

Advanced Modeling Assignment
Supply Chain Model for Industrial Zone
near Damman (Kingdom of Saudi Arabia)
TU Delft, Tuesday, April 14th - Friday, April 17th, 2020

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Almajdouie - de Rijke

Introduction

The goal of this project is to develop a simulation tool to support strategic decision making in expanding road infrastructure in the harbor of Damman. The project is expected to go through the following three stages. First a model of the existing infrastructure will have to be developed by incorporating geographical information, travel times of loaded trucks and waiting times at check points. (Include rail?) Next, the model will have to be calibrated using data collected by the industrial partner in this project. In a third stage scenarios for the expansion of the road network will have to be proposed and evaluated. The project is expected to be carried out in close collaboration with our industrial partner that has an on-site factory. To ensure maximal portability without compromising on computational efficiency, we request the simulation software to be written in the Julia programming language.

Assignment

Onder input wordt o.a. verstaan het fysieke lay-out van trajecten, knooppunten, routes tussen begin- en eindpunt, inclusief laad- en lostijden van vrachtwagens, gegeven een bepaalde packaging mode (type lading). Onder output wordt verstaan het bepalen v/d transport capaciteit in mt/u benodigd, bij een set van transport variabelen.

Model enkel voor productafvoer - niet voor grondstofaanvoer - langste afstand 22 km - 40 km per uur gemiddeld - wachttijd in de haven - belangrijkste tijd gaat zitten in checkpoints in de route - stoplichten, trafiek, road ban for truck - scenario: nieuwe fabriek met nieuwe input met toename van factor 1.5 tot 2;

Choosing this Assignment

This assignment will be co-supervised by Almajdouie - de Rijke in Damman.

Time Line

1. \leq March 15th: signatura collaboration agreement;
2. \leq March 30th: final version of this assignment;
3. Tuesday, April 14th, 09:00: project kick-off;
4. Wednesday, April 15th, 15:30: presentation by de Rijke at the TU Delft (room Banach on the van Mourik Broekmanweg) followed by Q&A;
5. Friday, April 17th, intermediate student presentation

The Royal Commission for Jubail and Yanbu (RCJY), through the respective Park Management organization, will develop a Value Park (VP) adjacent to the Amiral Complex. The VP will host various chemical converters, which will mainly consume feedstock supplied by the Amiral Complex. The majority of the VP will be located within industrial block 11, whilst the Amiral Complex will be located within blocks 8 and 10 (see Appendix A).

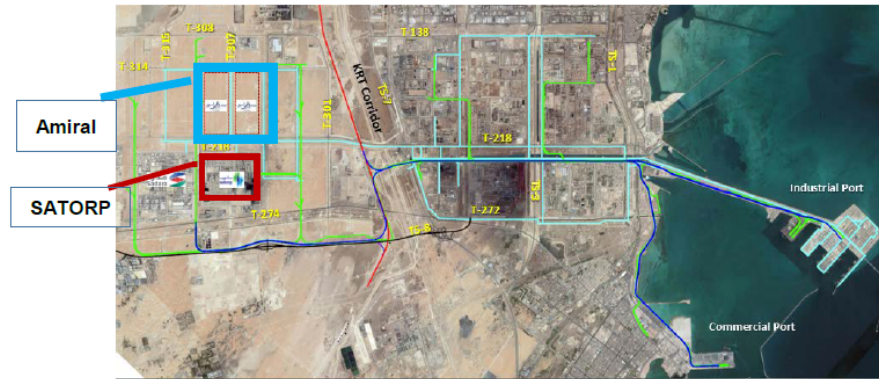


Figure 1

The Amiral Complex is connected through the existing Road 218 that runs at the SE side of the site, to the two major highways: the Dhahran-Jubail Highway and the Abu Hadriyah Highway.

Figure 1: Map industrial zone near Damman.

6. from April 20th to June 9th (to be defined): TU Delft visit to de Rijke plant in Rotterdam or Antwerp?
7. from April 20th to June 9th: student continue work on the assignment;
8. June 9th: final presentation by students at the TU Delft. Present will be de Rijke (to be confirmed)
9. after June 9th: visit to Damman?

References

1. referentie Armbruster model
2. report of students in 2019;