Flexible Loan System

# What is it

This system by its nature would be an on-chain debt ledger.

# Goals

## To lower costs

It aims to move the complex debt issuance on blockchain by leveraging the transparency and the concept of decentralization to attract investors with lower costs.

## To increase debt liquidity

The stake registered by investors can transfer to others any time before the stake gets maturity.

# Who would be the user

Organization can utilize the system on blockchain to record and showcase the debt situation.

Investors can do analysis and register their stakes on chain so to make the debt investments.

This Dapp would be suitable for the short-term zero coupon bond management. For short-term here to mean the mature date of the debt would be within one year.

# How the system works (Simplified version)

More details on ledger function part:

Generally, the debt principal would be in a number of unsigned integer. To make it further simplified, the conventional concept of separating long-term and short-term debt are not considered for fear of complex business logic related to cash flow discount and etc. Also the interest rate is not customized into each creditor log. Instead it is put as a generic rate, although in reality, a more flexible system may required, to be tailored to different fund sources.

Further split on the stake when investors in reality may have the need to transfer partial ownership is not considered here.

Specification focuses on ledger function:

1. Make KT\_ledger spendable so to have creditors spend tezos as commission fee if the current creditor wants to transfer the ownership to another one.
2. removeCreditor: it is to remove the specified mapped item, as well as modify current capital in place and the total debt amount It returns success or failure of the operation. It is not a public entrypoint.
3. checkPoint: it should be entrypoint to run in a regular basis to make sure expired creditors are removed in time. More importantly, it is intended to set to trigger token issue function (the TokenTransfer).
4. modifyOwnership: When certain creditor on the mapped list invokes modifyOwnership and sends specified commission fee (in tezos) to KT\_ledger. It would modify the owner of certain debt record [basically it needs to remove the orignal one and insert a new creditor record with the updated start date (which is now) and the same end date as the removed record ]. It returns success or failure of the operation.
5. addCreditor: The function addCredtor would simply add the new creditor as well as the total debt amount. Note for the data point “start date” in the record data structure, which would always be now. It returns success or failaure of the operation

Further details on token function part:

It’s basically the token issuance system on the base of FA1.2; Only the xtz need to be sent and withdrawal when token gets minted or burnt; Due to non applicable on float numbers, the token is 1 million amplified to pegged to USD

Specification focuses on token function:

1. totalSupply is a reference value for investors to estimate capital sufficiency;
2. The mint function would have a QC rule in the front end programming to make sure enough tezos collateral has been transferred to the Kt\_token contract;
3. The burnt function is modfied for simplicity, i.e. to be based on all or nothing principle; The amount withdrawal by triggering the burn function is calculated off-chain; also getBalanceValue would need to be utilized here;
4. Again, for burn function, the withdrawal amount is calculated off chain and send the amount;
5. Transfer\_ is, for example , when checkPoint is invoked, it would further call Transfer to assign tokens to the creditors’ accounts with debt reach maturity date;

# Limitation and unsolved issues in general

1. The burn funciton can be compromised by front running by manipulating xtz price; The contigency plan would be to apply the average score system by removing 2 highest last prices and 2 lowest last prices in the popular exchanges; And use the rest of the averaged middle prices;
2. Due to limited time, other functions are not developed or polished;