

# Analysis of “desiderata” and definition of “to be” scenario

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## Document Control Sheet

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# 1. Introduction

In accordance with the Work Plan, **WP 4 D4.2.2 “Analysis of “desiderata” and definition of “to be” scenario”** 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 part 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.

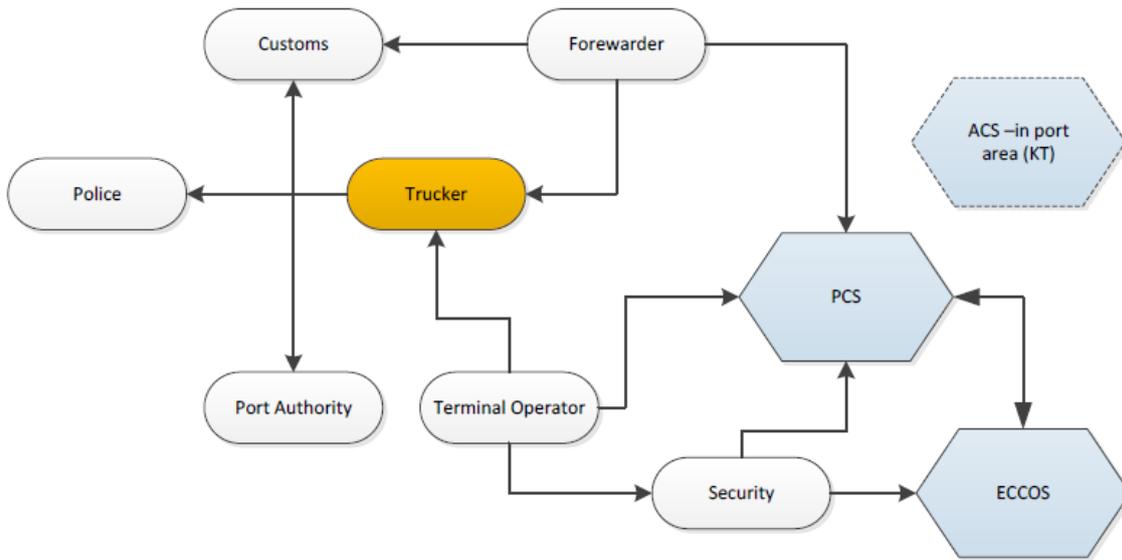
The Port of Ploče is at the southern terminus of Pan-European transport corridor V, branch C, representing a maritime extension of the rail and road routes leading to and from the Ploče area.



**Table 1** Road connections

### 1.3 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.



2 Diagram 1: System overview and stakeholders' interactions

### 1.4 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 Ploče 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
<ol style="list-style-type: none"> <li>1. Luka Ploče d.d.</li> <li>2. Adriatic Tank Terminal d.o.o. Ploče</li> <li>3. NTF d.o.o. Ploče</li> <li>4. Top Logistics d.o.o</li> </ol>	<ol style="list-style-type: none"> <li>1. INA d.d.</li> <li>2. Trans integral d.o.o.</li> <li>3. Jadroagent d.d. Ploče</li> <li>4. Adriatic Tank Terminal d.o.o. Ploče</li> <li>5. Luka Šped d.o.o.</li> <li>6. Ploče Šped d.o.o.</li> <li>7. Petra Marina d.o.o</li> </ol>	<ol style="list-style-type: none"> <li>1. Port of Ploče Authority</li> <li>2. Customs</li> </ol>	<ol style="list-style-type: none"> <li>1. Port security d.o.o.</li> </ol>

**Table 2** - List of the stakeholders which are identified

## 1.5 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.

### 1.5.1 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 Ploče.

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.

Key drivers for the establishment of Port Community Systems were, on the one hand, the need for a standardized communication platform in order to improve the systems in terms of punctuality, reliability or costs and, on the other hand, the need to increase competitive position among ports.

A good collaboration with the key authorities, as well as with stakeholders, potential customers and local trade associations, was critical in the setting up of the respective PCS which were – and still are – implemented by means of special training and workshops with the end users.

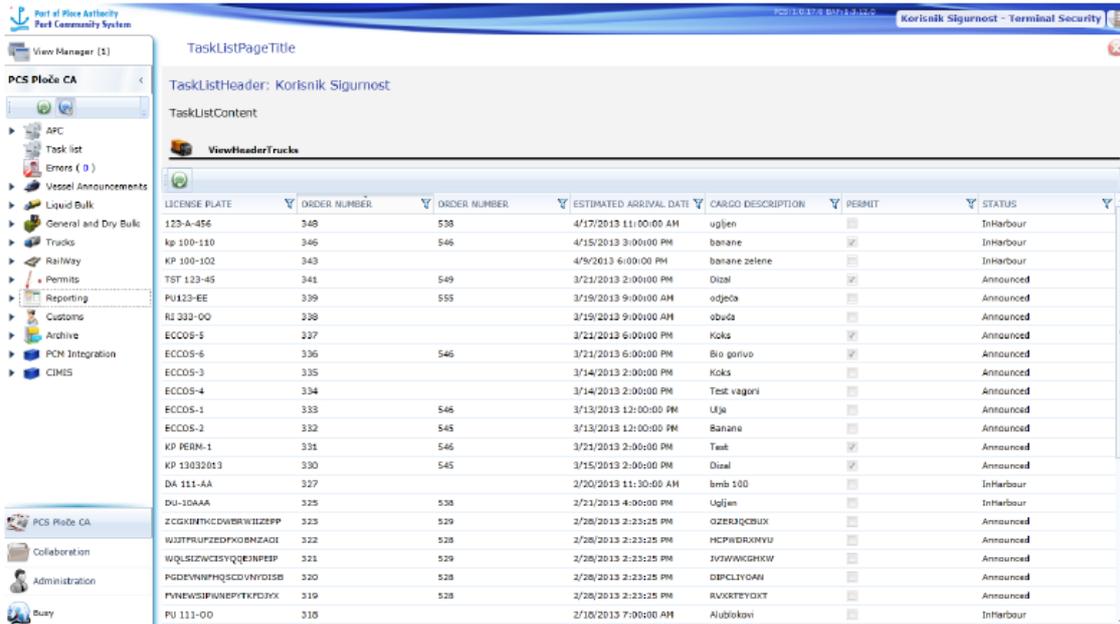
While target market areas differ widely in terms of existing IT infrastructure and use of functionality, it is arguable that where little or no automated processes are in place either at frontier, port or fiscal and regulatory level, the PCS is ideally placed to form the foundation or backbone of the Single Window vision.



*Picture 1: PPA Port Community System*

PCS 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. Although the functionalities for truck announcement process are developed there is no agreement yet who will prepare the announcement. 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.

After user login, the main screen appears:



LICENSE PLATE	ORDER NUMBER	ORDER NUMBER	ESTIMATED ARRIVAL DATE	CARGO DESCRIPTION	PERMIT	STATUS
123-A-456	348	538	4/17/2013 11:00:00 AM	ugljen	<input type="checkbox"/>	InHarbour
kp 100-110	346	546	4/15/2013 3:00:00 PM	banane	<input type="checkbox"/>	InHarbour
KP 100-102	343		4/9/2013 6:00:00 PM	banane zelene	<input type="checkbox"/>	InHarbour
TST 123-45	341	549	3/21/2013 2:00:00 PM	Dizal	<input type="checkbox"/>	Announced
PU123-EE	339	555	3/19/2013 9:00:00 AM	odječa	<input type="checkbox"/>	Announced
RI 333-00	338		3/19/2013 9:00:00 AM	obuća	<input type="checkbox"/>	Announced
ECC05-5	337		3/21/2013 6:00:00 PM	Koks	<input type="checkbox"/>	Announced
ECC05-6	336	546	3/21/2013 6:00:00 PM	Bio gorivo	<input type="checkbox"/>	Announced
ECC05-3	335		3/14/2013 2:00:00 PM	Koks	<input type="checkbox"/>	Announced
ECC05-4	334		3/14/2013 2:00:00 PM	Test vagoni	<input type="checkbox"/>	Announced
ECC05-1	333	546	3/13/2013 12:00:00 PM	Uglje	<input type="checkbox"/>	Announced
ECC05-2	332	545	3/13/2013 12:00:00 PM	Banana	<input type="checkbox"/>	Announced
KP REBN-1	331	546	3/21/2013 2:00:00 PM	Teak	<input type="checkbox"/>	Announced
KP 13032013	330	545	3/15/2013 2:00:00 PM	Dizal	<input type="checkbox"/>	Announced
DA 111-AA	327		2/20/2013 11:30:00 AM	bmb 100	<input type="checkbox"/>	InHarbour
DU-1DAAA	325	538	2/21/2013 4:00:00 PM	Ugljen	<input type="checkbox"/>	InHarbour
ZCGKINTKCDWBRWILZEP	323	529	2/28/2013 2:23:25 PM	OZBRJQCBUX	<input type="checkbox"/>	Announced
WJSTFRUFZEDFKOBNZADI	322	528	2/28/2013 2:23:25 PM	HCPWDRKMYU	<input type="checkbox"/>	Announced
WJQLSEWCSVQJENPESP	321	529	2/28/2013 2:23:25 PM	JYVWAKGKHIV	<input type="checkbox"/>	Announced
PGDEWVWPHQSCDWNVDISB	320	528	2/28/2013 2:23:25 PM	DEPCLYIGAN	<input type="checkbox"/>	Announced
PVNEWSIPWNEPTKFDZYK	319	528	2/28/2013 2:23:25 PM	BVORTEYDXT	<input type="checkbox"/>	Announced
PU 111-00	318		2/10/2013 7:00:00 AM	Ajubokani	<input type="checkbox"/>	InHarbour

Picture 2: PCS screen example #1

In PCS Menu there are different modules. Modules are APC, Vessel announcement, Liquid Bulk, General and Dry Bulk, Trucks, Railway, Permits, Reporting, Customs, Archive, PCM Integration, CIMIS.

