

A Data Exploration Tool for Novel DeFi-Metrics on the Algorand Blockchain

Nguyen Quy Tung Long, Kick-off Presentation – Bachelor Thesis

19.06.2023

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1. Introduction

- Background
- Motivation
- Goals

2. Research Questions

3. Methodology

4. Timeline

1.1. Background – Algorand

Algorand™

Founder *Silvio Micali* - Professor of
Engineering at MIT



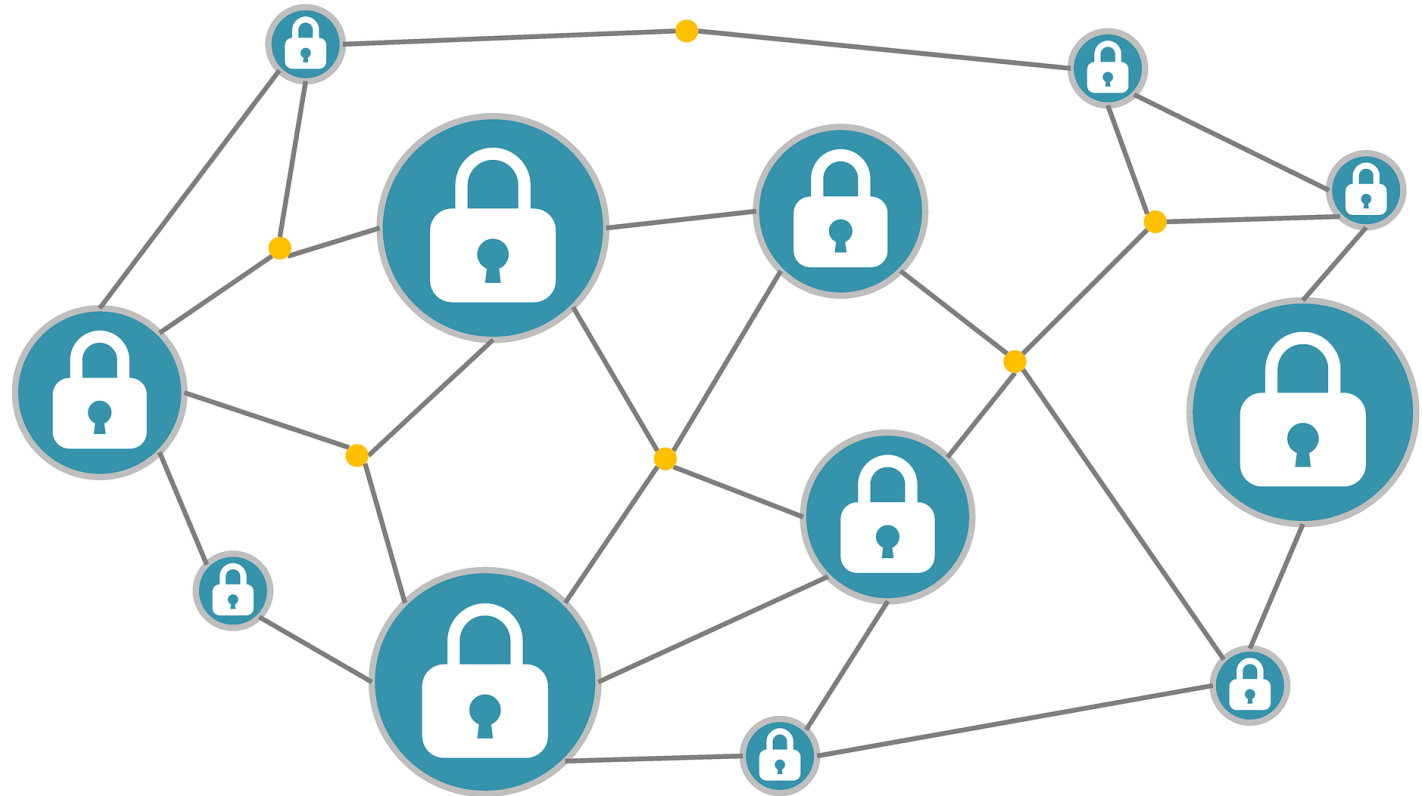
1.1. Background – Algorand

Algorand™

Founder *Silvio Micali* - Professor of Engineering at MIT

Algorand

- *Fast, secure, and scalable* blockchain platform
- *pure-proof-of-stake* based consensus approach



