



# How to choose a data provider for your web3 project?

Feb23

 @footprint\_data

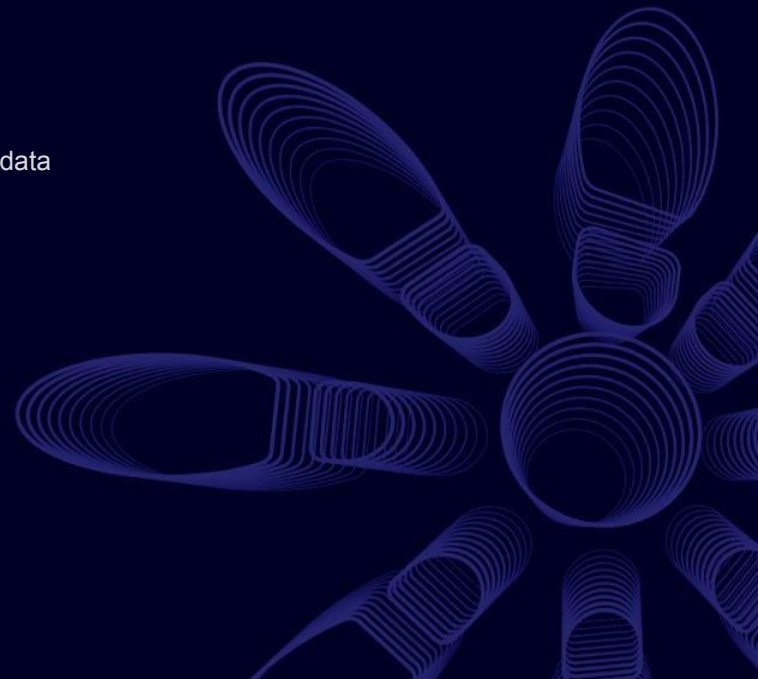


# Contents

- 01** Requirements
- 02** Common indexer pipeline
- 03** What are the options?
- 04** Footprint Analytics

# 01 Requirements

Things to consider when working with historical data

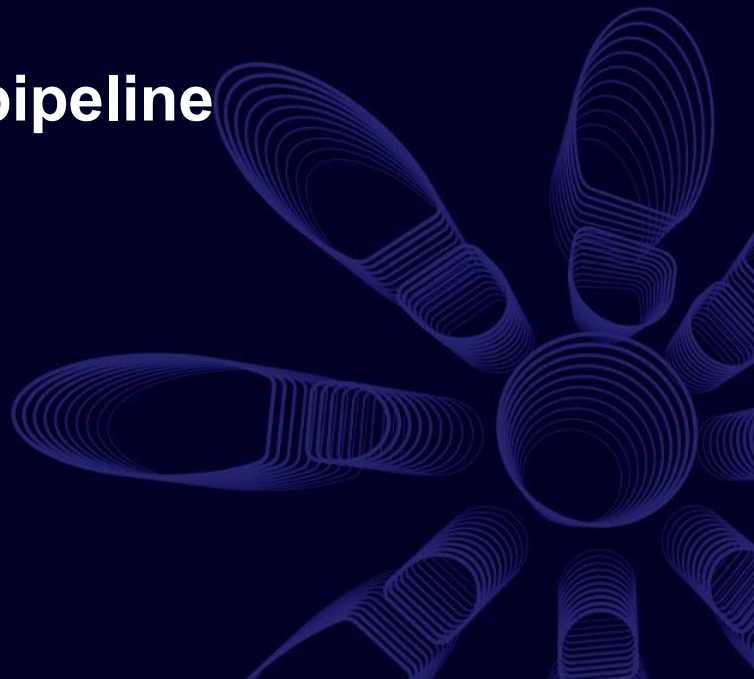


## — Things to consider

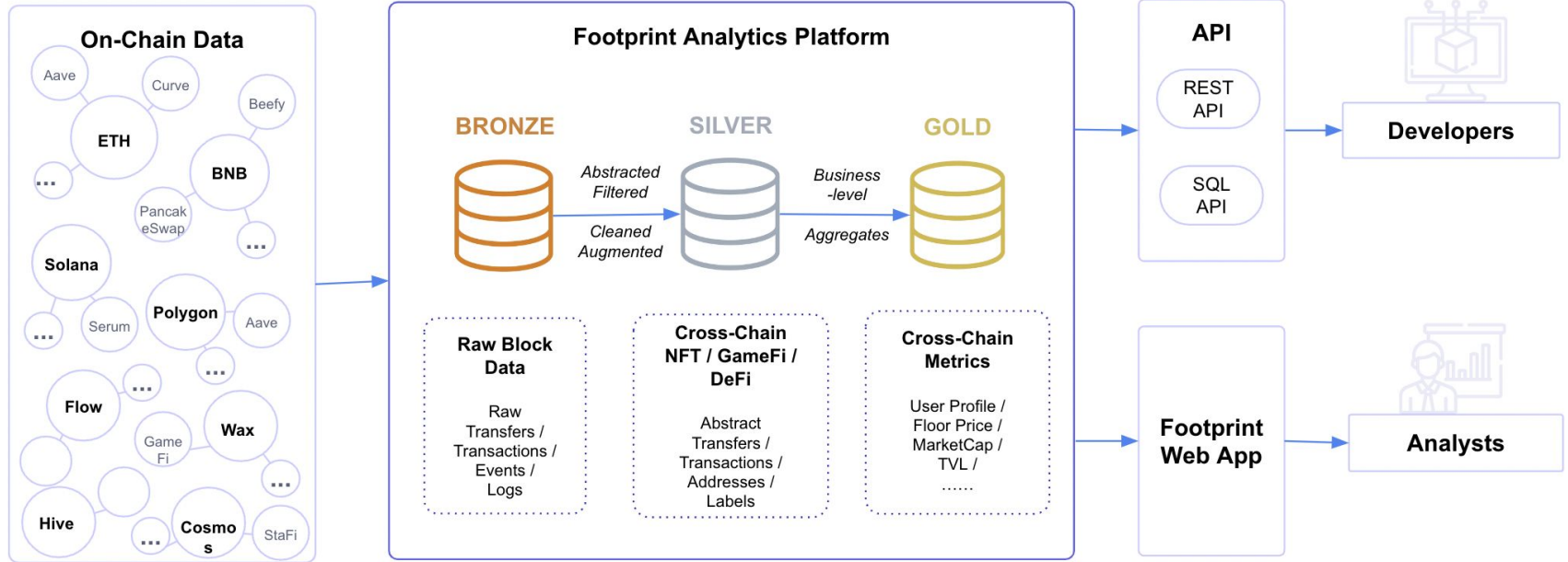
1. **Data requirements:** solution should meet on your specific needs and goals.
2. **Data quality:** data should be accurate and reliable.
3. **Data coverage:** data must cover your specific needs for specific cases.
4. **Data integration:** supplied data should be in a format that is compatible with your systems and tools.
5. **Pricing:** pricing should be reasonable and in line with industry standards.
6. **Support:** good customer support should be done.
7. **Legal compliance:** compliance with data privacy and regulation laws.

