Mu Protocol - Stablecoin LP Marketplace

TL;NR

We want to create a safe, efficient on-chain **marketplace** specifically for **stablecoin LP** where (i) **projects** who seek to achieve clear liquidity goals for their utility/governance tokens and (ii) **stablecoin holders** who seek to single-sided, profitable, safe LP opportunities **win together**. This product not only offers a strong stimulus for mUSD stablecoin growth but also by itself serves as a fundamental financial building block for the Sui ecosystem.

Problems in the Market

- DApp Projects crave *stablecoin liquidity* for their own utility/governance tokens on DEX pairs
- Stablecoin holders are constantly seeking *single-sided* LP opportunities with *high yield* and *capital safety*
- Existing farming products have inherent problems and unsolvable pain points: two-sided LP required for ideal price range, lack of clarity in target and plan, etc.

Our Solution: A Safe, Efficient Stablecoin Marketplace

The Mu Protocol team combines the essential advantages in both *yield farming* products and the *bribing* mechanism in vote-escrow gauge products with key observations on stablecoin liquidity in the cryptocurrency market and comes up with a one-for-all solution to solve the above problems.

- For **project users**:
  - More capital-efficient and cost-saving solution over liquidity farming
  - Clearer liquidity goals, better liquidity outcomes

- For **stablecoin holders**:
  - Single-sided LP opportunity: no need to purchase counter-part tokens to provide LP
  - Profitability: earn LP fees, bribe rewards, and more
  - Guaranteed capital safety: At-Any-Time Withdrawal, LP Value Perseverance insurance fund
- For **community**:
  - 100% Owned by community: the market place will be 100% owned by the Mu Protocol community, i.e., Mu token (governance and protocol utility tokens) holders
  - 100% decided by community: any significant protocol change or upgrade will be proposed, discussed, decided by the Mu protocol community through DAO forum, DAO snapshot, and later DAO on-chain governance
  - 100% decentralization: our goal is to 100% decentralize everything from on-chain protocol logic and data, open-sourced front-end to protocol governance
- For **mUSD stablecoin**:
  - Real use case for mUSD stablecoin
  - Strong stimulus for mUSD supply growth: fee discounts and more privileges exclusively enjoyed by mUSD stablecoin in the marketplace
- For **investors and Sui ecosystem**:
  - “1-2-4” Expo-fold TVL growth: $1 stablecoin deposit brings guaranteed $2+ TVL growth for the marketplace and $4+ TVL growth for the Sui ecosystem
  - Constant value accruing in invested Mu tokens

Then … How Does It Work?

The LP Stablecoin Marketplace centers around “liquidity tickets” (their modes in green) and is super simple to use for both projects seeking stablecoin LP (their actions in blue) and stablecoin holders seeking LP opportunities (their actions in orange). The typical life cycle of a liquidity ticket includes **four phases** and is as follows:

Assume that a Sui project named “Pied Piper” seeks 500k $USDT stablecoin liquidity for its own protocol token $PP on the $PP-$USDT pool on a DEX named “SuiDex". Also, assume that Pied Piper always has enough free $PP tokens at its disposal and has a 10k $USDC budget to solve its liquidity problem.

Assume that there are two $USDT stablecoin holders named Alice and Bob, each of whom has 300k $USDT at their disposal.

1. **Create Ticket & Transfer Collaterals and Bribes:**

   Pied Piper creates a “liquidity ticket” that specifies (i) the type and amount of the stablecoin they need, i.e., 500k in $USDT, (ii) the UID/address of the DEX pool on which Pied Piper needs stablecoin liquidity, i.e., $PP-$USDT on SuiDex, (iii) the length of the ticket’s fundraise period, say, 2 weeks, (iv) the duration of ticket, i.e., how many weeks the provided stablecoins are required to stay on the designated DEX pool to be qualified, say, 4 weeks, and (v) total bribe amount, say 10k $USDC and 10m $PP tokens. In a nutshell, “(10k $USDC+10m $PP) bribe for 500k $USDT on the $PP-$USDT pool in SuiDex for 4 weeks with a fundraise period of 2 weeks.” At the same time, Pied Piper needs to wrap-transfer (stablecoin_amount * collateral_ratio_for_$PP * num_duration_in_month) = (500k * 1.5 * 4/4) = $750k worth of $PP tokens as counter-part liquidity and collaterals and all 10k $USDC+10m $PP bribe tokens into the ticket object, where collateral_ratio_for_$PP is decided by DAO when Pied Piper registered $PP tokens as eligible tokens via their DAO proposal.

Then, a liquidity ticket object will be created by the marketplace including all the information above and is accessible for everyone on-chain. Furthermore, the ticket is marked in "Preparation Mode" and includes its execution timeline including:

a) creation_week_timestamp (T_0): the Unix timestamp of the beginning of this week (Last Thursday 0:00:00 in UTC/Wednesday 20:00:00 in EDT). Let's call it T_0.

b) fundraise_start_timestamp (T_1): the Unix timestamp of the beginning of next week (Next Thursday 0:00:00 in UTC/Wednesday 20:00:00 in EDT).
That is, $T_1 = (T_0+1\text{week})$.

c) LP_start_timestamp (T_2): the Unix timestamp when fundraise period ends and liquidity provision starts. Since "Pie Piper" has chosen a fundraise period of 2 weeks, we have the timestamp at $T_2 = (T_0+1\text{week}+2\text{week}) = (T_0+3\text{week})$.

d) LP_end_timestamp (T_3): the Unix timestamp when liquidity provision ends. Since "Pie Piper" has chosen a LP duration of 4 weeks, we have the timestamp at $T_3 = (T_0+1\text{week}+2\text{week}+4\text{week}) = (T_0+7\text{week})$.

