Association and formerly worked at the Securities and Exchange Commission.

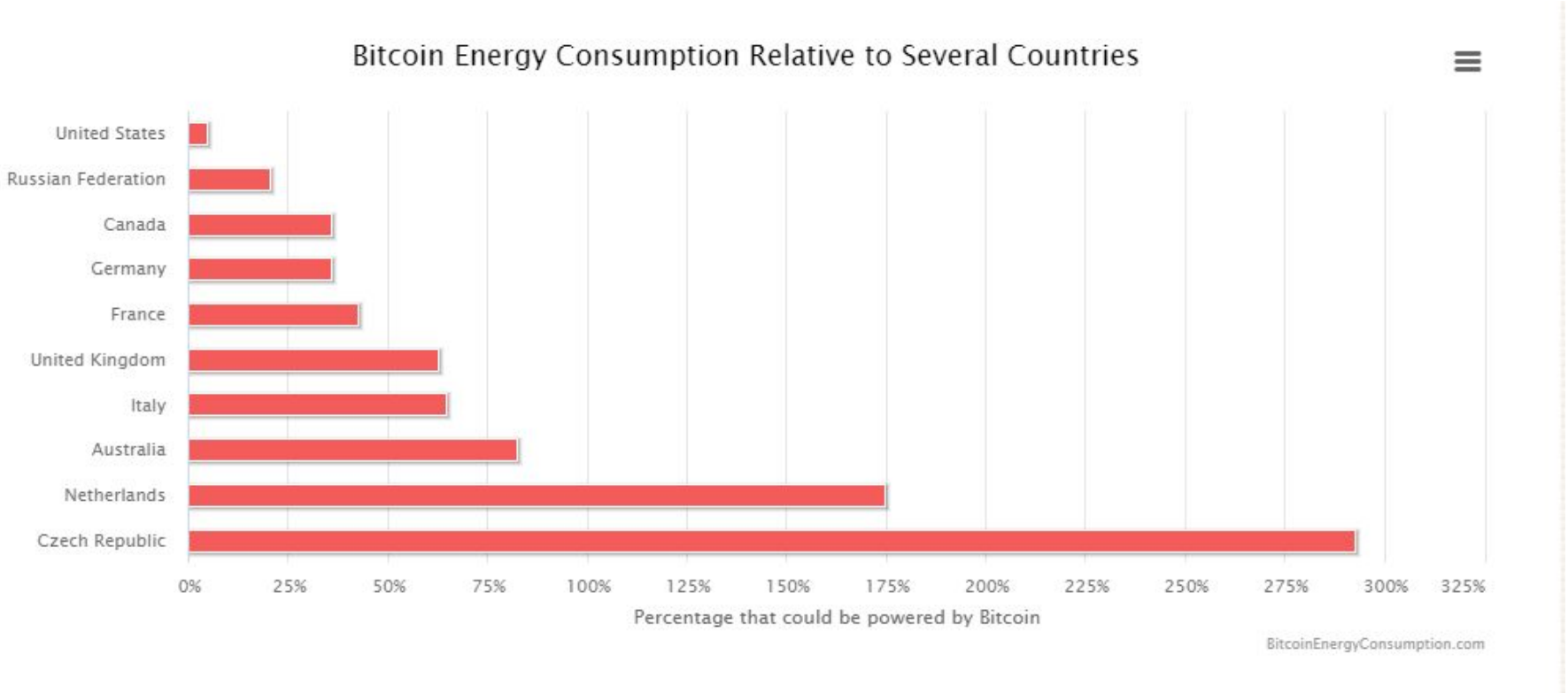
"I don't think there's any reasonable way for a retail crypto consumer to have confidence that their broker or trading venue is custodying their assets in a bankruptcy-remote way unless they get a very specific disclosure that they are," Gellasch said.

Do cryptocurrencies use an excessive amount of energy?

Ethereum average energy consumption per transaction compared to that of VISA as of 1/10/2022



Do cryptocurrencies use an excessive amount of energy?



Which cryptocurrencies are tied most often to mint NFTs?

