Definition of "as is" scenario and analysis of existing bottlenecks

Final Version of 30/08/2019

Deliverable Number D.4.2.1.

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Document Control Sheet

Project number:	10043002
Project acronym	TRANSPOGOOD
Project Title	Transport of Goods Platform
Start of the project	January 2018
Duration	21 months

Related activity:	WP4 D.4.2. – Test in port environment
Deliverable name:	D.4.2.1. Definition of „as is" scenario and analysis of existing bottlenecks
Type of deliverable	Report
Language	English
Work Package Title	Smart logistics pilot and test of profiles calculators
Work Package number	4
Work Package Leader	Elevante srl

Status	Final
Author (s)	Port of Ploče Authority
Version	1
Due date of deliverable	31.08.2019
Delivery date	30.08.2019

Summary

Introduction

In accordance with the Work Plan, **WP 4 D4.2.1 "Definition of "as is" scenario and analysis of existing bottlenecks"** had to study the requirements as prerequisite of As-IS scenarios for port of Ploče. During the preparation of the Document it was necessary to perform a detailed analysis and reengineering of current procedures and information flows between various stakeholders in order to find out the key process(es) which will be covered by further activities in TRANSPOGOOD Project.

As the first step, it was very important to understand the organization of the port of Ploce, to recognize all stakeholders, their nature, role and responsibility within the port community.

During the analysis the relevant processes were analyzed, critical factors were identified and the proposals for improvements were made.

The main output is the conclusion if the selected processes which must be improved are of special importance for function of the Port of Ploce Authority and in line with the aim of the TRANSPOGOOD Project in order to plan and carry out necessary activities defined within WPs. Within TRANSPOGOOD Port Community System Ploče should exchange information regarding available resources on new entrance terminal to serve profile calculators developed thorough project. Data which has to be exchanged depends on processes defined by Port of Ploče Authority which are included in this further parts of document and are crucial for understanding.

1.1 Overview if the Port of Ploče

The port of Ploce is the second largest Croatian freight port. By decision of the Government of the Republic of Croatia, The Port of Ploce Authority was established on February 13, 1997 for the purpose of the management, development and use of the port of Ploce and the port of Metkovic which is 24 km far from Ploce along the river Neretva. According to its purpose, the port of Ploce is a port opened for international public traffic and in view of its size and importance it has been proclaimed a port of special international and economic interest for the Republic of Croatia.

The Port of Ploce is located in the southern part of the Adriatic Coast at 43° 03'N and 17°26'E. Owing to its location, this port is of exceptional significance for the economy of the neighboring state Bosnia and Herzegovina, as well as for the partners from Italy, Serbia, Hungary, Slovakia and other countries of the Central Europe (picture 1. In Appendix 4.). It is located in a bay enclosed from the south and south-west by the peninsula of Peljesac, representing thereby a natural breakwater.

The position of the port of Ploce enables a quality maritime connection both with the cities on the Adriatic coast and in Italy and with the ports in the entire world.

1.2 Business Environment

The port of Ploče is one of the main ports of Croatia and it is considered as a strategic port by the Croatian Government. The Port of Ploče is located on the Adriatic Sea coast in the area of the Neretva River. Its facilities include terminals and other structures in Ploče and in Metković, which lies on the Neretva approximately 20 kilometers (12 miles) inland to the east of Ploče. It is the second largest cargo seaport in Croatia, mostly serving Bosnia and Herzegovina, along with some local and regional users.

The Port of Ploče is at the southern terminus of Pan-European transport corridor V, branch C, representing a maritime extension of the rail and road routes leading to and from the Ploče area.

