

# JuiceboxDAO’s Protocol Evolution: Navigating Updates and Enhancements

This document outlines the timeline of JuiceboxDAO’s efforts to enhance the Juicebox protocol on Ethereum Mainnet while emphasizing:

- the importance of not allowing JuiceboxDAO or anyone to have backdoor access to other projects’ treasuries, even in high demand or emergency situations.
- the understanding that organizations using earlier versions may want to upgrade their financial and membership operations to later versions that better suit their needs, without being required to first discontinue ongoing revenue, payout, token issuance, and redemption dependencies in earlier versions.

## V1

The first Juicebox protocol was deployed on July 15, 2021, followed by the issuance of the original JBX ERC-20 token, which continues to represent membership for JuiceboxDAO contributors.

Popular projects such as TileDAO, SharkDAO, ConstitutionDAO, MoonDAO, SpiceDAO, and AssangeDAO emerged alongside JuiceboxDAO, using the protocol as their financial and membership backbone. These projects were orchestrated with significant support from the early developer community, who utilized protocol tools like reserved rate, redemption rate, and discount rate creatively to address unanticipated treasury design demands.

The V1 protocol comprises several contracts, but only provides an option for projects to migrate the most surface-level contract functionality to new versions. This feature was used to publish a V1.1 contract on January 10, 2022, allowing projects to close themselves to new contributions. Prior to this, projects had to resort to setting a 100% reserved rate as an inefficient solution to stop issuing new tokens. Any V1 project could migrate to V1.1, and all new projects would use V1.1 by default.

Around the same time, a V1Rescue contract was deployed specifically for one project to access accidentally locked funds due to a flawed treasury design, caused by a misunderstanding of an uncommon protocol specification—the ability to create “one time” funding cycles—that was not carried over to subsequent protocol versions.

Although V1 offers some migration options, it does not provide strategies for evolving funding cycle data structure operations, token operations, or other core component operations. Over the first six months of the protocol’s existence, JuiceboxDAO learned how to enhance core protocol components, making them more robust, useful, and extensible. To build a more resilient foundation for the future, a V2 of the protocol needed to be developed.

## V2

In May 2022, the V2 protocol was deployed with all new contracts, including a new JBProjects ERC-721 contract to track project IDs and owners. All V1 projects had to relaunch on V2 with a new ID, token, and funding cycles, including JuiceboxDAO, which was the first project on both V1 and V2. JuiceboxDAO never issued an ERC-20 token onto its V2 treasury.

Despite extensive testing, after one week of light use, 0xSTVG discovered an edge-case bug in the V2 Funding Cycle store contract, which is a non-upgradable contract by design and heavily relied upon by all other protocol components. Given the low usage of the protocol after its first scarcely-promoted week on Mainnet, instead of launching a V3 and continuing to support V2, the DAO decided to relaunch V2 on May 29 and refund any projects that had started using the flawed contracts. This strategy was relatively quick, inexpensive, and effective given the limited scope of collateral. However, it would not have worked on a larger scale.

In July 2023, a Code4Rena audit contest uncovered another edge-case bug in the Funding Cycle Store. This time, a reset would have been expensive, and most existing projects were likely to be unconcerned with the now-known low-severity issue. JuiceboxDAO took this opportunity to stress test a more dependable versioning strategy that could also operate at a larger scale, while maintaining support for both V1 and V2.

## V3

On September 20, 2023, V3 contracts were deployed, retaining only the JBProjects ERC-721 contract from the V2 deployments. Consequently, JuiceboxDAO operated synchronized treasuries, funding cycles, and project token issuance on V1, V2, and V3, but with only two project IDs—the original from V1 and another from after V1.

Over the following six months, JuiceboxDAO began transferring funds from its V1 treasury to its V3 treasury and shifting payout obligations to V3. Operating from multiple treasuries certainly multiplied the workload and increased fragility, but ended up being manageable due to great operations tooling built by DAO contributors.

The final remaining step in phasing out its V1 and V2 treasuries involved deploying a new JBX ERC-20 token for its V3 treasury and allowing V1 JBX holders and project token holders on both previous versions to exchange them for the latest version. This new JBX token would be backed by the funds in its V3 treasury, where resources were being concentrated.

The new JBX token is a standard ERC-20 token, with the exception that its total supply accounts for tokens eligible for exchange but not yet exchanged. This feature enables redemptions to the V3 treasury to recognize JBX membership in all previous forms.

Despite thorough testing, setting the new JBX onto the V3 JuiceboxDAO treasury on January 25, 2023 resulted in an unexpected bug in the project's reserved token issuance. The fix would resemble the migration from V1 to V1.1. JuiceboxDAO would migrate its operations from V3 Controller and Payment Terminal surface-level contracts to V3.1 (via an intermediate 3.0.1 patch used to address the emergency bug), allow other V3 projects to do the same to avoid the token migration bug, and create future projects using V3.1. Funding cycle, token, and treasury operations would remain unchanged for projects moving from V3 to V3.1, and exchanges for the new JBX could proceed as planned. Read more about this bug in the postmortem, and learn how to exchange for the new JBX.

As of March 30, all possible versioning sequences for project updates have been practiced with full client support from juicebox.money, and all known risks have been mitigated. I look forward for JuiceboxDAO to one day shut off its V1 and V2 treasuries for good so that it no longer needs to ensure synchronized token issuance rates.

### **Reflection**

I initially helped build the Juicebox protocol to be able to create projects using it as my sustainability engine. I now feel more confident than ever that the protocol and DAO can handle whatever comes next, and that I am building on solidifying ground supported by a brilliant community of developers who are passionate about doing things the right way, even if it can be circuitous at times.

A huge thanks to JuiceboxDAO for backing these developers and patiently supporting this process. To increase the likelihood of risk-free protocol interactions in the future, I encourage the DAO to be conservative with suggested changes to core components, while continuing to finance protocol audits, documentation, and improvements to the developer experience for both clients and protocol extensions for a bit longer.

### **Relevant links**

Protocol architecture: <https://docs.juicebox.money/dev/learn/architecture/>

Protocol risks: <https://docs.juicebox.money/dev/learn/risks/>

JuiceboxDAO V3 Treasury: <https://juicebox.money/@juicebox>

JuiceboxDAO V2 Treasury: <https://juicebox.money/@juicebox?cv=2>

JuiceboxDAO V1 Treasury: <https://juicebox.money/p/juicebox>

Old JBX: 0x3abF2A4f8452cCC2CF7b4C1e4663147600646f66

New JBX: 0x4554CC10898f92D45378b98D6D6c2dD54c687Fb2

JBX upgrade: <https://docs.juicebox.money/user/guides/3-1-upgrade/>