

Summary

FUNCTIONAL SPECIFICATION

for the introduction of a
Yard Management System
(YRM)
at the depot xx

Customer

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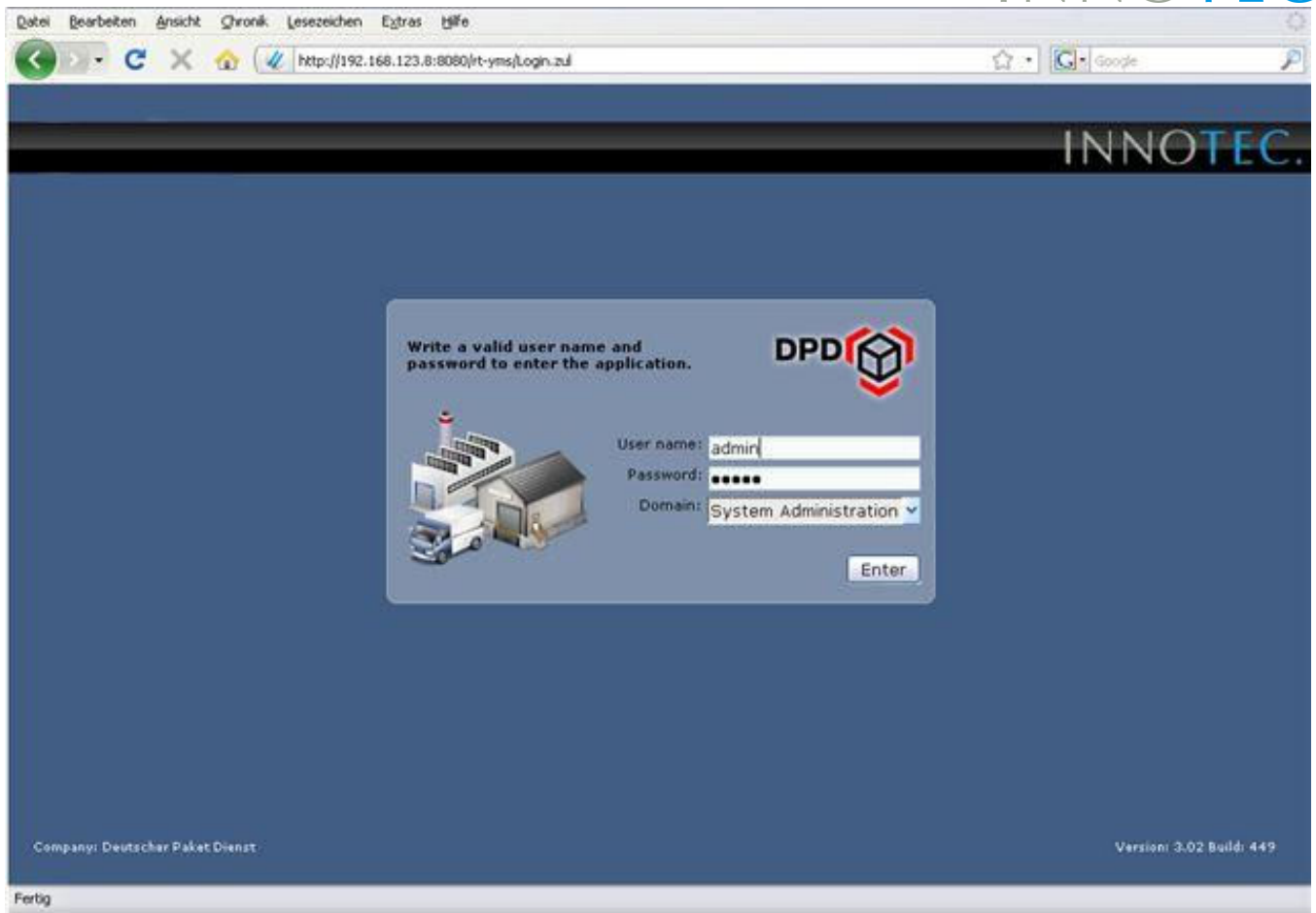


Figure: Start Screen from Yard Management System for Deutsche Paket Dienst - DPD

1 Introduction

The task of the project is the introduction of a Yard Ramp Management system (YRM) at the depot XX 16. The task of the Yard Ramp Management system is the control and coordination of the movements of transport units on the yards. For the YRM, the scope of functionality includes the software for planning and controlling the movements as well as the delivery of terminals for the communication with the shunters inside the yards.