# 02 **Common indexer pipeline**

From raw data to abstractions



# Indexing pipeline



# — JSON RPC

## RPC node

- JSON-RPC is a stateless, light-weight remote procedure call (RPC) protocol. It defines several data structures and the rules around their processing
- RPC node use RPC protocol to implement.

## 7 Examples

Syntax:

```
--> data sent to Server  
<-- data sent to Client
```

rpc call with positional parameters:

```
--> {"jsonrpc": "2.0", "method": "subtract", "params": [42, 23], "id": 1}  
<-- {"jsonrpc": "2.0", "result": 19, "id": 1}  
  
--> {"jsonrpc": "2.0", "method": "subtract", "params": [23, 42], "id": 2}  
<-- {"jsonrpc": "2.0", "result": -19, "id": 2}
```

rpc call with named parameters:

```
--> {"jsonrpc": "2.0", "method": "subtract", "params": {"subtrahend": 23, "minuend": 42}, "id": 3}  
<-- {"jsonrpc": "2.0", "result": 19, "id": 3}  
  
--> {"jsonrpc": "2.0", "method": "subtract", "params": {"minuend": 42, "subtrahend": 23}, "id": 4}  
<-- {"jsonrpc": "2.0", "result": 19, "id": 4}
```

## — Rpc Nodes type

### light\*

- Usually there is only a pointer, the information you need to request support from the full node
- Light, even in mobile phone.

### full\*

- Include all history block data in this node, no limit.
- Large, 10 or 20 times of normal

### normal\*

- Have a x block limit for the history, If over the limit, it will drop the detail message, And response "There is no such Block".

### archive\*

- group with full , which include all data and all traces.
- Very large, 5 times of full.

\* Each chain, each node quotient has a different definition, but the general meaning is close



## — Key api Methods

### eth\_getBlockByNumber

- Get block's basic data.
  - Include block & transactions basic data

### debug\_traceBlockByNumber

- get block's execute traces message
  - Include the input and output for each contract function, each gas fee , native token transfer information.
  - Because it involves backward recalculations, requests take a long time and easy to lose some information when the node is busy.

### eth\_getTransactionReceipt

- Get transaction execution data.
  - Include transactions running status(success, fail), the contract which created by this transaction, and logs

\* More method, click here <https://geth.ethereum.org/docs/interacting-with-geth/rpc>

# Data Mapping for Etherscan

## mapping table via etherscan

- Blocks
- Transactions
- Token transfers
- Logs/Events



Transaction Details < > **Logs/Events** Buy Exchange Gaming

Feature Tip: Add private address tag to any address under My Name Tag !

Overview Internal Txns Logs (4) State Comments

Transaction Hash: 0x672b04aee853fbb2ed645c7731719f6cce70c756a3204e2f573bed03dd6fd33c

Status: Success

Block: 14613381 1755095 Block Confirmations

Timestamp: 265 days 5 hrs ago (Apr-19-2022 04:09:47 AM +UTC) Confirmed within 1 min

Transaction Action: Executed Swap With 0x Protocol  
Swap 94.02925511330597376 Dai For 93.534194 USDC On Uniswap V2

Sponsored: Place your AD here

From: 0x26602bf417c4e57ba3d2268d793a1e16f29e069

Interacted With (To): Contract 0xdef1cd0ded9bec7f1a1670819833240f027b25eff (0x: Exchange Proxy)

ERC-20 Tokens Transferred: 2

From 0x26602bf417c4e... To Uniswap V2: Dai... For 94.02925511330597376 (\$94.03) Dai Stableco... (DAI)  
From Uniswap V2: Dai... To 0x26602bf417c4e... For 93.534194 (\$93.53) USD Coin (USDC)

Value: 0 Ether (\$0.00)

Transaction Fee: 0.00247660121939895 Ether (\$3.26)

Gas Price: 0.000000022509440758 Ether (22.509440758 Gwei)

