



# PROVIDING LIQUIDITY ON THE XRPL

Token Emissions and AMM

# Liquidity On XRPL

- **Tokens Emissions**
  - Fungible tokens / Stablecoins
  - NFTs
- **Central Limit Order Book**
- **Automated Market Maker**

# Fungible tokens

- All tokens from a collection are interchangeable.
- They are issued on chain by an issuer with a certain currency code.
- Represent various types of assets like currencies, commodities, cryptocurrencies...
- Stablecoins are designed to track an underlying asset price.



GATEHUB

# Trustlines on XRPL

## TrustSet

```
{
  "TransactionType": "TrustSet",
  "Account": "ra5nK24KXen9AHvsdFTKHSANinZseWnPcX",
  "Fee": "12",
  "Flags": 262144,
  "LastLedgerSequence": 8007750,
  "LimitAmount": {
    "currency": "USD",
    "issuer": "rsP3mgGb2tcYurxiLFiHJiQXhsziegtwBc",
    "value": "100"
  },
  "Sequence": 12
}
```

- Representant a contract between two accounts to send payment of a defined currency, issuer and amount.
- Prevent receiving unwanted tokens.
- Directly integrated to XRPL's functions.

# Central Limit Order Book (CLOB)

## → Order Matching

Buyers and sellers submit orders

Orders are matched based on price and time priority

## → Liquidity depth

Multiple price levels

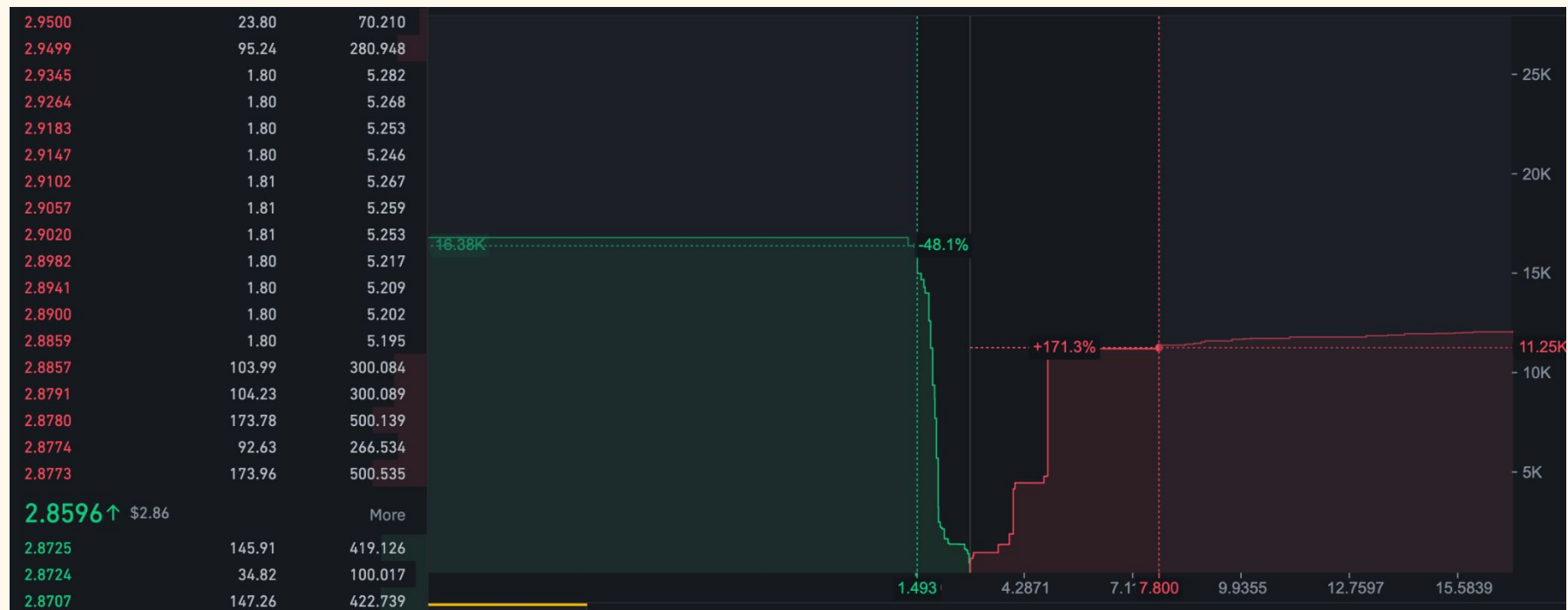
