1. Applicant information

Name

: Reserve Protocol (submitted by River, a member of ABC Labs who contribute to Reserve)

Address:

ABC Labs, LLC

251 Little Falls Drive,

Wilmington, DE,

County of New Castle,

19808

United States

Website:

reserve.org / abclabs.co

2. Primary contact

Name:

River

Title

: River

Country:

Canada

Email:

river@abclabs.co

Telegram:

@river0x

Forum:

@river0x

Discord:

@river0x

3. Key Information

Expected Position Yield:

10% (see supplementary for details)

Expected Maturity:

RTokens do not have maturity dates and collateral is redeemable 24/7 onchain in a permissionless manner.

Underlying asset:

KNOX Dollar is a fortified, RWA-backed stablecoin locking up to 10% APY for holders. It is an RToken deployed with Reserve protocol (see section 4).

Figure 1: 1 KNOX Dollar's collateral basket

As illustrated in figure 1, KNOX's collateral basket currently contains 67% Aave deposited USDC and 33% Compound deposited USDC.

Minimum/Maximum transaction size:

Initially, Minimum = 0, Maximum = ~$12,000,000 (correct at time of publishing).

The primary constraint is lending market liquidity. A maximum KNOX allocation of $12M is derived from safe withdrawal limits (at time of publishing). $8M Aave deposited USDC ($32M USDC liquidity) and $4M in Compound $4M USDC liquidity) enables a sufficient buffer to facilitate KNOX redemption at will.

Due to "kink" interest rates on both markets, there is a reliable incentive mechanism keeping the protocols sufficiently liquid. If Arbitrum DAO couldn't immediately exit their entire position, the increased market earn APY may be taken advantage of by arbitrageurs - likely facilitating Arbitrum DAO's complete RToken position exit.

As markets mature and (potentially thanks to LTIPP grants for both protocols), the maximum may increase accordingly.

Current AUM for product:

KNOX was deployed on the Reserve protocol 04/29/2024 and has $250K AUM, now kicking off it's Go-to-Market strategy - part of which will be assisted with Reserve's LTIPP grant

Current AUM for issuer: There is no formal "issuer" on the Reserve protocol as all operations are handled using decentralized onchain smart contracts. These smart contracts hold ~$90M in TVL. RTokens are created when the underlying collateral is deposited and destroyed when the underlying collateral is withdrawn.

Volume of transactions LTM:

KNOX has limited transaction volume LTM since it only recently launched on 04/29/2024. See other mainnet RToken LTM volume as a barometer:

- ETH Plus (ETH+), a diversified staked ETH index: $123,869,582

- High Yield USD (hyUSD), a flatcoin deployed to beat inflation: $23,929,198

- Electronic Dollar (eUSD), a safety-first stablecoin: $225,545,618

Source of first-loss capital:

$RSR staked onto the RToken

Reserve Rights (RSR) is the governance token for Reserve protocol and can be staked on RTokens, where it has two roles:

- Overcollateralization: Staked RSR receives a portion of the RToken collateral's revenue in exchange for being the first capital-at-risk in the case of collateral default

- Governance: Staked RSR proposes and votes on changes to the RToken's configuration

Figure 2: RToken recapitalization

Should a collateral depeg occur, the RToken autonomously exchanges all collateral for a predefined emergency collateral basket (in the case of KNOX, DAi, USDC and USDT). The RSR staked on the RToken is then seized and auctioned off to recapitalize the RToken. Should there be a collateral shortfall after this recapitalization process, emergency collateral is distributed to holders equally. See figure 2 for an illustration of this process.

This system was tested during the USDC depeg of March 2023 with Electronic Dollar $eUSD holders being made whole long before USDC returned to peg. RTokens with similar collateral to KNOX enjoy anywhere from 11% overcollateralization

[(High Yield USD)](#) to 84% overcollateralization [(Electronic dollar)](#). It is important to note that this rate is set by the market and past performance is not indicative of future results.

All RTokens enjoy a measure of overcollateralization protection, and KNOX is no exception.

4. Basics and background

1. How will this investment improve Arbitrum's RWA ecosystem?

KNOX is an RToken deployed with Reserve protocol. To help answer this question, let's familiarize ourselves with Reserve.

Reserve is a free, permissionless platform on Ethereum mainnet (as well as Arbitrum and Base) to build, deploy and govern asset-backed currencies referred to as "RTokens." RTokens are always 1:1 asset-backed, allowing for permissionless minting and redeeming onchain. Figure 3 illustrates an RToken's potential.

Figure 3: What are RTokens?