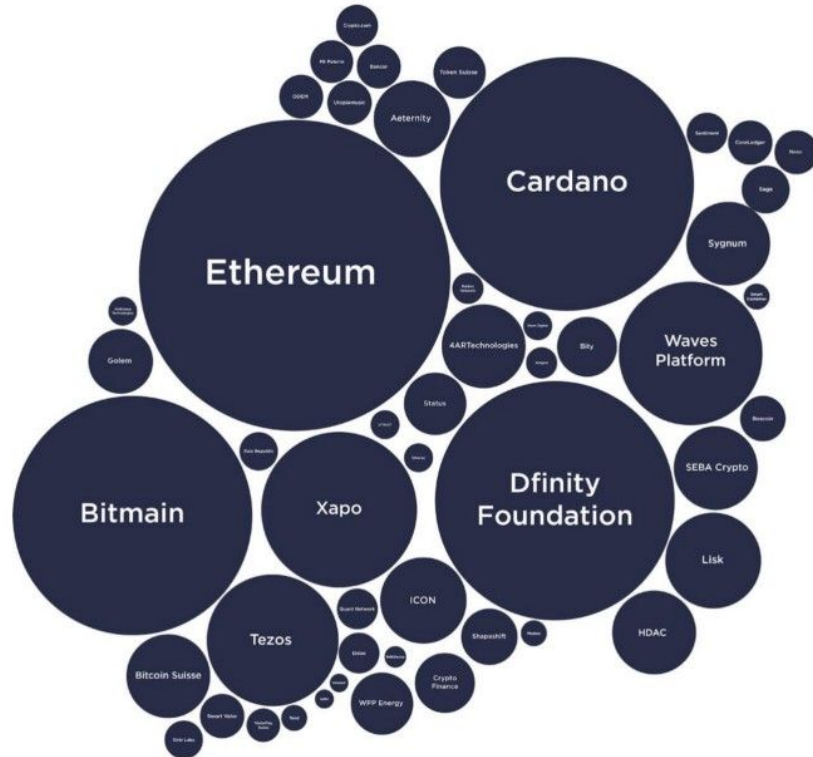
Ether Price: \$3,102.52 / ETH

Gas Limit & Usage by Txn: 132,629 | 110,025 (82.96%)

Gas Fees: Base: 20.839440758 Gwei | Max: 38.67 Gwei | Max Priority: 1.67 Gwei

Burnt & Txn Savings Fees: Burnt: 0.00229285946939895 Ether (\$3.02) Txn Savings: 0.00177806553060105 Ether (\$2.34)

# — Why raw data is not enough?



## EVM

- Transactions
- Logs
- Traces

## Polkadot

- Extrinsics
- Ininsics
- Events

## Bitcoin

- UTXO

# EVM Data Provided by Footprint

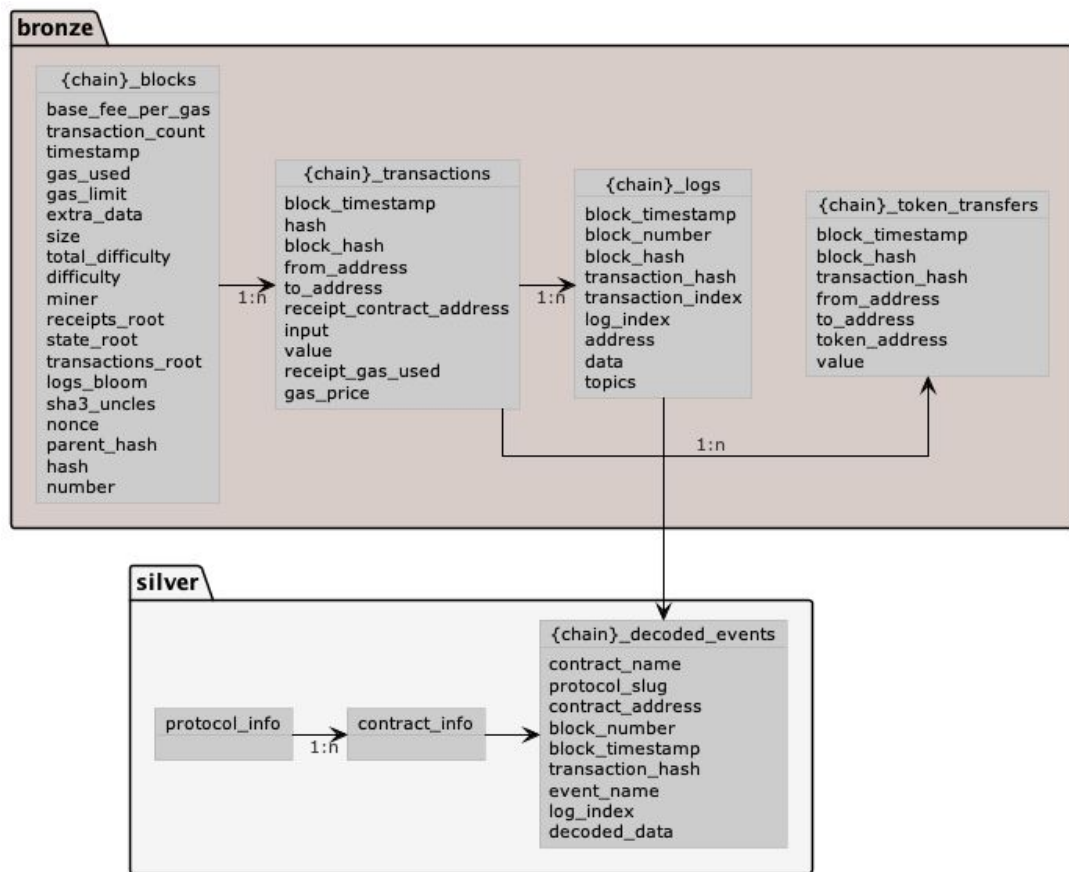


## Difficulties of data analysis

- Difficult access to off chain data
- Events cannot be queried quickly

## Footprint data structure

- Relational Databases
- Provides on chain raw data
- Provides **silver** level data generated by combining **off chain** and **on chain** data



# Shortly about abstractions (not to be used on a community session)

1. Contract is recognised as ERC721 or ERC1155 (no unique solution)
2. <https://docs.getdbt.com/docs/build/materializations> are being executed
  - a. [https://dune.com/spellbook#!/source/source.spellbook.erc721\\_ethereum.evt\\_transfer](https://dune.com/spellbook#!/source/source.spellbook.erc721_ethereum.evt_transfer)
  - b. [https://dune.com/spellbook#!/model/model.spellbook.nft\\_ethereum\\_transfers](https://dune.com/spellbook#!/model/model.spellbook.nft_ethereum_transfers)
  - c. [https://dune.com/spellbook#!/model/model.spellbook.nft\\_transfers](https://dune.com/spellbook#!/model/model.spellbook.nft_transfers)

