Blockchain Enabling Project-Focused Public Debt: A DApp to Help Public Entities Raise Funds

This project follows the blockchain narrative of real-world assets, tokenizing traditional finance assets on-chain, where only a few crypto-friendly companies currently raise debts on-chain, thanks to projects like Goldfich or Maple finance. This project aims to create a completely new concept of public debt tokenized.

This project addresses a critical issue in the borrowing market for public entities, specifically focusing on the challenges faced by developing and underdeveloped countries. Conventional borrowing methods, such as issuing bonds or seeking funding from international financial institutions, often lack project-specificity. This deficiency can result in a lack of accountability, fostering corruption and inefficient use of resources.

Other events that influenced the creation of this idea are:

- The Next Generation EU, which offers substantial investments if the country commits to achieving predefined goals set by the EU commission. Funds are disbursed in instalments upon meeting the goals outlined in the roadmap.
- China's investments in developing/underdeveloped countries infrastructure in exchange for access to raw materials. Many of these countries accept these investments due to a lack of alternative funding options.

1. Introduction

The proposed decentralized application (DApp) aims to connect public entities (PEs) with global investors through blockchain technology. The DApp enables PEs to post their project business plans (data on-chain and document off-chain) and seek funding from investors worldwide. Investors with blockchain wallets can support these projects and receive tokens representing their investments. These tokens grant investors the rights to claim interest rate payments and participate in the project's implementation until the last investment tranche has been delivered.

2. The DApp's Value Proposition

The proposed DApp introduces a potential new instrument on the international financial markets, providing countries with a reliable means to secure funds for their projects. The DApp emphasizes precision and accountability, enabling funding for specific projects and ensuring resources are allocated efficiently.

This creates a win-win opportunity for both PEs and investors. PEs can access funds from anyone globally, while investors can invest in any project proposed by PEs across the world. The DApp allows PEs to post their project business plans and seek funding from investors worldwide. Investors with blockchain wallets can support these projects and receive tokens representing their investments, which grant investors the rights to claim interest rate payments and participate in the funds management governance.

3. The DApp's Functionality

The DApp's core functionality revolves around the management of funds and the governance of the projects' funds still not delivered to PEs. The smart contracts at the heart of the DApp play a crucial role in facilitating this process.

- Project fund Management

The smart contracts manage the funds contributed by investors, splitting them into tranches determined by PE in project proposal stage. This structured approach ensures that resources are released in a controlled and transparent manner, aligned with the project's milestones and progress. This gives great power over the project and opens discussions on how to tackle situations where malevolent actors (enemy countries, terrorists, etc.) can potentially threaten the project's success without proper countermeasures that can reduce the DApp's decentralization.

- Interests' payments

The project tokens grant token-holders the right to claim interest rate payments on their investments, providing them with a reliable stream of returns and incentivizing them to support the public entity's projects. If the PE doesn't pay the interest payment on time (as for a common public debt bond), it is considered a default of the PE, and the remaining funds in the smart contract are unlocked, allowing token-holders to withdraw their share. It could be possible to add more flexibility, allowing for a delay in the payments.

- Periodic Updates and Voting

The PEs are required to provide periodic work-in-progress updates on the project, then presented to the token-holders for their review and approval. The token-holders are empowered to vote on these updates. If the update is approved, the smart contract automatically releases the next tranche of funds to the PE, allowing the project to continue its development. If the token-holders deny the PE's update, the project is blocked, token-holders can withdraw the remaining funds from the smart contract and initiate legal action to split the collateral, if it was planned project proposal contract. This mechanism ensures that the interests of the investors are protected and that the funds are not misused or misallocated.

4. Technical Implementation

The DApp is built using Solidity, programming language for developing smart contracts on the Ethereum blockchain and has been deployed on the Sepolia Ethereum testnet.

The DApp utilizes a multi-contract architecture, with several interconnected smart contracts working together to manage the various aspects of the project funding process:

- All project data is stored in a smart contract on which all others are based and which is updated throughout the life of the projects.
- Project-token contract on which, along with the first contract, two others are based to manage voting on project updates and interest payments.

5. Conclusion

This innovative DApp introduces a new instrument on the international financial markets, providing countries with a reliable means to raise funds. While the DApp's architecture enhances security and flexibility, the complexity may pose usability challenges for PEs in integrating with their existing processes. Striking the right balance between the DApp's decentralized features and the requirements of public sector organizations will be crucial for widespread adoption and successful implementation.