RTokens enjoy numerous advantages over holding naked tokenized assets:

- Responsible governance by stakers with capital at risk

- Overcollateralization shielding in case of depeg events

- Diversified backing

- Permissionless, free onchain deployment, minting and redeeming

For example, Electronic Dollar (eUSD) was the first RToken and is a safety-first stablecoin (backed by Aave and Compound deposits) that brings together diversified, highly liquid backing with [anti-bank run overcollateralization that currently exceeds more than the value of the TVL of the RToken itself](#). eUSD has been chosen as the stablecoin for two retail user applications: 1) [Ugly Cash 1](#) - an app that gives bank-like services to customers throughout LatAm, enabling them to receive USD remittance from the US at 0% fee and spend their eUSD with a debit card. 2) [Sentz 1](#) - an app built on the MobileCoin blockchain that enables users to send and receive payments globally from anyone you can text for (basically) free.

So, how will this improve Arbitrum's RWA ecoststem? By deepening RWA liquidity on the network

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KNOX becomes a demonstration vehicle for additional RWA use cases within the Arbitrum ecosystem. Its promise lies both in its composition today but also its future potential integrations.

KNOX is backed entirely by USDC, an onchain representation of a dollar in a bank account - an RWA. By minting KNOX, the Arbitrum Foundation will be deepening its RWA ecosystem as KNOX collateral is Aave and Compound USDC deposits - thereby deeping market liquidity and decreasing capital costs. Lower capital costs on Arbitrum may bring users from other networks to take advantage of network-specific protocols to maximize profitability and [in such a competitive market landscape every bit helps](#).

A STEP allocation could also encourage users familiar with Reserve to bridge to Arbitrum to take advantage of KNOX APY and may bring second order benefits for Arbitrum DeFi ecosystem such as deeper Compound / Aave liquidity and new users for Arbitrum protocols. This RToken mint could improve both Arbitrum's RWA ecosystem and Arbitrum's DeFi ecosystem!

1. Identify key management personnel and individual experience. Also include third parties utilized for managing assets and their qualifications.

The Reserve protocol and RTokens such as KNOX are governed onchain through smart contracts, transparently, by capital-risking, incentive-aligned RSR stakers. There are no middle-men involved in the operations of the Reserve protocol or KNOX.

Nonetheless, ABC Labs team members have been contributing to the Reserve protocol for the past 6 years.

Thomas Mattimore, CEO of ABC Labs, previously led a team of 95 project managers, engineers, designers and data scientists automating the mortgage underwriting process as the company went through hypergrowth. His fintech experience informed his 6 year anon participation in DeFi and transition full-time into the space. He has overseen liquidity strategy at Reserve and has overseen protocol growth from $23M to ~$90M TVL in the past 7 months.

Griffin Peer, liquidity lead at ABC Labs, has been working on crypto strategy since 2020 and was previously at [Dinara](#). He executes Reserve's DeFi multichain liquidity strategy on a day to day basis and can be directly attributed to the previously mentioned liquidity growth.

Taylor Brent, lead protocol engineer, started out at Google, working on distributed systems programming to handle data and run statistical analyses on natural-language processing data. He leads protocol design for Reserve and has been

contributing to the ecosystem for as long as anyone.

Meir Galimidi, ABC Labs' lead researcher, previously worked bringing DTCC's Trade Information Warehouse into Solidity with Axoni. He makes granular research reports on how to best boost liquidity across ecosystems, which has closely informed Griffin's RToken growth success.

River, the author of this proposal, cut his teeth on yield farms in downtime while running a dumpling restaurant. After working for DeFiSafety as a technical risk analyst, he took up a research position at Euler Labs. He was laid off after exploit-related downsizing, but found his feet at Reserve where he focuses on DAOs.

1. Describe any previous work by the entity or its officers/key contributors similar to that requested. References are encouraged.

Reserve smart contract development has been overseen by Patrick McKelvy, ABC Labs' Director of Engineering. His previous role was cofounding a leading CDP project under an alternate account that gave him a wealth of experience. If the Arbitrum Foundation would like references from his previous project, ABC Labs would be happy to connect the two parties. For the sake of confidentiality, this would need to be in a separate channel.

Other ABC Labs contributors have a wealth of traditional finance experience with multiple team members specializing in areas such as convertible bonds, sales and trading with institutional grade assets, M&A and equities.

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Figure 4: Reserve's recent growth

ABC Labs contributors have been monitoring the protocol's growth and paying careful attention to all protocol functions for over a year now. Security underlies every decision made by the team (details in section 8) and to this date the protocol has not suffered a security incident despite seeing protocol TVL ~5X in the past 6 months.