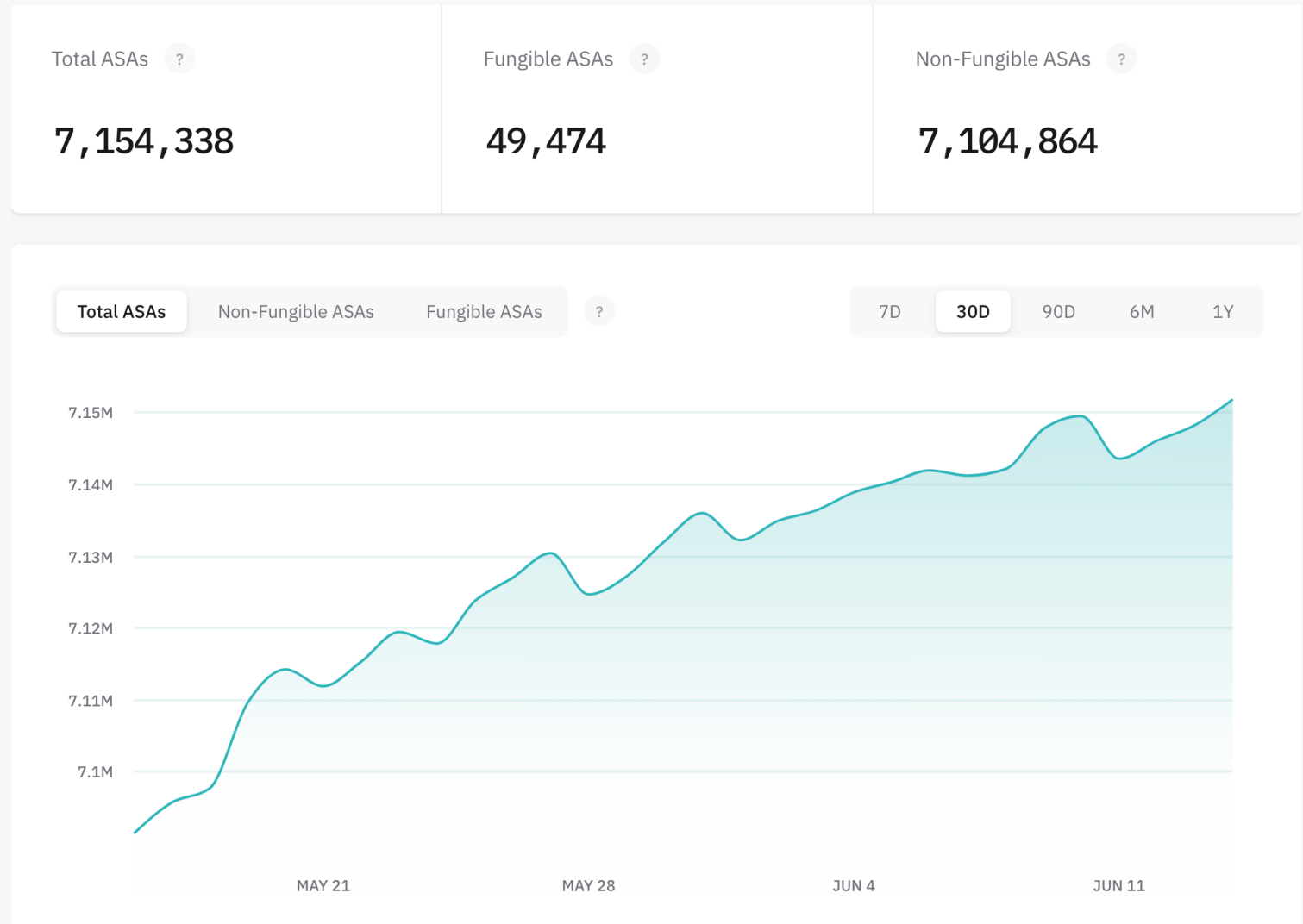
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Algorand