3 Answers

Sorted by: Highest score (default) ▾

▲ I think you should check a few conditions with different ABIs:

2

1. Events `Transfer(address,address,uint256)` and `Approval(address,address,uint256)` should be emitted in case of any existing transactions to this smart contract
2. Methods `name()`, `symbol()` could return `bytes32` or `string`
3. Method `decimals()` could return `uint8` or `uint256`
4. Method `totalSupply()` should return `uint256`
5. Method `balanceOf(address)` should return `uint256` for any argument

Share Improve this answer Follow

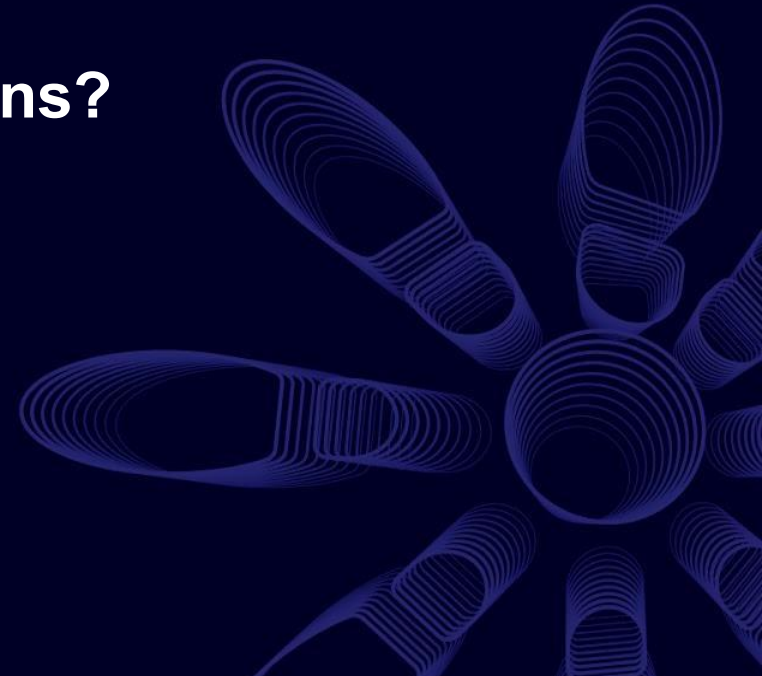
answered Mar 22, 2019 at 11:05



k06a

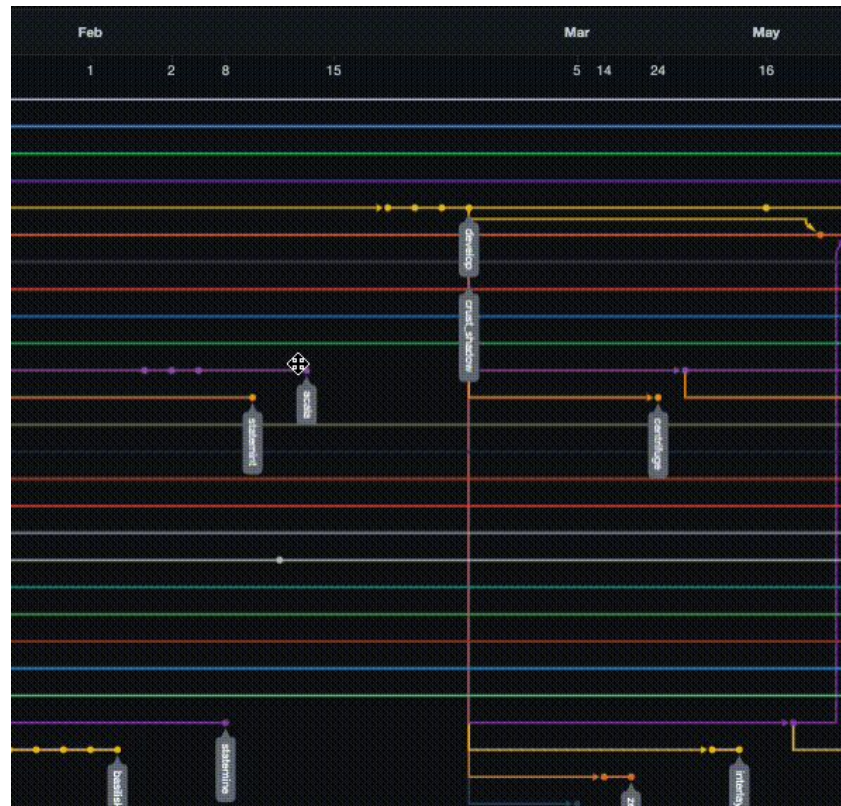
2,466 2 19 27

# 03 What are the options?



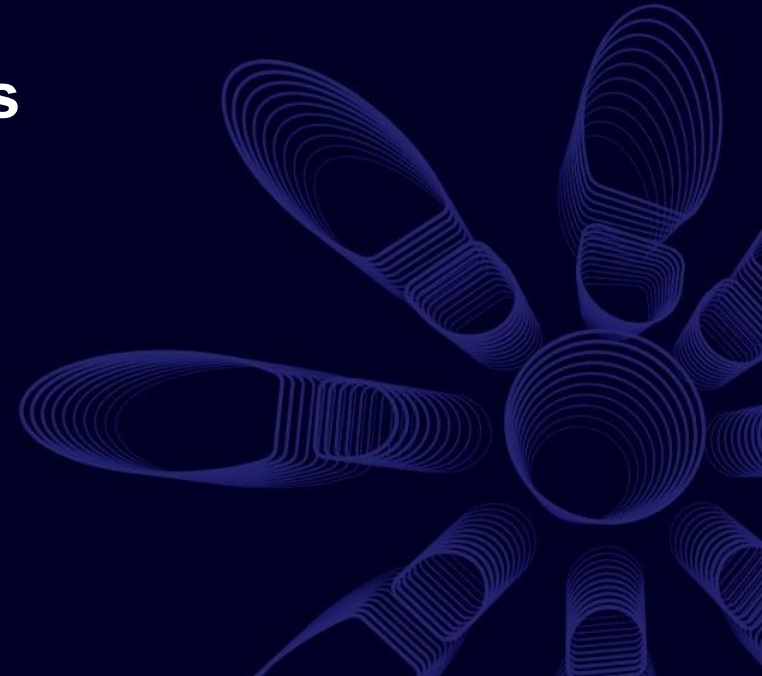
## — What are the options?

