

Architecture Concept Based on Distributed Systems for a Monorail System

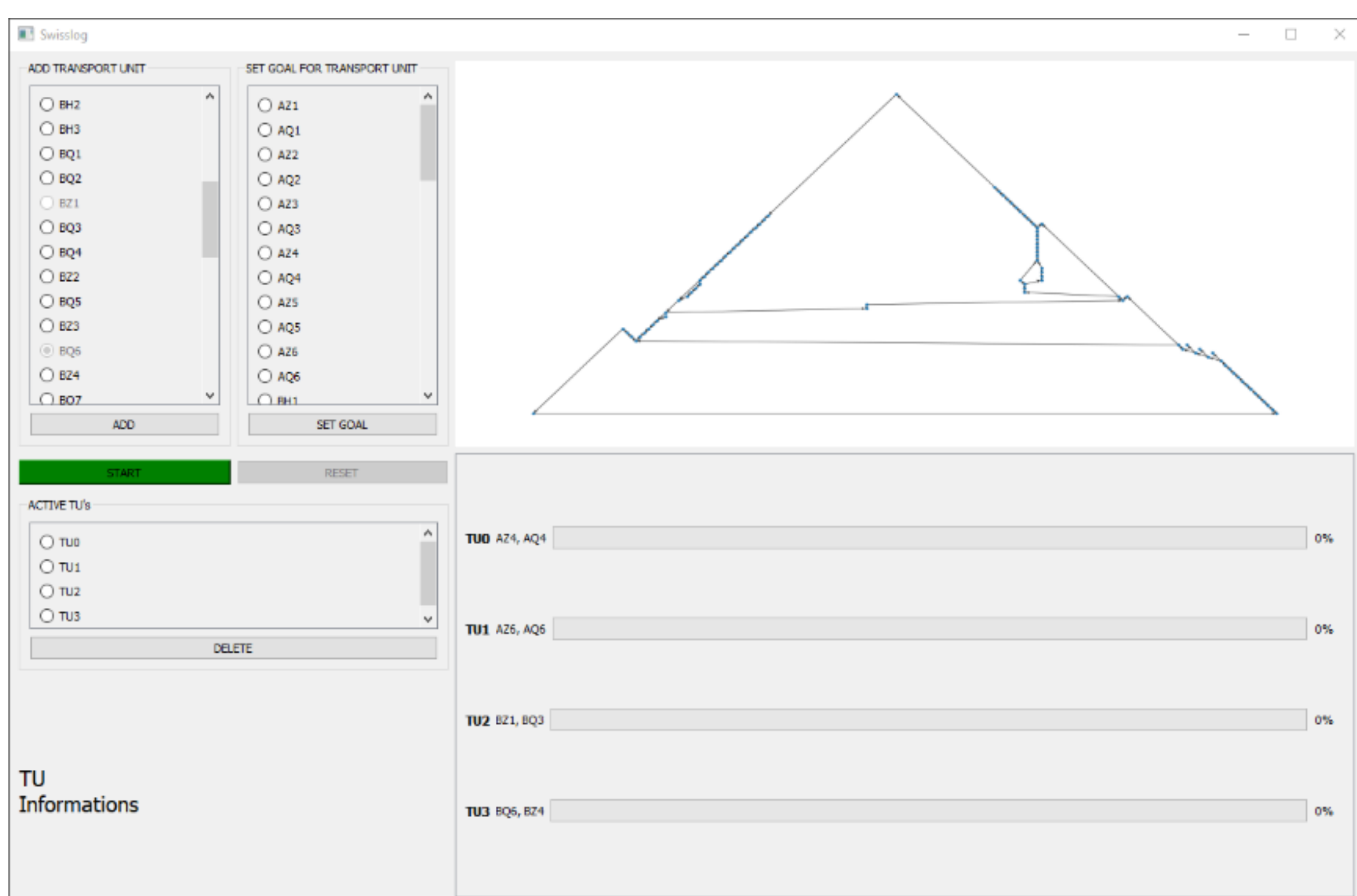
INTRODUCTION:

The monorail conveyor system from Swisslog is a flexible warehouse transport system with up to 200 transport units. The units are controlled by a central server via access points, which prevents the system to be easily scaled.