Goals

Altogether, the introduction of the YRM should lead to an increase of the productivity for the loading and unloading of transport units. The following are points where improvements were recognized as possible:

- a) Reduction of manual entry activities in EDV system

Since the communication between the stations (ex: gates doors and shunter trucks) is done verbally, the exchanged information is partial maintained in the existing ERP System via manual input.

- b) More efficient use shunter trucks through

- the automation of the majority of the control of the movements,

- electronic communication of transport orders over terminals,
 - optimal assignment of driving orders to the shunter trucks.
- c) A balanced utilization of the system through controlled occupancy of the gates
- d) Reduction of the manual effort for the yard organizationFuture process

Standard sequence of operations

Transport units are loaded and unloaded on the yard area. In the normal case, so-called regular units are used for the processing. The processing of regular units is carried out in accordance with a schedule. In addition to the regular units, additional units are also processed. These are described in the section "Special Cases". Different unit types are delivered and processed. As different types, there are swap bodies, semi-trailers or rigid trailers. If the units remain connected to the tractor during the processing, these are referred to as combinations. Swap bodies or semi-trailers are treated differently. They can remain connected to the tractor or moved by means of depot's own shunter truck. The strategy plans determine whether a unit is to be moved as a combination or via a shunter truck. Strategy plans are defined in YRM and set which station a unit is to be moved to for loading or unloading and whether movements by combinations or shunter truck are to be made.

Different information is recorded in the existing ERP system upon arrival of a truck. Among other things, the strategy plan designator which indicates how the unit is to be processed is recorded. Furthermore, a note is entered, whether the unity is available for further loading after the initial unloading or should be picked empty. After all the relevant data has been recorded in the existing ERP system and transferred to the YRM, the strategy plan is released and transport legs created. The first transport leg always contains the movement of transport units from the station gate to the first parking space on which either the unit or the combination should be parked. The first parking space, which is either a parking space or a ramp, is shown in YRM as a message and the driver is informed about the space verbally. With confirmation of the message, the first transport leg receives the status "completed" (time between recording in the existing ERP system and the display in YRM).

If units are not moved as combinations, they are moved via shunter trucks. The movements are carried out on the basis of movement orders (movement orders = transport legs to be completed by a shunter truck) which was produced according to the strategy plan. The movement orders and the transport orders are shown in the control monitor of YRM and communicated to the shunter trucks over the control. In the terminals, which are installed in the shunter trucks, the movement orders and the transport orders are communicated and displayed along with the corresponding status messages. The assignment of movement orders to the shunter truck is carried out with the aim of avoiding empty driving time. The handling and communication of transport orders (movement of units as a combination = transport order) is very important. With the exception of the first transport order which is communicated to the driver of the combination at the gate as described above, the transport orders are communicated to the drivers via the shunter truck. Corresponding transport orders are sent to all active shunter trucks and displayed on a separate area of the display. The transport order is regarded as processed if a shunter truck has reported the task as completed.

Altogether, a variety of restrictions and parameters are taken into account within the control.

Besides the control monitor which is already mentioned, a graphic displaying all the parking spaces and the statuses visually is available. By means of the graphic, the input and administration of the master data is also carried out for the parking spaces.

Loaded units which are units to be unloaded and empty units intended to be loaded are to be delivered and processed in YRM.

The impulse for the loading arises from the availability of free loading ramps. Whenever a loading ramp is free, it has to be checked whether a permitted unit is available and can be brought to the ramp. As a rule, units from parking lots in a specific zone are to be brought to the ramps. If no unit is available on the parking lot, an exception can be used and a unit brought directly from the unloading to the loading ramp. Per relation, several units can and will be loaded. The number to be expected (target) is entered in the daily dispatching.