	Advantages	Disadvantages
Third-party API	<ul style="list-style-type: none"><li>• Easy to use</li><li>• Good for advanced search</li><li>• Scalable</li><li>• Reliable</li></ul>	<ul style="list-style-type: none"><li>• Dependable</li><li>• Limited customisation</li><li>• Pricy</li></ul>
SDK	<ul style="list-style-type: none"><li>• Good for advanced search</li><li>• Highly customisable</li></ul>	<ul style="list-style-type: none"><li>• Hard to set-up and maintain</li><li>• Pricy</li></ul>

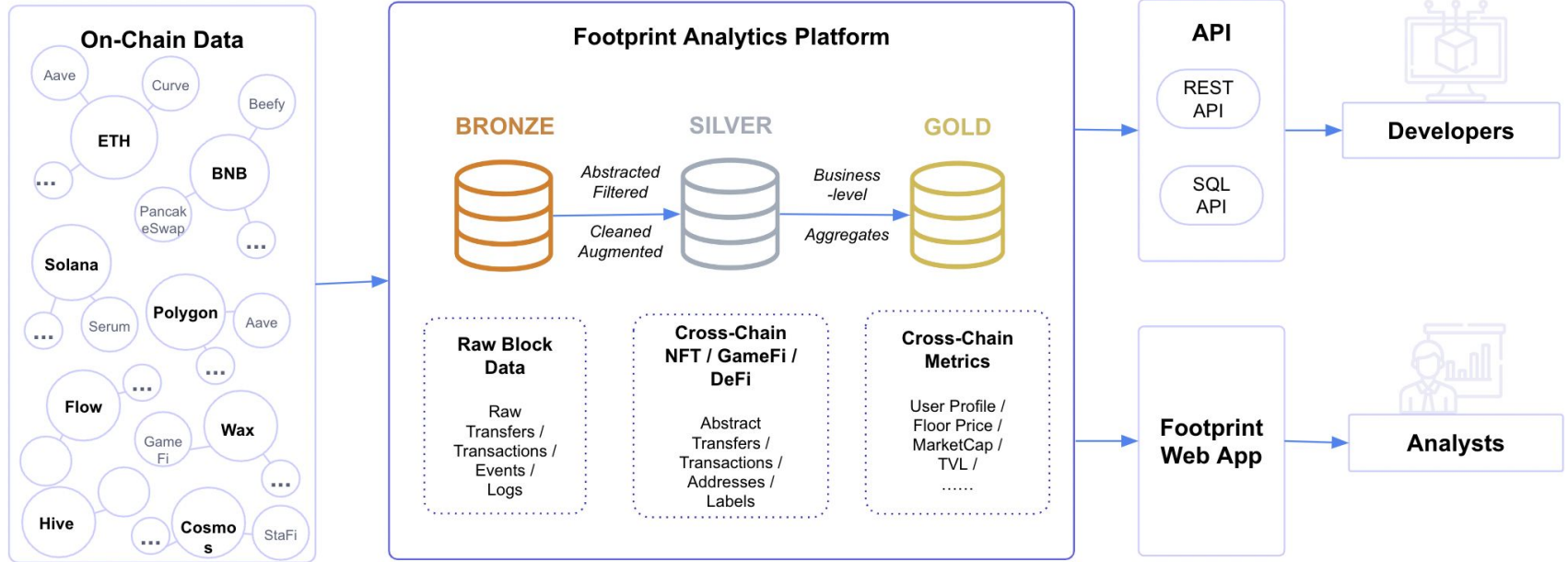




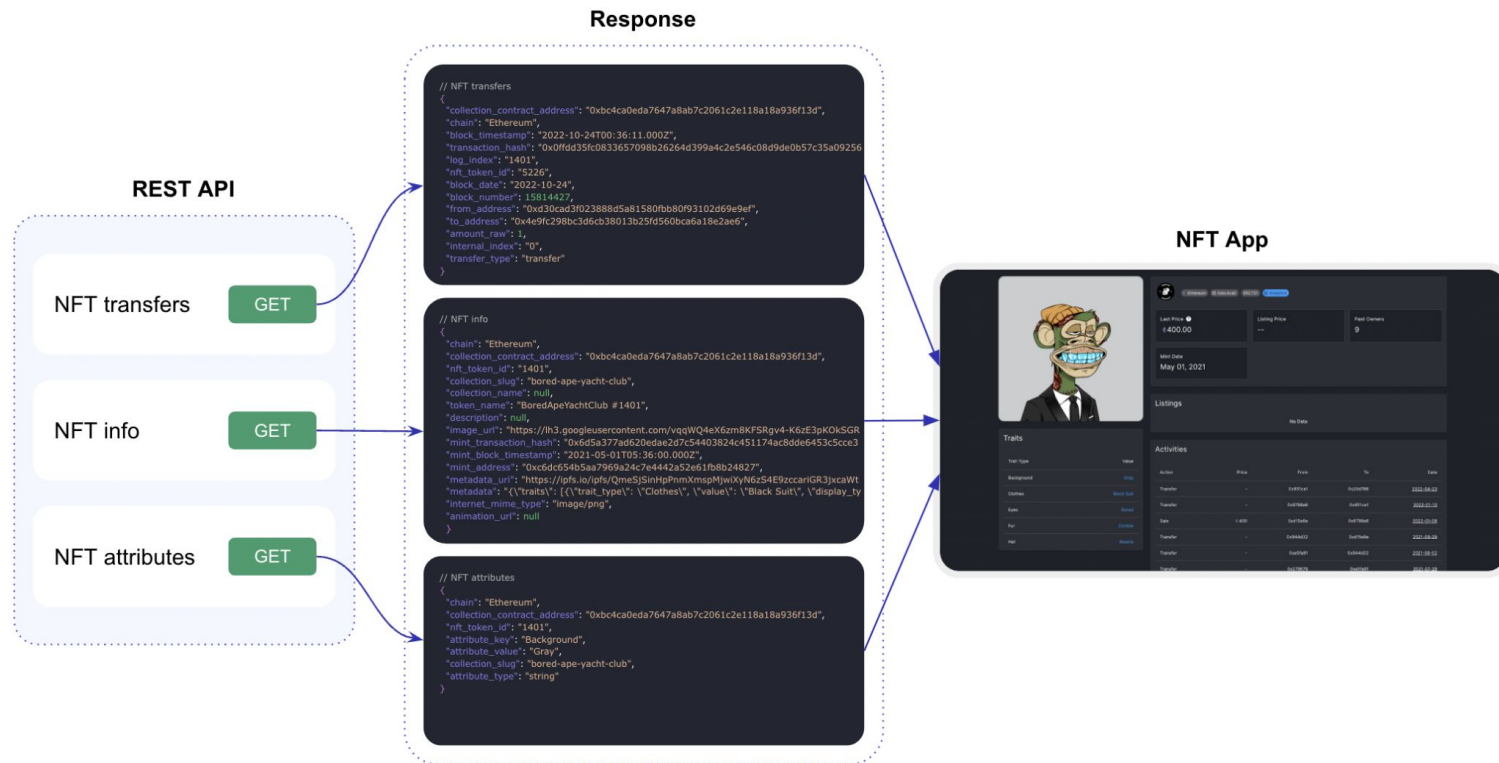
# 04 Footprint Analytics



# Indexing pipeline



# REST API



# Restful API



(MAYC collection contract address:0x60E4d786628F6a6478F785A6d7e704777c86a7c6)

JUMP TO

GET STARTED

How to get API key

Introduction

REST API V2

NFT

NFT transactions

NFT transfers

NFT orders

NFT wash trade checker

NFT collection statistics

NFT statistics

NFT info

NFT attributes

NFT collections by chain

NFT balance

NFT balance by wallet

Token

GameFi

Chain

SQL API

Query

UPLOAD API

Upload

REST API V1

NFT

GameFi

Chain

Address

## NFT transactions

GET https://api.footprint.network/api/v2/nft/collection/transactions

Returns the sales record of the NFT collection in the marketplace.

YOUR REQUEST HISTORY

TIME	STATUS	PATH	USER AGENT
2023/1/12 17:44	200	/api/v2/nft/collection/tra...	API Explorer
2023/1/12 17:44	200	/api/v2/nft/collection/tra...	API Explorer
2023/1/12 17:42	200	/api/v2/nft/collection/tra...	API Explorer

EXPAND Page 1

QUERY PARAMS

chain string required **Ethereum**

