

# I/O COIN COMMUNITY

## DEVELOPMENT REPORT

2023



Prepared By:

Joel Bosh I/O Digital Foundation  
I/O Coin Founder & Developer

## PAGES

Page 3. Empowering Blockchain Advancements

Page 4. Introduction

Page 7. Development Progress Report

Page 8. IDE environment tools

Page 10. Smart contracts layer transparent to legacy consensus

Page 11. Dynamic integration Tests

Page 13. Approve and transfer calls tests

Page 14. Dev Backward Testing points

Page 17. Smart Contract Creation Event

Page 18. DVM Stress Test

Page 19. Legal & Compliance

# I/O Coin Community: Empowering Blockchain Advancements

Dear I/O Coin Blockchain Enthusiasts,

We are thrilled to share with you this report highlighting the key points discussed during our recent Ask Me Anything (AMA) session. As a passionate community of blockchain enthusiasts, we are committed to pushing the boundaries of technology and fostering advancements in the blockchain space. This report aims to provide you with valuable insights into our community's efforts and achievements.

By embracing the principles of decentralization, collaboration, and inclusivity, I/O Coin has become a thriving community at the forefront of blockchain innovation. Through this report, we invite you to join our journey and learn more about the exciting developments and initiatives discussed during the AMA.

## Key Points Discussed:

- 1. Embracing Fairness and Transparency:** I/O Coin upholds the principles of fairness and transparency, similar to the pioneering spirit of Bitcoin. Our project was fair launched on July 24th 2014, without any pre-mine or initial coin offering, ensuring equal mining opportunities for all community members to participate from the very beginning.
- 2. Driving Innovation:** At the heart of our community lies a relentless drive for innovation. During the AMA, we explored groundbreaking features such as the Decentralized Names Architecture (DIONS) and the Decentralized Virtual Machine (DVM). These cutting-edge technologies differentiate I/O Coin from other projects and provide a solid foundation for transformative applications.
- 3. Advancing Blockchain for Real-World Use:** We are dedicated to leveraging blockchain technology for real-world applications. Through ongoing scientific research and development, I/O Coin seeks to deliver tangible value to various industries and drive widespread adoption. Our focus on practical use cases sets us apart as a community committed to making a meaningful impact.
- 4. Engaging the Community:** Active community involvement is vital to our success. During the AMA, we emphasized the importance of your contributions, whether through development, advocacy, or simply utilizing I/O Coin for transactions. By joining forces, we can collectively shape the future of blockchain technology and drive its mainstream adoption.
- 5. Openness to Support and Contributions:** We deeply appreciate the support we have received from our community and beyond. Contributions play a crucial role in sustaining our research and development efforts, allowing us to explore new avenues and push the boundaries of what is possible with blockchain technology. Your support and contributions are highly valued and make a tangible difference.

By reading this report, you are taking an important step toward understanding our community's vision and contributions. We invite you to explore the various sections of this report, which highlight the key discussions during the AMA and provide valuable insights into our ongoing journey.

Thank you for your interest and support. Together, we can create a brighter future empowered by I/O Coin's blockchain technology.

Sincerely,

JOEL BOSH

I/O COIN FOUNDER & DEVELOPER

## INTRODUCTION

**I/O Coin (IOC)** is a digital currency that was **Fair launched in 2014**, following a two-week Proof of Work (PoW) phase using the X11 algorithm. **This initial phase allowed miners to generate coins by solving complex mathematical problems**, a common method used by many cryptocurrencies during their launch phase. After this initial two-week period, **I/O Coin transitioned to a Proof of Stake (PoS)** consensus mechanism.

The PoS mechanism is an energy-efficient alternative to PoW. **In L1 PoS, coin holders participate in securing the network and validating transactions, and they receive new coins as a reward.** This approach not only reduces the energy consumption of the network but also incentivizes coin holders to maintain the security and integrity of the network.