While we invite the Arbitrum Foundation to view market feedback in the form of TVL as a sufficient reference, Reserve contributors would be pleased to connect the Arbitrum Foundation to any of our ecosystem partners. The examples (in Figure 5) below of teams we work with include teams on Arbitrum such as Beefy.finance, who we enjoy a strong relationship with. [

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Figure 5: excerpts from ecosystem partners - L = from a public group coordinating LTIPP co-incentivization R = a private group with DEX partners

1. Has your entity or its officers/key contributors been subject to an enforcement action, criminal action, or defaulted on legal or financial obligations? Please describe the circumstances if so.

ABC Labs contributors have not been subject to an enforcement action, criminal action, or defaulted on legal or financial obligations.

1. Describe any conflicts of interest for your entity and key personnel.

ABC Labs personnel are currently implementing a successful LTIPP application. That is the only other activity between Arbitrum and Reserve.

1. Insurance coverages, guarantees, and backstops Name of insurer or guarantor Per incident coverage Aggregate coverage

RTokens are decentralized assets, with onchain overcollateralization (explained above) to guard against black swan or bank run events (potentially leading to collateral defaults).

1. Historical tracking error in your proposed product, or similar to that being proposed Product 2024 YTD 2023 2022 2021

Given that RTokens are fully onchain, there have been no tracking errors.

1. Brief reason for above tracking error

N/A

1. Please describe any experience your firm has in working with decentralized organizational structures

[ABC Labs is the evolution of the Reserve project](#), which for 6 years worked to develop the protocol. Ever since the deployment of the protocol 18 months ago, ABC Labs contributors have been working across the DeFi ecosystem to grow RToken TVL.

Indeed, ABC Labs does not deploy RTokens itself and prefers to cultivate an ecosystem of protocols, apps and entrepreneurs as contributors. Some highlights include:

- The [first RToken being deployed by MobileCoin,](#) now known as [Sentz](#).

- The Based ETH (bsdETH) staking index RToken deployed by [Diva Staking,](#) thereby boosting staking client diversification. This [index is currently more liquid than wstETH](#) on its network of deployment! Governors will be approached to use it as a vehicle to help grow divaETH once live on the network

- [USDC+,](#) an RToken launched by StakeDAO, primarily designed to help boost native yield throughout the StakeDAO ecosystem.

- Reserve's participation in the Curve ecosystem, with a [$20M investment into governance](#)

- Over 20 other integration surfaces including Yearn, Beefy Finance, Ondo Finance, Frax and RocketPool.

Reserve is already working with [the Arbitrum Foundation LTIPP.](#)

1. What is your entity's current assets under management, assets held in trust, total value locked, or equivalent metric for your legal structuring

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Chart

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Figure 6: Reserve's TVL

Reserve has roughly $90M in TVL (figure 6). This is mostly held in yield bearing collateral, with large amounts in USDC, USDT, and stETH. See figure 7 for a breakdown of some of the largest collateral in Reserve (source: [DeFiLlama](#)).

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Figure 7: Reserve TVL by collateral

1. How many of these assets held are present on Arbitrum One, if any?

Some $250K of ABC Labs owned liquidity is currently on Arbitrum One with a large amount more arriving imminently to assist LTIPP bootstrapping efforts.

5. Plan design

1. Please describe your proposed product, including a description of the underlying assets and, if more than one asset, the proposed allocation among assets and general investment guidelines. Where appropriate, include targeted maturity mix and credit quality. Attach supplementary documents as appropriate.

KNOX is an RToken deployed with the Reserve protocol and is a fortified, RWA-backed stablecoin locking up to 10% APY for holders.

The Arbitrum Foundation would mint KNOX, which is backed 67% by Aave USDC and 33% Compound USDC. Minting KNOX will deposit the amounts into these underlying markets programmatically without any ABC Labs oversight.

USDC, which is the underlying asset of the entire RToken, has a [B+ rating on Bluechip.org,](#) the stablecoin rating agency. It has been rated ["very strong" by S&P in a variety of criteria](#).

Aave is the largest lending protocol across 12 chains. Users may participate as suppliers or borrowers. Initially 67% of KNOX collateral will come from [Aave's USDC market](), which [has a 93% DeFiSafety process quality rating.]()

Compound is a protocol that enables supplying of crypto assets as collateral in order to borrow the base asset. 33% of KNOX collateral will originate from Compound's USDC market - [which DeFiSafety scored 80%]().

1. Do investors have any shareholder, investor, creditor or similar rights?

No shareholders, investors, creditors or any other parties have preferential rights over KNOX. RTokens are fully noncustodial and only the holder of the RToken can redeem it to access underlying collateral.

Those staking $RSR on the KNOX RToken receive governance votes and yield from the collateral revenue in exchange for providing first loss capital.