Table 1 Road connections

2. Identification of the main target groups and stakeholders

2.1 General information

Port of Ploče Authority has recently developed a Port community system designed to support processes for all stakeholders involved in cargo, vessel, truck announcing and other forwarder to port related operations. PCS system is currently in phase of implementation for use by all port of Ploče community stakeholders. At present time there are two IT systems in use at port of Ploče community. A new PCS system and the technical security used for recording persons accessing port area through port of Ploče gate.
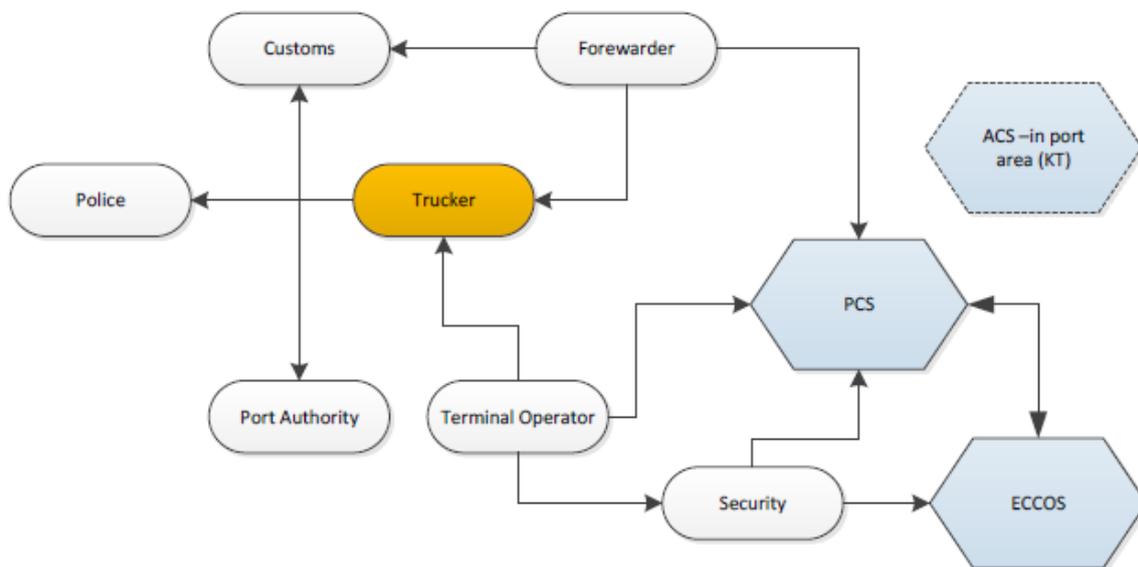
Diagram 1: System overview and stakeholders' interactions

2.2 Involved parties and roles

On the basis of the common agreement between the project partners about the list of the processes which should be considered, the Port of Ploce Authority listed all stakeholders in the port community , divided them into the groups on the basis of the core business activity and then selected minimum one and in some processes even more representatives who were interviewed. The crucial criteria for the selection was the level of the involvement in relevant

processes, then the size and volume of the activities, as well as the readiness to cooperate in the interview.

List of the stakeholders which are identified:

Terminal operators	Forwarding agents	Public institutions	Port Security
1. Luka Ploče d.d. 2. Adriatic Tank Terminal d.o.o. Ploče 3. NTF d.o.o. Ploče 4. Top Logistics d.o.o	1. INA d.d. 2. Trans integral d.o.o. 3. Jadroagent d.d. Ploče 4. Adriatic Tank Terminal d.o.o. Ploče 5. Luka Šped d.o.o. 6. Ploče Šped d.o.o. 7. Petra Marina d.o.o	1. Port of Ploce Authority 2. Customs	1. Port security d.o.o.

Table 2 - List of the stakeholders which are identified

2.3 IT system in use

During analysis Port of Ploče Authority had two IT systems in use. The system for persons and vehicles access control into port of Ploče area, Technical security system and newly build, but not yet fully implemented IT system for broader port community, Port Community System Ploče.

2.3.1 PCS (Port Community System)

Port Community System is a centralized and automated system for exchanging of information and documentation between organizations and marine transport authorities. It is based on data exchange automation opportunities and the known international standards and requirements of the port's electronic interaction between the related organizations, systems and customers, transportation terminals, railway and customs administration. Part of PCS system is aimed at covering truck announcements. PCS as main system for all parties involved in port community has been planned to interact and exchange messages regarding truck announcements with Technical Security system used by Port Security.

Constructing modern port terminals, while maintaining the existing level of communication between the parties in the "port community" that is characterized by frequent untimely submission of information, the number of paper documents in which one information is entered several times, the lack of coordination and long duration of the procedures, could not result in full improvement of the efficiency and competitiveness of the port and the

overall transport route. Therefore, Port of Ploče Authority decided to start activities on development of the PCS system of the port of Ploce.

The objective of the PCS is to develop a centralized, web-based and intelligent electronic message switching facility between the all port community members. Through a web-based application all port stakeholders will be able to access to all relevant information in secure fashion. This would provide a single source and an integrated standardized process for data exchange with links to the systems of port stakeholders.