**In late 2017**, the I/O Coin development team introduced a significant upgrade to the blockchain: the **Decentralized Input Output Name Server (DIONS)**. This upgrade included a fully revamped Decentralized Application (DAPP) wallet system, which was designed to accommodate all the new DIONS features. This was a significant challenge, as it involved moving from a single feature to a multi-feature wallet, but the team was able to make it all work.

The DAPP wallet was the first of its kind in the market, providing full access to all decentralized features on the I/O Coin Blockchain without requiring a smart contract. **It enabled identity storage, both private and public**, allowing users to store their personal identification and control who could view and share their attachment files or identities. The **avatar creation** feature also allowed for storing art and pictures, deeds, copyrights, trademarks, proof of ownership, data, and much more, **all utilizing the highest levels of encryption in AES256.**

Private and public identities were fully transferable between users, and users could send IOC via usernames. This base is ready for a full DNS service to be enabled in the future. Private identities enabled users to attach and upload any 1MB file to the IOC blockchain. **Users could also transfer identities and documents to other users while maintaining a fully encrypted tunnel. These features extend to Internet of Things (IoT) devices, which could access them via API.**

In addition to IOC's data capabilities, which extend to IoT devices via API, **the team also enabled AES256 encrypted messaging.** With the increasing attacks on citizens' freedom of speech on centralized platforms like Telegram and Twitter, the team wanted to ensure that users would have a decentralized platform where they could continue to communicate. **Since IOC is a decentralized open-source platform, there is no way for any developer or even the foundation to stop or provide any service to decrypt data. Only the end user who holds a private key could do such a thing.**

The I/O Coin development team also worked hard in expanding DIONS by deploying two essential upgrades: **Stealth Addresses and Shuffle Staking**. Stealth addresses provided another layer of privacy to IOC users. The team implemented sending and receiving of shade payments into the wallet, giving users an optional way of sending private payments. Stealth addresses went live on Block 1898337.

**Shuffle Staking** provided a more fair and balanced reward system for low-weighted stakers. The change in code gave low-weighted stakers a chance to be rewarded via shuffle even if their weight in coins was low compared to the rest of the stakers. This is a significant improvement over many other PoS blockchains, where rewards are only given if a user has a set amount of coins in stake.

**Fast forward to 2023**, the I/O Coin team has been working on another significant upgrade: **the Decentralized Virtual Machine (DVM)**. **The DVM is designed to be functionally compatible with the Ethereum Virtual Machine (EVM)**, which means that any smart contract that can run on Ethereum should also be able to run on the DVM. This is a significant achievement as it allows for the easy migration of existing Ethereum dApps to the I/O Coin network.

For instance, if a developer has created a decentralized lending platform on Ethereum, they can easily migrate this platform to run on the I/O Coin network without having to rewrite the entire codebase. This compatibility with Ethereum also extends to ERC20, ERC 721, ERC tokens, the most common type of token on Ethereum. The team has successfully run dynamic integration tests using an ERC20 token contract on the DVM, demonstrating that the DVM can support these tokens.

The DVM also introduces several enhancements over the EVM. One of these enhancements is the use of **polymorphic data structures**, which allow a data type to appear as multiple different data types. This feature provides greater flexibility in handling data and enables developers to create more complex and dynamic applications.

For example, in a decentralized marketplace, a seller could list different types of items (like books, electronics, clothes, etc.), each represented by a unique data structure. This would allow for a more personalized and dynamic shopping experience for users. The DVM also allows for a named account structure, which makes it easier for users to manage their accounts by using a memorable name instead of a complex alphanumeric address.

The I/O Coin team has also been developing tools to make it easier for developers to build on top of the I/O Coin platform. One of these tools is **'Gandalf'**, **a plugin that automates the script workflow**, simplifying the process of developing and deploying smart contracts on the I/O Coin network.

In addition to these technical developments, the team has been conducting extensive testing to ensure the security and reliability of the system.

This includes **fuzz testing**, a technique that involves inputting large amounts of random data to the test subject to identify potential security vulnerabilities. For instance, a smart contract could be fuzz tested by sending it random inputs and observing its behavior to identify any potential security vulnerabilities.