1. Describe the legal and contractual structuring for your product including regulatory bodies overseeing your business and the product and identifying all legal jurisdictions interacting with your product. Attach supplementary documents as appropriate.

KNOX is an RToken deployed using Reserve that is fully decentralized and available through permissionless smart contracts onchain only. ABC Labs' primary role in the Reserve ecosystem is the creation and maintenance of the Reserve protocol and it contributes from within the USA. ABC Labs but is one of many ecosystem contributors to the project and does not deploy RTokens itself. RTokens like KNOX do not have an issuer as the minting process is entirely manifested by users in smart contracts when they deposit the underlying collateral.

1. Would Arbitrum's assets be bankruptcy remote from your own entity and its officers/key contributors? If so, please explain the legal and contractual basis. On a confidential, non-reliance basis, provide any third party legal opinions to support the conclusions.

Arbitrum's KNOX assets inherit the properties of Compound, Aave and USDC. Neither the KNOX creator nor ABC Labs have any control over the KNOX asset-backing which are transparently locked in smart contracts onchain and controlled by governance.

1. How are Arbitrum's assets protected vis-a-vis the bankruptcy of the brokerage or applicable financial institution (e.g., bank deposit insurance, securities insurance, etc.)?

The Arbitrum Foundation's assets are held in non-custodial smart contracts. Should KNOX collateral depeg, $RSR overcollateralization will go some distance to recapitalize Arbitrum's KNOX. This mechanism has already been market stress tested during the [USDC depeg of March 2023]()

1. Does the Issuer issue more than one asset? If so, what is the priority relationship between different asset classes?

There is no formal issuer on the Reserve protocol given its fully onchain decentralized nature. Although ABC Labs does not deploy RTokens, the protocol has been used by others to deploy 1000+ RTokens assets accounting for ~$90M in TVL to date. Each RToken has independent governance, independent asset backing and independent overcollateralization. There is no priority between different RTokens or collateral.

The KNOX RToken does have emergency collateral with different "diversity factors", which represents the priority placed on each emergency collateral. KNOX's emergency collateral is [DAi, USDC and USDT]() with a diversity factor of 2, which means 2 of the backup tokens are used to replace any single defaulting collateral.

1. Provide a detailed cash flow diagram that shows the flow of funds from ARB/Fiat conversion, investment in underlying asset, payment of expenses, sale of underlying asset, and repayment (Fiat/ARB conversion), including the counterparties and legal jurisdictions involved.

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Figure 8: Mint / redeem for RTokens

As demonstrated in figure 8, RTokens like KNOX are minted by depositing collateral baskets to RToken contracts (which can be generated programmatically using "zaps"). In turn, the RToken contract returns a proportional number of RTokens to the collateral deposited. There are no payments, expenses, sales or repayment involved. It is entirely handled onchain with no human counterparties.

In order to redeem, KNOX are sent to the RToken contract, which returns the KNOX collateral basket assets (which can in turn be returned into any token using "zaps") to the sender. Once more this is entirely handled onchain with no human counterparties.

Figure 9: the Arbitrum Foundation's specific minting process

In this specific KNOX mint, the Arbitrum Foundation would take the following steps to enter the position:

1. The desired amount of ARB would be exchanged for USDC / ETH for best execution

2. Visit app.reserve.org, connect to the Arbitrum network, and select the KNOX RToken

3. Deposit USDC or ETH to Mint KNOX using RToken Zap Mint

4. The ETH or USDC will be programmatically exchanged into Compound USDC and Aave USDC in the preconfigured amount and the Arbitrum Foundation would receive a proportional amount of KNOX

When the time to redeem the position comes, the opposite operation occurs:

1. The Arbitrum Foundation would visit app.reserve.org and "redeem" their KNOX position using the "Zap Redeem" function

2. It would choose which asset to receive (for example ETH) and would have the initial mint + KNOX earnings returned to it in a proportional amount.

This operation is illustrated in figure 9 above.

1. Describe anticipated tax consequences (if any) in transacting on the underlying and/or receipt of yield.

We do not give tax advice and it is dependent on the country where the holder lives; however our understanding is that when KNOX is redeemed for a greater monetary value than the amount minted, there is a tax differential. RToken holders are responsible for their own tax obligations and should consult with a tax advisor with up to date information about their relevant tax jurisdiction.

1. Describe the process and expected timeline for liquidation of assets, if given instructions to do so by Arbitrum governance.

KNOX can be permissionlessly redeemed by its holders onchain, 24/7.

Given the size of this withdrawal, RToken throttles would apply, limiting mints to 7.5% (or $2,500,000, whichever is greater) of KNOX's TVL per hour. This may result in Arbitrum's redemption requiring a few hours to fully complete, but ABC Labs contributors would be available to guide the process.