Noticeably, Pied Piper is free to adjust any parameter of the ticket or even cancel the ticket as long as the ticket is still in "Preparation Mode" *and* they adjust their staked amount of $PP accordingly. That is, once "Preparation Mode" ends, Pied Piper can no longer change any parameter of or cancel the ticket and cannot withdraw either its collaterals or its bribes.

2. **Stake Stablecoin into the Ticket:**

After fundraise_start_timestamp (T_1), the ticket automatically transitions from "Preparation Mode" into "Participation Mode", and thus begins its Phase 2. "Participation Mode" starts at fundraise_start_timestamp (T_1) and ends at LP_start_timestamp (T_2). At any time during this period, Alice and Bob can stake or unstake any amount of their $USDT into or from the ticket, based on their own judgment on the potential profits and risks of the liquidity ticket issued by Pied Piper.

Alice and Bob can adjust their staked amount whenever and however they wish before LP_start_timestamp (T_2).

Besides, during this period, we anticipate that Pied Piper will possibly launch a liquidity raise campaign to attract as many $USDT holders as possible.

Let's say, at the end of "Participation Mode", Alice stakes 200k $USDT into the ticket while Bob only 100k $USDT.

3. **Provide Liquidity on the Pool**

After LP_start_timestamp (T_2), the ticket automatically transitions from "Participation Mode" into "Liquidity Mode". "Liquidity Mode" starts at LP_start_timestamp (T_2) and ends at LP_end_timestamp (T_3).

After the ticket transitions into "Liquidity Mode", anyone (usually, Pied Piper themselves) can call a public "deployLiquidity()" function. Once called, the function will go through two checks: (i) collateral ratio check and (ii) liquidity quorum ratio check.

- "Collateral Ratio Check": checks whether the ratio of the current moving average value of the $PP collateral in the ticket over the value of staked $USDT is equal to or greater than base_ratio_for_$PP. If not, the ticket will instantly transition into "Abort Mode".
- "Liquidity Quorum Ratio Check": checks whether the ratio of the amount of staked $USDT over the target amount of $USDT specified by PiedPiper in Phase 1 is equal to or greater than the quorum_ratio_for_$PP ("quorum_ratio_for_$PP" is decided by DAO when Pied Piper registered $PP tokens as eligible tokens via their DAO proposal). If not, the ticket will instantly transition into "Abort Mode"
- "Abort Mode": This essentially means that Pied Piper's liquidity ticket fails. $PP collaterals, bribe tokens, and staked $USDT become open for their respective owners to claim back. Once all tokens are claimed, Pied Piper can unpack/destroy the ticket, and the life cycle of this ticket ends.

If the function call passes both checks, it will then deploy all staked $USDT in the ticket along with equivalent amount of $PP from collaterals in the ticket to the designated DEX pool. The LP receipt object will be wrap-transfer into the ticket object.

After liquidity deployment, the only action permitted on the ticket is the withdraw() function by stablecoin providers. Let's say Alice changes her mind and calls the withdraw() function. Then the function will redeem a portion of the liquidity provided by the ticket to the $PP-$USDT pool and send those tokens back to Alice. In this case, it would be 200k/300k = 66.6% of the liquidity redeemed from the $PP-$USDT pool and sent back to Alice. Importantly, Alice only gets 50% of the total redeemed amount in both tokens since half liquidity has been provided from $PP collateral in the ticket. Moreover, Alice will be compensated more $PP tokens from the remaining $PP collaterals in the ticket object for her potential impermanent loss so that what Alice obtains by withdrawal will equal in value to what she initially provides, i.e., $200k USDT. Furthermore, since Alice quits the liquidity provision before it ends, she not only will not be eligible for any bribe rewards and liquidity fees but also will suffer 5% penalty. The penalty will be evenly split to Pied Piper's compensation (2.5%) and Mu Protocol platform fees (2.5%).

4. **Reward Distribution & Withdrawal**

   After LP_end_timestamp (T_3), the ticket automatically switch into "Distribution Mode". Only two actions are allowed during this Phase: claim_and_withdraw() by stablecoin providers (in our case, its only Bob) and kill_ticket() by Pied Piper.

   - "claim_and_withdraw()" by stablecoin providers:

     This will withdraw the proportion of liquidity provided by the caller. The caller will receive in two tokens. In our case, Bob will receive both $USDT and $PP tokens. However, Bob will be compensated more $PP tokens from the remaining $PP collaterals in the tickets for his impermanent loss. Moreover, the caller will also receive his/her share of the bribe tokens and liquidity fees. In our case, since Bob is

the only stablecoin providers at the end, he will receive all of the 10k $USDC + 1m $PP token bribe provided by Pied Piper along with all the liquidity fees generated on the $PP-$USDT pools during the 4-week liquidity period. Noticeably, a protocol fee of 2.5% might be charged onto the bribe rewards and the liquidity fees based on the protocol needs.

- kill_ticket() by Pied Piper:

  This function can be called only by the project who has issued this ticket at the first place. In our case, it is Pied Piper. Additionally, this function cannot be called unless all liquidity have been withdrawn by stablecoin providers. In our case, it can be called only after Bob withdraws his liquidity and claims his rewards. After calling this function, Pied Piper will withdraw all of the remaining $PP collaterals in the ticket including both those withdrawn from the DEX pool and those that have been sitting in the ticket object.

Q&A

Q1. The collateral and counterpart liquidity requirement for Pied Piper looks very demanding. Will it significantly deter Pied Piper from adopting the marketplace?

A1. No. (Blablabla..)

Q2. All stablecoin providers need to withdraw their liquidity from the DEX pool In "Distribution Mode". Will this result in a significant TVL drop after a ticket life cycle ends?

A2. Practically no. (Blablabla..)