



A blockchain pitch  
for:

# **SPINDL'S DISTRIBUTED ARCHITECTURE**

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## PROBLEM STATEMENT

Spindl's process, as quoted from [Mr. Antonio's blog](#), will involve "a huge fire hose of data," which SDK collects across every client site. These sub-transactions are in the millions per second, which is inefficient to store on the smart contract, even with for-loops. Furthermore, the large data sets are ridiculously **costly** to store on-chain as is. Retrieving and utilizing on-chain data can be executed using web3 libraries, but it is still **unscalable** because of its transactional nature.

## OPPORTUNITY

Spindl will use three components, including its **smart contract**, **IPFS storage**, and a **subgraph**:

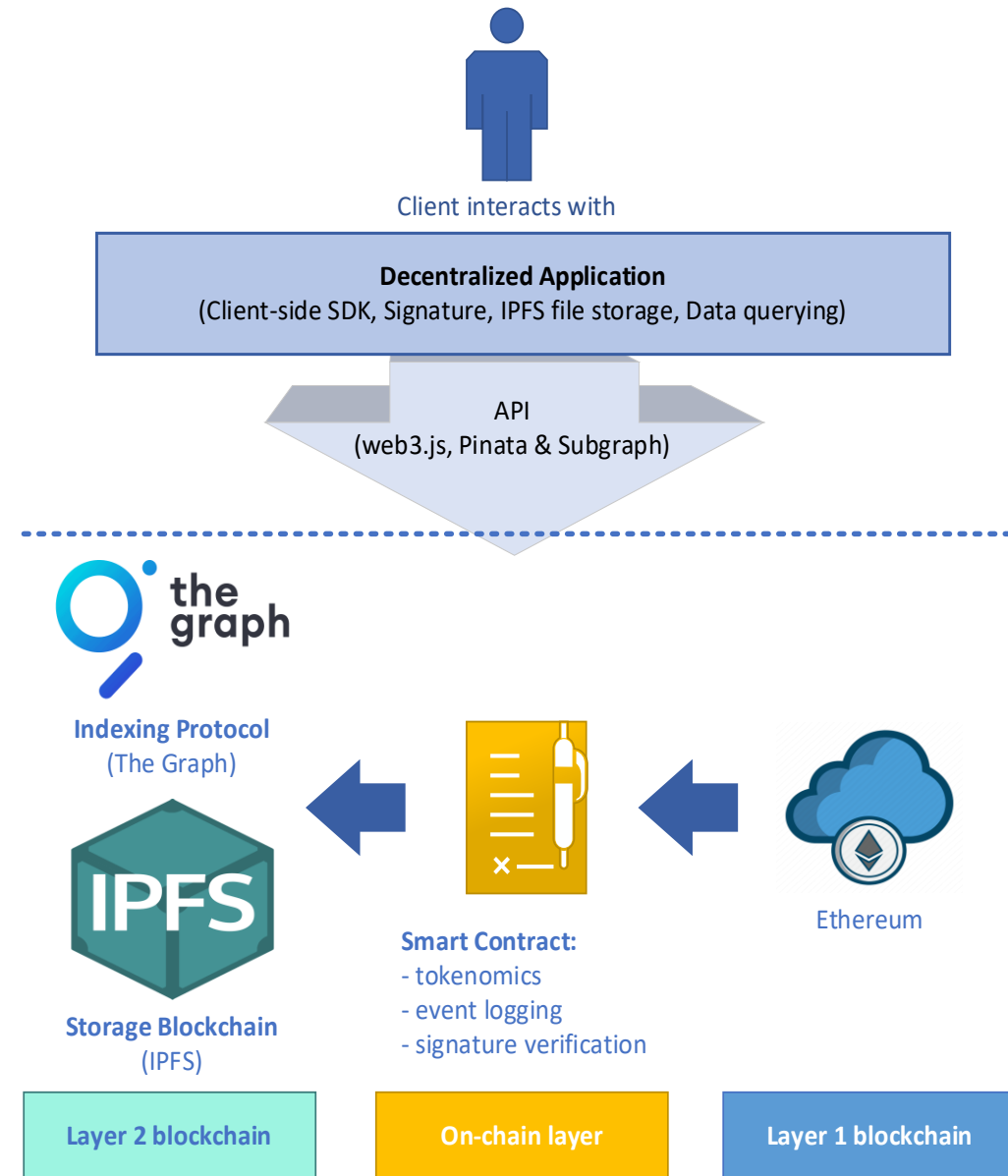
1. Data collected from client-side SDK will be stored on a peer-to-peer IPFS storage. Our client signs a single-bulk transaction, outputting a signature and IPFS file ID
2. The client interacts with the Smart Contract to input the signature and IPFS file ID as an array of transactions. The two data are stored on-chain and is retrievable by event logging
3. Spindl will host a subgraph using the Graph protocol, which enables our clients and ourselves to query the on-chain data. The query is in GraphQL, which can be processed to retrieve the sub-transactions from IPFS for analytics use cases.

## POTENTIAL IMPACT

Client enjoys the **flexibility** and **efficiency** to perform bulk transactions on the smart contract because signatures and IPFS files are immutable off-chain entities. IPFS can become a private storage blockchain if data privacy is required.

