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## INFORMATION SUPPORT TO TRANSPORT-LOGISTIC INFRASTRUCTURE IN THE PORT OF KOPER

### SUMMARY

Besides the trade flow, the Port of Koper, as an organisational form of co-operation between parties offering transport services, needs also the information flow in the area it covers.

The article shows the possibility of graphic presentation of the Port transport and logistic infrastructure and the graphic communication between all the users of the Port area. The intranet connection gives every user the insight into the system where all the requested data for an efficient exploitation of a determined infrastructure are available.

The possibility of applying the intranet connections in the whole operating system of the enterprise offering port services is illustrated in the conclusion.

### 1. INTRODUCTION

For successful market activity every economic subject needs information about the situation, organisation, efficiency of measures concerning the enterprise and the environment in which it operates.

The concept of information support to transport-logistic infrastructure of the Port of Koper is to cover the needs, both at the operational level (profit centres, transport, planning development and maintenance) as well as management requests. It must provide better planning and maintenance of the current and new transport links with other structures in the enterprise.

All the logistic process operators are well aware of the importance of up-to-date information about the system they manage. Special problem is the overall view of the whole system of the port which cannot be simply solved by a traditional documentary practices. The realisation of different analytic schemes, when we want to combine all data of a requested terminal is effort- and time-consuming. The graphic display of the present situation with attribute data of a requested object enables the graphical supported communication between participants and parts in the transport process of the Port of Koper. The connection was enabled by the Autodesk Mapguide which uses Internet and Intranet architecture, object oriented maps, checking, selection and control, searching and drawing.

### 2. ANALYSIS OF THE PRESENT SITUATION

#### 2.1. Interacting information process

In the Port of Koper the working process - goods receipt, handling operation, cargo delivery - is organised at eleven terminals:

general cargoes terminal, fruit terminal, livestock terminal, container and ro-ro terminal, car terminal, timber terminal, bulk cargoes and soya terminal, alumina terminal, liquid terminal, terminal - silo, bulk terminal.

The process at the terminal is organised and controlled by a planner, sales manager and technologist. Operational planning department co-ordinates and controls the work and decides on the priority operation. The work is planned one day in advance. Forwarding agents and agents, Port business partners order the work to be carried out in the Port.

The commodities arrive to the Port by land and by sea. They can be imported, exported or in transit. The Port performs maritime, stevedore and warehousing operations. The Slovene Railways are involved in handling the railcar operation.

All numerical data related to cargo in a requested area are provided via electronic data exchange between all participants in the port service process.

Users input work orders, railcars orders, vessel arrivals and vessel arrival confirmation into their PC environment. Up to a scheduled time the collected documents are confirmed and transmitted to the Port over network (VAN) to the Port central computer (HOST) where planners transform the orders into work orders and the confirmed vessels arrivals are assigned the berths and the duration of berthing.

After completing the work planning process in the Port at a determined time, the Port sends the completed plan for the next day to all customers. When they first enter the network, the customers get the work plan in their PC environment. They send in their remarks regarding the plan up to a scheduled time.



### 2.1.1. The procedure of transport process management

#### – *Vessel notice*

The agents send via computer network (VAN) the vessel notice (48 hours before the vessel arrival at the latest). The message is input into the Port programs which perform the formal control and define the berthing number (automatic input into the vessel arrival register).

#### – *Vessel berthing*

Based on the vessels notice and vessels confirmation, the berthing plan is prepared by the Operational Planning Department. The internal vessel notice can be included in the berthing plan (when the formal agent's notice has not arrived yet and when, in fact, the vessels arrival is certain).

#### – *Planning the handling*

Shift foreman at a single terminal controls the orders according to different criteria: enter time, customer, vessels, warehouse, ....

The order sheet confirmed by the shift foreman is supplemented by the missing data: technological procedure, warehouse, rail track marking, berth. In this way the order is transformed into work order. Other authorised users in the Port are able to control the received orders and work tasks as well.

#### *Disposition of mechanisation*

As for chosen technological procedure requested for a shift work order, the shift foreman enters the requested type and quantity of mechanisation. When the list of workers is prepared the garage master enters the code of the disposed mechanisation.