This integration and data exchange will show that different information systems in different port organizations can exchange data efficiently and provide benefit to whole port community.

2.3.2 Technical Security System

System used by the Port security company to record and control all persons entering and exiting the port area. Port security officer is manually entering data into system. Each person entering the port area has to be recorder in system. In case person is entering with vehicle the license plates and company names are added to driver data.

Port security officer is able to search through history and is able to monitor how many vehicles are present on port area. However, there is no toll to monitor or to keep track of where those vehicles are. Through system the officer is able only to see when each vehicle or person has entered through main gate and when each vehicle or person has exited through main gate. There is no option to keep a record when a vehicle has arrived at external or internal parking, neither when a vehicle has arrived at dedicates quay or port terminal.

In conclusion, system provides limited report options to port security offices that are in charge of providing security. Based on different interviews the officer did not express any concerns regarding different report as there is no need to issue any truck or persons visits reports, congestion reports or to keep statistics about vehicles and pedestrians entering the port area.

2.4 Key issues

2.4.1 Automation level of stakeholders

Actual automation level of stakeholders is low and has to be improved. Almost all documents in use are in hard copy (paper).

Entrance and exit procedures are made with paper exchange which means waste of time for delivering information's and not up to date state of them. Without prompt information stakeholders can't have exact information how many trucks are actually in port and how many

trucks is waiting for entrance (on parking lots). Neither there is any information of all announced trucks that are driving toward port of Ploče.

Major weakness at the entrance and exit point is the absence of automatic ramps which means that vehicles have possibilities for uncontrolled entrance or exit port.

2.4.2 Use of hard copies for gate in/out processes

Truck drivers and other persons using their vehicle for entering the port of Ploče have to purchase first a valid vehicle permit at PPA office.

Forwarders give paper copies for cargo manipulations and dispositions to truck drivers for cargo discharging and loading as well as all customs related documents.

One of the roles of port security officers is receiving instructions on paper list for allowing truck drivers to enter the port. A piece of paper is used to check each plate number and cross ones that have already entered the port.

All vehicle permits are paper based with attaché receipt.

In all drivers, customs, agents and forwarders use preprinted paper-based forms and make multiple hard copy for cargo manipulations and entrance procedures. In many cases as identified during then analysis, the process can be confusing and not all parties know the process in detail. There are a lot of questions what to do next.

2.4.3 Reengineering operational processes

With implementation of PCS information system, the automation of delivering information between stakeholders has been achieved. However, the PCS is not yet in operations and some of roles are yet to be defined, especially the process of truck announcing procedure.

With PCS only one part of port related procedures is automated. In case of gate in and gate out the PCS will not touch or modify any of existing gate processes. However, the gate system and PCS will exchange documents regarding truck announcement and truck statuses.

Ta achieves quick turnover times and establishes a modern gate in/gate out system, gate procedures must be automated, and some process operation reengineering has to be done.

Furthermore, with automation of gate system and implementation of automatic ramps processes could be simplified and more security will be reached.

2.4.4 Lack of general rules

On modern truck terminals around the globe a set of rules is set to help authorities to organize and control all kind of situations. In Port of Ploče case the lack of general rules is notices as soon as you approach external parking lots. There is no rule how the truck must park and where are the parking lots.

External parking lots for Port of Ploče can be described as unmanaged macadam place where truck stops before entering the port. Drivers take advantage of this space to park trucks and

arrange all papers for port entrance. There are no general rules and truck driver make self-arrangement. No government authority or port security company has the jurisdiction to deal with cases of non-proper behavior. Only the police can be called to deal with cases of violation of law and order.

2.5 Target groups Target groups	Target value	Source of verification	Description of the target group involvement
Terminal operators	14	Operation with cargo and manipulations. Organization of operations with cargo based on delivery of documents from freight forwarders. Documents are delivered to terminal operators, Port authority, Port security and customs. Port Community System Terminal Operating System etc.	Terminal operators are main operators involved in operations and manipulation with cargo. Cargo Is stored on terminals which delivery is organized with cargo owner and Forwarding agents
Forwarding agents	16	Forwarding agents organize delivery of cargo and must deliver announcement for trucks or vehicle used for transport of cargo. Announcement must be sent to Port Authority which	Cargo is stored on terminals which delivery is organized with cargo owner and Forwarding agents. Forwarding agents organize delivery of cargo and must deliver announcement for