Module APC is used to input data in IMO files.

Vessel announcement module enables working with vessel announcements, meaning that all action about vessel's arrival and departure can be done by Vessel announcement module.

Liquid Bulk, General and Dry Bulk module enables working with dispositions (work orders).

These modules also enable warehouse documents saving.

Trucks module enables working with truck announcements.

TRUCK VISITS

LICENSE PLATE	ORDER NUMBER	ORDER NUMBER	ESTIMATED ARRIVAL DAT	CARGO DESCRIPTION	PERMIT	STATUS
kp 100-120	349	350	4/18/2013 9:00:00 AM	eluu	<input type="checkbox"/>	Arrived
123-A-456	348	338	4/17/2013 11:00:00 AM	ugljen	<input type="checkbox"/>	InHarbour
kp 100-110	346	346	4/15/2013 3:00:00 PM	banane	<input checked="" type="checkbox"/>	InHarbour
KP 100-103	345	323	4/9/2013 7:00:00 PM	al	<input type="checkbox"/>	Arrived
KP 100-102	343		4/9/2013 6:00:00 PM	banane zelene	<input type="checkbox"/>	InHarbour
KP 100-001	342		4/6/2013 5:00:00 PM	zrnc	<input type="checkbox"/>	Arrived
TST 123-45	341	349	3/21/2013 2:00:00 PM	Dizal	<input checked="" type="checkbox"/>	Announced
FU123-EE	339	355	3/19/2013 9:00:00 AM	odjeća	<input type="checkbox"/>	Announced
RI 333-00	338		3/19/2013 9:00:00 AM	obute	<input type="checkbox"/>	Announced
ECC05-5	337		3/21/2013 6:00:00 PM	Koks	<input checked="" type="checkbox"/>	Announced
ECC05-6	330	340	3/21/2013 6:00:00 PM	Dio gorivo	<input checked="" type="checkbox"/>	Announced
ECC05-3	335		3/14/2013 2:00:00 PM	Koks	<input type="checkbox"/>	Announced
ECC05-4	334		3/14/2013 2:00:00 PM	Test vagoni	<input type="checkbox"/>	Announced
ECC05-1	333	346	3/13/2013 12:00:00 PM	Ulje	<input type="checkbox"/>	Announced
ECC05-2	332	345	3/13/2013 12:00:00 PM	Banane	<input type="checkbox"/>	Announced
KP PERM-1	331	346	3/21/2013 2:00:00 PM	Test	<input checked="" type="checkbox"/>	Announced
KP 13032013	330	345	3/15/2013 2:00:00 PM	Dizal	<input checked="" type="checkbox"/>	Announced
KP TST-12	328	346	3/12/2013 2:00:00 PM	Oprema 1	<input type="checkbox"/>	Arrived
DA 111-AA	327		2/20/2013 11:30:00 AM	bmb 100	<input type="checkbox"/>	InHarbour
OS 222-DB	326	330	2/20/2013 11:30:00 AM	bmb 95	<input type="checkbox"/>	Cancelled
DU-10AAA	325	338	2/21/2013 4:00:00 PM	Ugljen	<input type="checkbox"/>	InHarbour
ZGKINTKCDWBRWIZEP	323	329	2/28/2013 2:23:25 PM	OZERJQBUX	<input type="checkbox"/>	Announced
WIIITRUFZEDFXOBMZAGI	322	328	2/28/2013 2:23:25 PM	HCPVDRXNYU	<input type="checkbox"/>	Announced
WQLSIZWCSYQGENPEIP	321	329	2/28/2013 2:23:25 PM	JVWVWKGHW	<input type="checkbox"/>	Announced
PGDEVINFHQSCDVVNDISB	320	328	2/28/2013 2:23:25 PM	DIPCLLYOAN	<input type="checkbox"/>	Announced
FVNEWSIPWNEPYTKFDJYX	319	328	2/28/2013 2:23:25 PM	RVRTEYOXT	<input type="checkbox"/>	Announced
FU 111-00	318		2/18/2013 7:00:00 AM	Alublokevi	<input type="checkbox"/>	InHarbour

Picture 3: PCS Truck visit screen

If user selects one of the truck announcements, selected truck announcement screen will appear.

TRUCK VISIT - NUMBER 348

TRUCK EXIT

GENERAL SECTION		REMARKS SECTION	
STATUS	ORDER NUMBER	ORDER DATE	NOTES
InHarbour	348	4/17/2013 11:37:37 AM	
TruckSection		CUSTOMS SECTION	
LICENSE PLATE	EMPTY OF FULL	CUSTOMS CONFIRM DATE	
123-A-456	Empty		
ESTIMATED ARRIVAL DATE	ARRIVAL DATE	TERMINAL OPERATOR	
4/17/2013 11:00:00 AM	4/17/2013 11:46:28 AM	TERMINAL CODE	
ENTER DATE	EXIT DATE	LPCT - Luka Ploče Generalni tarazi	
4/17/2013 11:46:34 AM		WAREHOUSE DOCUMENT DATE	
CANCEL DATE	BLOCKRAW	4/23/2013 8:25:00 AM	
	<input type="checkbox"/>	ORDER SECTION	
TruckDriver	BlockedTime	ORDER NUMBER	
Euro Durić		338	
TruckCompany	UnblockTime		
Host atrans			
PERMIT SECTION			
PERMIT	Permit Number	Permit Valid To	
<input type="checkbox"/>		Enter date	
MESSAGES   ECCOS Messages   ATTACHMENTS			
MESSAGE	SENDER ORGANIZATION	SENDER USER	MESSAGE DATE
TRUCKENTRYORDER	LFGT	LUKA	4/17/2013 11:42:30 AM
TRUCKDISPLINK	STUDEN	Studen	4/17/2013 11:45:21 AM
TRUCKARRIVAL	SECURITY	Sigurnost	4/17/2013 11:46:09 AM
TRUCKENTER	SECURITY	Sigurnost	4/17/2013 11:46:37 AM

Picture 4: Details of the truck visit screen PCS

Truck announcement screen contains all necessary information about truck.

Railway module enables working with wagon announcements.

Permits module enables working with vehicle permits. Vehicle permits can be issued, modified, printed and saved.

Reporting module is used to save or print different reports, such as Customs report, Cargo report, Vessel report.

Customs module enables customs to search different documents, such as warehouse documents, No obstacles documents, etc.

PCM module is used for all action regarding containers.

CIMIS module is connected with the Croatian Ministry of maritime affairs, transport and infrastructure.

### 1.5.2 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.

## 1.5 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 issue port entrance truck permit	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 trucks or vehicle

		Port Community System ICT system, etc.	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.

## 2. Identification of the main changes and improvements

### 2.1 General Procedure Requirement

#### **a. Automation procedures and information exchange:**

- All data will be entered only once into the system;
- Implementation of recognition systems (truck plate recognition, driver licence recognition...);
- Automation of ramp (automatic rise, block...).

**b. Information/data exchange** between different information systems has to be made where reasonable. With information exchange between AGS and PCS can improve process execution, data reliability and single entry of data.

**c. External park lots** - there will be a quick enter process on the external entrance gate; when the truck arrives at the external entrance gate, plate recognition system will recognize truck plates; driver takes the PIN 1 barcode list or show RFID device, and the gate will open. If plate recognition system will not recognize truck plate, entrance procedure is same (truck driver always takes the PIN 1 barcode list) and the gate opens. Daily entrance vehicle permits will be payed at the kiosk. After the driver documents are scanned, and all other documents for entering are prepared, driver will pay the vehicle daily permit by inserting the PIN1 into Kiosk. The truck driver will pay the parking fee only if the truck is parked more than 3 hours in the external parking lot. The parking fee will also be paid at the kiosk by inserting the PIN1. PIN1 barcode ticket or RFID card will “carry” all the data about truck, driver, vehicle permit, and driver ID.

**d. Entrance/exit point** – officers order at port entrance is police, customs, port security. At the port entrance point there are plate recognition system and video surveillance.

**e. Tracking truck all-over the port area** – at the entrance truck driver receive RFID device and all trucks will be tracked inside the port area using plate recognition system and RFID devices.

## 2.2 Renewed process (use cases)

The information collected prior to the arrival of the vehicle at the port and during the completion of its job inside the port is used to provide the customs police with as many details as possible regarding the goods in transit and supporting documents (especially customs documents). The customs police can make any additional checks on the basis of this information rather than on the basis of further paper documents the truck driver can exhibit. Alongside the “logistic” checks to establish the feasibility of vehicle jobs, the port entrances also have to perform security checks. The integration of these two processes and of their supporting systems improves reciprocal efficiency and effectiveness and speeds up vehicle transit operations.

All truck and goods entry or exit from harbour must be preceded with approved announcement, declaring:

- The plate number of the incoming/exiting vehicle
- The driver’s identity (name, surname)
- The terminal operator at which loading or unloading operations are to be performed
- The type of operation to perform and details of the goods being transported

Conditions for a truck to enter a port area are:

- **A truck must have an announcement**
- **A truck must pay an entry permit (daily, half-annual or annual)**
- **A truck must have a terminal confirmation for entrance**

The following figure summarizes the operative moments at the port gate supported by Automatic Gate System and the events that determine the information exchange inside the port areas.