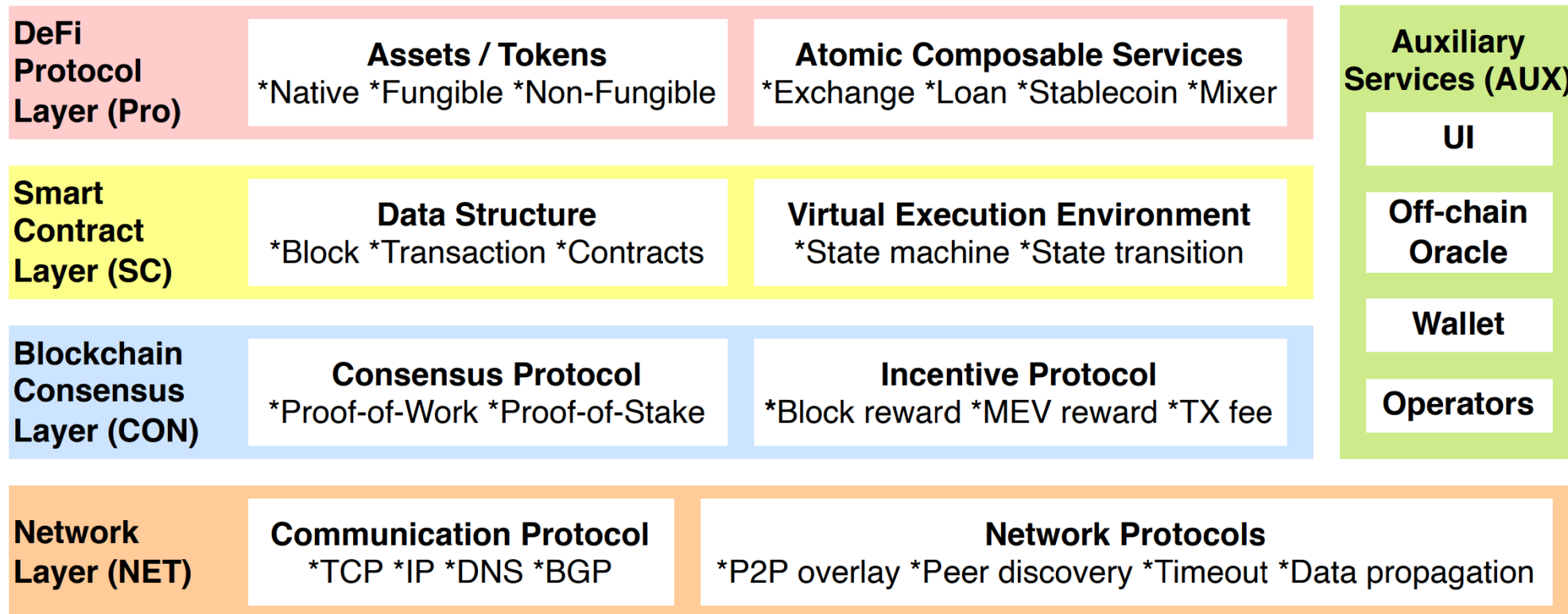
- **Fast, secure, and scalable** blockchain platform
- **pure-proof-of-stake** based consensus approach
- A growing number of *asset types* and *financial instruments* is being traded on its network.



Algorand Standard Assets, provided by [Algorand MainNet Metrics Dashboard](#), via [Algorand Developer Portal](#), accessed 15.06.2023

