

## PILOT ACTION FINAL REPORT - PP05 - LUKA KOPER

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## 1. Ex-ante situation

*Before the introduction of the innovative technology at (the gate of) the Container Terminal, the handling and processing of data related to the trains with wagons and containers arriving/leaving the port was done manually. In addition to this, at the container terminal in the port of Koper, a physical check of containers and wagons at their arrival takes place by company's employees, in order to register the status of inbound/outbound freight and rolling stock.*

*The checking procedure includes unit's serial numbers, possible damages, containers' numbers, sequences of wagons etc. All these information are also shared between different stakeholders between which the most important role is left to railway operators and customs.*

*During the pilot action in COMODALCE, Luka Koper will work with Adria Kombi d.o.o. on the improved implementation of operational procedures, like those mentioned before, by digitizing the operations and the data acquired for the local database and shared with the other stakeholders involved in the process, which will immediately provide all the data to the whole system, without waiting for intermediate steps but sharing just-in-time the info about the railway freight transport with the port community.*

*Before intervening with the innovation, the location showed a railway completely free of any additional equipment and leaving the trains to enter at the Container Terminal without any digitizing system for the recognition of wagons/container:*



Figure 1: railway to the gate of the Container Terminal in the Port of Koper (source: Luka Koper archive)

*Through the research made for the TNA purposes, some crucial needs and weaknesses were identified. First of all, the main aspect was the digitization of the processes which serve to speed up the operational*





The pilot action aimed to install an OCR scanning system in the port of Koper, at the entrance of the container terminal, for the scanning of wagons and containers transported through railway in the port of Koper. The system is able to scan the trains with containers at terminal's gate and provides all the data codes and videos through a detection system which scans the wagons/containers in real time, saving all the information on a local server. The implemented solution shows images about detected serial numbers, status of the wagons and containers (including eventual damages) and records images also for later disputes with forwarders, owners of the containers etc. The system consists in an installation of a double portal over two railway tracks in front of the container terminal:

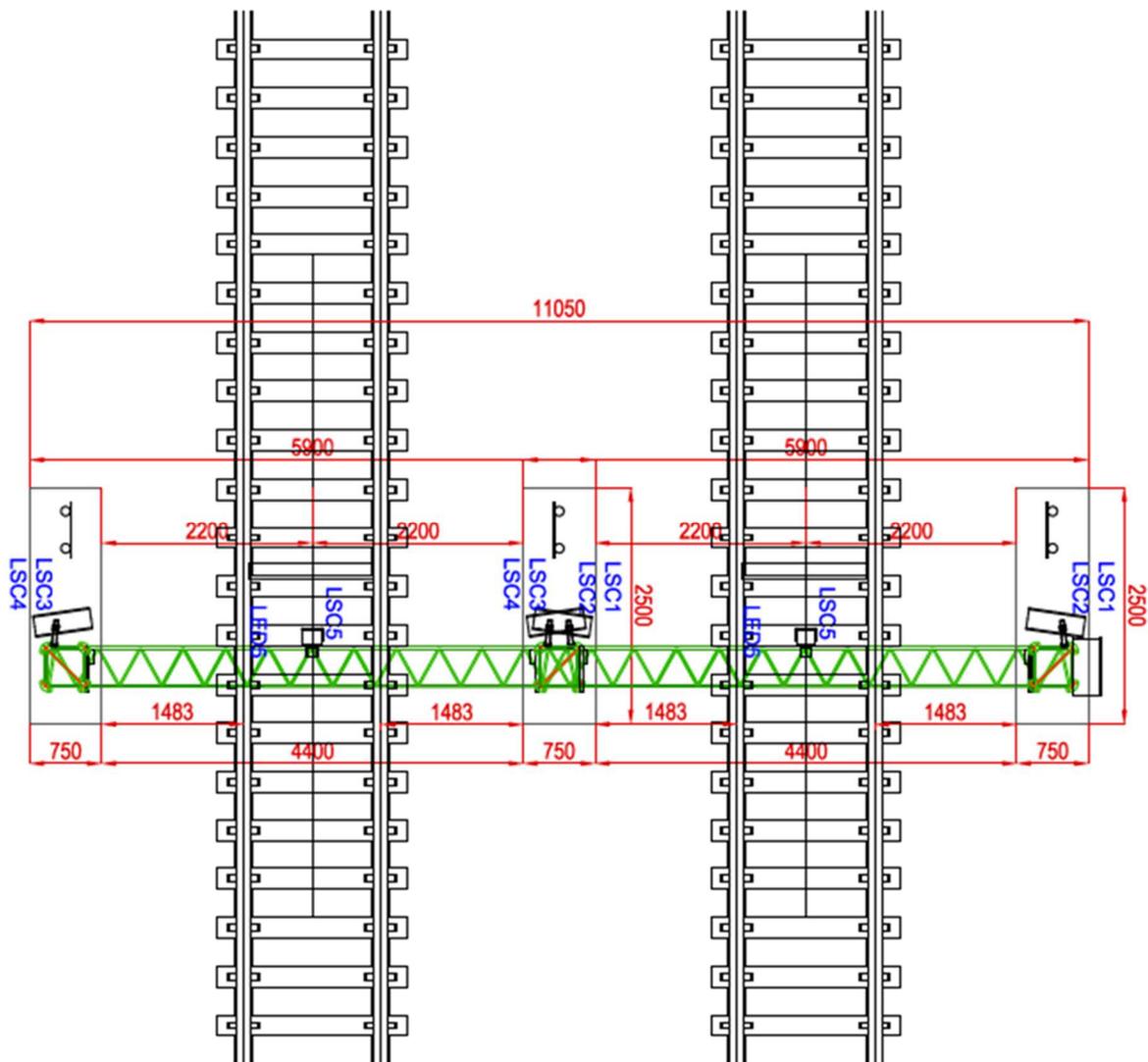


Figure 3: design of the OCR system in the port of Koper (Source: Luka Koper's archive)

It mounts an equipment composed by video cameras with high resolution capacity and with lighting system for the detection of serial numbers and damages in every type of atmospheric conditions and for 24 hours a day. In addition to this, the high capacity of the video card and of the storage disks installed, allows the servers to record the trains passing inbound and outbound of the Container Terminal for many weeks, before archiving the data.

The design for the chosen location has been drafted by the working team and after the project design was completed by the chosen contractor, the tender for the purchase of the portal was published. The CAMCO company was successful in the tender and provided the equipment by the end of August 2021. Meantime,



some works for the construction of foundations took more time than expected and the concrete installation of the OCR portal was postponed to October 2021. The works were successfully completed by the end of the year and additional integrations of the software provided by Adria Kombi were needed at the beginning of 2022. Actually, the equipment is fully installed as seen below:



Figure 4: installed OCR system in the port of Koper (Source: Luka Koper's archive)

The installed equipment allows the Port's Community System (PCS) to efficiently follow the operational processes at the railway which serves the Container Terminal and digitally fulfils the expectations of the stakeholders involved in the processes. Here below a view of the recorded container on the wagon:



The system allows also to see the above container from four different sides. The Investment I2 was successfully completed by the end of 2021 and handed over for use at the beginning of 2022, when all the data flows were used by the involved stakeholders. Actually, the system is fully in use at the Container Terminal and implementations are foreseen in next years.

### 3. Conclusions

The pilot action achieved the expected results and is ready also for future implementations of the system. In fact, the OCR system could be integrated with other systems which are part of the PCS and could allow the operators to follow the containers during their whole journey at the Port of Koper.



### *The experiences*

*Actually, the system allows a reduction of operative estimated times for around five minutes per train, which means that approximately for 24 trains per day it can represent a gain of two hours per day. In terms of percentage, it represents a reduction of more than 8 % of the operative time at the railway gate of the Container Terminal.*

*Not only the external stakeholders will benefit from the introduction of such a system, co-financed by the COMODALCE project through the Activity I2, but also the involved employees will indirectly benefit from it as a safer and more secure working process, where the digitization is able to limit the presence of checkers on the field. It reduces the possibility of accidents involving employees and offers safer working conditions. Such an improvement has not been yet quantified from the social point of view, but a reduction of absence of employees due to illness is reflected for sure also in a reduction of payments of sick leave.*

*From the technical point of view, the railway operators and all the other logistic operators involved are enthusiastic about the innovation, but they are still getting acquainted with the new system. As mentioned above, through the project's results we have realised that the installed equipment can represent the basis for the concrete development of the full digitization of the manipulation processes related to the railway transport of containers and of their manipulation within port's area.*

*It's also proved that the system can be integrated with other video systems in the port which can provide a traceability of each container and wagon in port's area. In addition to this, the system can be also integrated with the OCR systems which are planned to be installed at port's road entrances, scanning trucks and transported containers. This further step, which links the road and the railway transport through the ICT solutions for multimodality in suburban areas, is foreseen within the pilot activities planned in the newly submitted EU project named ACCESSMILE. The evaluation process is ongoing within the Interreg CE Programme.*