		issue port entrance truck permit Port Community System ICT system, etc.	trucks or vehicle used for transport of cargo. Announcement must be sent to Port Authority which issue port entrance truck permit. Based on Port entrance permit Port Security issue Driver ID confirmation.
Public institutions: Port Authority	6	Port Authority based on announcements provides t port entrance truck permit which is needed to enter port Port Community System ICT system, etc.	Port Authority based on announcements provides t port entrance truck permit which is needed to enter port. Permit also is needed to authorize driver which is done by Port Security.
Port Security	10	Port Community System Security system	Truck is authorized by Port Security based on ID documents and port entrance truck permit.
Public institutions: Customs	10	Port Community System	Custom check cargo which enters or leave ports on custom check point.
Truck company	300 drivers per day	Delivery of cargo Port Community System Security system	Truck company is responsible for delivery of cargo.

3. Definition of "as is „scenario" - Gate processes overview

For better understanding the main existing operational processes are divided into gate in and gate out processes. Additional is each of the main process broken down into more unique sub processes describing specific procedures.

Through existing process analysis, the document describes procedures for issuing permits, billing and special cases when no permit is needed or there are some exceptions.

Port Authority of Ploče has issues in 2009 a document describing procedures for entering and exiting the Port of Ploče free zone. All other regulations can be accessed via representative person from Port of Ploče Authority.

The entry process is strictly regulated through issuing permits for vehicle and all pedestrian. There is a must to have valid permits for entering the Port of Ploče free zone although some exceptions are possible.
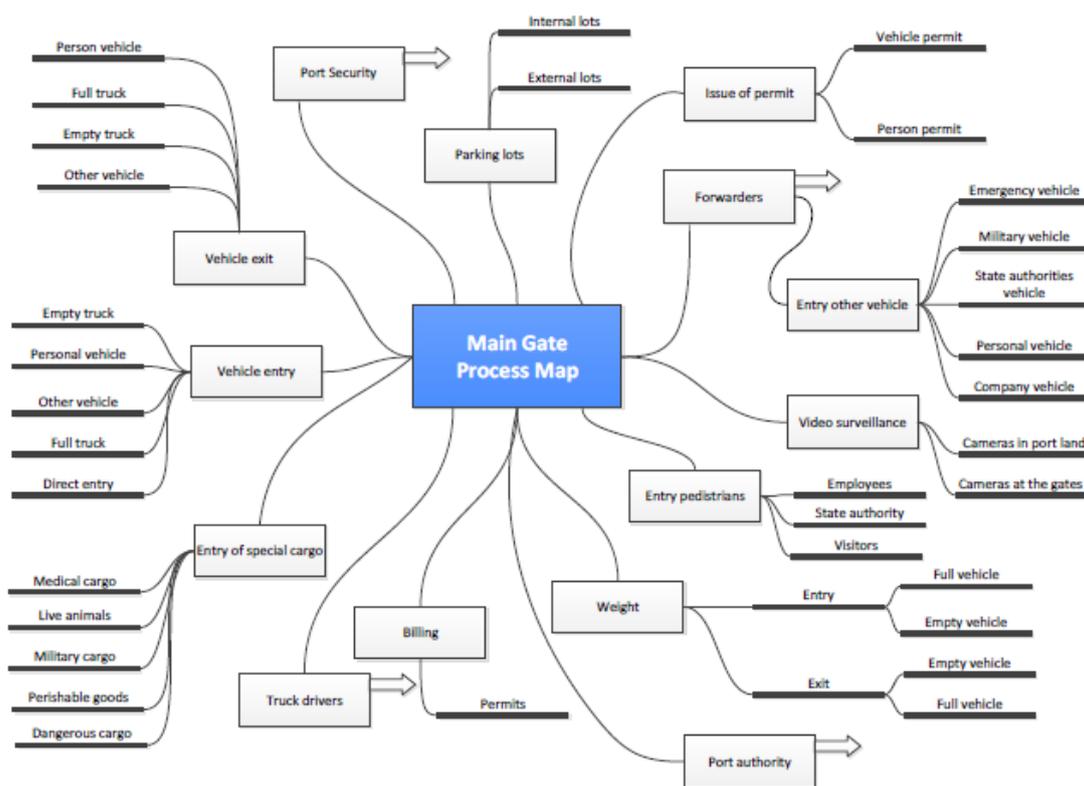

Diagram 2: Process map of main gate current processes

3.1 Gate IN Process

All vehicles entering the Port of Ploče are using Main gate, the same gate is used by workers, visitors and other pedestrians.

