

WELCOME

OptiYard Final event 25th of September

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Elements supporting the Demonstrator

- When starting the project some developments were expected on the infrastructure: a direct connection to the industrial part from the main galeria, a lengthening of one of the track to receive longer trains and a second connection to Parenzane to exit the train.
- After a few months works were not achieved and we kept the initial layout of the port and its access to elaborate the simulations.
- The achievement of track 14 extension was however taken into consideration in the course of the project.
- The upgrading of certain shunting locomotives reducing the time for operations was taken into consideration.

WHY optimizing Trieste operations

- Trieste is a port with a high potential in the development of :
 - Multimodal logistic chains between central Europe and Far East with the call of deep sea container carriers
 - Multimodal logistic chains between Northern and Western Europe to and from Turkey
- The recent growth of the traffic demonstrate the need of enhancing efficiency and gaining capacity.
- Infrastructure works will give a capacity increase but in the short term any operational improvement enhancing reliability and competitiveness are important.

Development of the project

- In order to prepare the optimisation the first step was to elaborate the simulator
- The first step was based on a standard week of activity where the time allocated to each part of the operation was standard .
- However we obtained a more precise real week to see if the simulator could work on that week. This was performed by Simcon but Iffstar in charge of the optimisation could not introduce that real week in their optimisation module (Optimodule) without a long delay.
- The decision was to keep the standard week to analyze the efficiency of the optimisation.
- However the crucial point was the integration of the simulation program and the Optimodule software in order to show step by step the operations decided by the optimodule.

The follow up of the process

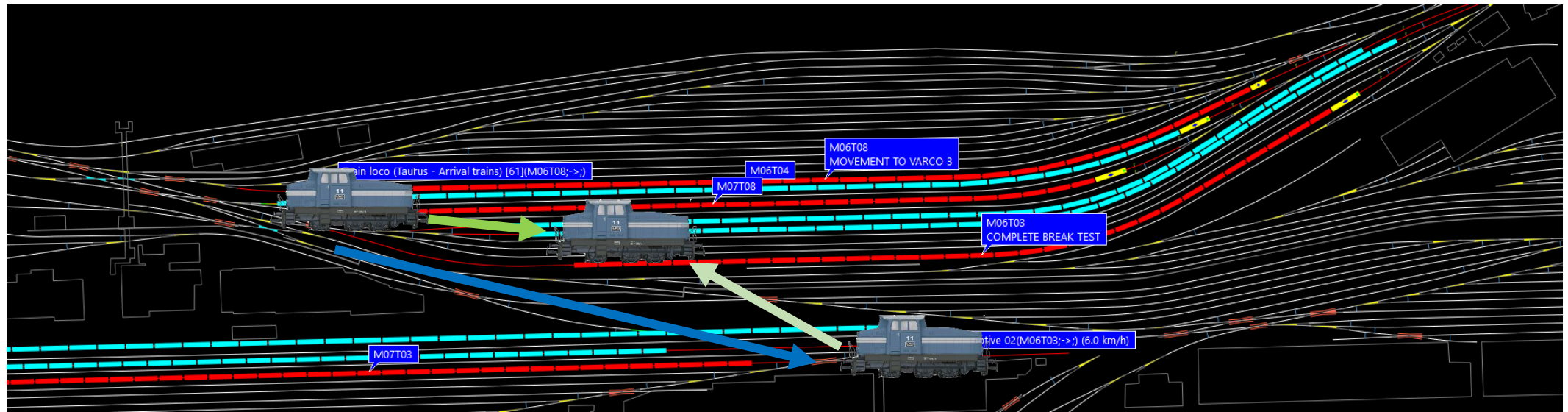
- At this stage the integrated optimodule and simulation is working with some limit in functioning time enabling to perform simulation of the optimisation on some hours only.
- This enables to develop the demonstrations which involve:
 - A simulation of the optimized solution of the reference traffic on the maximum time of functioning
 - A simulation of the reference traffic with Villon software during the same period
 - A recording of each step of the operations performed by each software
 - A record of all elements constituting the KPIs which have been identified to characterize the efficiency of the optimodule

The Finalization of the demonstration

- As usual any fundamental change in the operations in Port and Terminals needs a preparation with the staff
- So it is first necessary to work on a model simulating the operations to test any proposed solution optimising the operations
- This may be useful to support the experience of the dispatchers enabling them to test new solutions
- Either by hand or with integrated optimization module the simulations will enable to compare some KPIs between the reference operation and the optimized ones and assess the progress.