The I/O Coin team has also been working on setting up a **decentralized exchange (DEX)** on the I/O Coin network. This will allow users to trade tokens directly on the blockchain, without the need for intermediaries. For example, a user could trade their I/O Coin tokens for another type of token (like an ERC tokens) directly on the I/O Coin network, without having to go through a centralized exchange like Binance or Coinbase.

**The I/O Coin blockchain DVM upgrade will be backward compatible**, allowing for seamless upgrades. This ensures that legacy wallets can continue to function even after the upgrade, providing peace of mind and a smooth user experience for users.

The I/O Coin team is committed to providing a robust, secure, and user-friendly platform for developers and users alike. They are continually working on enhancing the platform and providing tools and features that enable the creation of innovative applications. Whether it's the user-friendly names provided by DIONS, the advanced smart contract capabilities of the DVM, or the developer-friendly tools like 'Gandalf', I/O Coin is pushing the boundaries of what's possible with blockchain technology.

In summary, I/O Coin is a blockchain platform that combines advanced features with user-friendliness. It started with a fair launch and a commitment to energy-efficient consensus through Proof of Stake. It then introduced user-friendly names and data storage with DIONS, and it's now working on advanced smart contract capabilities with the DVM. Throughout this journey, the team has remained committed to security, transparency, and usability, making I/O Coin a compelling platform for both developers and users.

I/O Coin, since its inception, has taken steps that align with the principles of decentralization and fairness, which are fundamental to blockchain technology. **The project was launched following a two-week Proof of Work (PoW) phase, similar to Bitcoin, and transitioned to a Proof of Stake (PoS) consensus mechanism. There was no pre-mine or Initial Coin Offering (ICO), methods often associated with securities in the eyes of regulatory bodies. Instead, coins were fairly distributed to those who participated in the initial PoW phase.**

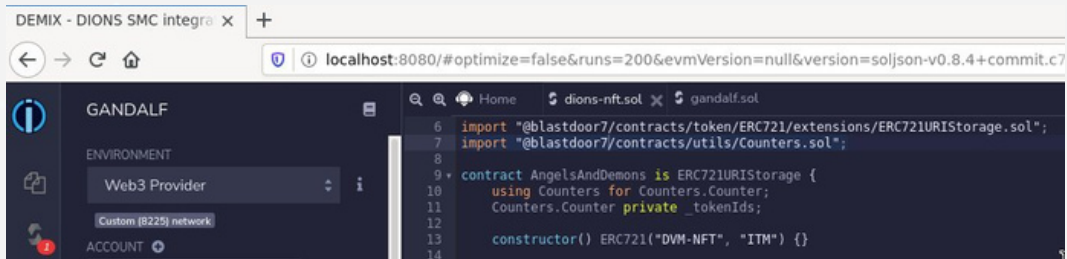
**The project is community-driven, funded through community donations, including contributions from the development team.** This approach fosters a sense of ownership and commitment among its members, further emphasizing the decentralized nature of the project.

# I/O COIN DEVELOPMENT & PROGRESS REPORT

## SUMMARY

- **Decentralized Virtual Machine (DVM) and Ethereum Virtual Machine (EVM) Compatibility:** The I/O Coin Development Team has ensured that the DVM is functionally compatible with the EVM. This compatibility allows for the easy migration of existing Ethereum dApps to the DVM
- **ERC Token Contract Testing:** The team has successfully run dynamic integration tests using an ERC token contract on the DVM. This demonstrates that the DVM is capable of supporting the most common type of token on Ethereum.
- **Decentralized Names Architecture (Dions) and Arbitrary Data Payloads:** The team has conducted tests around Dions architecture, which allows for the creation of decentralized apps (dApps) and games. The arbitrary data payload of Dions can be used to implement any state machine, which is a key component in game development.
- **Smart Contract Execution and Polymorphic Data Structures:** The team has been testing the execution of smart contracts on the DVM, including the use of polymorphic data structures embedded within the decentralized name transactions. Polymorphic data structures allow a data type to appear as multiple different data types, ensuring the flexibility and robustness of the smart contract execution process.
- **Smart Contract State Storage and Retrieval:** Testing has expanded to include smart contract data state storage and retrieval, followed by state machine (SM) operations based on the retrieved state. This demonstrates that the DVM is capable of maintaining the state of smart contracts and executing state transitions.
- **Named Account Structure:** The DVM allows for a named account structure, which is a further advantage over the Ethereum system. This makes it easier for users to manage their accounts by using a memorable name instead of a complex alphanumeric address.
- **Hybrid DApps:** The combination of DIONS and DVM allows for the creation of hybrid applications. These applications can interact with data structures and state machines evolving on the peer-to-peer network in combination with smart contracts.
- **IDE Environment Tools:** The team is developing 'Gandalf', a plugin that will enable generic script type generation and deployment, largely automating the script workflow. This will simplify the process of developing and deploying smart contracts on the I/O Coin network.

