### Osmosis phase 2 project plan - 2022/Q4

### Scope:

* P1: TWAP
* P2: GAMM transactions, queries…
* P3: Balancer
* P4: Stableswap

#### Artifacts:

* Osmosis <https://github.com/osmosis-labs/osmosis>, for GAMM module (balancer code) and TWAP module on commit hash: 42d73f1cc1c52e85561518be1014b730ef6b7a12
* For stableswap, there are still some pull requests ~~- we will agree upon commit hash later.~~
  + Update December 5th: tag v13.0.0 should be used

#### Features/Module overview an expectations communicated:

Osmosis LAb team member (Dev) gave us a code balancer and TWAP code walkthrough.

The main focus during the audit should be:

* TWAP: focus on spec - clarity is a must, there is a spec written it should be understandable and 1-1 with the implementation
* Balancer: focus on issues, and safety checks - spec is not on a very high level, code is slightly confusing (try to give suggestions to improve both)
* Stableswap: safety properties both in code and tests
* Test improvements: The goal with the osmosis lab is to add more unit and simulation tests. Suggestions for adding more test cases that will improve and fulfill the expectations listed above.

### Project Plan

#### Timeline:

* 7-8 weeks starting from 17.10.2022.

#### P1 Feature/functionality to focus on TWAP module

* Specification - clarity
* Discrepancies spec vs code implementation
* Code analysis

##### Tasks:

* ~~Analyze spec and code~~
* ~~Code inspection for finding issues, suggestion improvements and new test cases~~
* Run interesting sequences of tx by hand / add or suggest test cases

#### P2: Feature/functionality to focus on GAMM module

* Analyze base for creation and joining/existing pools

##### Tasks:

* ~~Adapt atomkraft - test/use protobuf generator if possible~~
* ~~Create TLA spec for tx msgs for GAMM module~~
* ~~Generate traces, use them in Atomkraft and run sequences of transactions on live chain~~
* Extend TLA spec to cover TWAP functionality - will skip now, for not seeing how we could efficiently use Atomkraft for e2e testing of Queries against the TWAP module (TWAP API holds only queries)

#### P3: Feature/functionality to focus on Balancer code

* Specification - check the quality of existing spec
* Discrepancies spec vs code implementation - try to improve spec, open PRs
* Code analysis

##### Tasks:

* ~~Analyze spec and code~~
* ~~Improve spec - open PRs~~
* ~~Code inspection for finding issues, suggestion improvements and new test cases~~
* ~~Run interesting sequences of tx by hand / add or suggest test cases~~
* Expand TLA spec to cover critical features of balancer pools - JoinSwapShareAmountOut

#### P4: Feature/functionality to focus on Stableswap code

* Specification - check the quality of existing spec
* Discrepancies spec vs code implementation - try to improve spec, open PRs
* Code analysis

##### Tasks:

* Analyze spec and code
* Improve spec - open PRs
* Code inspection for finding issues, suggestion improvements and new test cases
* Run interesting sequences of tx by hand / add or suggest test cases
* Expand TLA spec to cover critical features of stableswap pools