collection\_contract\_address string required **0x60E4d786628F**

start\_time string

end\_time string

NFT Collection Contract Address

LANGUAGE

Shell

Node

Ruby

PHP

Python

AUTHENTICATION

API Key

HEADER

Header

40c2avnA08fuYtPdMz9ix6o/jR2Hvqopf7Ifq92YDwrmI

CURL

REQUEST

curl --request GET \

--url 'https://api.footprint.network/api/v2/nft/c

--header 'API-KEY: 40c2avnA08fuYtPdMz9ix6o/jR2H

--header 'accept: application/json'

Try It!

RESPONSE

200 TRY IT

```
{
  "block_date": "2023-01-11",
  "trade_type": "single",
  "transaction_hash": "0x8b8dd33192d07262c06878a41557b",
  "block_timestamp": "2023-01-11 21:30:59.000 UTC",
  "block_number": 16386259,
  "log_index": "215",
  "chain": "Ethereum",
  "eth_amount": 20.5,
  "internal_index": "0",
  "collection_contract_address": "0x60E4d786628F6a647",
  "collection_slug": "mutant-ape-yacht-club",
  "nft_token_id": "9497",
  "marketplace_contract_address": "0x74312363e45dcaba",
  "marketplace_slug": "2y2",
  "number_of_nft_token_id": 1,
  "value": 27337.034991136155,
  "value_currency": "USD",
  "amount": 20.5,
  "amount_currency": "ETH",
  "amount_currency_contract_address": "0xe00000000000000000000000000000000000000000000000000000000000000000",
  "buyer_address": "0x0b6f67f944c80e9cd0b60512b19ed9a2i",
  "seller_address": "0x70219c18604deb7f89379d56a62b2bd",
  "royalty_rate": 0,
  "royalty_amount": 0,
  "royalty_value": 0,
  "platform_fee_rate": 0,
}
```

Build your NFT dapps with Footprint, including:

- [NFT explorer](#)
- [NFT wallets](#)
- [NFT trackers](#)
- [NFT marketplaces](#)
- [NFT games](#)

[Try for free](#)