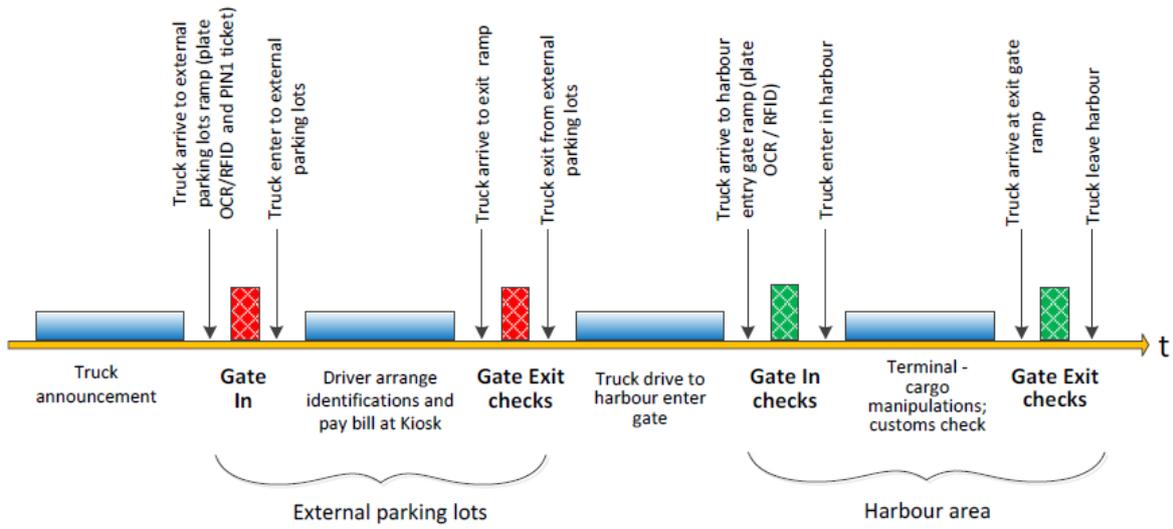


Diagram2: Entrance and exit process



scanned truck plate number, plate data are combined with the truck announcement in AGS system.

At the same time the ADR system recognises dangerous cargo code and send information to AGS system. In case the truck driver already has a temporary RFID device (annually or half annual entry permit) there is no need for PIN1 ticket. The driver just reads his RFID card (instead of take PIN1 ticket) and RFID data are joined in truck announcement, plate data and ADR data. Semaphore green light will be turned on, gates will open, truck enters on external parking lots.

If there is some problems and green light not lights (lights red light), the driver can use the Intercom device for communicating with Info desk. For example, when maximum allowed dangerous cargo on parking is reached, truck enters with dangerous cargo is not allowed.

When a visitor approaches to external parking gate, OCR system will take a snapshot of vehicle plates. After successfully recognition process on semaphore lights green light.

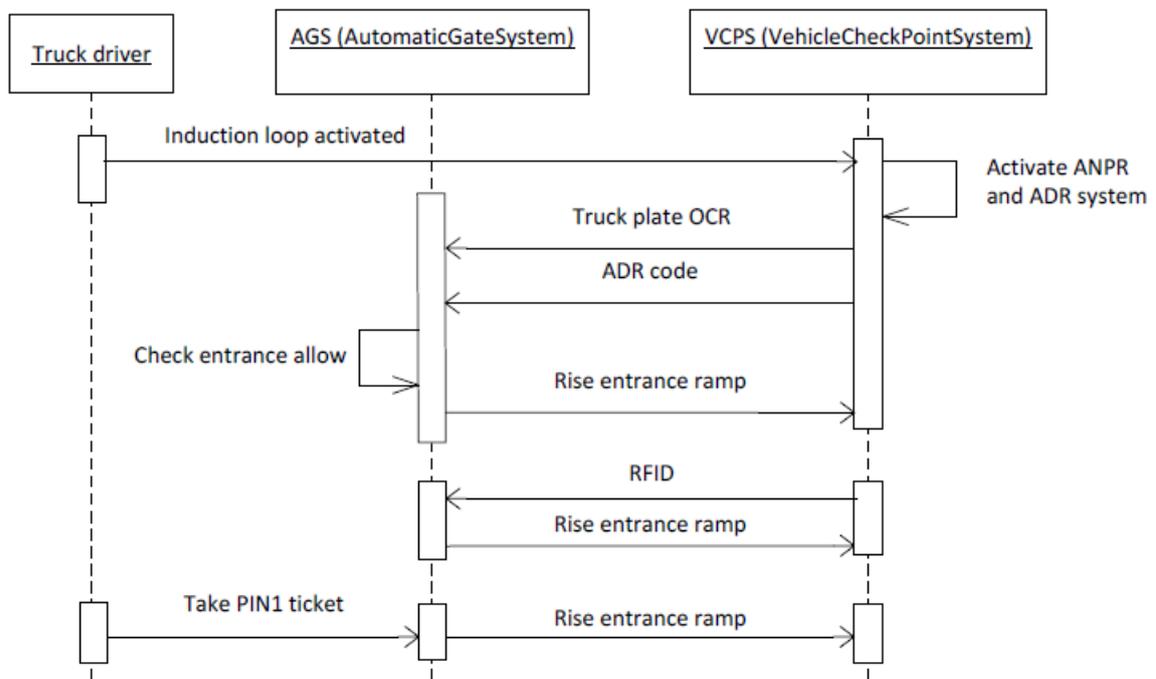


Diagram 3: Entrance procedure on external parking lots - sequence diagram

### 2.3.3 Identifying the truck driver and visitor

Truck driver goes to the Kiosk. Put the PIN1 ticket or temporary RFID card into the kiosk slot and choose if he is a truck driver or a visitor.

If a truck has a half-annual or annual permit, driver puts an RFID card into the kiosk slot, and proceeds with identifying procedure.

In case the truck plate was not correctly recognised at the entry gate, the driver has to manually input or correct the plate number. Plate number data inserted by the driver is then combined with the truck announcement and linked to PIN1 ticket ID (or to temporary RFID card).

### 2.3.4 Pay the parking fee and daily truck entry permit

Once there is a valid announcement and the driver checked, the driver can pay daily entry permit for the vehicle at a Kiosk. On the screen, choose entry permit options. A daily permit fee can be paid at Kiosk with credit card or cash.

If the truck driver uses valid temporary permit (RFID card) at Kiosk the system show entry permit expires date.

If the truck is parked more than three hour on external lots also parking fee has to be paid.

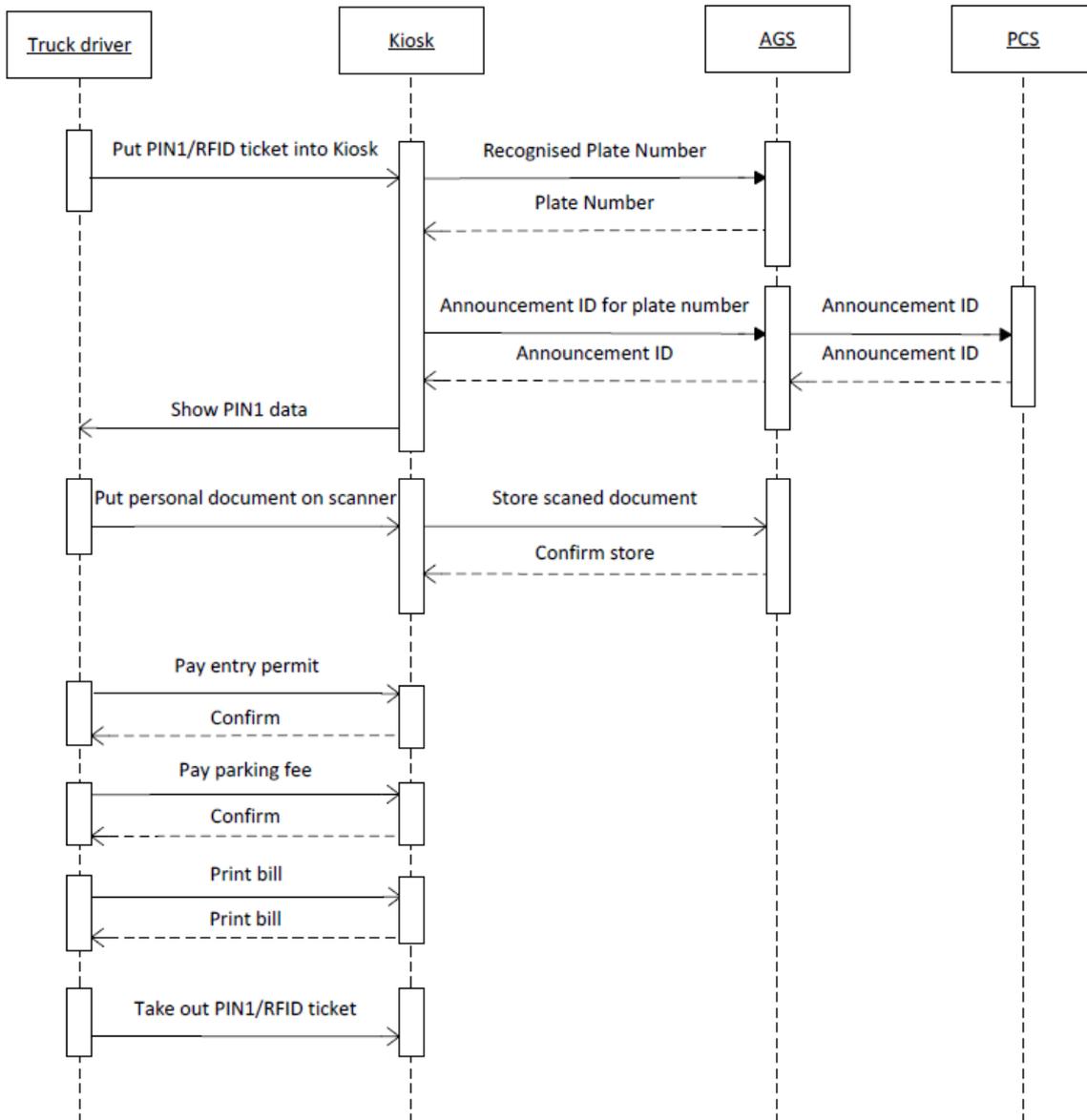


Diagram 4: Identifying driver, vehicle and bill procedures – sequence diagram

### 2.3.5 Arrange other documents

Before exiting the external parking, lots and enter in harbor driver has to arrange all necessary documents (customs check disposition...).