1. What amount of first-loss equity will Sponsor provide to ensure over-collateralization, how is the first-loss equity denominated, and what is the source of capital?

Overcollateralization is provided by RSR stakers and driven by a combination of revenue distributed to stakers and risk profile of the RToken's underlying collateral. Overcollateralization rates are set by the market. However, using other RTokens as yardsticks, somewhere between 11% overcollateralization (High Yield USD) to 83% overcollateralization ($eUSD) may be possible. With ~8% of $RSR's circulating supply being staked, there is good evidence that this market mechanism functions as intended.

1. Describe the liquidity and stability of the proposed underlying assets, including anticipated settlement times from the sale of the underlying to the repayment of ARB

USDC is one of the most liquid assets onchain, with ~$10M Arbitrum liquidity and $100M mainnet liquidity (from defillama.com/liquidity). This is before considering the many hundreds of millions more on CEXs (the asset has a $33B market capitalization). Finally, if the The Arbitrum Foundation wishes to, it may access underlying USD through a redemption with Circle itself. Settlement should be effectively instant due to this liquidity.

1. If relying on the blockchain for any of the transactional flows, please describe any blockchain derived risks and mitigations.

Reserve utilizes the Ethereum blockchain for all transaction flows. 4 main areas of risk have been identified:

1. Smart contract

: risks associated with smart contracts include vulnerabilities in code leading to security breaches, bugs, and unintended consequences

1. Counterparty

; largely stemming from poor operational practises where the other party fails to keep funds separate

1. Depeg

: when an RToken collateral deviates from its target value

1. Governance:

risks driven by powers held by RToken decision makers

Smart contract risk is mitigated by:

- [Open-source code](#) which fosters transparency and scrutiny

- [Thorough testing](#) with 93% code coverage minimizing unintended behavior

- Automation tools such [Echidna](#) and [Slither](#) reinforcing the above

- [Eight independent audits](#) including Code4rena and Halborn

- An industry leading [$5 million ImmuneFi](#)security bug bounty

Counterparty risk is mitigated by:

- Autonomous smart contracts enabling [verification of protocol activity](#) and eliminating the need for error-prone or censoring middlemen

- Transparent onchain [proof of reserves helping users verify RToken backing](#)

Depeg risk is mitigated by:

- Having onchain [1:1 diverse asset backing](#)

- RSR staking overcollateralization (as discussed in section 3)

- Permissionless minting and redemption, creating profitable arbitrage opportunities to maintain RToken pegs (which are [taken up by MEV searchers](#))

- Anti-bank run mechanisms, such as [predictable reserves with proportional distribution](#)

Governance risk is mitigated by:

- A governance structure that aligns decision makers with holders with first loss capital at stake

- A multi-stage governance process which enhances review and deters malicious proposals

- Specific, accountable executive governance roles like Pauser, Short Freezer, Long Freezer and Guardian, following the principle of "least privilege" (fully explained in section 7)

- A sufficiently decentralized upgradability system which preserves flexibility while ensuring responsible changes

.Learn more about [Comprehensive Risk Mitigation at Reserve protocol](#)

1. Does the product rely on any derivative product (swaps,OTC agreements)?

The KNOX RToken does not rely on derivative products.

1. List all the third party counterparties linked to your assets including and not restricted to prime broker if any, custodian, reporting agent, banks for derivatives or loans and provide primary contact details for the third party counterparties

This RToken is non-custodial. Nevertheless, it is deposited into Aave and Compound. It inherits the decentralization of Aave and Compound. Contributors from each protocol can be reached in their respective Discords.

1. Can you explain how risk management (inv and operational) is being done? Can you provide a copy of your risk management policy?

ABC Labs has developed Reserve protocol smart contracts with risk management front and centre. Risk management is an ongoing process and monitoring tools such as [Hypernative alert the team](#) (located across all timezones) perpetually to important protocol activity. Aside from the 6 year development process, 8 (and counting) audits, $5M bug bounty previous stated, please see this addendum to ABC Labs risk management policy:

- The protocol and collateral plugins are all heavily unit tested, with code coverage of 98% or above. They also have extensive integration tests, and exhaustive tests that test permutations of the most extreme configurations and states allowed by the protocol.

- Additionally, there are 3 separate echidna suites that fuzz the protocol. Every test must pass for a new release to make it to production

- No code is allowed to be used in production until it has been audited at least once with the majority of code in production being audited 3 or more times.