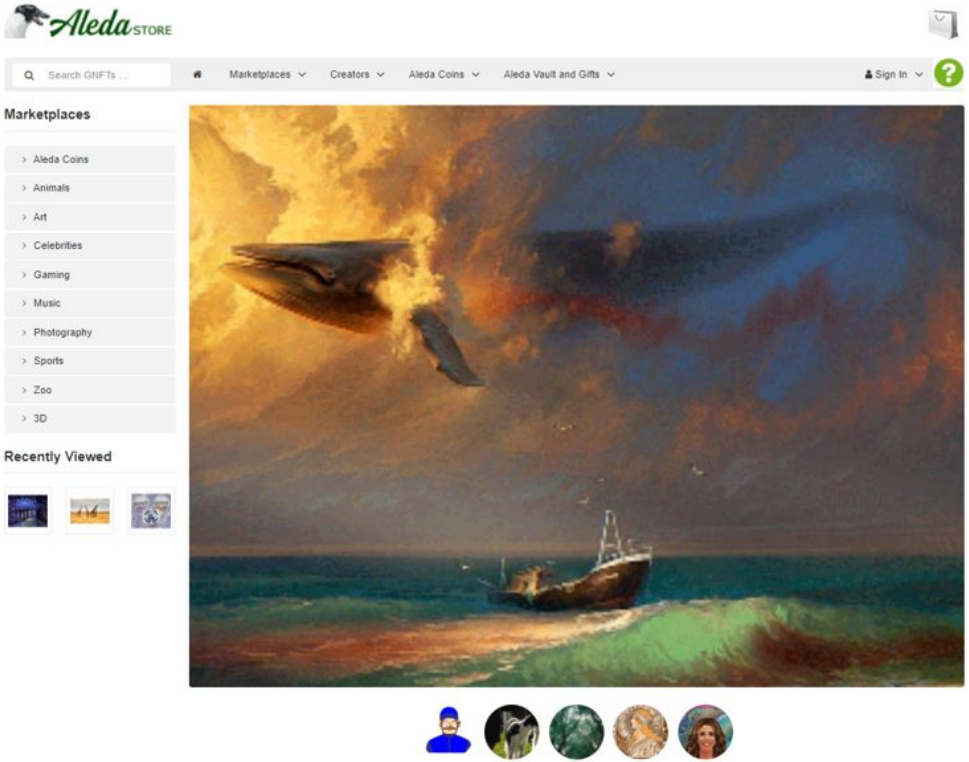
Ranking	Coin	Ticker	Price	1h	24h	7d	24h Volume	Mkt Cap
1	Bitcoin	BTC	29,615.48	0.00%	-0.70%	2.90%	$31,928,294,705.00	$564,182,297,870.00
2	Ethereum	ETH	1,838.97	0.00%	-6.50%	-4.00%	$22,409,656,699.00	$222,545,748,874.00
3	Tether	USDT	1.00	0.00%	0.10%	0.10%	$58,471,849,829.00	$73,245,967,571.00
4	USD Coin	USDC	1.00	0.20%	0.00%	0.10%	$6,949,439,794.00	$53,317,372,656.00
5	BNB	BNB	312.84	0.40%	-4.80%	8.50%	$2,695,081,249.00	$52,595,757,419.00
6	XRP	XRP	0.40	10.00%	-2.30%	-1.90%	$2,475,866,750.00	$19,293,520,086.00
7	Binance USD	BUSD	1.00	-20.00%	0.20%	0.10%	$7,171,747,839.00	$18,272,673,622.00
8	Cardano	ADA	0.49	70.00%	-5.50%	-3.70%	$740,317,268.00	$16,473,765,732.00
9	Solana	SOL	44.56	10.00%	-8.40%	-10.40%	$2,295,520,161.00	$15,152,719,436.00
10	Dogecoin	DOGE	0.08	30.00%	-4.80%	-5.10%	$485,858,163.00	$10,525,892,199.00

Is there a better business model for creating NFTs?