The driver can watch his status on the Info panel, which is located in the building of truck terminal and on external parking lots.

An example of the Info panel is on the picture below.

Truck	Terminal	Time	Announcement	Operator	Driver	Entry permit	Parking	Entrance
CE94U67	NTF	23.4.2013 9:40	●	●	●	●	● 3:50	●
ST097ST	LPT	23.4.2013 10:40	●	●	●	●	● 1:30	●
DU769GH	NTF	23.4.2013 10:40	●	●	●	●	● 2:50	●

Picture 6: Info panel

**Note:** If “Parking” red light is on, truck’s queue will not change. If a truck is on the top of the list, truck can enter first, but Parking red light is a piece of information for driver, meaning that parking must be paid before exit of external parking lots.

Truck	Terminal	Time	STATUS
CE94U67	NTF	23.4.2013 9:40	ENTRANCE
ST097ST	LPT	23.4.2013 10:40	WAITING
DU769GH	NTF	23.4.2013 10:40	WAITING

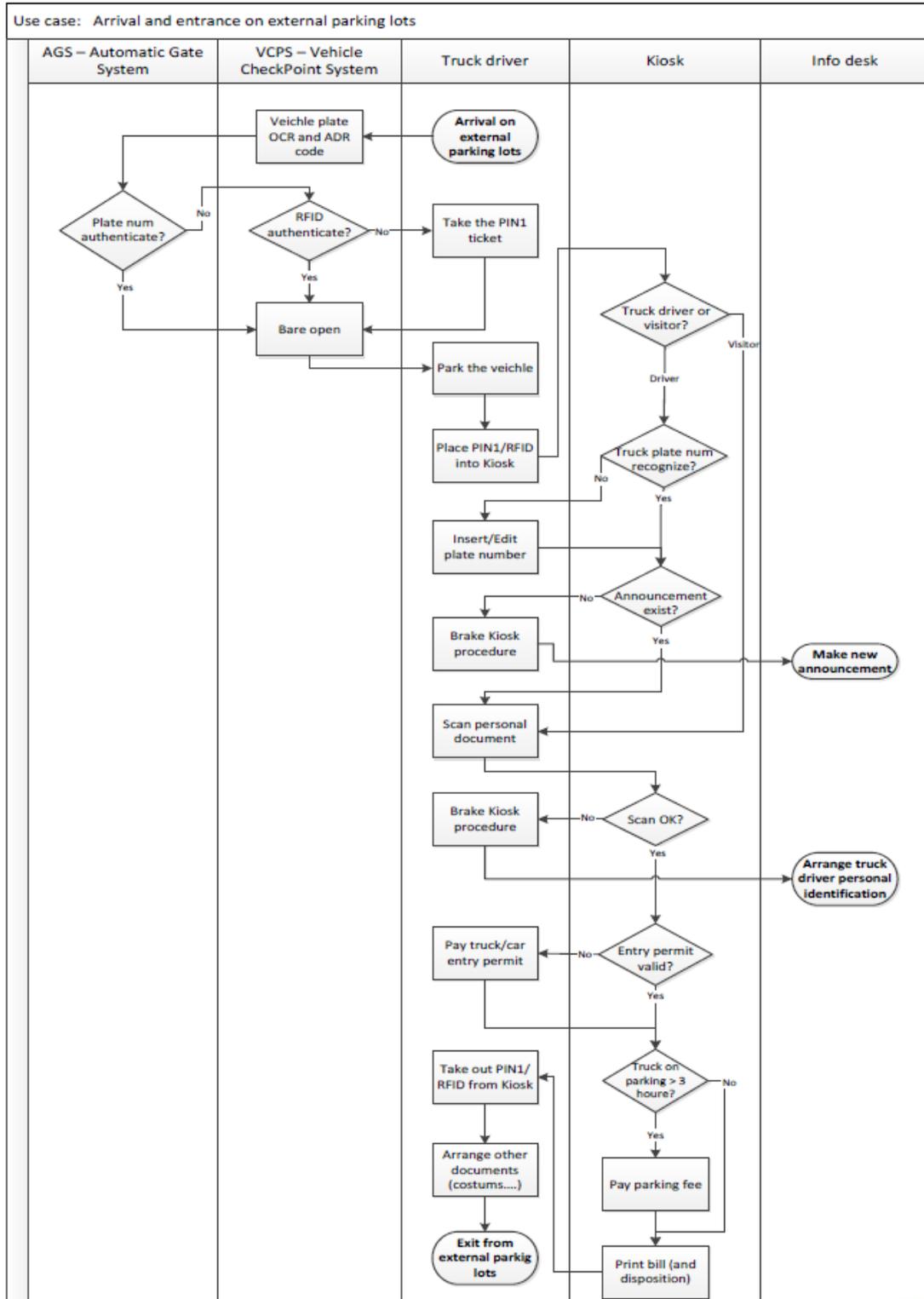


Diagram 10: Entrance at external parking lots – process chart

### 2.3.6 Exit from external parking lots

When all conditions are fulfilled and truck is for entering in harbor, the truck approaches the exit ramp from parking.

When the truck arrives in front of exit barrier the induction loop under truck activate the ANPR system and truck plate are once more read by OCR.

If the truck has a daily permit, driver reads the PIN1 ticket barcode and if parking fee is arranged semaphore green light is on and gates open.

If the truck has a temporary permit (half-annual or annual), the driver reads an RFID card, semaphore green light is on and gates open.

If there is some problems and green light not lights (lights red light), the driver can use the Intercom device for communicating with Info desk.

Parking building employees (ship agents, forwarders, custom officers, LUP officers...) exit the external parking lots with their RFID device.

Visitors exit the external parking lots with PIN1 ticket given at the entrance. When a visitors' car arrives in front of exit barrier, the induction loop under vehicle activates the ANPR system, vehicle plates are read by OCR. Driver of the visitor's vehicle reads the PIN1 ticket and if parking fee is arranged semaphore green light is on, the gate opens.