## IDE ENVIRONMENT TOOLS



Plugin 'Gandalf' which will enable generic script type generation and deployment. The wizard will largely automate the script workflow.

## GRAPHICAL UI FOR SMART CONTRACT CRAFTING



Some users will be able to deploy smart contracts using the api, some will need the ui. This I turned to this week, the shot shows an demo setup from my system



- **Transparent Smart Contracts Layer:** The smart contracts layer is designed to be transparent to the legacy consensus. This is achieved by carrying the signature identifying a smart contract execution request in the standard decentral name payload.
- **Backward Compatibility:** The DVM is designed to be backward compatible, allowing for seamless upgrades. This is facilitated by the existing architectural layer that allows arbitrary data. This approach ensures that legacy wallets can continue to function even after the upgrade.
- **Dynamic Payload:** The dynamic payload in the decentral distributed data architecture allows for back compatibility and dynamic flexibility. This is a key advantage over Ethereum, which uses fixed header data.
- **Polymorphic Virtual Machines:** The DVM is designed to be polymorphic, meaning it can support multiple programming languages. This is a significant advantage over Ethereum's EVM, which only supports Solidity.
- **Decentralized Exchange (DEX) Setup:** The team is working on setting up a decentralized exchange on the I/O Coin network. This will allow users to trade tokens directly on the blockchain, without the need for intermediaries.
- **Security Testing:** There have been numerous bulk simulation and fuzzing tests. Fuzzing is a technique that involves inputting large amounts of random data to the test subject to identify potential security vulnerabilities.
- **IDE Environment Tools:** The team has been working on the essential IDE environment tools for Solidity contract script development and deployment. In particular, with their DeMix plugin named 'Gandalf' that will enable generic script type generation and deployment<sup>16</sup>.  
**Human Readable Names for Smart Contracts:** Smart contracts in the DVM system will have associated human-readable names instead of just 20-byte addresses like in Ethereum. This is a significant usability enhancement as it makes it easier for users to interact with smart contracts.
- **Security and Regression Testing:** The team has conducted additional security and regression testing as part of the release preparations. Regression testing ensures that previously developed and tested software still performs the same way after changes or interfacing with other software.
- **Transparent Application Layer Enhancements:** The data architecture already enables encrypted file storage and AES256 encrypted communications, allowing the development of signature protocols over it, providing transparent application layer enhancements. This indicates that the system can support a wide variety of applications beyond just smart contracts.