3.1.1 Gate in process for vehicles

Vehicles entering the port of Ploče free zone are represented by personal vehicles and vehicles for commercial and non-commercial use. Common for all vehicles is that they have to be equipped with vehicle permit which is issued by Port of Ploče Authority. This permit does not constitute a permission to enter the Port but are only one of the conditions for entering the port and are representing a bill to pay the compensation for using port infrastructure inside port of Ploče free zone. Truck driver shows vehicle permit to the port security officer at main gate. The port officer checks the validity and compares data from vehicle permit and vehicle. If there are no irregularities the driver is allowed to enter the port. To enter the port area driver must have:

- Valid vehicle permit,
- Valid persons permit and
- Valid order for load/discharge or other relevant documents.

Commercial vehicles are all vehicles using port services to load or unload cargo. The biggest difference in process workflow is in comparison with truck carrying liquid cargo, general or break bulk cargo and those carrying containers.

Empty or loaded all drivers of commercials vehicle has to stop on external parking lot and provide itself a valid vehicle permit. As shown in Diagram 3, with this permit the truck driver can approach a security officer. The driver approaches the security officer by foot. After the security officer checks the vehicle permit and controls that data on the permit correspond with real life they enter all necessary driver data inside Technical security system. In case of liquid cargo, the driver is allowed to enter the port of Ploče only if the security officer gives a driver a go ahead. This happens based on the preannouncement.

Requirements for entering at the port area for all commercial vehicles are:

1. Vehicle permit
2. Persons permits
3. Order for charge/discharge
4. A call for fuel-tanker trucks by the liquid terminals

Load/discharge orders are provided to the truck driver by the forwarder, before approaching to the port area. Load/ discharge order for an empty trailer truck going to the port to load container is not obligatory. Every day a list of all announced fuel-tanker trucks, is send to port

security officer by the liquid cargo terminals, usually by the fax-machine. When a fuel-tanker truck enters the port, a port security officer checks the list and "erases" the fuel-tanker truck from the list when entering the port.
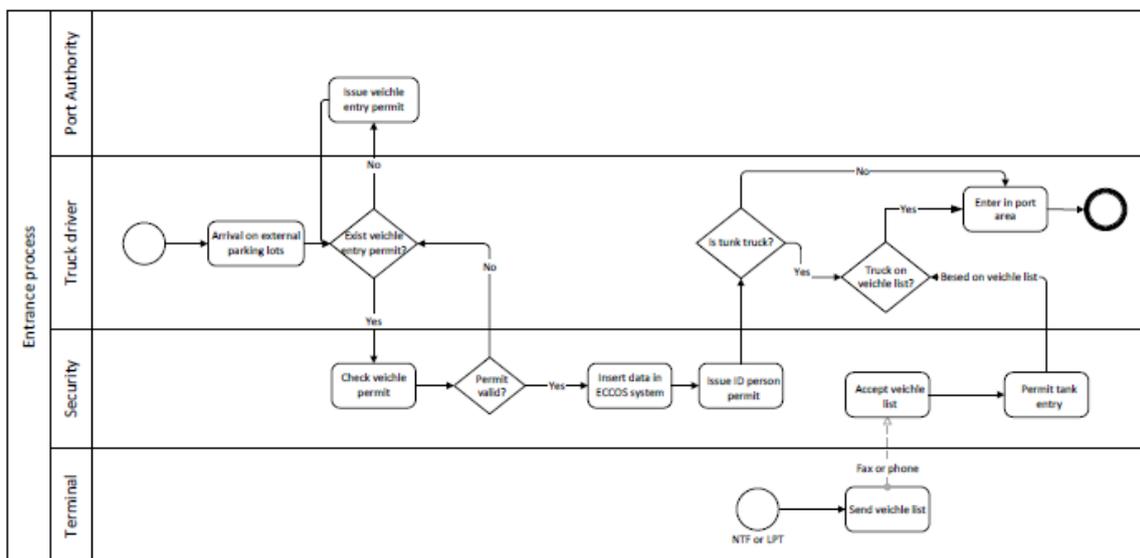

Diagram 3: Gate In process for commercial vehicles

There are no written roles of how driver enter the port neither there is no rule for queuing. The only role is the rule of preannouncement for truck heading towards liquid cargo terminals.