Asset risk management for RToken collateral is conducted by RToken governors. Given that this is informal and decentralized, there is no codified risk management policy to attach. However, here is a brief insight into some of the considerations taken when discussing basket changes:

- Collateral asset: what is the underlying asset for the yield-bearing collateral? Does it have a bluechip.org rating? What are its trust assumptions? How can it be redeemed? How deep is onchain liquidity? What are borrow rates on multiplier markets?

- Underlying protocols: how long have they held TVL? How many audits does the code have? Is there a bug bounty? How decentralized is parameter decision making? Is there a monolithic approach to risk management or is it more granular? Does it have an ITB Risk Radar rating? How have DeFiSafety scored it? How liquid is the collateral's market? What is the RToken asset being supplied being borrowed collateralized with by borrowers?

Learn more about Comprehensive Risk Mitigation at Reserve protocol.

6. Performance reporting

1. What are your proposed performance benchmarks? If this is substantially different from the underlying assets, please explain why.

The proposed performance benchmark is DAI Savings Rate. If KNOX provides sustained, higher comparable yield to its offering (currently 10%), then this treasury allocation is outperforming the benchmark DeFi rate and can be viewed as a success. KNOX is both diversified and enjoys an amount of overcollateralization, which presents advantages over a deposit into the DAI Savings Rate.

Indeed, while KNOX's current holder APY just meets that target, the revenue share structure (explained in supplementary) may more than compensate for that over the course of a year. It is also true that the market is in a minor downtrend at the moment, reducing Aave and Compound rates.

Given that KNOX deposits collateral into lending markets, a utilization benchmark should also be pursued. One of the key value propositions of this treasury allocation by the Arbitrum Foundation is the second order benefits additional liquidity begets so these should be monitored.

1. Describe the content, format, preparation process, and cadence of performance reports. This should include proof of reserves, if appropriate. Please include a sample report.

Performance reports would be placed in a thread on the Arbitrum forum and updated biweekly. They would include the following metrics:

- KNOX APY for period

- Arbitrum Foundation Earnings for period (including both KNOX appreciation and 2.5% fee)

- KNOX collateral composition

- KNOX TVL

- KNOX overcollateralization ratios

- Aave and Compound USDC outstanding borrows

A sample comment can be viewed here.

1. Who provides the performance reports in respect of the underlying assets?

These performance reports would be produced by ABC Labs contributors. Nevertheless, since the data is available onchain, anyone could verify / replicate the results as required. The preparation process would be straightforward.

1. Describe any formal audit process and timing of such audits

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There is no formal audit process since all data is available onchain publicly. However, if formal audit processes on KNOX would bring the Foundation value, ABC Labs contributors will engage stakeholders.

7. Pricing

1. Provide a copy of your standard contract, or one similar to what is being proposed here.

RTokens are permissionless and free to use, completely verifiable in smart contracts, with no traditional legal contract required.

1. Fee summary: Inclusive of the full scope of services requested. Product Fee schedule If asset based Fee calculation for our plan if asset based Annual fee if flat fee Any other fees (including redemption or minting fees)

Both Reserve protocol and the KNOX RToken do not have fees.

1. Describe frequency of fee payment and its position vis-a-vis payment priority compared with other expenses (i.e., cash waterfall)

RTokens do not have fee payments.

8. Smart Contract/Architecture

1. How many audits have you had and name of auditors? Please provide a copy of reports.

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Figure 10: Auditors who have written reports on Reserve

[Reserve protocol has been audited 8 times:](#)

- [Ackee](#)

- [Code4rena, (1, 2, 3)](#)

- [Halborn](#)

- [Trust](#)

- [Solidified](#)

- [Trail of Bits](#)

Reserve currently has a [$5M bug bounty](#), one of the largest bug bounty programs on ImmuneFi. Enabling greater access to inflation-proof money cannot be realized without faith in the mechanism and so the ecosystem [has made safe protocol development its number one priority.](#)

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Figure 11: Reserve's bug bounty

1. Is the project permissioned? If so, how are you managing user identities? Any blacklisting/whitelisting features?

This project is not permissioned in any capacity. There are no blacklist / whitelist features.

1. Is the product present on several chains? Are there any cross chain interactions?

Reserve has been deployed to Mainnet and rollups Base and Arbitrum (in that order). It is not live on other networks. Some RTokens are bridged from Mainnet up to rollups, but there are no cross chain interactions.

1. Are the RWA tokens being used in any other protocols? Please describe the various components of the ecosystem

KNOX is launching for the Arbitrum ecosystem, and will be working toward DeFi integrations similar to the work already done by other RTokens eUSD, hyUSD, and ETH+.

Future KNOX integrations could include DEXs, lending markets, CDPs, leverage apps, DAO treasuries and fintech apps.