- **Decentralized Exchange (DEX) Setup:** The team is working on setting up a decentralized exchange on the I/O Coin network. This will allow users to trade tokens directly on the blockchain, without the need for intermediaries. This could lead to lower fees and faster transactions for users. For example, a user could trade their tokens for another type of token almost instantly, without having to go through a centralized exchange.
- **Security Testing:** There have been numerous bulk simulation and fuzzing tests. Fuzzing is a technique that involves inputting large amounts of random data to the test subject to identify potential security vulnerabilities. This is particularly important in the context of smart contracts, where malformed or unexpected contract data could potentially be used as an attack vector.
- **IDE Environment Tools:** Another area the team has been working on is the essential IDE environment tools for Solidity contract script development and deployment. In particular, with their DeMix plugin named 'Gandalf' that will enable generic script type generation and deployment. Not only are they working on the underlying blockchain technology, but also on the tools that developers will use to build on top of the I/O Coin platform.
- **Human Readable Names for Smart Contracts:** Smart contracts in the DVM system will have associated human-readable names instead of just 20-byte addresses like in Ethereum. This is a significant usability enhancement as it makes it easier for users to interact with smart contracts. The team also introduced the Named Account Structure, which allows for a named account with a unique 20-byte identifier to be resolved by the peer-to-peer consensus network, outputting addresses belonging to that account. This enhancement offers more flexibility and user-friendly account management.
- **Security and Regression Testing:** The team has conducted additional security and regression testing as part of the release preparations. Regression testing ensures that previously developed and tested software still performs the same way after changes or interfacing with other software. This practice ensures the stability and reliability of the system.
- **Transparent Application Layer Enhancements:** The data architecture already enables encrypted file storage and AES256 encrypted communications, allowing the development of signature protocols over it, providing transparent application layer enhancements. This indicates that the system can support a wide variety of applications beyond just smart contracts.

## APPROVE AND TRANSFER CALLS TESTS

```
[
  {
    "address" : "moFhT3s35xm5u85pxxz6tvs5bqdaXzMaxV",
    "amount" : 40532.65200000,
    "type" : "base:id:ioc",
    "type-name" : "base:name:iocoin"
  },
  {
    "address" : "n1Zkkz4LS8u5oK1pu7ffsJyqRYZKTyEP8K",
    "amount" : 32.65200000,
    "type" : "meta-token:id:cham",
    "type-name" : "meta-token:name:chameleon"
  },
  {
    "address" : "n1Zkkz4LS8u5oK1pu7ffsJyqRYZKTyEP8K",
    "amount" : 12.53300000,
    "type" : "meta-token:id:TEST-SEQ-0001",
    "type-name" : "meta-token:name:test-seq-fuzz0001"
  }
]
```

Approve and transfer calls to this contract the team got the (what the devs call meta-tokens listed as received, the "native" base currency type list as type:base ):

```
{
  "address" : "mhpSG34W9PaCpCb2kRNZWRyU4Gd9CejWF1",
  "amount" : 198.72400000,
  "type" : "meta-token:id:TEST-SEQ-0002",
  "type-name" : "meta-token:name:test-seq-fuzz0002"
},
{
  "address" : "mhgRumwEAqgtgArGCRxjpdRFW6mdgN7fs6",
  "amount" : 92.29000000,
  "type" : "meta-token:id:TEST-SEQ-0003",
  "type-name" : "meta-token:name:test-seq-fuzz0003"
}
]
```

The shot above also list a test collection of tokens the team created as a test battery and also for load and fuzz testing which they are cranking up now. This provides the client side basis for e.g. airdrops, token balance and ioc (native).

This would be typically hooked into a UI Dapp.