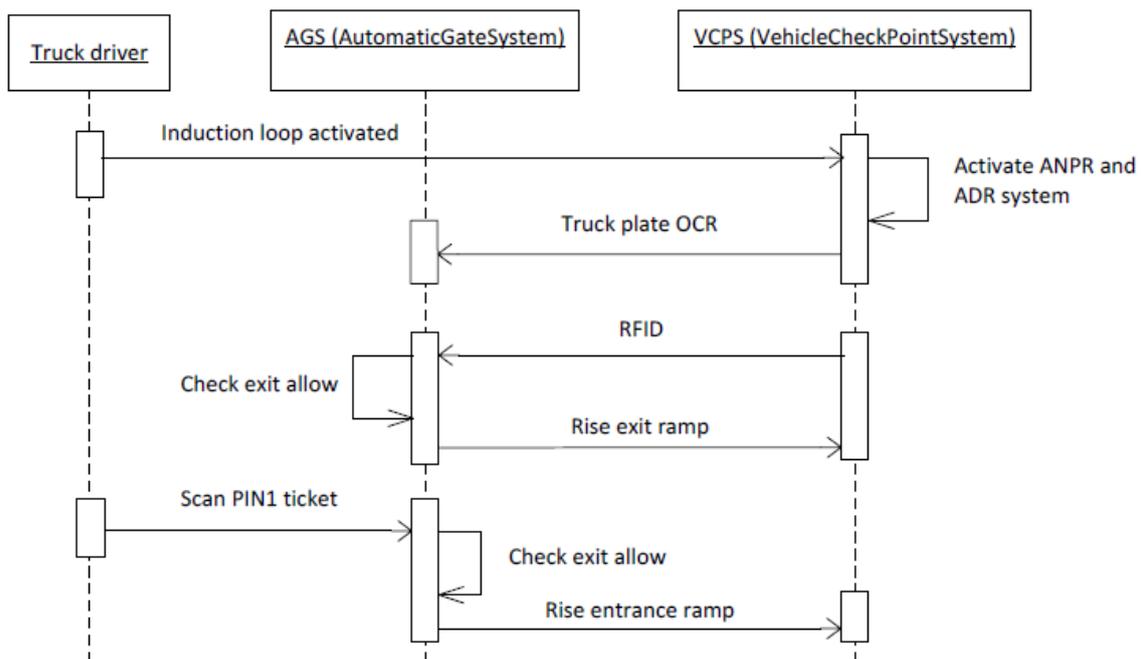


Diagram 5: Exit procedure from external parking lots - sequence diagram

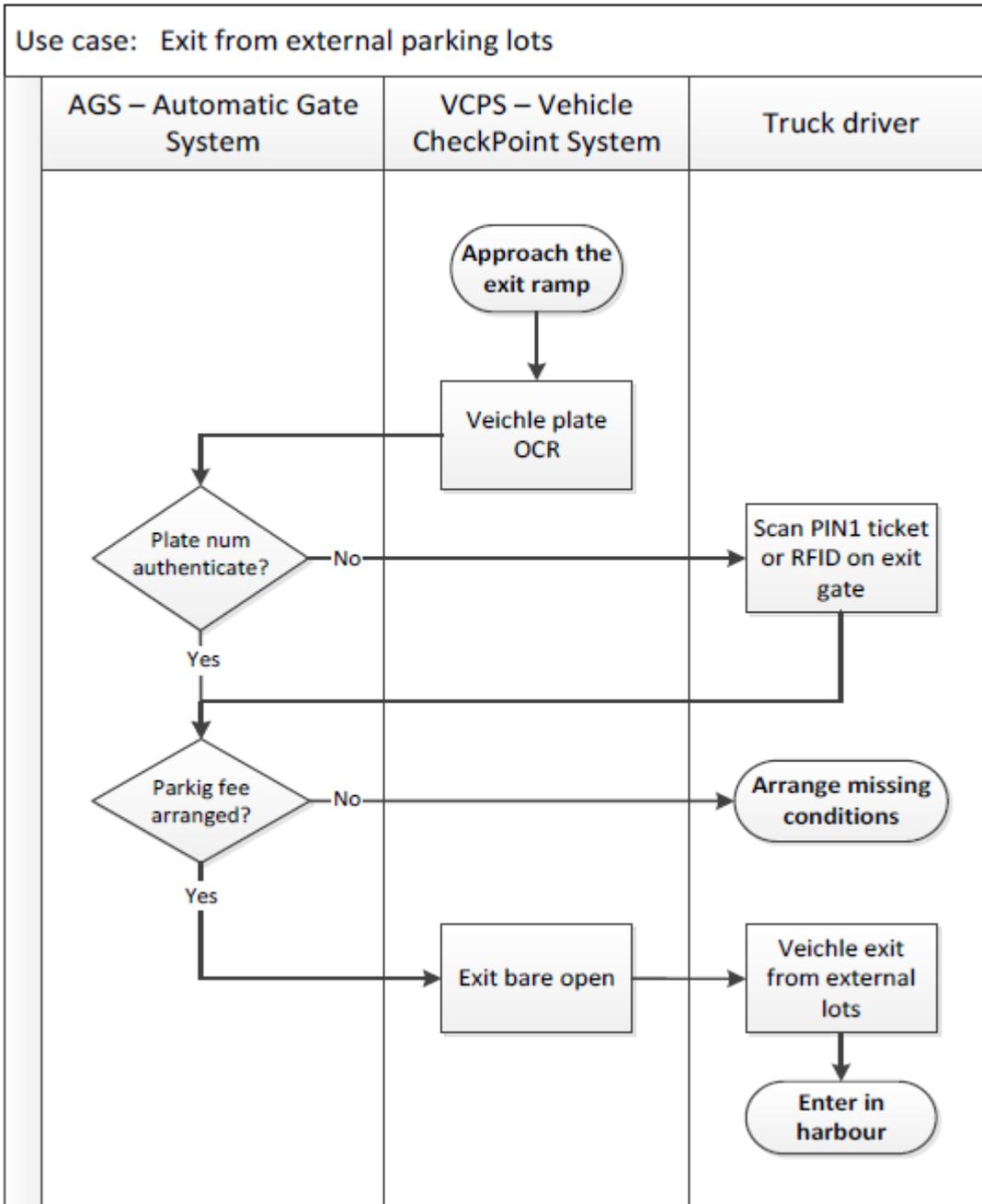


Diagram 6: Exit from external parking lots – process chart

### 2.3.7 Vehicles entering in the harbour

Between external parking lots and port entry point, there will be a **Video portal** for the truck all side pictures. Video portal will be placed on both truck entry lanes. At the top of video portal will be placed **Info semaphore**, which indicate if the lane is open or close (red cross or green light). When a truck passes the induction loop, snapshots of truck plates (front and rear) and truck front, back, top and side are taken. Also, an ADR label of dangerous cargo is

recorded. All pictures and ADR label is stored in an information system under truck plate number (and pin to PIN1 ticket label).

**Note:** When truck pass Video portal driving speed is limited at 30 km/h. At the front of Video portal can be placed traffic sign for limited speed. When the truck arrives at Video portal and the OCR plate number is made, employers at entry gate are alerted of truck arrival and all information and picture of the scanned truck plate are available. Between video portal and entry gate the truck entry order (truck overtaking) or drive lane must not be modified.

Truck stop before the first entry gate ramp and driver is first checked by Port Police (valid driver licence, passport...). If there is no problem policeman rise first ramp and truck can proceed and stop at the second ramp. Then Custom check truck cargo and if allowed truck entrance in port acknowledge the approval in the PCS system (Block/Unblock message). The driver gives a PIN1 ticket to the Port Security employee. Using barcode reader and AGS information system he checks out if all requirements are fulfilled. If all conditions are satisfied Security employee paired PIN1 ticket ID with the new RFID card ID.

Port Security employee retrieves PIN1 ticket and gives the RFID device to the driver.

**Note:** If truck driver already has an RFID card (temporary entry permit) the Security officer checks the RFID data.

Then Port Security officer opens the gate, and the truck enters the port area.

Immediately after the entrance in port area the radiation detection device will scan the truck (radiation detection device is installed immediately after port entrance). Radiation detection device is not connected to information system and in case of detection of the radiation red lamp will flash and audio signal will be emitted.

If any problem arise and truck not have permission to enter the harbour area the Security employer rise entry ramp and allow the truck controlled turns and immediately leave the port area.