Quantity available at each price

## → Suffer from possible lack of liquidity

Gaps in prices

Require professional market makers

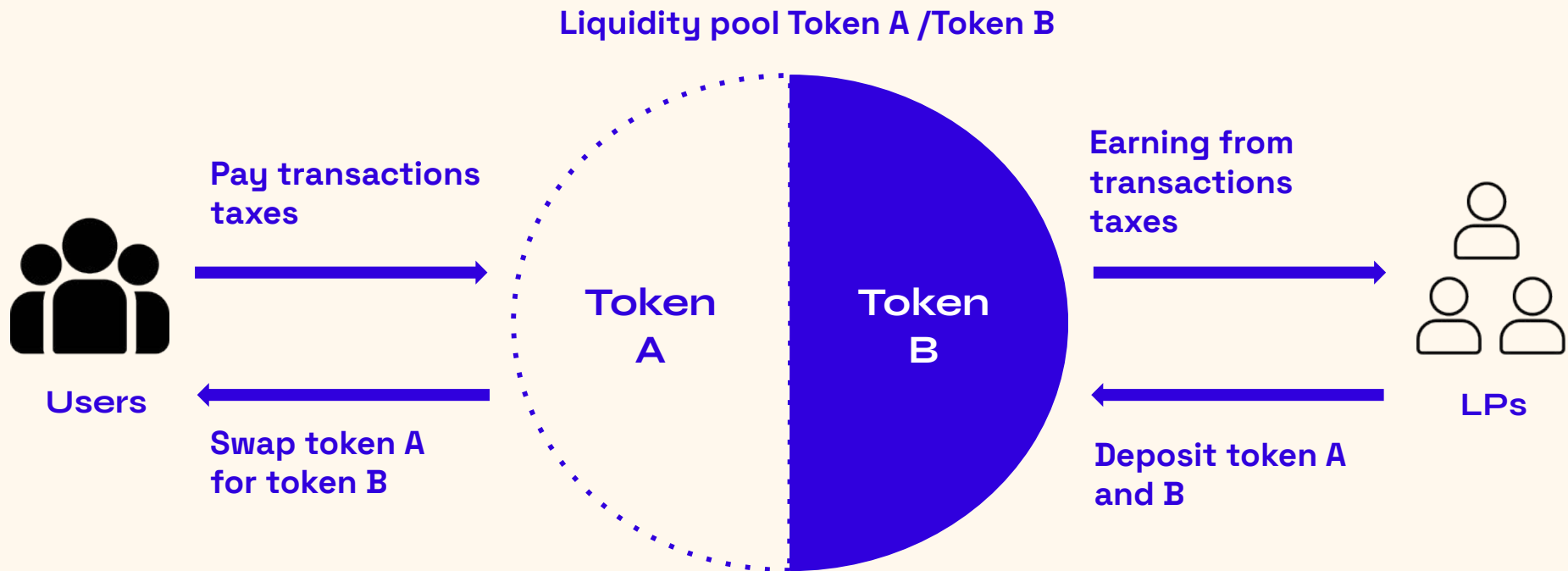
# Central Limit Order Book (CLOB)



# Why Use an AMM ?

- **Liquidity**
  - Simple mechanism for users to trade assets
  - Allow for constant liquidity and availability on the pools
  - Ideal for less liquid markets
  - All orders are market orders
  - Slippage (depends on pool size)
- **Farming**
  - Create add initial liquidity to the pool
  - LP represents the proportion ownership of the pool
  - Provide liquidity to AMM
  - Anyone can be market maker
  - Passively generate returns on liquidity

# AMM Flow



# Orchestra Pool



 **XRP/USDC** 1 XRP = 0.551982 USDC  
rGHt6...Lofs 📄 🔗 1 USDC = 1.81165 XRP

**\$502.24K**  
309.38M LP

- Total XRP XRP coin  
461,215 XRP
- Total USDC GateHub  
254,582 USDC

<u>Volume 24h</u> ~\$19,556	<u>Fees 24h</u> ~\$219.28	<u>APR</u> 15.72%	<u>Contributors</u> 795
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# Constant Product Market Maker

$$\begin{array}{c}
 1000 \\
 \text{XRP} \\
 x \\
 \hline
 \end{array}
 \times
 \begin{array}{c}
 2000 \\
 \text{USD} \\
 y \\
 \hline
 \end{array}
 =
 \begin{array}{c}
 2\,000\,000 \\
 k \\
 \hline
 \end{array}$$