RTokens are well integrated into DeFi applications. RTokens have countless pairs on Curve and ~$20M total liquidity. Curve is one of the [primary arms of Reserve liquidity](#) strategy, though it is accompanied by various liquidity partners. RTokens have also been integrated with [markets](#) with recent additions on Arbitrum. Discussions to use RTokens as collateral for perpetuals exchanges are underway. A slice of the Reserve ecosystem can be viewed below in figure 12.

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Figure 12: a small cross-section of Reserve's ecosystem

RToken ecosystem partners have helped [Reserve TVL cross $100M](#). Reserve's growth strategy has been to integrate with other ecosystems and these TVL milestones stand testament to these efforts.

Reserve has been focusing on the Arbitrum ecosystem in the last few months, implementing audit feedback, discussing GTM [strategies with new protocols](#), [facilitating co-incentivization groups](#) and much more. Indeed, STEP is a large part of why Reserve chose Arbitrum over other networks.

As Devansh Mehta can attest, we have been considering deployment on this network for months now and the combination of both STEP and LTIPP have rolled out the red carpet to Reserve. The choice ultimately was easy thanks to these programs and our deployment to the home of DeFi stands as testament to the value of these DAO initiatives. Deploying to a new network is an undertaking we take very seriously - as demonstrated by our [RSR spend to grow KNOX, amongst other Arbitrum initiatives](#)

1. How are trusted roles/admins managed in the system? Which aspects of the solution require trust from users?

Despite the system being [built according to the principle of least privilege,](#) there are some trust assumptions when using RTokens.

RToken admin roles have the following few capacities and may execute them based on predetermined security minded criteria:

- Addresses [1](#) and [2](#) may "pause" the RToken. This address can stop the issuing or trading of new RTokens, but cannot stop RToken redemptions (or other functions). This could be one person, a multisig or even a bot which triggers based on failsafe conditions

- Addresses [1](#) and [2](#) are "Short Freezers": addresses capable of freezing RTokens. This disables nearly all RToken functions including minting, redeeming, and unstaking. These "short freezer" can maintain the freeze for a governance-set amount of time, which is then passed onto the highest level of freezer: the Long Freezer.

- Address [2](#) is a "Long Freezer": who can extend the duration of the freeze. This "long freeze" is much longer than the short freeze, and so governance should carefully considers who can trigger it. This particular role exists so that in the case of a zero-day exploit (for example), governance can act before the system unfreezes.

- Finally, there is [the Guardian role](#). This address has the ability to reject proposals even if they pass through the governance process.

- [Address 1 is controlled by Tom Sawyer, the deployer of KNOX](#)

- [Address 2 and the guardian address is controlled by ABC Labs](#).

- [Address 1 is controlled by Tom Sawyer, the deployer of KNOX](#)

- [Address 2 and the guardian address is controlled by ABC Labs](#).

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Figure 13: RToken operations when paused / frozen

Figure 13 displays different powers that may be called upon by each role. Of primary concern to Arbitrum's DAO is RToken redemption, as this will affect whether or not Arbitrum's KNOX collateral is immediately accessible or not.

RToken governance also requires some degree of trust from Arbitrum's DAO to not modify the RToken's collateral into less suitable assets. This risk is mitigated by:

- A 14 day (at least) onchain governance process in which many checks and balances throughout - see figure 14 for a proposal lifecycle. [

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Figure 14: a default RToken proposal lifecycle

- Incentive alignment from having RToken governors provide first loss capital resulting in conservative, mission aligned stewardship.

- ABC Labs' guardianship on KNOX, which may veto governance actions in extreme situations (e.g. a governance attack).

Since this RToken uses collateral from noncustodial lending markets Compound and Aave, it inherits trust assumptions from both. These are:

- Oracle risk

: Compound and Aave USDC markets both use Chainlink as their price feed. This price feed is the most battle tested and well established price feed, seeing through countless trying episodes. Nevertheless, these oracles are not flawless.

- Governance risk

: it is not impossible that governance on each protocol may change parameters to allow unsafe loan-to-value ratios (for example) and accrue bad debt to the protocol. This is unlikely given the largely risk averse nature of contributors to both DAOs, as demonstrated by Aave delegates' recent discussion on DAI's suitability as a collateral token.* Indeed, should bad debt occur and Arbitrum's deposits be irretrievable, both Aave (with its safety module) and Compound (with its reserves) offer additional capital to backstop this process. This exists before considerations about RToken overcollateralization come into play. This risk is measured.

- Indeed, should bad debt occur and Arbitrum's deposits be irretrievable, both Aave (with its safety module) and Compound (with its reserves) offer additional capital to backstop this process. This exists before considerations about RToken overcollateralization come into play. This risk is measured.