# SQL API

## SQL API

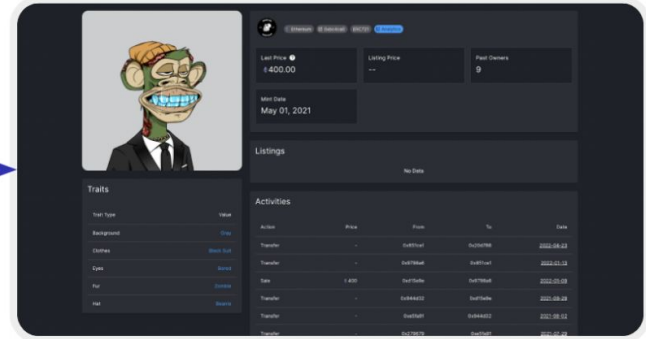
```
import axios from 'axios'

axios.post('https://api.footprint.network/api/v1/native', {
  query: `
    SELECT * FROM (
      SELECT * FROM nft_info
      WHERE collection_contract_address =
        '0xbc4ca0eda7647a8ab7c2061c2e118a18a936f13d' AND nft_token_id = 1401
    ) a
    LEFT JOIN (
      SELECT * FROM nft_token_attributes
      WHERE collection_contract_address =
        '0xbc4ca0eda7647a8ab7c2061c2e118a18a936f13d' AND nft_token_id = 1401
    ) b
    ON b.collection_contract_address = a.collection_contract_address AND
    b.nft_token_id = a.nft_token_id
    LEFT JOIN (
      SELECT * FROM nft_transfers
      WHERE collection_contract_address =
        '0xbc4ca0eda7647a8ab7c2061c2e118a18a936f13d' AND nft_token_id = 1401
    ) c
    ON c.collection_contract_address = a.collection_contract_address AND
    c.nft_token_id = a.nft_token_id
  )`
})
```

## Response

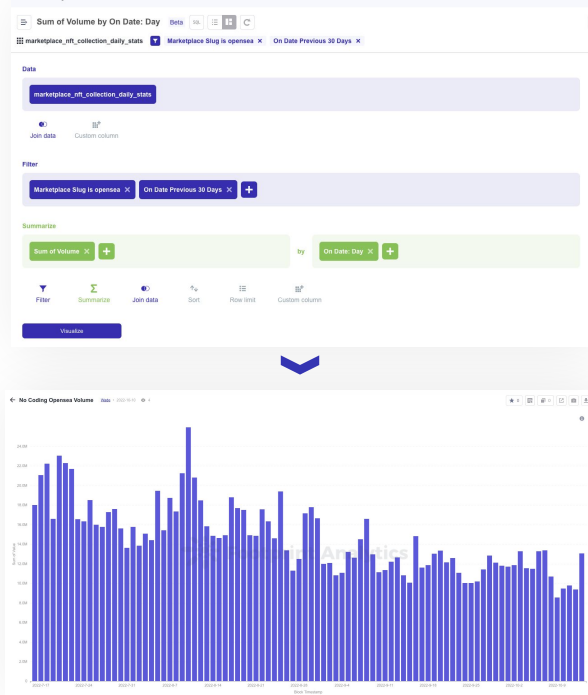
```
{
  "chain": "Ethereum",
  "collection_contract_address": "0xbc4ca0eda7647a8ab7c2061c2e118a18a936f",
  "nft_token_id": "1401",
  "collection_slug": "bored-ape-yacht-club",
  "collection_name": null,
  "token_name": "BoredApeYachtClub #1401",
  "description": null,
  "image_url": "https://lh3.googleusercontent.com/vqqWQ4eX6zm8KFSRgy4-K6",
  "mint_transaction_hash": "0x6d5a377ad620edae2d7c54403824c451174ac8dd",
  "mint_block_timestamp": "2021-05-01T05:36:00.000Z",
  "mint_address": "0xc6dc654b5aa7969a24c7e4442a52e61fb8b24827",
  "metadata_url": "https://ipfs.io/ipfs/Qme5SjSinHPmXmnpMjwixyN6Z54E9zcca",
  "metadata": "{ \"traits\": [ { \"trait_type\": \"Clothes\", \"value\": \"Black Suit\" }, { \"trait_type\": \"image/png\", \"value\": \"image/png\", \"animation_url\": null, \"attribute_key\": \"Background\", \"attribute_value\": \"Gray\", \"attribute_type\": \"string\", \"block_timestamp\": \"2022-10-24T00:36:11.000Z\", \"transaction_hash\": \"0x0fdd35fc0833657098b26264d399a4c2e546c08d9deb\", \"log_index\": \"1401\", \"block_date\": \"2022-10-24\", \"block_number\": \"15814427\", \"from_address\": \"0xd30cad3f023888d5a81580fb80f93102d69e9ef\", \"to_address\": \"0x4e9fc298bc3d6cb38013b25fd560bca6a18e2ae6\", \"amount_raw\": \"1\", \"internal_index\": \"0\", \"transfer_type\": \"transfer\" } ] }",
  "internet_mime_type": "image/png",
  "animation_url": null,
  "attribute_key": "Background",
  "attribute_value": "Gray",
  "attribute_type": "string",
  "block_timestamp": "2022-10-24T00:36:11.000Z",
  "transaction_hash": "0x0fdd35fc0833657098b26264d399a4c2e546c08d9deb",
  "log_index": "1401",
  "block_date": "2022-10-24",
  "block_number": "15814427",
  "from_address": "0xd30cad3f023888d5a81580fb80f93102d69e9ef",
  "to_address": "0x4e9fc298bc3d6cb38013b25fd560bca6a18e2ae6",
  "amount_raw": "1",
  "internal_index": "0",
  "transfer_type": "transfer"
}
```

## NFT App



# SQL API - Customized for specific needs

A flexible SQL API customization for robust requirements



JUMP TO

GET STARTED

How to get API key  
Introduction

REST API V2

> NFT

> Token

> GameFi

> Chain

SQL API

Execute a native SQL query

Execute a native SQL async query

Query asynchronous query results

UPLOAD API

> Upload

REST API V1

> NFT

> GameFi

> Chain

> Address

Powered by readme

## Execute a native SQL query

[POST https://api.footprint.network/api/v1/native](https://api.footprint.network/api/v1/native)

Synchronous SQL API query, suitable for simple table lookup query, if you have complex query, please use asynchronous SQL API query

YOUR REQUEST HISTORY

TIME	STATUS	PATH	USER AGENT
2023/1/12 18:36	200		API Explorer
2023/1/12 18:29	200		API Explorer
2023/1/12 18:29	200		API Explorer