Price per  
XRP  
2 USD

$$X * Y = K$$

+100 XRP

SWAP

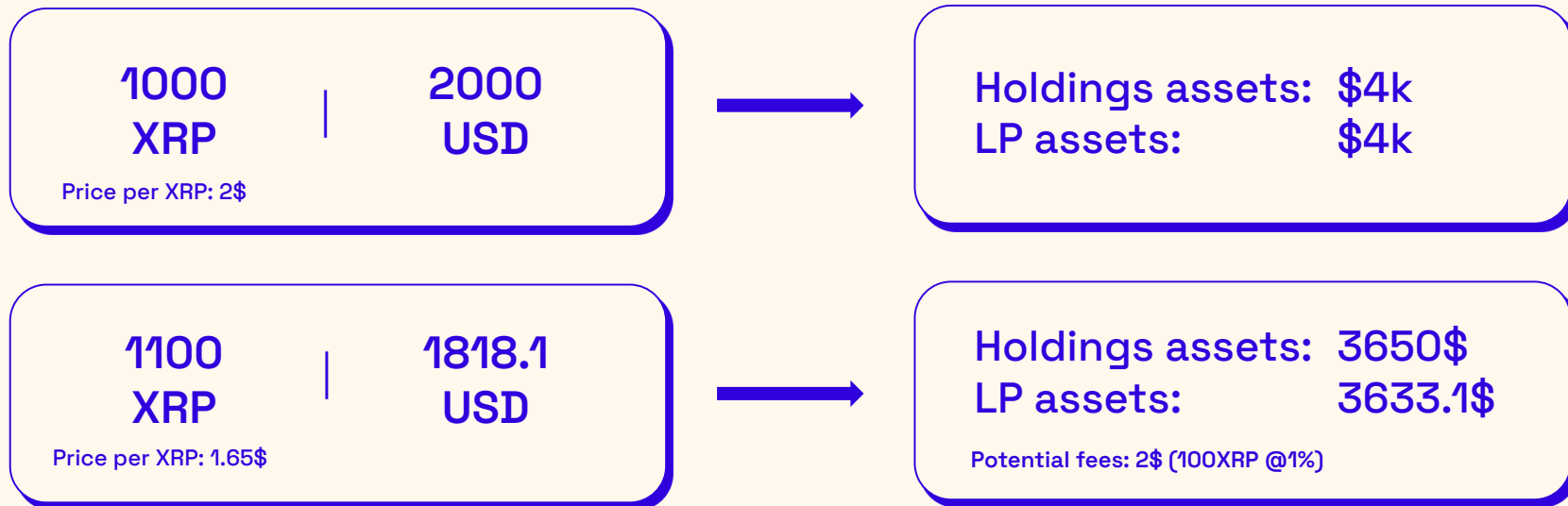
-181.9 USD

$$\begin{array}{c}
 1100 \\
 \text{XRP} \\
 x \\
 \hline
 \end{array}
 \times
 \begin{array}{c}
 1818.1 \\
 \text{USD} \\
 y \\
 \hline
 \end{array}
 =
 \begin{array}{c}
 2\,000\,000 \\
 k \\
 \hline
 \end{array}$$

Price per  
XRP  
1,65 USD

# Impermanent loss (IL)

Impermanent loss occurs when the price of assets in liquidity pool changes after depositing them, leading to potential losses compared to holding the assets outside the pool. It must be mitigated with AMM pool fees.



# Uniques features of XRPL AMMs

## Protocol Native

Developers can utilize native AAM functionality without the need to manage their own smart contract design

## Continuous Auction Mechanism

Reduces impermanent loss by incentivizing arbitrageurs to bid for price discrepancies at near zero fees

## CLOB Integration

Price optimization determines best price through liquidity pool or central limit order book

## Single-sided liquidity

Anyone can easily participate as a liquidity provider as only a single asset is required to contribute to a pool

## Prevent gas front running

XRPL's deterministic random transaction ordering makes front running difficult. No miners gas prioritization.