Finally, there is custodian risk

from highly centralized Circle, with which USDC collateral is held. Circle is a highly transparent custodian. Nevertheless, with DAOs holding ~$700M of the asset makes USDC the most popular way for DAOs to currently store value (outside of their own token / ETH).

- Indeed, once more, as this DAO treasury mint is held in KNOX, it enjoys overcollateralization protection. This proved its worth during USDC's depeg, with Electronic Dollar $eUSD being restored to peg the day after USDC depegged, despite USDC holders not being made whole until days later.

It is fair to say that the few trusted roles/admins managed in the system have had their potential impact minimized through the RToken system. While trust does remain in the system, there is far less trust required compared to other yield-bearing stablecoins.

1. Is there any custom logic required for your RWA token? If so please give any details.

RTokens are ERC-20 tokens and therefore require no custom logic.

9. Supplementary

1. Please attach any further information or documents you feel would help the screening committee or ARB tokenholders make an informed decision.

There are three areas left undiscussed by this application:

1. Revenue Calculations

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Figure 15: KNOX Dollar revenue estimates -viewable here

The ~10% APY is calculated by averaging Aave and Compound30 day yield equal to RToken collateral share (33% Compound, 67% Aave). Of that, 92.5% will go to the Arbitrum Foundation (all RTokens seamlessly split revenue in a governance-set way). This calculation was made on 05/01.

2.5% of collateral basket revenue generated by KNOX Dollar is passed to the Arbitrum Foundation from all holders, meaning that as this asset grows so too will Arbitrum's earnings from it. KNOX contributors plan to pitch this as a leading treasury asset to other Arbitrum ecosystem DAOs such as JonesDAO, GMX, Silo and others. ABC Labs will also be incentivizing this RToken thanks to the LTIPP grant.

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Figure 16: Provisional estimates on how revenue is affected by mint size and RToken TVL

It is important to note that a mint to KNOX has revenue share, but that as the RToken grows this opportunity cost may be more than mitigated (and eventually entirely replaced). The size of the revenue share is dependent on the size of the mint.

The example amount in figure 16 at point A ($6M) demonstrates the TVL (~$16M) at which the KNOX RToken must reach for the revenue share to outweigh simply holding Aave USDC or Compound USDC. Point B, a hypothetical $11M mint by the Arbitrum Foundation, should be equalized at ~$29M KNOX TVL. As you can see in figure 17 below, estimates for this RToken should make this minor, initial opportunity cost effectively irrelevant, with Arbitrum DAO's initial losses being quickly more than compensated thanks to KNOX's seamless revenue share configuration.

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Figure 17: How KNOX revenue share may bring substantial value to Arbitrum DAO

This additional revenue stream to Arbitrum DAO could be used for reinvestment into ecosystem initiatives, which can further develop Arbitrum's DeFi ecosystem powered solely by yield. Indeed, an allocation now may turn into a self-sustaining form of revenue for the DAO. This directly aligns incentives between Reserve's ecosystem and Arbitrum's - which should mean a win for either is a win for both. A STEP allocation could kickstart this process.

1. KNOX's age

As you can see, KNOX is a recent RToken. It was deployed less than a week before this application was submitted. As market participants know, there is no better endorsement than smart contracts holding funds for a long period of time.

Given that Reserve contracts have been live now and crossed ~$90M in TVL across its deployments, it is not unreasonable to state that these assets have been proven. Even during the USDC depeg stress test, an internal RToken failsafe was triggered that further protected $eUSD holders.

KNOX uses entirely the same code (with a small, audited modification to be compatible with Arbitrum's faster blocktimes) as eUSD. The collateral is the same (there is a case to be made that it is safer with no USDT exposure), the KNOX RToken contract is (effectively) identical, the revenue handling is the same, the audits are on the same code, the testing has been done on the same code, the four risk types have been considered in the same way and the bug bounty is still the same $5M.

ABC Labs contributors invested 6 years of rigorous system design and testing. KNOX inherits the provable resilience of the Reserve protocol's other RTokens. KNOX is as safe as a mint into any other major RToken.

1. KNOX Governance

KNOX is a young asset but leverages tens of thousands of RSR holders and 18 months of live market governance experience with RSR stakers. The Reserve ecosystem may alternatively offer an interest-free loan to the Arbitrum

Foundation if preferred so that the Foundation will have an influence on KNOX's future. This staked RSR provides an additional revenue stream to the Arbitrum DAO in addition to governance influence.

Closing

Thank you for your consideration and patience with these applications. We apologize for the length and have endeavored to shorten it as much as possible while balancing the need to retain relevant information. ABC Labs is ready to respond to any necessary clarifications at will.