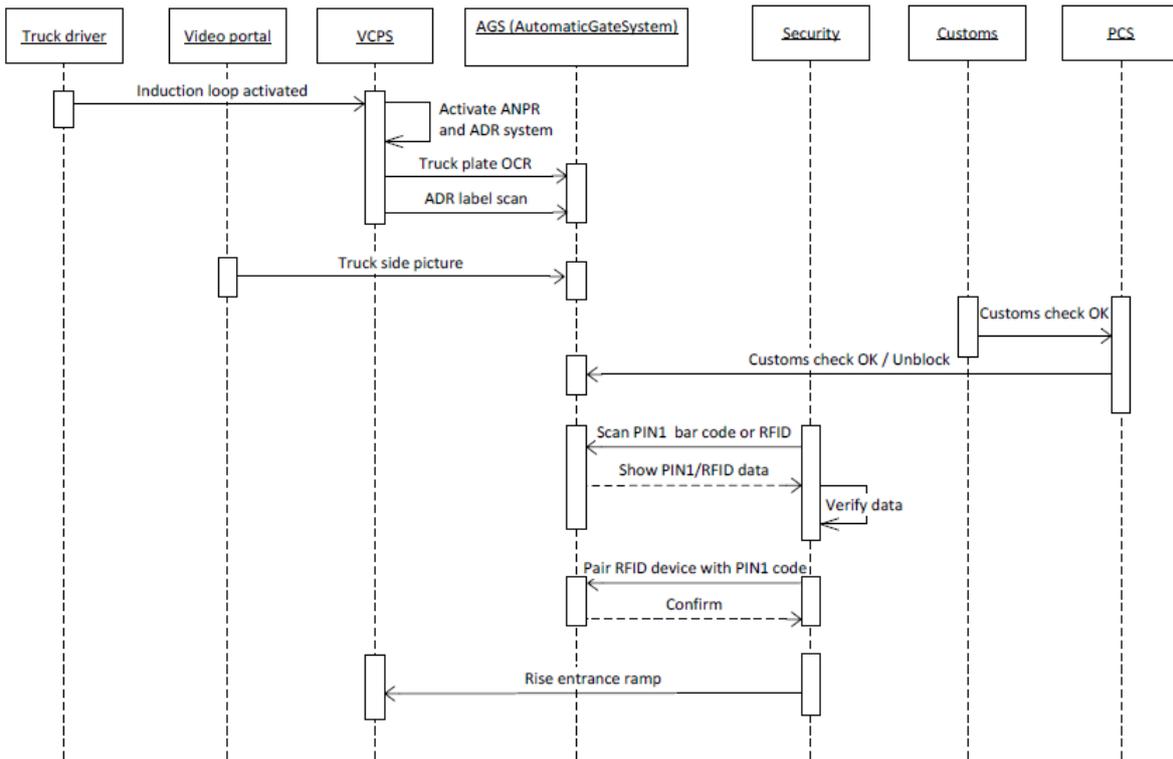


Diagram 7: Entrance procedure in harbour area - sequence diagram

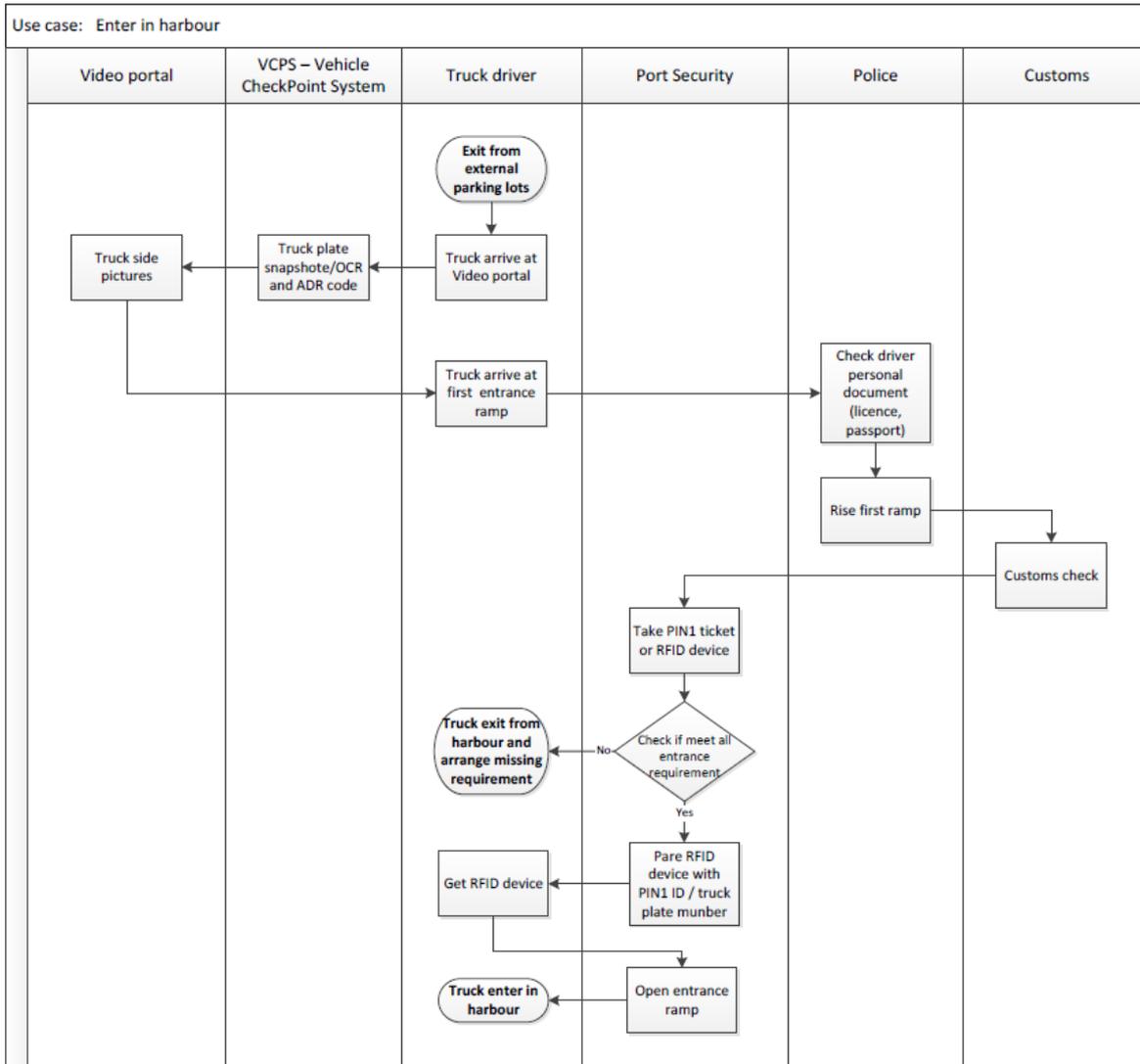


Diagram 8: Enter in harbour – process chart

### 2.3.8 Arrival on harbour exit point and exit procedures

In harbour area are made cargo manipulations (load or unload cargo). After manipulations ended truck has to leave harbour area. If Custom check or other exit procedures are needed truck must stop on internal parking lots. Trucks approach the internal parking lots ramp and when overpass the induction loop OCR of truck plate is taken. Using RFID card raises the entrance ramp.

After arranging exit documents and custom check the truck leaves the internal parking.

Truck approaches the exit ramp from internal parking lots and when overpasses the induction loop, OCR of track plate is taken and using RFID device raise exit ramp.

If there is some problems green light not lights (lights red light) and ramp not rises, the driver can use the Intercom device for communicating with Port Security. It here is some problems

truck driver can arrange it while staying on internal parking, so the possible traffic congestion at the exit harbour gate is minimized.

Before the truck reaches the port exit gate it has to pass through **Video portal**. Video portal will be placed on both truck exit lanes.

At the top of video portal will be placed **Info semaphore**, which indicate if the lane is open or close (red cross or green light).

When a truck passes the induction loop, snapshots of truck plate and truck front, back, top and side are taken. Also, an ADR label of dangerous cargo is recorded. All pictures and ADR label is stored in the AGS system under truck plate number (and pin to RFID card label).

**Note:** When truck pass Video portal driving speed is limited at 30 km/h. At the front of Video portal can be placed traffic sign for limited speed.

When the truck arrives at Video portal and the OCR number plate is taken, employers at exit gate are alerted of truck arrival and all information and picture of the scanned truck plate are available. Between video portal and entry gate the truck entry order (truck overtaking) or drive lane must not be modified.

The radiation detection device will scan the truck before the exit port area (detection device is installed immediately before the port exit). Radiation detection device is not connected to information system and in case of detection of the radiation red lamp will flash and audio signal will be emitted.

Then the truck reaches the exit gate.

If the truck plate number is not correctly recognised truck driver has to put an RFID card near an exit gate reader. If all exit conditions are met green light lights. If there is any unfulfilled requirement and green light not lights (lights red light), the driver can use the Intercom device for communicating with Port Security.

For temporary and permanent permit (port employers, annual permit...) exit gate bar rises when green light lights.

For daily entrance permit truck driver has to drop an RFID card in exit gate box and exit gate bar rises. The truck can leave harbour area.