Aleda

https://Aleda.store

Aleda.store NFT 2.0
Digital Asset Wrapper Platform



- The NFT 2.0 platform is used to create, mint and track digital assets.
- The platform wraps digital assets with patented technology for authentication and proof of ownership.
- It can be used to assign and enforce viewing rights of NFT 2.0's, collections of which can include physical assets.
- The NFT 2.0 private Blockchain technology does not use cryptocurrency and is a clean, green technology.

Key Questions about NFTs

Aleda STORE

Do NFTs have to be tied to cryptocurrency?

- No. NFTs do not need to be tied to cryptocurrency

Will there be a market for NFTs without cryptocurrency?

- Yes. The key functionality of an NFT is control of ownership and validation of authenticity of digital assets.

Aleda.store is a digital wrapper platform for creating NFT 2.0's

- NFT 2.0's have all of the functionality of NFTs, without using cryptocurrency
- Patented smart search and digital asset management technology

Markets for NFT 2.0 – Any Market that uses Digital Assets

Sport Memorabilia
Professional & Collegiate

- Images, video, and recordings made by the Athlete.
- Team and college branding.
- Authenticated with proof of ownership.

https://aleda.store/sports-c-6/dave-roberts-2020-los-angeles-dodgers-world-series-ring-p-216

Music

- Images, video, and recordings made by the recording artist.
- Authenticated with proof of ownership.

https://aleda.store/music-c-3/

Pictures

- Images, video, and recordings made by the photographer.
- Authenticated with proof of ownership.

https://aleda.store/photography-c-12/giraffes-in-kenya-p-185

Art

- Images, video, and recordings made by the artist.
- 3D printing, Metaverse ready.
- Authenticated with proof of ownership.

https://aleda.store/art-c-1/van-gogh-c-11/starry-night-over-the-rhone-p-155

Scholarly Publications and Newspapers

- Documents, images, video, and recordings made by the author, self publishing.
- Control of digital assets with patented search engine

Educational Materials

- Personalized for classrooms, museums, zoos, corporations, law firms, healthcare facilities
- Digital Assets for Libraries
- Facilities with rare or restricted access materials that can't be handled by the public

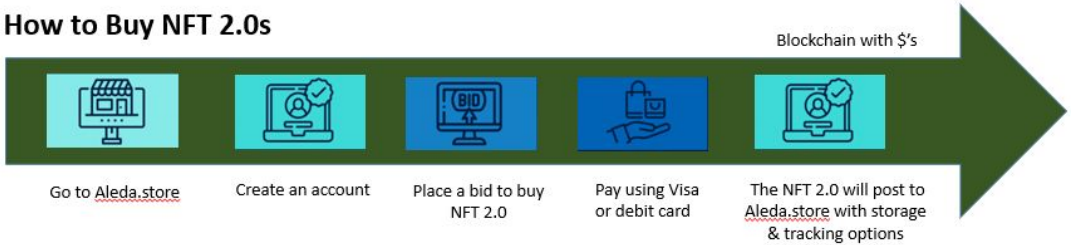
What's the difference between an NFT and an NFT 2.0?

Non-Fungible Token (NFT)?

A unique and non-interchangeable digital asset with authenticity and ownership recorded to a ledger. Popular NFTs are created from photos, videos, audio, and other types of digital files as unique items.

Non-Fungible Token (NFT) 2.0?

NFT 2.0's are the same as NFTs, without cryptocurrency.
NFT 2.0's use green technology, unlike NFTs.



Aleda.store is an easy way to create and advertise digital assets.
NFT 2.0 tech can be used to prove authenticity and ownership.

Digital Bling for your Virtual Place

Collecting without the clutter

Aleda STORE

1

Pick your digital item

- Custom painting, picture, music, video game collectible, meme, GIF, concert ticket stub, digital artwork

Option to include physical assets

2

Register and build

- Green distributed blockchain
- low cost minting
- credit card, debit card and Paypal accepted
- personal portfolio

No digital wallet or cryptocurrency needed

3

Upload your file

- step-by-step guide
- minting NFT 2.0's and portfolio
- Digital ledger
- Ownership proof
- Authenticity certificates

Ownership accountability and storage options

4

Setup sales process

- fixed price
- auction
- classified ad
- limited edition
- collection
- fixed and predictable cost

Flexible options for selling and buying with standard currency