## DEV BACKWARD TESTING POINTS

- **Encrypted Messaging Between Wallet Users:** The I/O Coin team has successfully tested and demonstrated the ability for wallet users to send encrypted messages to each other. This feature is crucial for maintaining privacy and security within the network. For example, two users could exchange confidential information securely, knowing that their conversation is protected from potential eavesdroppers.
- **AES Encrypted "Channel":** The team has established an AES encrypted "channel" between two wallets. This channel can serve as a secure, auditable, publish-subscribe scheme between two entities. For instance, two temperature sensors located in different parts of the world could use this channel to securely exchange data.
- **Secure Communication Between Sensors:** Building on the encrypted "channel", the team demonstrated how two sensors can securely communicate with each other. This feature could be particularly useful in Internet of Things (IoT) applications, where secure communication between devices is paramount.
- **Encrypted Data Storage and Transfer:** The I/O Coin team has shown how encrypted data can be stored on the network and transferred to a new owner. This feature is crucial for ensuring the privacy and security of data on the network. For example, a user could store sensitive documents on the network and transfer ownership to another user, all while maintaining the confidentiality of the data.
- **Graphical IDE and Wallet Management:** The team is developing a graphical Integrated Development Environment (IDE) and wallet management functions, which will be connected to the network via an API. This will provide a user-friendly interface for developers to interact with the network, deploy smart contracts, and manage wallets. This is a significant improvement in terms of usability and accessibility, making it easier for developers to build on the I/O Coin network.
- **Gas Fee Scaling:** The team is working on a dynamic scaling mechanism for gas fees. This mechanism will adjust the gas fees based on the blockchain's difficulty. This feature is important for maintaining the network's economic balance and ensuring that gas fees remain fair and proportional to the computational resources used by a transaction.
- **Mempool Handling:** The team has made improvements to the mempool handling of smart contract execution transactions. The mempool is where transactions wait to be confirmed by the network. Improving the handling of transactions in the mempool can lead to faster transaction confirmation times and a more efficient network.
- **Consensus Changes:** The team has been working on consensus changes for the validation of the DVM contract and storage at the generated block level. These changes are crucial for maintaining the network's security and ensuring that all nodes agree on the state of the blockchain.
- **Consensus Handling and Validation:** The team is adding the final stages to the consensus handling and validation for the new DVM associated transactions. This includes code execution and storage validation. These changes are crucial for maintaining the network's security and ensuring that all nodes agree on the state of the blockchain.

The image below shows the system response to a smart contract creation event, in the shot note the address associated with the storage which is the smart contract address (in eth lingo the equivalent is the account)

```
9xrTxZmYVCG7g5waOpfiHRh0gKxmMP7y0ZqRdyrbhHKiGDJImJ4gofivwV63j2ZG94DAYYJC
3QNbj5aLt1qgYjETaRbVhsn7QDcZDbGfIh5Itg/iIxLSE0p/zbEkaSuJ/RPD+25vDtp+X9NfL
Dw7tGdy7p3b29BYUGSWwsTUH5QbeddzM4GtITVQxJLCE5zrG+skvU2FqgUvxoG6IHFw6SH/8R
cfVHKTDTeWYvXs2Rbfq99V4A05RLAT2mMI74KbD0s6MQiLDQqLYLxsp8Frnpb07YBK9s1F07
zB74LhwMKpfC1duB5XM212N6n2CkX/FI30rnRaFP4GGL2kJDqPUMmwwJvBU9oGbssLAqmUH7b
RRFADLMLSFik9/eKLDPSaDbSLgm9tG7L8UQcAyLrPFYTYA5yUorAaRtrvGtYJtDmr3YGskX10
AihXG7uLXpBcmtbQCnxhqjV01xmeZYETiGVVBRVo+YhcG0YTQorE7JsuxPh3/Gh9/TjtZRGVo
l+MP81ilhKzUe9tEB6AHfwa0YZpr6pYS5oRskRIwbsE7n13PRR4GwDc=
search storage 1
search storage : continue 2
storage alias not found, generating it
alf:> op_data_set name storage_n2jvDrGaitLWaDqP8guGB7YpcrJFN66S1K
op_data_set data contract creation 1651328083
op_data_set name storage_n2jvDrGaitLWaDqP8guGB7YpcrJFN66S1K
op_data_set data contract creation 1651328083
alf:> □
```

The storage is successfully generated and associated uniquely with the smart contract as a special dion sub type. Note the storage address shown in the alias and update type.

```
    "expires_in" : 209909
  },
  {
    "alias" : "storage_n2jvDrGaitLWaDqP8guGB7YpcrJFN66S1K",
    "encrypted" : "false",
    "value" : "contract creation 1651328083",
    "address" : "mowxBsa2tv1TQj6C5AZu4VLewYDLPLCSzR",
    "nHeight" : 120,
    "expires_in" : 209909
  }
]
alf:> □
```

similarly, we now create another contract the new storage is allocated for this automatically as shown

```
search storage 1
search storage : continue 2
storage alias not found, generating it
op_data_set name storage_mkM8P8wozWPgpxzFcJwKgBg7JphbT7b4Rg
op_data_set data contract creation 1651329431
op_data_set name storage_mkM8P8wozWPgpxzFcJwKgBg7JphbT7b4Rg
op_data_set data contract creation 1651329431
alf:> □
```