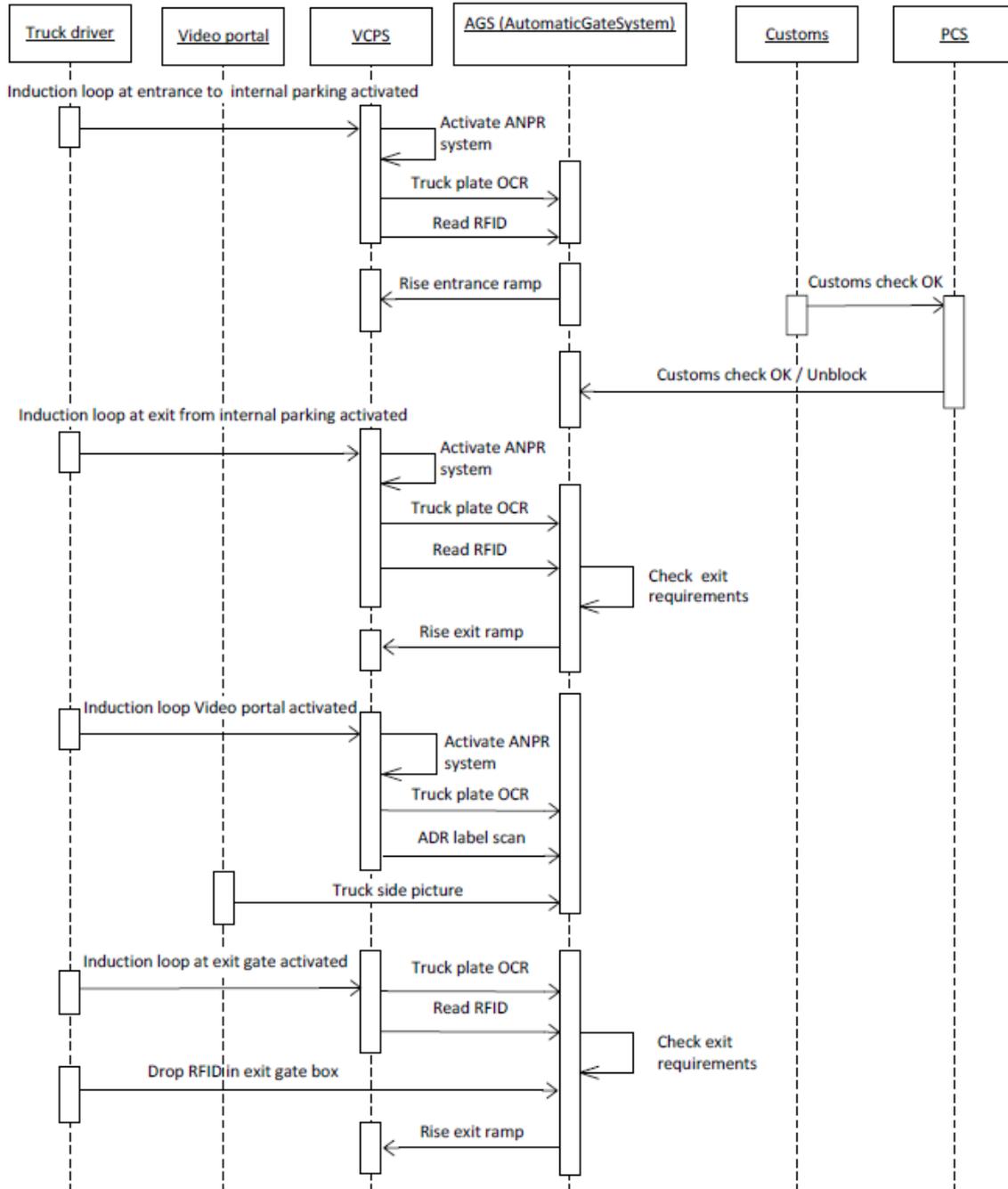


Diagram 9: Exit procedure from harbour area - sequence diagram

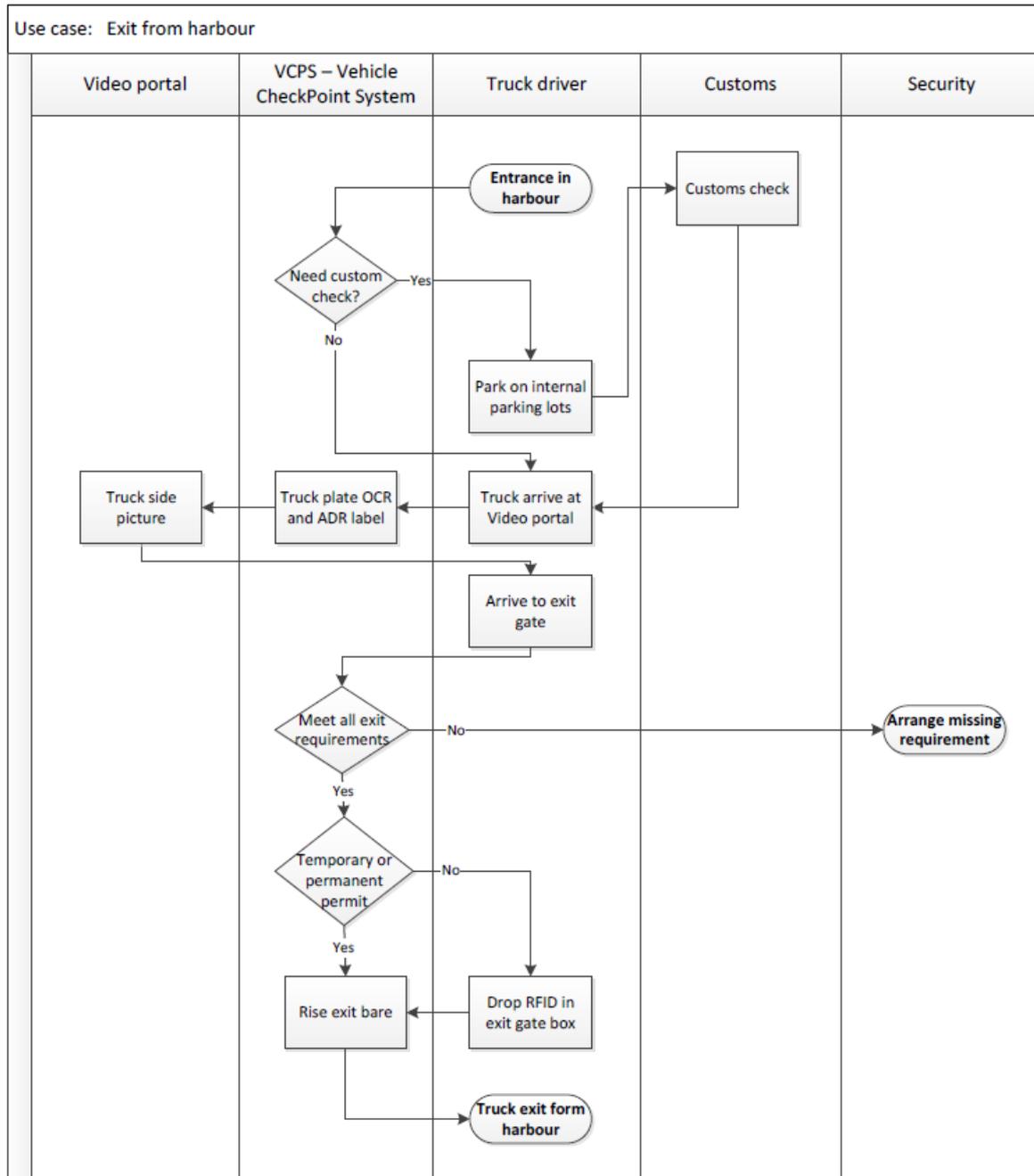


Diagram 10: Exit from harbour – process chart

## 2.4 Suggestions summary:

Vehicle permits are no longer printed, that is physically no longer exist.  
 Permits for persons no longer printed, that is physically no longer exist.  
 Parking on external parking lots is not paid for the first 3 hours.

## 3. Definition of “to be” scenario

### 3.1 Automatic Gate System (AGS)

The AGS system manages the security of the transits through the port gates with different managing levels:

- It controls permissions at the field devices in the port gates: barriers, traffic lights, bar code, RFID readers;
- Is connected with Kiosk and Event display to provide and get necessary data;
- Collects the data of the users and vehicles to which an access license is issued and the authorization levels;
- Exchange data with other IS systems (PCS, VCPS...)
- Exchange data with other platforms (TRANSPOGOOD Platform)

Actually, is in the use VCPS system, which provides basic functionality for entrance control (licence plate recognition, RFID or automatic gate bare is in use).

The AGS system manages the security of the transits through the main port gates with different managing levels:

- a) it controls permissions at the field devices in the port gates: barriers, traffic lights, bar code, RFID readers;
- b) is connected with Kiosk and Event display to provide and get necessary data;
- c) Collects the data of the users and vehicles to which an access license is issued and the authorization levels;
- d) Exchange data with other IS systems (PCS, VCPS...)

Existing surveillance information system and VCPS system have to be evaluated if they meet new operability and extension requirements.

Automatic Gate System controls entrance on port and based on results of processes exchange information with other platforms like TRANSPOGOOD platform.

## 3.2 Interaction with Other information systems and platforms

VCPS and AGS must be integrated with other information systems in Luka Ploče where is reasonable. With information exchange between AGS and other IS can improve process execution, data reliability and single entry of data.

The AGS system must be integrated with PCS system. PCS system is in use basically for port business documents storage and process handling. Integration between AGS and PCS must be established for truck announcement, dispositions and customs approval. Truck announcement, dispositions and customs approval will be handled in PCS system, AGS system will only read data from PCS. Key identification element will be truck plate number.

Integration between code lists will be made according to the principle that PCS code list is principal and all new entry and update has to be made in PCS system. Only code lists, which are unique to AGS system will be arranged in AGS system.

Integration is made with Web services technology and SOA architecture.

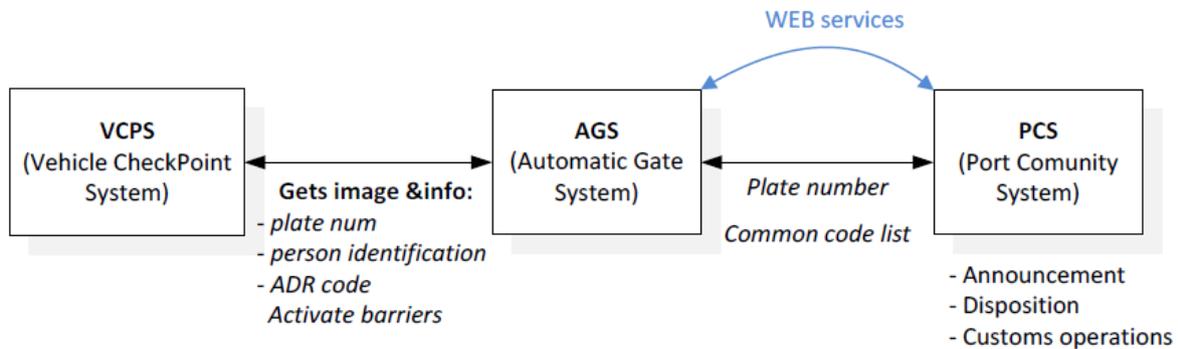


Diagram 11: AGS interaction with other information systems

### 3.2.1 Integrating AGS and PCS

The table below shows connection between AGS and PCS

Task	AGS		PCS	PCS Status	Executed by
Truck announcement	O	←	X	Announced	Terminal operator, Forwarder or Cargo Agent
Truck announcement update (only LicensePlate, TruckDriver and TruckCompany)	X	→	O	Announced	Terminal operator, Forwarder
Entrance in external parking lots	X	→	O	Announced --> Arrived	
Exit from external parking lots	X				
Arrival on Gate In	X				
Customs check	O	←	X	Block / Unblock	Customs
Entrance in harbour	X	→	O	Arrived --> InHarbour	Port Security
Customs check	O	←	X	Block / Unblock	Customs
Arrival on Gate Out	X				
Exit from harbour	X	→	O	InHarbour --> Departed	Port Security

**Legende:**

X - primary input

O - replicate by system

*Table 2: Integration between AG Sand PCS – Message flows*

A Truck Announcement message is made in the PCS and is sent to the AGS. The truck announcement has **Announce** status since the vehicle has not yet arrived at the external parking lot. Truck Announcement messages can be updated by the AGS system (Licence plate, Truck Driver, Truck Company, other relevant data), however, when updated, the truck announcement does not change the status. When the truck enters at external parking lots, AGS will send a message to PCS and the status of the truck announcement is changed to **Arrive**. When the truck comes in front of the port entrance, customs may block the truck (when documents are cleared, customs will unblock the truck and the driver will be able to enter the port area). Both messages (**Block/ Unblock**) will be sent from PCS to AGS. When truck enters in the port area, the AGS will send a message to the PCS. The truck announcement in the PCS will change from Arrived to In Harbour. Upon exit, customs may block the truck. After the customs check is performed, the truck driver will be unblocked. Both messages (block/unblock) will be sent from the PCS to the AGS. When the truck exits the port area, the AGS will send a message to the PCS, and the announcement status in the PCS will change to **Departed**.

### 3.2.2 PCS message specification

#### 1. Truck announcement

TruckAnnouncement Id	integer
OrderNumber	string
OrderDate	DateTime
TerminalOperator	string
EstimatedArrivalDate	DateTime

LicensePlate	string
TruckDriver	string
TruckCompany	string
EmptyOrFull	WSEmptyOrFull
DispositionCode	string
CargoCode	string
CargoText	string
CargoWeight	Nullable<decimal>
PermitNumber	string
PermitValidTo	DateTime (nullable)
HasPermit	Boolean

This message is made in the PCS system and is sent to the AGS system before a truck arrives. This message can be updated in the PCS system. All updates are sent to the AGS system. Updates are allowed until a truck arrives at the external parking gate.

### 2. Truck Arrival

TruckAnnouncement Id	integer
LicensePlate	string
TruckDriver	string
ArrivalTime	DateTime

### 3. Customs Block

TruckAnnouncement Id	integer
LicensePlate	string
BlockTime	DateTime

If full truck is entering port area, or full truck is exiting the port area, at port area check point, custom will block truck. This message is made in the PCS system, and is sent to the AGS system.