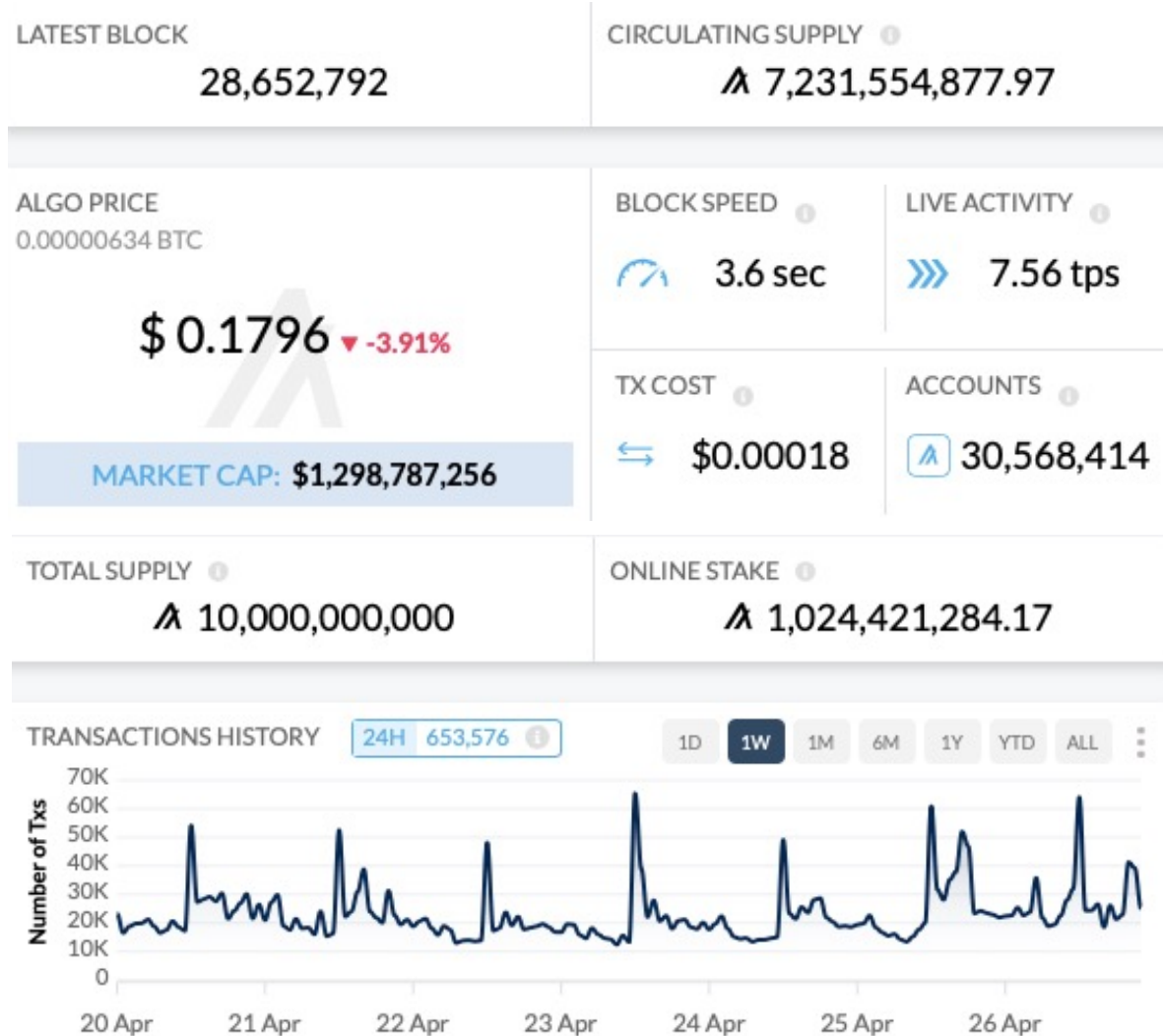
1.1. Background – DeFi

- DeFi (Decentralized Finance) is a financial infrastructure built on top of a blockchain network.
- It relies on open, permissionless protocols / decentralized applications.