# XRPL's AMM Basic Functions

## AMMCreate

```
{
  "Account" : "rJVUeRqDFNs2xqA7ncVE6ZoAhPUoaJJJSQm",
  "Amount" : {
    "currency" : "TST",
    "issuer" : "rP9jPyP5kyvFRb6ZiRghAGw5u8SGAmU4bd",
    "value" : "25"
  },
  "Amount2" : "2500000000",
  "Fee" : "20000000",
  "Flags" : 2147483648,
  "Sequence" : 6,
  "TradingFee" : 500,
  "TransactionType" : "AMMCreate"
}
```

- Initiate liquidity pool on the ledger
- Create initial balances of LP for sender
- One or both can be tokens

# XRPL's AMM Basic Functions

## AMMDeposit

```

{
  "Account" : "rJVUeRqDFNs2xqA7ncVE6ZoAhPUoaJJJSQm",
  "Amount" : {
    "currency" : "TST",
    "issuer" : "rP9jPyP5kyvFRb6ZiRghAGw5u8SGAmU4bd",
    "value" : "2.5"
  },
  "Amount2" : "30000000",
  "Asset" : {
    "currency" : "TST",
    "issuer" : "rP9jPyP5kyvFRb6ZiRghAGw5u8SGAmU4bd"
  },
  "Asset2" : {
    "currency" : "XRP"
  },
  "Fee" : "10",
  "Flags" : 1048576,
  "Sequence" : 7,
  "TransactionType" : "AMMDeposit"
}

```

- Add liquidity to existing pool in exchange of LP tokens
- Can be single or double assets deposits
- Use the pool to trade for single asset deposits

# XRPL's AMM Basic Functions

## AMMWithdraw

```
{
  "Account" : "rJVUeRqDFNs2xqA7ncVE6ZoAhPUoaJJJSQm",
  "Amount" : {
    "currency" : "TST",
    "issuer" : "rP9jPyP5kyvFRb6ZiRghAGw5u8SGAmU4bd",
    "value" : "5"
  },
  "Amount2" : "500000000",
  "Asset" : {
    "currency" : "TST",
    "issuer" : "rP9jPyP5kyvFRb6ZiRghAGw5u8SGAmU4bd"
  },
  "Asset2" : {
    "currency" : "XRP"
  },
  "Fee" : "10",
  "Flags" : 1048576,
  "Sequence" : 10,
  "TransactionType" : "AMMWithdraw"
}
```

- Withdraw assets by returning LP tokens to the pool
- Delete the AMM if both pools are emptied
- Can be simple or double assets withdrawals

# XRPL's AMM Basic Functions

## AMMDelete

```
{
  "Account" : "rJVUeRqDFNs2xqA7ncVE6ZoAhPUoaJJJSQm",
  "Asset" : {
    "currency" : "XRP"
  },
  "Asset2" : {
    "currency" : "TST",
    "issuer" : "rP9jPyP5kyvFRb6ZiRghAGw5u8SGAmU4bd"
  },
  "Fee" : "10",
  "Flags" : 0,
  "Sequence" : 9,
  "TransactionType" : "AMMDelete"
}
```

- Happens if there is too many trustlines to remove at once on the AMMWithdraw
- Can delete up to 512 trustlines per call

# XRPL's AMM Basic Functions

## AMMVote

```
{
  "Account" : "rJVUeRqDFNs2xqA7ncVE6ZoAhPUoaJJSQm",
  "Asset" : {
    "currency" : "XRP"
  },
  "Asset2" : {
    "currency" : "TST",
    "issuer" : "rP9jPyP5kyvFRb6ZiRghAGw5u8SGAmU4bd"
  },
  "Fee" : "10",
  "Flags" : 0,
  "Sequence" : 9,
  "TransactionType" : "AMMDelete"
}
```

- Vote to change pool fees
- Vary between 0.5 and 1%
- Votes weighted based on LP tokens held

# Quiz Time

[academy.xrpl-commons.org/](https://academy.xrpl-commons.org/)



# Let's code

Token issuance  
and AMM activity

# Workshop

- Create token
  - Enable rippling on Issuer (TrustSet)
  - Issue trustlines
  - Send payment
- Create AMM Pool
  - Must be XRP-Token
- Interact with your pool (swap)
- Interact with other trainees pools (swap)
- Become LP of others trainees pools
- Withdraw from pools

## Activity walkthrough



<https://github.com/XRPL-Commons/dev-training-june-2026>