BODY PARAMS

query string select \* from "nft\_

HEADERS

api-key string 40c2avnA08fuYt

RESPONSE

200 OK

Updated about 2 months ago

Query Execute a native SQL async query

LANGUAGE

Shell Node Ruby PHP Python

CURL

```
1 curl --request POST \
2 --url https://api.footprint.network/api/v1/native
3 --header 'accept: application/json' \
4 --header 'api-key: 40c2avnA08fuYtPdM9ix6o/jk2H
5 --header 'content-type: application/json' \
6 --data @- --data @- --data @-
7 {
8   "query": "select * from \"nft_aggregator_transact
9 }
10 EOF
```

RESPONSE

```
1 {
2   "message": "success",
3   "code": 0,
4   "data": {
5     {
6       "chain": "Ethereum",
7       "block_number": 16383918,
8       "block_timestamp": "2022-12-31 06:41:11.000 UTC",
9       "transaction_hash": "0xa1540b25636aeb4899a08a2",
10      "log_index": "127",
11      "internal_index": "0",
12      "collection_contract_address": "0x06ad75b40decf1",
13      "nft_token_id": "3101",
14      "marketplace_slug": "opensea",
15      "aggregator_slug": "blur",
16      "aggregator_name": "Blur.io: Marketplace",
17      "aggregator_contract_address": "0x39da41747a83a
18    },
19    {
20      "chain": "Ethereum",
21      "block_number": 16386465,
22      "block_timestamp": "2022-12-31 18:14:11.000 UTC",
23      "transaction_hash": "0x6fc35a12821218240b5bee5",
24      "log_index": "163",
```

# Zero Coding Required to Get Blockchain Insights



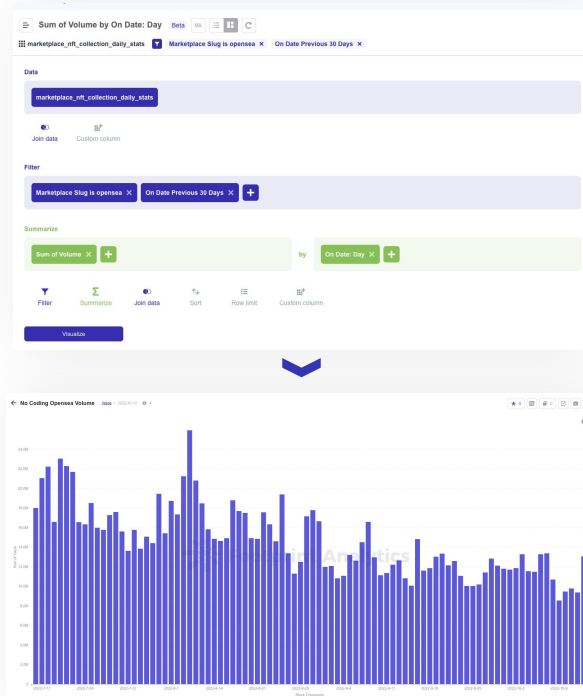
Create a New Chart for OpenSea Trading Volume

Complex of SQL code

```
1 WITH token AS
2 (SELECT DISTINCT call_tx_hash AS tx_hash,
3     CASE
4     WHEN addr[7] = '\x00000000000000000000000000000000' THEN '\xc02aaa39b223fe
5     ELSE addr[7]
6     END AS token_address
7 FROM opensea."WyvernExchange_call_atomicMatch_"
8 WHERE (addr[4] = '\x5b3256965e7c3cf26e11caf296dfc8807c01073'
9     OR addr[11] = '\x5b3256965e7c3cf26e11caf296dfc8807c01073')
10 AND call_success),
11 excluded_txns AS
12 (SELECT call_tx_hash
13 FROM opensea."WyvernExchange_call_atomicMatch_"
14 WHERE (addr[4] = '\x5b3256965e7c3cf26e11caf296dfc8807c01073'
15     OR addr[11] = '\x5b3256965e7c3cf26e11caf296dfc8807c01073')
16 AND call_success
17 AND call_block_time > '2022-01-21'
18 GROUP BY 1
19 HAVING count(DISTINCT CASE
20     WHEN addr[7] = '\x00000000000000000000000000000000' THEN '\xc02aaa39
21     ELSE addr[7]
22     END) > 1)
23 SELECT date_trunc('day', evt_block_time) AS DAY,
24     SUM((om.price / 10^erc.decimals) * p.price) AS usd
25 FROM opensea."WyvernExchange_evt_OrdersMatched" om
26 INNER JOIN token ON token.tx_hash = om.evt_tx_hash
27 INNER JOIN erc20.tokens erc ON token.token_address = erc.contract_address
28 INNER JOIN prices.usd p ON p.minute = date_trunc('minute', evt_block_time)
29 AND maker != taker
30 AND token.token_address = p.contract_address
31 AND date_trunc('day', p.minute) > date_trunc('day', now()) - interval '90 days'
32 AND erc.tx_hash not in
```

VS

Drag and drop in 1 minute



# Most Comprehensive Coverage of Chains and Domains



Footprint Analytics provides a comprehensive, timely and accurate overview of the full blockchain ecosystem

24

Chains

700,000+

NFT Collections

17

NFT Marketplaces

1,987

GameFi Protocols

519

DeFi Protocols

108,005

Tokens

## Chains



SOLANA



## Marketplace



2.0



Aavegotchi



Cryptopunks



Walken



MAGIC EDEN



Rarible



Decentraland





# Q & A

- # Send **5 monthly free trial accounts** for the members who ask questions
- # Please sign up Footprint Analytics via the link <https://www.footprint.network/?channel=cyberAcademy> and send your account to Admin in Footprint Discord.



# Welcome to join our community

---



Twitter: [https://twitter.com/Footprint\\_Data](https://twitter.com/Footprint_Data)



Discord: <https://discord.com/invite/3HYaR6USM7>



Data API: <https://www.footprint.network/data-api>



Github: <https://github.com/footprint-network>



Email: [sales@footprint.network](mailto:sales@footprint.network)



**Scan QR Code to Join  
Footprint Discord**