High-level systematization of Decentralized Finance

1.2. Motivation




AlgoExplorer

Existing Algorand Block Explorer

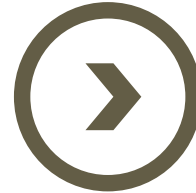
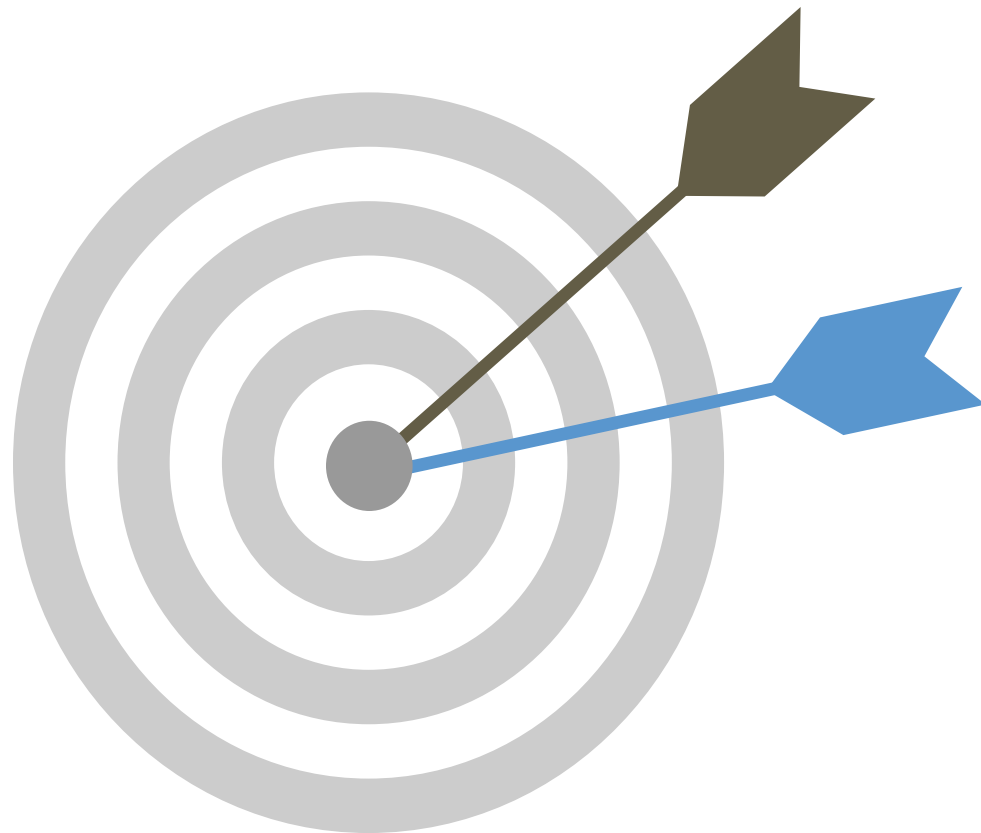
- ✗ Protocol's frequency of usage
- ✗ Assets and financial instruments usage
- ✗ Automated Market Makers (AMMs) usage
- ✗ Total Value Locked in liquidity pools

...

➔ Not much useful information for traders, MEV researchers, etc.

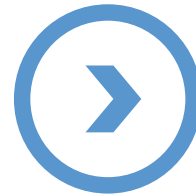
➔  In need of a data tool to help extract useful **insights** about **DeFi assets** and **protocols**

1.3. Goals of the Thesis



Identify novel DeFi Metrics

that can give useful insights,
based on current literature.



Develop a Data Tool

Pipeline to collect and analyze data to
display metrics.

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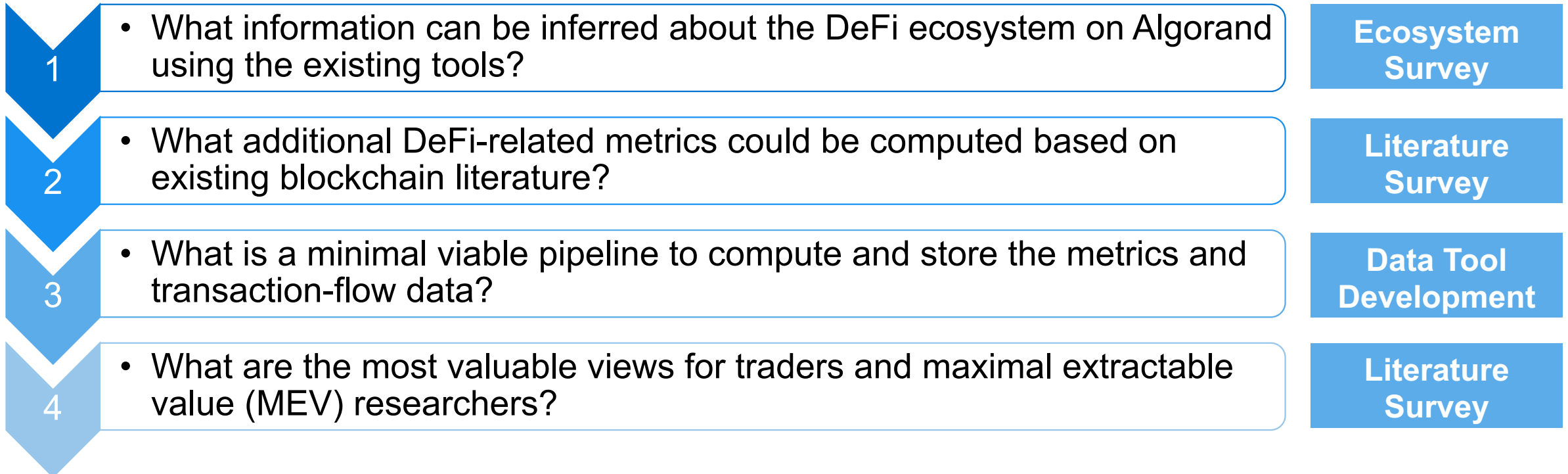
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- 1 • What information can be inferred about the DeFi ecosystem on Algorand using the existing tools?
- 2 • What additional DeFi-related metrics could be computed based on existing blockchain literature?
- 3 • What is a minimal viable pipeline to compute and store the metrics and transaction-flow data?
- 4 • What are the most valuable views for traders and maximal extractable value (MEV) researchers?