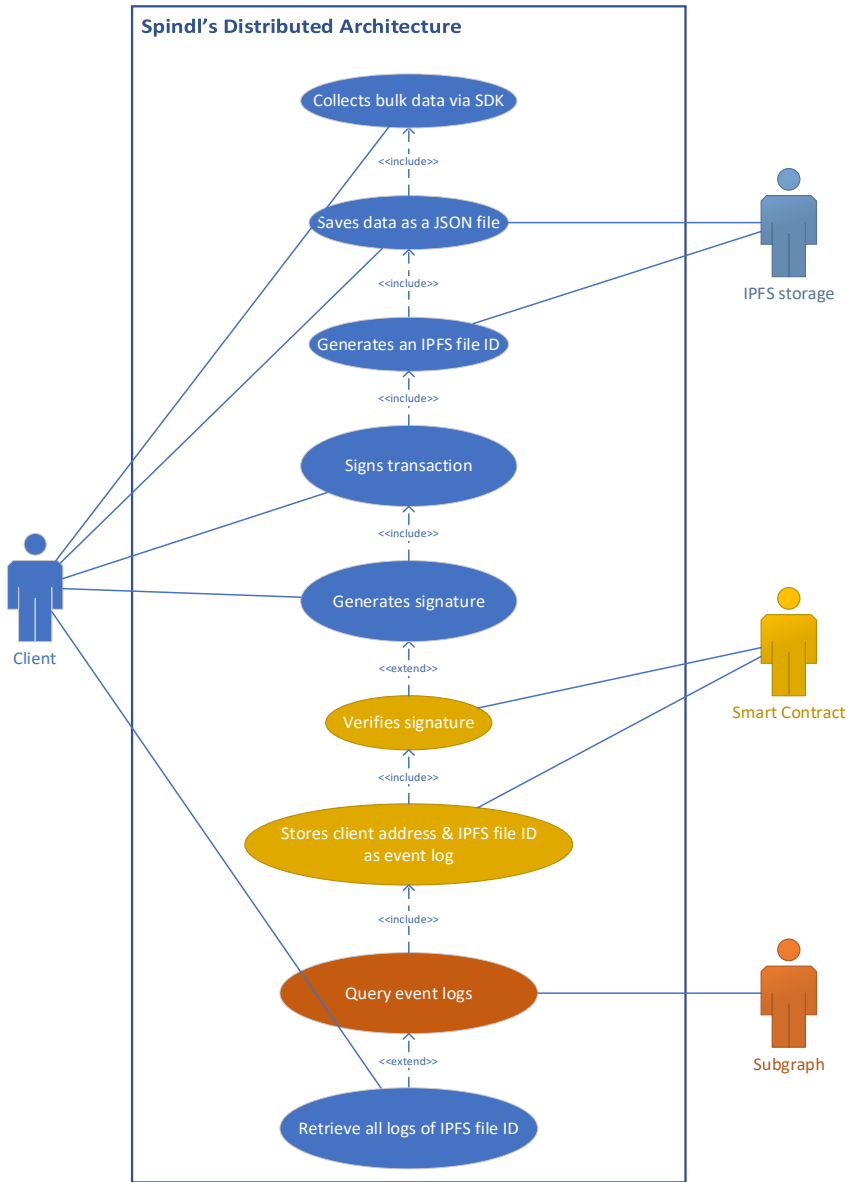
The off-chain process to generate signature has **zero processing time** (compared to on-chain transaction) and can be **automated**.

**Streamlined data querying** and analytics are interoperable with data visualization tools, such as Power BI and Tableau.



# Spindl's Technical Architecture

Use Case diagram:



JSON file template for IPFS storage:

JSON	Raw Data	Headers
Save	Copy	Collapse All Expand All Filter JSON
sig: "0x776e3ebac9ff09558b593d...131c3f07d7016414c2e881b"		
types:		
Data: [...]		
message:		
client: "amazon.com"		
client_address: "0xbc01E2E5d8a2fd1a0d347C07255664E4B7b5F944"		
timestamp: 1666709820		
data:		
0:		
uid: "0x7034"		
platform: "twitter"		
event: "click"		
date: "1666709820"		
1:		
uid: "0x7035"		
platform: "appstore"		
event: "click"		
date: "1666709826"		
2:		
uid: "0x7034"		
platform: "amazon"		
event: "cart"		
date: "1666709835"		

JSON file template to store data attributes

GraphQL query of client address and IPFS file ID:

```
logs(first: 5, skip: id address }
```

Query to get first 5 entries of IPFS file ID (id) and client address (address)

```
{ "data": { "logs": [ { "id": "bafybeihpv7ff2pojbcctefmb4bqq5jcrf3szx56anhfz7qiwb65op76q7m", "address": "0xe843a75566df3c1debe4298e37c8ba1f41ccdb7a" }, { "id": "ndFXw74Fg4YgEYzXo8XTPnCNhW6hFpbsH61qHnJC3", "address": "0x833f9518cc6cd092c563d89a01e8782ffa30b8b8" }, { "id": "QmazTEvJHFY7rGQ1g5KxQm3Q86KDV9XnF3a42G9n46xidq", "address": "0xe843a75566df3c1debe4298e37c8ba1f41ccdb7a" } ] }
```

Result of the query

Demo subgraph: [View link](#)

# THANK YOU

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