# Aada Finance - Peer-to-Peer Lending

*Light paper*

We are Aada Finance. We are a non-custodial, interoperable, and decentralized lending protocol on Cardano. Using the protocol, you can a) Lend your assets and earn interest or b) Borrow crypto assets and use them as financial tools.

## NFT bonds

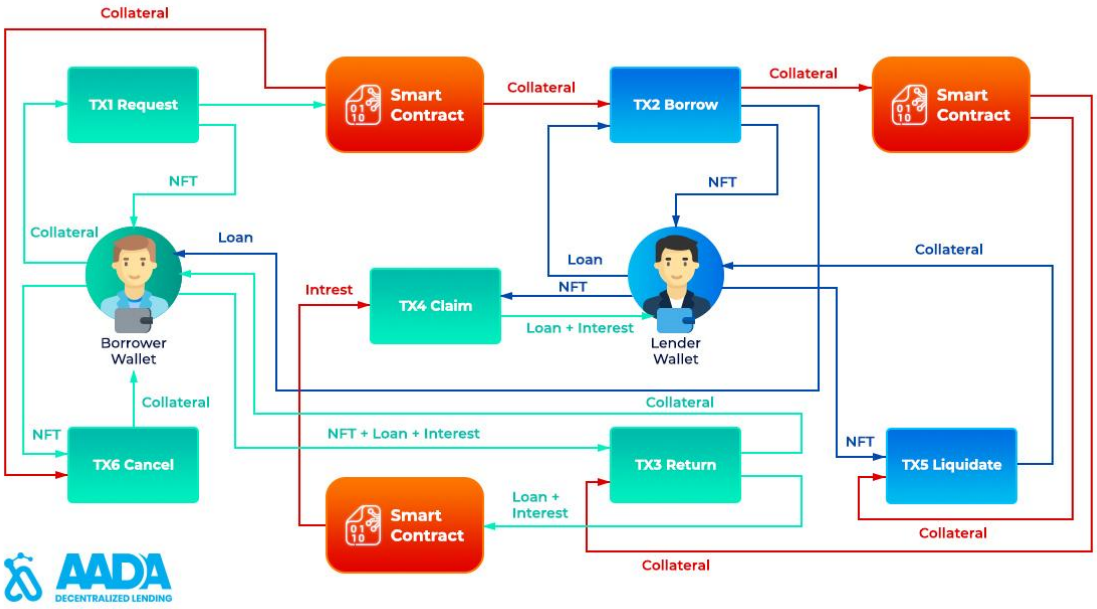
The protocol does not attribute loans to wallet addresses. Instead, it mints transferable, tradeable, and redeemable NFT bonds. This feature enables anyone holding a Lender NFT bond to claim a loan and interest. On the other hand, anyone with a Borrower NFT bond can redeem the deposited collateral.


*NFT bond journey*

## How does V1 work?

Lending and borrowing on Aada works in a peer-to-peer manner. The user journey starts with a borrower who creates a loan request. This loan request locks the borrower's' collateral[1] into a smart contract. It opens up the possibility of two scenarios:
a) The borrower can cancel the loan request and redeem the collateral.
b) The borrower finds a lender who supplies the loan.

[1] Collateral - is an asset deposited to a smart contract by a borrower. The collateral serves an assurance of compensation in the event of borrower insolvency.




*Aada V1 workflow*

If the latter happens, the lender must send the loan amount to the borrower's wallet. While moving borrower collateral to a smart contract from where the borrower can only take it back if the loan is repaid and the correct amount of interest paid to the lender.

## Is it safe?

While they provide new use cases to the lending and borrowing concept, NFT bonds also enhance the protocol's safety. For instance, repaying a loan requires meeting either of the following conditions:

1. Burning the borrower NFT created at the time of the loan request
2. Repaying the loan and the interest

In other words, anyone holding the underlying bond can claim the collateral. As the NFT serves as a proof of loan, its lack eliminates the possibility of unlocking the deposited assets.

NFTs are minted by using parameterized minting script and utilizing UTxO consumed at the time of the minting. This process allows a specific PolicyID pair to be created only once leveraging the constantly changing UTxO reference.

# Liquidations

Liquidations are an essential element of lending and borrowing used to protect the lender from incurring dramatic losses. Aada ensures minimal lender risk by addressing two types of liquidation scenarios:

1. When the loan expires, and the borrower does not pay back the loan;
2. When the collateral value-to-loan drops significantly, which increases the risk of borrower insolvency;

## Liquidations by expirity

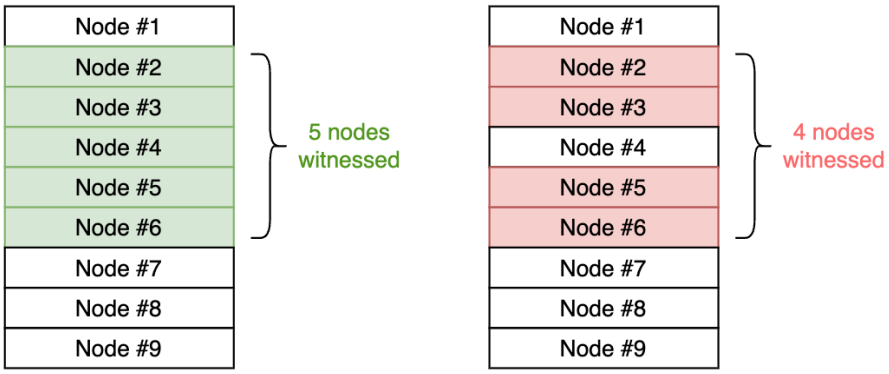
In the event of loan expiration - the lender is eligible to claim the whole collateral locked in the smart contract. The smart contract allows claiming the collateral only if the lender NFT bond is burned in the transaction.

## Liquidations by price (Oracle)

If the collateral value drops significantly, the lender becomes eligible to claim the borrower's collateral entirely or partially. Oracles are introduced to calculate the fraction of collateral required to compensate the lender and whether it can be liquidated off-chain.

The Liquidation Oracles constitute multiple distributed nodes. They are incentivized to operate fairly and continuously over time.

The borrower can choose any liquidation oracle they want at the time of loan request. However, the Aada client will support the multi-sig Aada Oracle. This oracle operates as a multi-sig minting policy where more than half of the oracle nodes must agree on executing a liquidation transaction.




*Left - liquidation is successful; right - liquidation does can't happen*

# Are NFT bonds superior?

The feature does not guarantee superiority. Nonetheless, it introduces a breakthrough approach to blockchain technology and DeFi. Some of the core NFT bond features include seamless on-top use of batchers and free debt movement within the State Machines.

Last but not least, the method aligns perfectly with Cardano's eUTxO fundamentals. It can easily be implemented within the Hydra scaling solution or continuous smart contract versioning without any protocol issues. While it's yet to be tested in dynamic DeFi conditions, it fully embraces the principal concept of building on the Cardano blockchain.