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Ecosystem Survey

- Gather metrics provided on most popular block explorers.
- Analyze to infer insights based on those metrics.

	Market General Information					Asset Information				Transaction Details					Block Information			Address / Account Information			
Metrics Block- Explorer	Circulating Supply	Staked Supply	Price	TVL	TX Cost	Price (\$)	Chart of Stats	Market Cap	Total Txs	Tx ID	TX Type	Sender	Receiver	Fee	Round	Proposer	Txs	Balances	Assets	Apps	
AlgoExplorer	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AlgoScan	✓	✓	✓	✓	✗	✓	✗	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Goal Seeker	✗	✗	✓	✗	✗	✗	✗	✗	✗	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗

Literature Survey

Keywords: DeFi metric, DeFi protocol, decentralized exchange, DeFi loan, flash loan, automated market maker, maximal extractable value.

Database: Google Scholar

Inclusion Criteria:

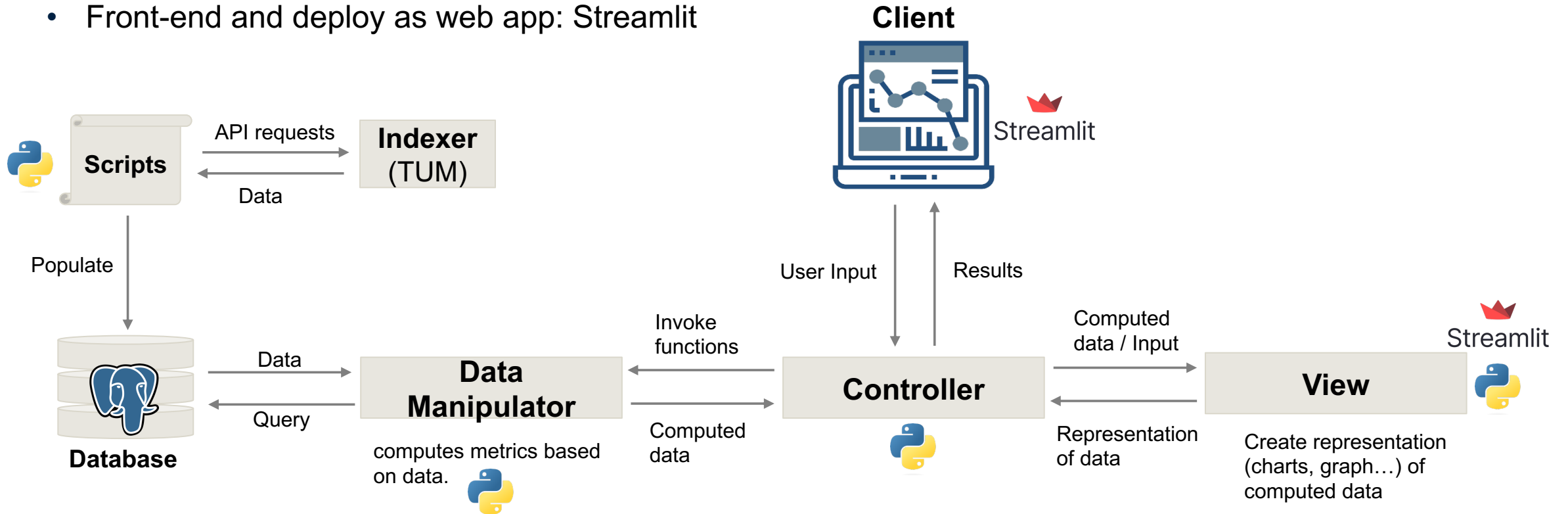
- Papers that discuss the terms mentioned above by elaborating on their insights.
- Papers that discuss the usage (frequency) of the instruments, protocols.