3.1.1.1 Issuing a vehicle Permits

Port of Ploče Authority differentiates between temporary vehicle permits and permanent vehicles permits valid for one year. Vehicle permit is issued by the Port of Ploče Authority. Every vehicle (except emergency vehicles) must have a valid vehicle permit to enter the port. A driver is able to arrange a valid vehicle permit and pay the bill inside PPA office near main gate. The office is open from Monday to Friday from 6am to 9pm. In case a driver arrives after office hour the special procedures takes place at Port security office at main gate directly. The whole process of vehicle permit issuing is simple, but there is no automation and all bills, invoices and reports are filled by hand. Records of issued permits are entered into a special book by PPA officer.

3.1.1.2 Temporary vehicle permits valid one day

Ploče Port Authority is able and is authorized to issue temporary permits with validation of one day, 30 days and 180 days. The most common permits are daily vehicle permits used by hauling companies for their tracks.
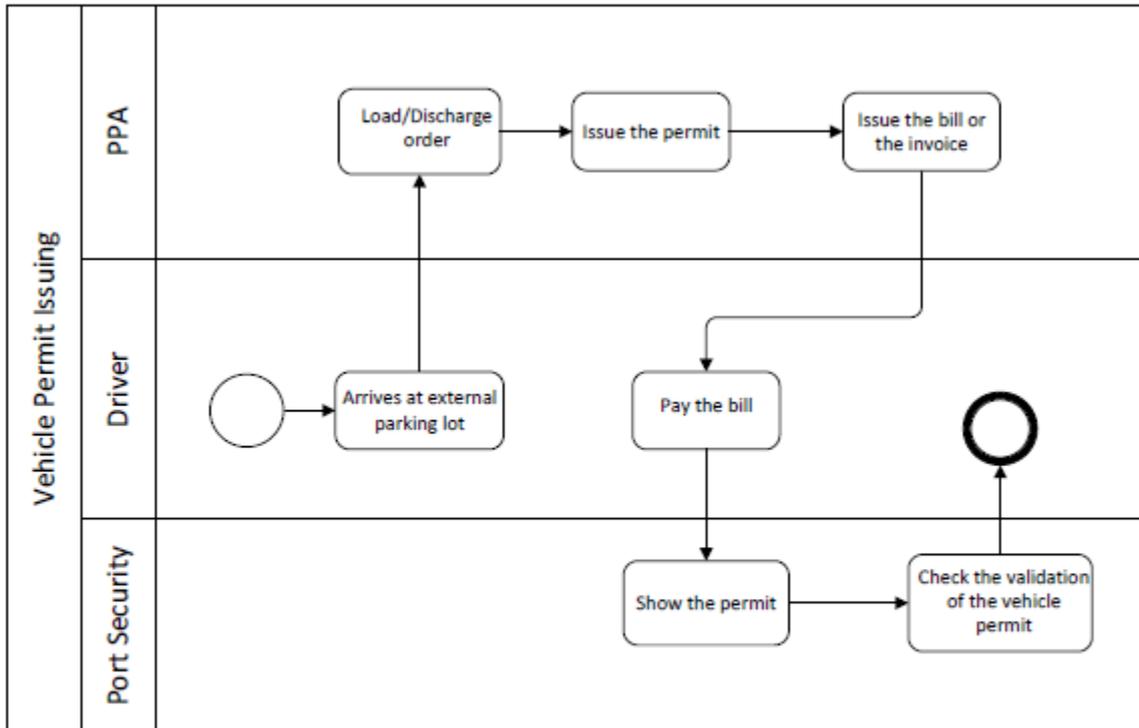
Diagram 4: Vehicle permits issuing process

Driver, as shown on Diagram 4, has to present the discharge or load order to PPA office inside the office for permit issuing near main gate. Based on this order the PPA officer issues the daily vehicle permit. The driver has to pay the bill in cash, or it agreed an invoice is sent to the company. With valid permit, as on Picture 1, the driver can approach security officer at main gate. There is a receipt attached to the permit for billing purposes. The driver must return this permit to the security officer before exiting port area. This permit must be always visible and stuck on the vehicle's windshield.