On creation we can look at the storage alias list and see the corresponding storage allocated for the second case, also I ran a contract execute on the first resulting in and update operation on it :

```
{
  "alias" : "storage_mkM8P8wozWPgpxzFcJwKgBg7JphbT7b4Rg",
  "encrypted" : "false",
  "value" : "contract creation 1651329431",
  "address" : "mjjekB6EbACjjc3s7v6UdTxxSKgiEoxafH",
  "nHeight" : 236,
  "expires_in" : 209997
},
{
  "alias" : "storage_n2jvDrGaitLWaDqP8guGB7YpcrJFN66S1K",
  "encrypted" : "false",
  "value" : "contract state update 1651329010",
  "address" : "mowxBsa2tv1TQj6C5AZu4VLewYDLPLCSzR",
  "nHeight" : 232,
  "expires_in" : 209993
}
]
alf:> □
```

Here's a shot of the first smart contract, the payload is the base64 encoded bytecode. the name is for demo purposes on the right the field shows the contract address which uniquely links to state storage

```
[
  {
    "alias" : "smart_contract",
    "encrypted" : "false",
    "value" : "H4sIAAAAAAAAAA/71ZaZrjKAz9P6cRQmzHAYzvf4TRAo6d0JXqquLJfZ
2yBTytPER1hAwRCAJ6yuBCdAA0QooAPLJvoQUB/I8IGMh2ZgPEQa4zqt9Q0dyxuZIZ/SQRNr
6qLXEatI8pd1DpY2ySWueUhp76xZpT2adNsq1d69SXeWhvawS2Qpim0ZfASfHbiNiZX7CnG
HqL0dBj1STx1ao+fcwr1x0iG4sAX2L3h11v8euDXbeJjKPLE3uu6Jq04w1Vn276jc8Cdzq29+
0QTXfHHd/Cdu8N3sPAT@cSnmi74zn3GB/nRKMg3p9lZTWFAzil0LEB0tSBSnIi57SddPJ5d9u
DFwoBlVmjMmXmW1Sh6nFaDzjFpgcejCE8a0z78sGHP9XoyHzxu+4BV034lXZeL7XrWlGd1eI
m087tYFolegTHKlKNkpdLQcGikgd2xoU7whV32oe6f1iH7lke2b0SY9aWfSDRx78Zd9rt5irB
0LDqlyvpPv0kcE7ZAlrRAasc4dRnWk4TFkuTMXF2a0hCYesH37ib60TMpuzylE1T6rWwTHLY
```

The first contract is executed and a state update occurs, again in the shot we see the auto update op

```
storage alias exists, updating the associated contract state
update_data_node_tx n2jvDrGaitLWaDqP8guGB7YpcrJFN66S1K
createnewblock 2 - FOUND EXEC TX VERSION
address of target contract n2jvDrGaitLWaDqP8guGB7YpcrJFN66S1K
search storage : found alias storage_n2jvDrGaitLWaDqP8guGB7YpcrJFN66S1K
search storage 1
search storage 2
search storage 3
search storage : test alias storage_n2jvDrGaitLWaDqP8guGB7YpcrJFN66S1K
"/home/argon/data1/testnet"search storage : FOUND STORAGE ALIAS storage_n
2jvDrGaitLWaDqP8guGB7YpcrJFN66S1K
storage alias exists, updating the associated contract state
update_data_node_tx n2jvDrGaitLWaDqP8guGB7YpcrJFN66S1K
alf:>
alf:> □
```