#### 4. Customs Unblock

TruckAnnouncementId	integer
LicensePlate	string
UnBlockTime	DateTime

When customs clearance is done, the Unblock message sent from the PCS to the AGS system.

#### 5. Truck Enter

TruckAnnouncementId	integer
LicensePlate	string
EnterTime	DateTime

This message is made in the AGS system and is sent to the PCS system. When a truck passes police control and checks, security officer checks truck data. After security checks, security officer opens port area entrance gate, and message Truck enter is made.

#### 6. Truck Exit

TruckAnnouncementId	integer
TruckLicensePlate	string
ExitTime	Data Time

After all exit checks, truck approaches the port area exit gate. Truck driver opens exit gate, and message the Truck Exit is made. The truck exit message is mad at AGS system and is sent to PCS system.

If the Video portal has a power failure it will be not possible to capture licence plate number, vehicle pictures and other video material. We assume that this is not critical procedures and all data shall be entered later into the AGS system.

At the entrance in the harbour area Port Security officer checks paper form and manually raises entrance ramp.

At the internal parking lot customs officer shall manually raise and lower the exit ramp.

At the exit gate from harbour a Port Security Officer takes paper form from the truck driver, fills the exit hour and raises the exit ramp. All collected paper forms will be taken to the Info desk, so the Info desk employee is able to enter data in an information system.

In special case, when truck enters regularly with the daily RFID card, Security take the RFID card and raises the exit ramp. If information system works normally Security scans the RFID card and fills in the truck exit date.

### 3.3 Test methodology

To ensure the highest level of software functionality and operability the test team will adopt following test method and workflow. Testing team will work to ensure the usability, interoperability and performance of the new software.



Figure 1: Test workflow

#### 3.3.1 Test environment

The overall environment for developing system consists of:

1. Testing environment – used by developers and test team for testing and internal quality assurance
2. UAT environment – user acceptance test environment
3. Production environment - used by all end users to actually work with system in everyday life

Test environment must be as similar as possible to production environment. After successful implementation system in production environment the testing system must remain operational for further development and testing purpose.

### 3.3.2 Test levels

According to each test methods, various test levels shall be applied in order to minimize unwanted errors in pilot version of software.

#### *Unit testing*

Working with the functional specification, the test engineers shall analyse every aspect of the application's operations, including those generally hidden from the end user.

The following areas of the project must be unit-tested and signed-off before being passed on to testing team:

Test must cover:

1. Compliance with the designs and specifications,
2. Performance,
3. Database verification (correct inserting and updating of rows),
4. Correct functioning of all components.

#### *Integration testing*

During this phase of testing, the testing team shall test the software in specific settings and evaluates the performance of module interactions or screens within the applications.

This is a standard testing procedure and requires that coherent sets of information are processed through the whole system. At this point it is not the individual program or function that is evaluated, but the flow of information through the system. The criteria here are:

1. Correct hand over of information (and pick up of that information) to next modules or functions.
2. System allows for correction to previous stages in the process.
3. Information remains unchanged during (re) use in other modules.
4. Interfaces work
5. The whole workflow can be processed with the system

### *System testing*

This is a simulation test comprising the testing of the software and all interfaces in a semi-production environment. This will require simulation or duplication of operational information, procedures, accepted workflows, and audits and checks on the system. This final step in the testing process will ensure that the new software and all interfaces will perform according to specification in a production environment.

### *Regression testing*

Regression testing involves retesting of all modules of the application after a change is made to the application. This is a standard testing procedure. The testing team shall carefully recreate the environment and steps involved when a bug was originally reported to verify or deny the success of the changes. The team will also take great care in reviewing the other areas of the application to ensure nothing was inadvertently affected, thereby causing new problems to be introduced.

### *User acceptance test*

UAT is the testing of the system by business users. For efficient testing it is required that the user test group has received training about the correct use of the system.

Test cases for the UAT must cover principal daily business cases.

### **3.3.3 Bug regression**

Bug Regression will be a central tenant throughout all testing phases. All bugs that are resolved as “Fixed, Needs Re-Testing” will be regressed when testing team is notified of the new drop containing the fixes. When a bug passes regression it will be considered “Closed, Fixed”. If a bug fails regression, testing team will notify development team by entering notes into Bug Tracking System. When a Severity 1 bug fails regression, testing team will beside entering notes into bug tracking system, also put out an immediate email to development team. The Test Lead will be responsible for tracking and reporting to development and product management the status of regression testing.

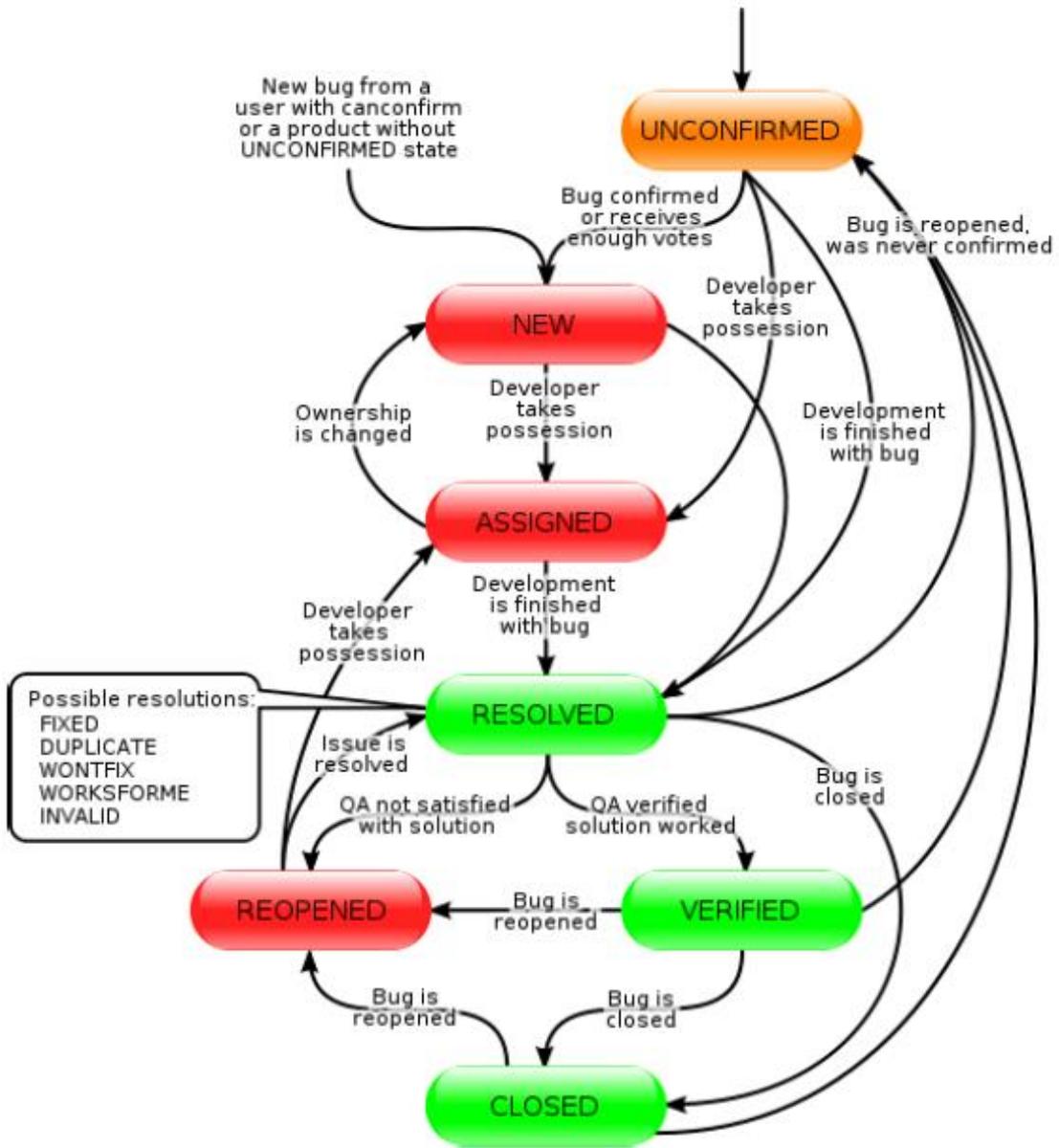


Figure 2: Life-cycle of a bug

At the end of each phase in roll out plan a separate cycle of regression testing will occur to confirm the resolution of Severity 1 and 2 bugs.

### 3.3.4 Test completeness

Testing will be considered complete when the following conditions have been met:

*Standard Conditions:*

When Testing Team, Development Team, Project Management, and Technical Management agree that testing is complete, the application is stable, and agrees that the application meets functional requirements.

All priority 1 and 2 bugs have been resolved and closed. Each test area has been signed off as completed by the Test Lead. 50% of all resolved severity 1 and 2 bugs have been successfully re-regressed as final validation. Ad hoc testing in all areas has been completed.

*Bug Reporting:*

Bug find rate indicates a decreasing trend prior to Zero Bug Rate (no new Sev. 1/2/3 bugs found).

Bug find rate remains at 0 new bugs found (Sev. 1/2/3) despite a constant test effort across 3 or more days.

Bug severity distribution has changed to a steady decrease in Sev. 1 and 2 bugs discovered.

No 'Must Fix' bugs remaining prior despite sustained testing.

*Test deliverables*

Testing will provide specific deliverables during the project. These deliverables fall into three basic categories: Documents, Test Cases / Bug Write-ups, and Reports.

## 4. Conclusion

The PCS (Port Community System) and Technical security system is 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 XML 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.