Picture 1: Example of daily vehicle permit

3.1.1.3 Temporary vehicle permits valid 1, 3 or 6 months

Drivers entitled to permits with longer validity are concessioners or companies that have a long period contract for hauling. The representative from the company applying for temporary permit with longer validity has to fill in the form. On the basis of filled form, a PPA officer issues the invoice for the compensation for using port infrastructure inside port of Ploče free zone. This permit must be always visible and stuck on the vehicle's windshield

3.1.1.4 Permanent vehicle permits

The process of issuing a permanent vehicle permit is the same as the process of issuing a permanent permit with longer validity.

3.2 Gate out Process

Vehicles can exit the port area only after the police and the customs clears the trucks and its cargo. A driver parks the truck at internal parking lot nearby custom office and arranges the customs released documents. After custom clearance and police check, truck driver approaches port security officer where leaves the temporary person permit.

Requirements for exiting the port area are:

- Police check
- Custom check
- Custom seal

3.2.1 Gate out for vehicles

When exiting the port area, truck driver stops at the main gate. Police and customs check the vehicle and driver and allow the driver to exit the port area. Then driver leaves the port area. In the case of prolonged custom documents check, or in the case of some problems (payment etc.), the driver is directed from exit point to the internal parking.
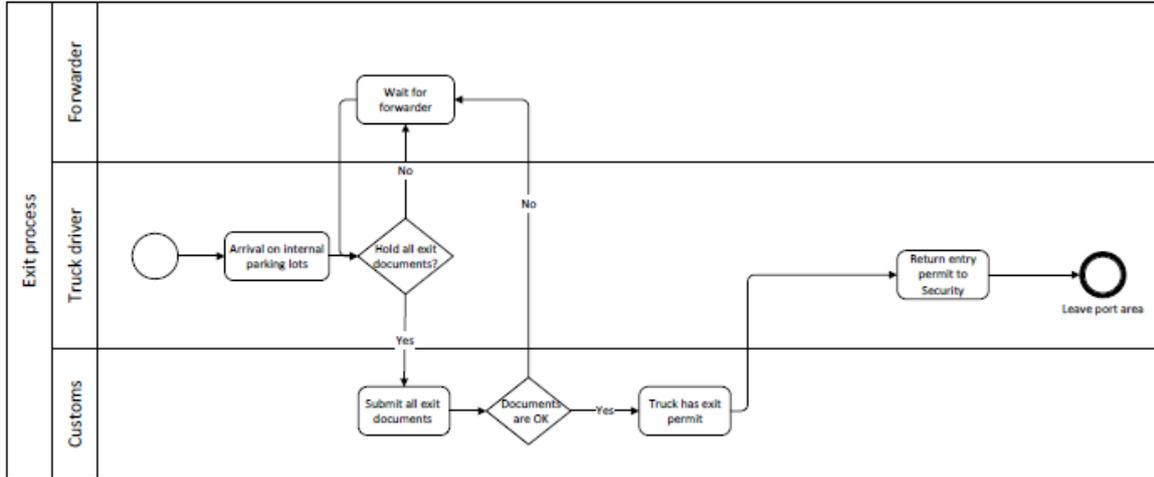

Diagram 5: Current Gate out Process

4. Key issues and problems

- no ramp on entrance and exit gates
- external parking lots, no infrastructures and no rules
- internal parking - no infrastructure, macadam, no information
- in many cases port security receives paper list with truck plate numbers and then cross on truck arrival
- in some case all entrance person permit is used:
  - person data is evidenced in extra book
  - the permit is taken from one truck driver which wait on exit lots and assigned to new truck driver
- there are no exact rules for issue permit, no expose order for truck entry and truck driver doesn't know when they are on turn
- At exit from Luka Ploče entrance permit have to be returned to Security and security update the exit in Technical security system. In case securities forget to evidence exit rest in system inconsistent data
- **No integration**
- **No electronical exchange of informational**
- **No information and data to plan activities for transport of cargo**
- **Truck companies cannot plan activities regarding transport and delivery of cargo**
- **No possibility to exchange data with other systems**
- **No "single window" concept and data are entered more then once**

5. Conclusion and Overview

The PCS (Port Community System) and Technical security system in integrated on actual business process regarding entrance and exit point. Technical security system is used to control all persons entering and exiting the port area (truck drivers, employees, visitors…). Technical security system is also used to control all vehicle (with and without cargo), entering and exiting port area, because vehicle permit is linked with permit for persons. When a permit for person is issued, it is linked with vehicle´s registration plate. This functionality of binding permit for person with vehicle permit will be resolved by PCS system.

Integration between systems is made by exchange messages (messaging system) in XLM data format with Web Services.

