Liquidity Provision Diagram

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1 Introduction

All calligraphic characters (c.f. $\mathcal{A}, \mathcal{B}, \mathcal{C}, \mathcal{F}$ and $\mathcal{X}$) denote smart contracts. In particular

- *Exchange*: χ denotes the Gnosis Protocol's Batch Exchange contract.

- *Fund Account*: $\mathcal{F}$ denotes a **Gnosis (Multi-Sig) Safe** having m owners and approval threshold of $1 < n \le m$.

- *Trader Accounts*: Each of $\mathcal{A}, \mathcal{B}$ and $\mathcal{C}$ denote, single owner, **Gnosis Safes** all owned by $\mathcal{F}$. The differing notation for these "accounts" is only relevant for their particular use cases.

For a family of trader accounts $\{\mathcal{A}_i\}_{i=1}^a$ the ownership structure is depicted as
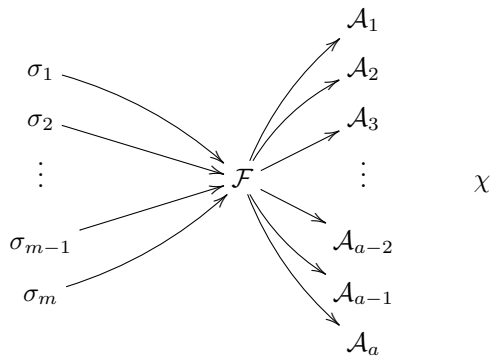
where σ_i denote *externally owned accounts*. Notice the Batch Exchange contract included on the far right indicate that only the trader accounts will be directly interacting with it. The above diagram can be expressed more compactly as
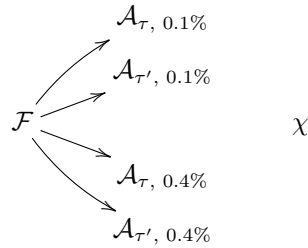
$$\{\sigma_i\}_{i=1}^m \Rightarrow \mathcal{F} \Rightarrow \{\mathcal{A}_i\}_{i=1}^a$$

The advantages of using Gnosis Safes here are

- **Asset Management** Fund account can contain significant sources of funds going beyond the standard use case of an externally owned account. Essentially, any transactions submitted on behalf of the fund account will require "team" approval.

- **Batched Transactions** Gnosis Safe, as a smart contract wallet, has the feature that multiple transactions can be batched together as a single Ethereum transaction. Furthermore, the Gnosis Safe can execute transactions on behalf of any other Safe that it owns. This implies that the fund account will be capable of transferring tokens through the trader accounts and directly into the exchange in a single transaction and will be incredibly beneficial when we elaborate on the multitude of transactions for our purposes.

1.1 Strategy 1 - Spread Orders

Let $\tau = \{1, 2, 3\}$ and $\tau' = \{1, 2, 4\}$ denote two token sets whose elements are integers corresponding to tokens listed on the Batch Exchange smart contract χ by *token ID*.

$$
\begin{array}{ccc}
 & \mathcal{A}_{\tau,\ 0.1\%} & \\
 & \mathcal{A}_{\tau',\ 0.1\%} & \\
\mathcal{F} & & \chi \\
 & \mathcal{A}_{\tau,\ 0.4\%} & \\
 & \mathcal{A}_{\tau',\ 0.4\%} &
\end{array}
$$

1.2 Strategy 2 - ETH brackets

1.3 Strategy 3 - Incentive Program