Non-optimized Simulation model

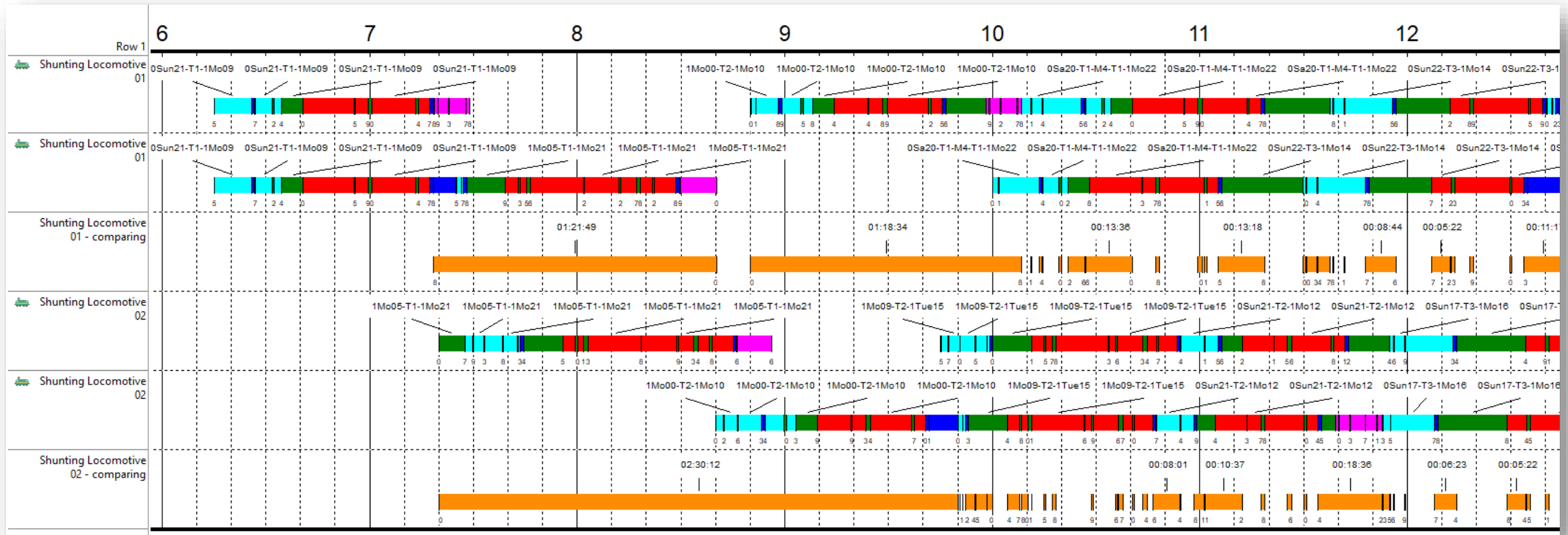
- Manual optimization – experimental (human decisions - dispatcher)



- ➡ Return from train to waiting position
- ➡ Move from waiting position to train
- ➡ Direct move from train to train (by dispatcher)