The listing below highlights the contract address to storage association which serves as key. The storage evolves for each contract on the p2p network generated by each node that gets to stake the executable transactions. The state evolves providing an immutable audit

```
"address" : "n2jvDrGaitLWaDqP8guGB7YpcrJFN66S1K",
  "nHeight" : 225,
  "expires_in" : 209998
},
{
  "alias" : "storage_n2jvDrGaitLWaDqP8guGB7YpcrJFN66S1K",
  "encrypted" : "false",
  "value" : "contract state update 1651328687",
  "address" : "mowxBsa2tv1TQj6C5AZu4VLewYDLPLCSzR",
  "nHeight" : 225,
  "expires_in" : 209998
}
]
alf:> █
```

Next the team go's on, creates and execute several contracts result in the following generated storage elements in various states such as creation (contract create) or state updates for contract execution against given input data

```
},
{
  "alias" : "storage_mwDiYiZoAczf5Uhs4gJHURsTZypGpMQbUP",
  "encrypted" : "false",
  "value" : "contract creation 1651330170",
  "address" : "mtrvZeYTApKawEbJWrf3nY6xY8KbxsVd82",
  "nHeight" : 251,
  "expires_in" : 209994
},
{
  "alias" : "storage_mxMr38kCd4nN7wqkAPRGhsEMYf2p8GWU1H",
  "encrypted" : "false",
  "value" : "contract state update 1651330363",
  "address" : "mtzbaRvkGdgh7QRbNucL2jDXi6Qtdt6wxV",
  "nHeight" : 254,
  "expires_in" : 209997
},
{
  "alias" : "storage_n2jvDrGaitLWaDqP8guGB7YpcrJFN66S1K",
  "encrypted" : "false",
  "value" : "contract state update 1651329010",
  "address" : "mowxBsa2tv1TQj6C5AZu4VLewYDLPLCSzR",
  "nHeight" : 232,
```



- **Smart Contract Demo:** The team has demonstrated a use case of freight monitoring and conditions tracking using smart contracts on the DVM. This shows the practical application of the technology and its potential to automate complex processes in various industries.
- **Data Processing and Commitment:** The team has shown how data is processed and committed in the DVM. The system marks data as 'warm' prior to commit and 'cold' after the commit. This could be a mechanism to ensure data integrity and consistency in the system.
- **General Form of Contracts and Storage Layer:** The team clarified that the contracts and storage layer in the new release is more general in form than the old application-specific Dion system. This means that the new system is less restricted and can support a wider range of applications<sup>13</sup>.  
**Smart Contract Data Storage Testing:** The team has been testing the smart contract data storage mechanism and it's looking good. This is an important aspect of the system as it ensures that the data associated with smart contracts is stored securely and reliably.
- **Smart Contract Creation Event:** The team has demonstrated the system's response to a smart contract creation event. The system associates an address with the storage, which is the smart contract address. This is similar to the account concept in Ethereum.

## LEGAL & COMPLIANCE

On May 10, 2018 a legal letter was prepared by a team of legal experts in securities law from Legal & Compliance, LLC, outlining the details of the project's launch and operations. This letter was not submitted to any regulatory body but was made available to the community to provide to Bittrex Exchange or other interested parties. This proactive approach demonstrates the community project's commitment to transparency and operating within the regulatory framework.

However, it's important to note that the final determination of whether a cryptocurrency is considered a security is subject to various factors and ultimately decided by regulatory bodies such as the SEC. The Howey Test is often used as a standard to determine whether a transaction qualifies as an "investment contract" and thus a security. Based on the information provided, I/O Coin does not appear to meet the criteria of the Howey Test, as there was no investment of money in a common enterprise with an expectation of profits predominantly from the efforts of others.

Please note that these points are based on the information provided and the current state of the I/O Coin project. The development team, as part of the I/O Coin community, is continually working on enhancing the platform and providing tools and features that enable the creation of innovative applications. The team's work is funded by community donations, which underscores the decentralized and community-driven nature of the project.

**Disclaimer:** This information is provided for general understanding purposes only and does not constitute legal advice. For any legal concerns or questions, it's recommended to consult with a legal professional. The final determination of whether a cryptocurrency is considered a security is subject to various factors and is ultimately decided by regulatory bodies such as the SEC.