GOAL:

In order to decentralize the system all units must be able to find the fastest path to their goal. The goal of this project is to implement a graphical simulation for a monorail network with decentralized units.

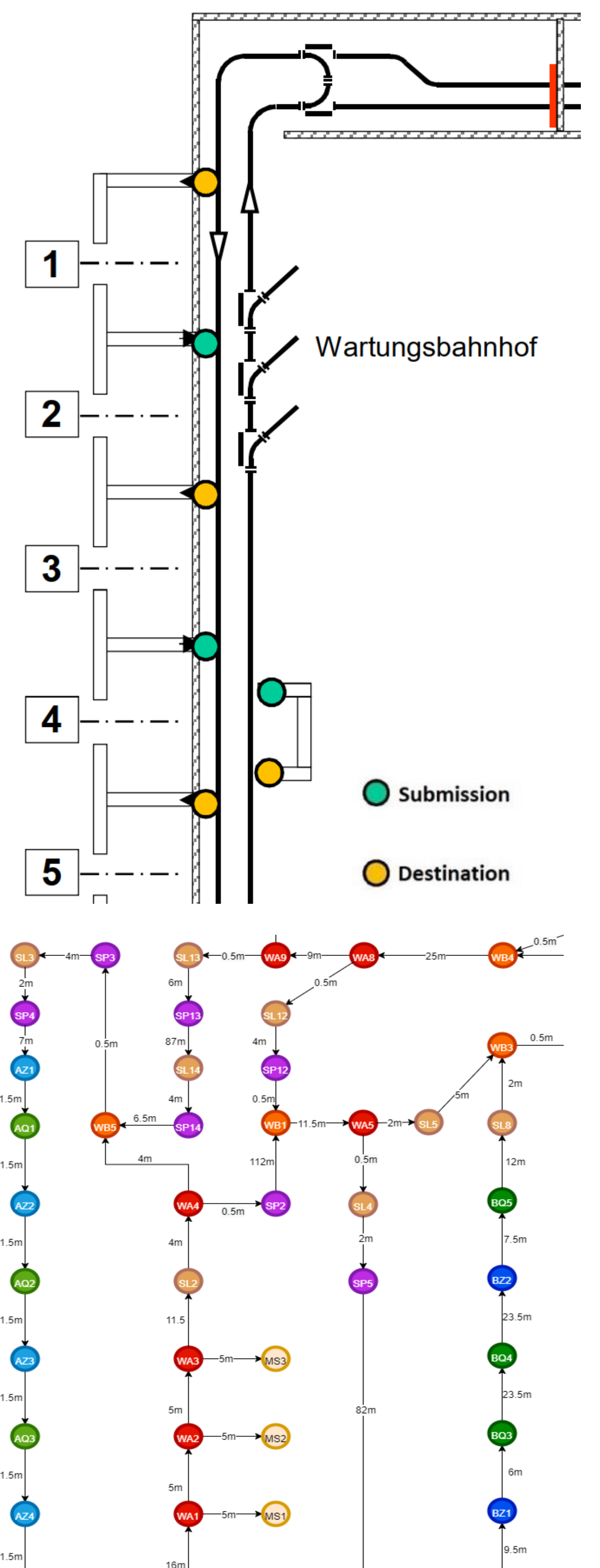


IMPLEMENTATION:

The code is all implemented in Python with a Back-End and Front-End part. The NetworkX library was used to implement the network and path planning and PyQt5 was used to implement the GUI. All frequently refreshing loops were carried out in separate tasks.

PATH PLANNING:

The monorail network is represented in a graph with directed and weighted edges, the nodes represent stations, junctions and speed limiter. Within this graph the fastest route can easily be found with a Dijkstra algorithm. The NetworkX library in Python includes this method to return a path or time.



RESULT:

The Program exhibits a representation of the network and the active transport units traversing on it. While in the background the transport units are represented as autonomous objects connecting to nearby other units and stations.

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