Parallel to this number, the actually loaded number of units is reported in the daily dispatch. An overview of the daily dispatch is made available as a printout.

The processing is carried out 6 days in the week for 24 hours on the day. The peak time for the loading and unloading is during the night. A cleanup of the system is carried out once daily at the beginning of the new day. As a rule, the clearing up is carried out in the morning around 7AM. Cleanup means essentially resetting the daily dispatch for the actions of the next shift.

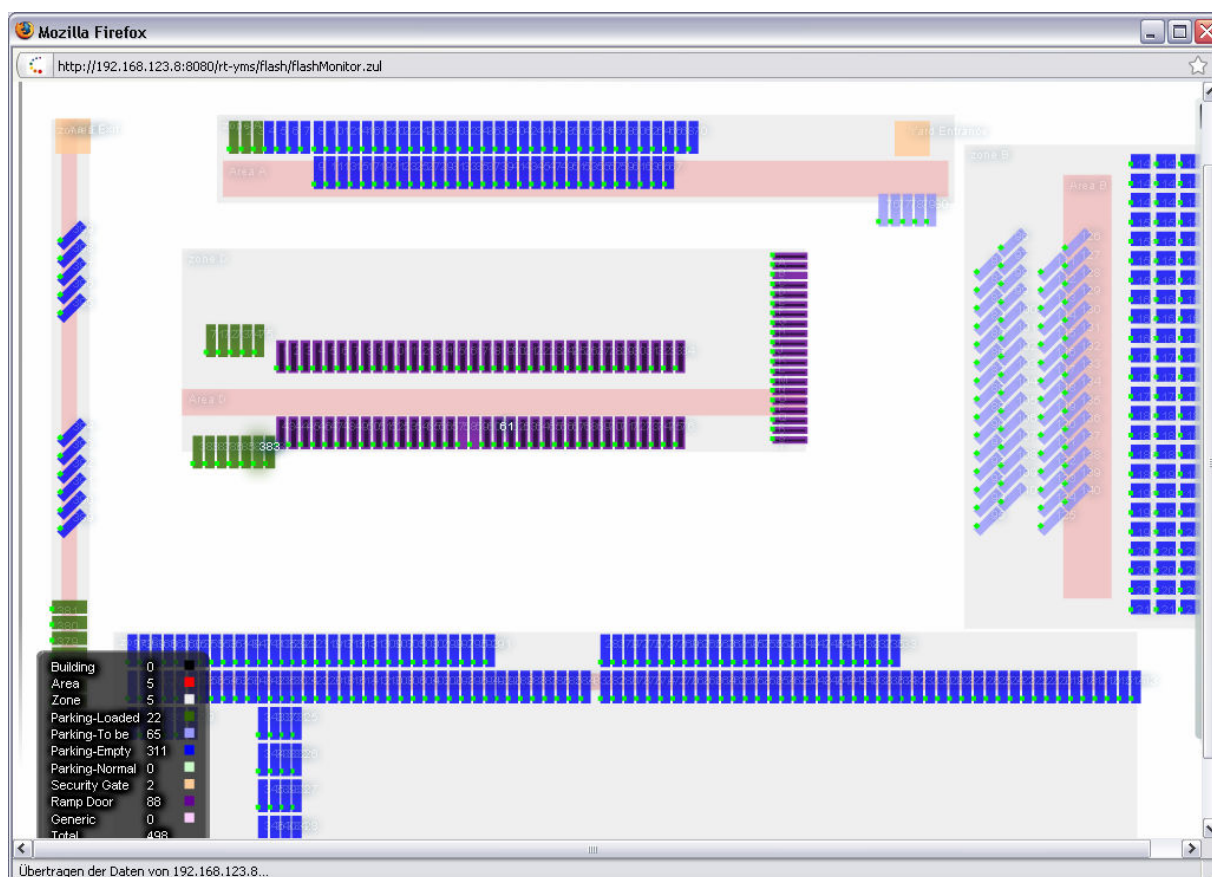


Figure: Screen “graphical layout monitor” with park lots, ramps, security gates. All information are in real time