Truck announcement should be made in Port Community System. Announcement update can be done in Technical security system and updated in PCS system. Truck arrival, truck enter and truck exit is made in Technical security system and updated in PCS system.
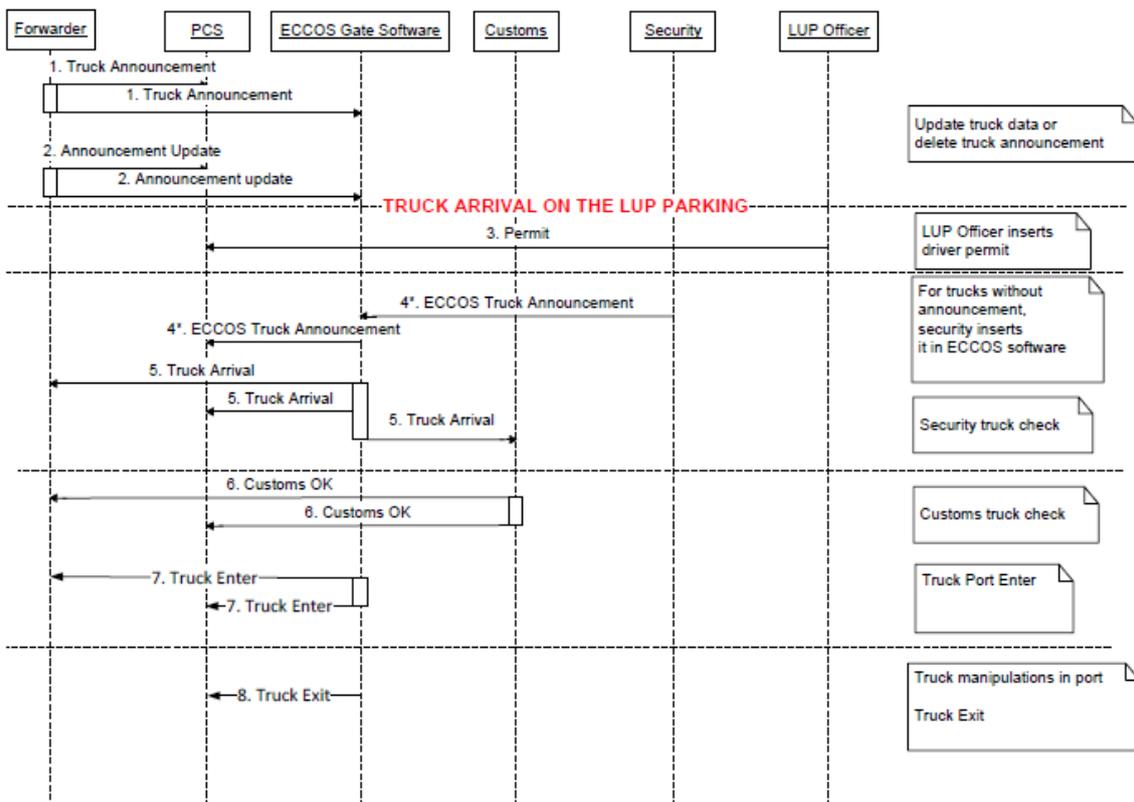

Diagram 6: Enter and exit processes diagram

Due to the lack of port resources, truck announcement should be sent prior of truck arrival.

To overcome the multiple existing barriers of efficient intermodal and multimodal transport and to overcome problems regarding transport of cargo intention is to use smart ICT tools. Data should be exchanged within port eco system and to system which exist within port area.

Port of Ploče Entrance terminal is new opened entrance terminal to Port of Ploče with available space for trucks and other vehicles which transport different type of cargo. At the moment there are 24 places for trucks that transport liquid cargo and 24 places for trucks which transport other type of cargo (containers etc.)

All truck which enter port of Ploče must park on entrance terminal and based on truck announcements enter the port. Truck announcements must be entered by stakeholders and without truck announcement trucks cannot enter port area.

In real time many truck announcements have to be updated on hourly base which have impact on space availability. In real time scenario Port Community System deliver data regarding truck announcements and parking availability.

New entrance terminal has direct road connection from highway and truck are entering parking directly from highway without entering City of Ploče. Entrance Terminal has been built in port of Ploče area, and it is fully automated.

Data regarding resources which are crucial for cargo transport and for planning activities should be exchange on public platform from planning activities and planning daily business resources.