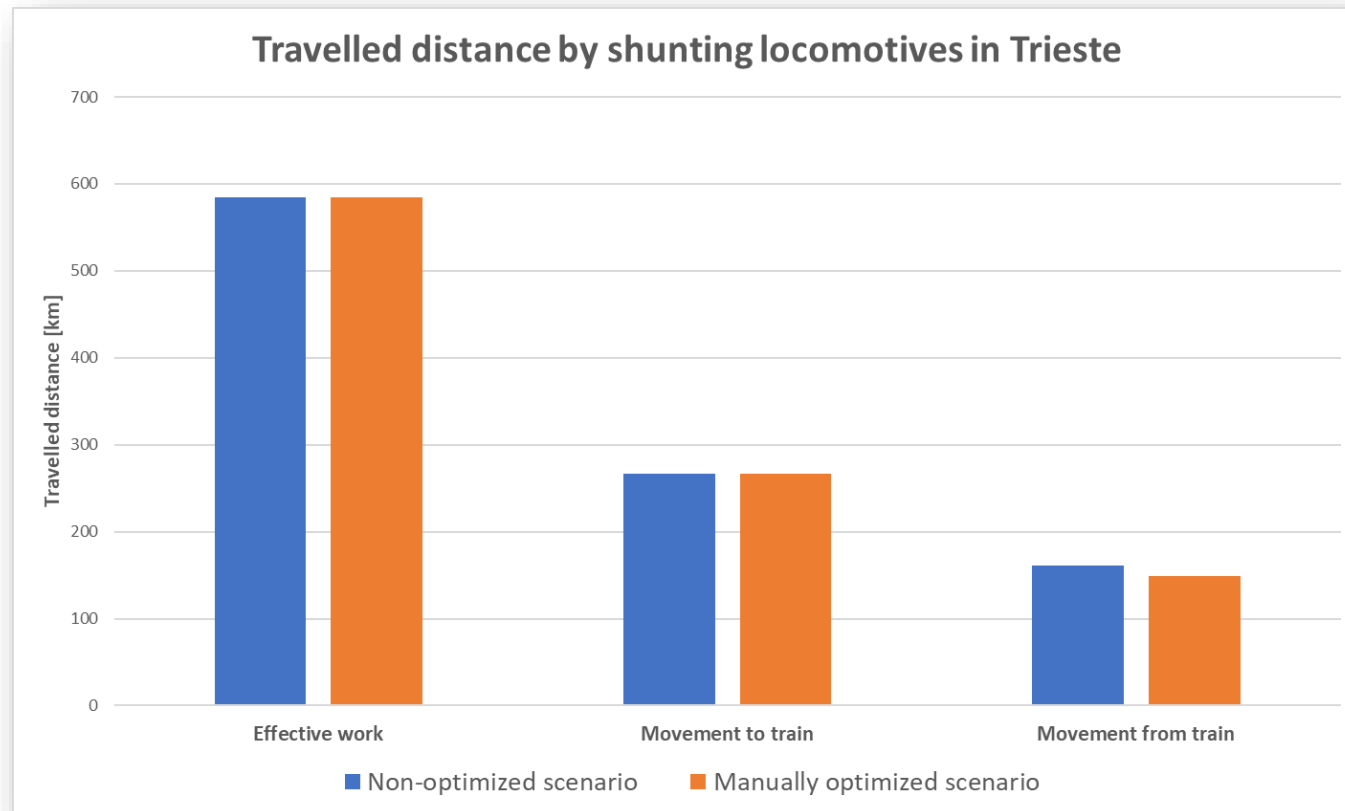
Non-optimized Simulation model

- Manual optimization – experimental (human decisions - dispatcher)



Non-optimized Simulation model

- Manual optimization – travelled distance of locomotive (Trieste)



Explanation:

- One week operation
- Effective work – pulling/pushing wagons
- Empty Movement to train/from train
- One day manual optimization saved 12 km of empty locomotive movements (return from train to waiting position)

What can be the impact of an optimization

- If the optimization reduces the utilization of certain equipments constituting a bottleneck for the capacity it may theoretically create some more capacity for the port.
- Of course this must be checked with much more simulations with different scenarios of traffic increase as other constraints may appear.
- The simulation operated on a period of 24 hours is interesting as traffic arrivals are repeating more or less regularly during the week.
- This shows the interest of simulating also the reaction of the operation in case of a sudden reduction of one of the resources to assess the impact on crucial KPIs



Thanks for your Attention