Exclusion Criteria:

- Papers that's meant to provide broad overview, introduction to DeFi.

Data Tool Development

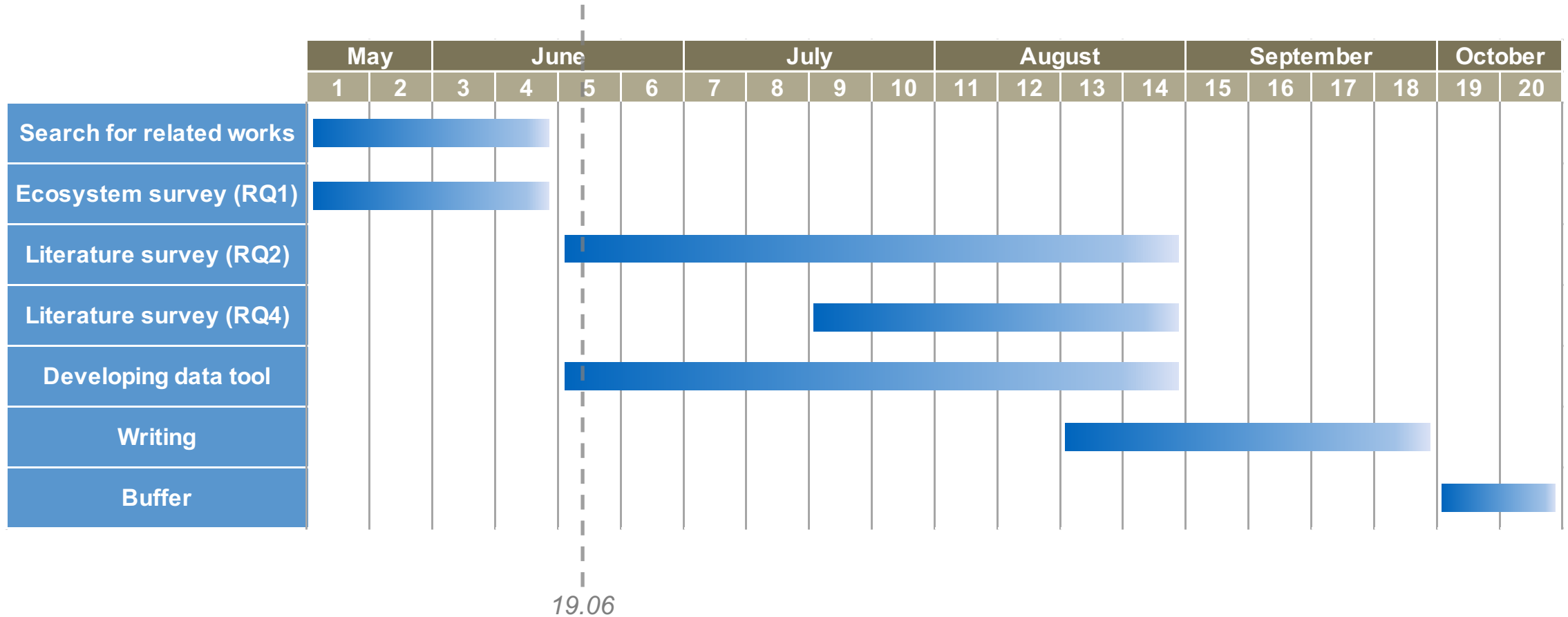
- Back-end: Indexer run by TUM, Python
- Database: PostgreSQL
- Front-end and deploy as web app: Streamlit



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Schedule



**Thank you for
your attention!**



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