#### – *Input of data about the handled quantities*

The vessels planner enters the data related to the handled quantities per hold twice in a shift and on the basis of these data the planned completion of works on the ship is calculated in the Operational Planning Department.

### 2.2. The infrastructure information support

Until 1995 all registers about areas and premises and their technological characteristics in the Port of Koper were managed graphically on charts in different tables. In this way, the complete documentation could be subject to ruin or loss. Geo-information was introduced in the port's transport-information system, which is an interactive information supported system based on graphics for data entering, saving, searching, analysing and displaying. The whole area is divided into strata. At single premises (shores, berths, roads, tracks, communal infrastructure, buildings, storage

areas...) the data are connected in database. Both databases are linked through a common single key. This method of port's areas arrangement provides access to data and also offers a basis for more efficient management of the basic port's activity - handling, storage, dispatching. Geotransport information system is currently at disposal only at the Department of Development.

### 3. THE MANAGEMENT MODEL OF TRANSPORT-LOGISTIC INFRASTRUCTURE OVER INTRANET NETWORK

All logistic process operators are well aware of the importance of up-to-date information about the system they manage. However, a particular problem is the overall view on the whole port's transport system which cannot be solved by traditional documentary practices. Likewise, the elaboration of different analytic schemes, when we want to combine the data of a requested terminal is effort- and time-consuming.

#### *Example:*

The planner preparing the work plan for the following day needs the information about available capacities of logistic infrastructure at the terminal. He needs the information about depth, shore gabarit, technological, storage areas, dispatch possibilities. All the data must be up-to-date, accessible at one place and also in the Central Planning Department which co-ordinates all the port's services, from receiving the goods to their delivery. The link between geotransport information system and all the parties involved in the port's service process is therefore very important for the Port's development.

The model will be object (graphically) oriented which means that the system component function or the characteristics of graphic unit indicates directly the value or the data. This directness is enabled by the identification data (meter). The basis of the model are the constructors (graphic components) forming a subsystem by means of the network connections. With regard to the selected function, the model must select, display, classify, change the system units. It is composed of two independent database systems;

- graphics (geometry) - CAD system
- data (attributes) - relation database

Both have also a separate choice of commands which enable working with data. The object oriented application provides a solid connection of both systems, it breaks the system barrier and enables the passage of data from one system to another.



### 3.1 Model development

The model development will be conceived in stages which means gradual solving of a single complex of problematic.

It starts with entering of facility state in graphics (space) and attributive presentation. At the second stage we concentrate on the program tools for network upgrading.

#### 3.1.1. Program software and tools

The program software is composed of programs and tools:

Programme	Author	Location
Netscape Communicator	Netscape	Users
Map Guide Viewer	Autodesk	Users
Map Guide Author	Autodesk	Users
Map Guide Server	Autodesk	curator (tutor)
ODBC Access 7 driver	Microsoft	curator (tutor)

The following data can be found on the Intranet Server in the Port of Koper:

- HomePage; Basic Intranet Homepage can be found at www address <http://lksrv02/gis/okvir1.html>,

- graphic data, thematic or SDF/SIF file, maps or MWF files can be found at the address <http://maps/situacija.mwf>,
- attribute data; are the data in attribute base baza1.mdb. The base is accessible over attributes related to graphic objects through the ODBC intermediary accessible as vir1. In file baza1.mdb,
- documents viewing; in MapGuide we choose one or more graphic premises of Port of Koper. We click on the icon Report and select the adequate report.

Figure 1 represents the facilities of the transport-logistic infrastructure (berths, premises on main roads, roads, storage areas). Besides, the transport infrastructure, the overview of communal infrastructure and buildings can also be selected.

#### 3.1.2 Tools of Intranet connections<sup>1</sup>

##### Autodesk MapGuide

is a group of tools able to create and edit, providing a simple access to vector maps or drawings on www. The map functions are directed to basic requests and presentation forms. It is one of three Autodesk tools, when unified, able to provide graphic viewing, planning, supporting and exchange of technical documentation.

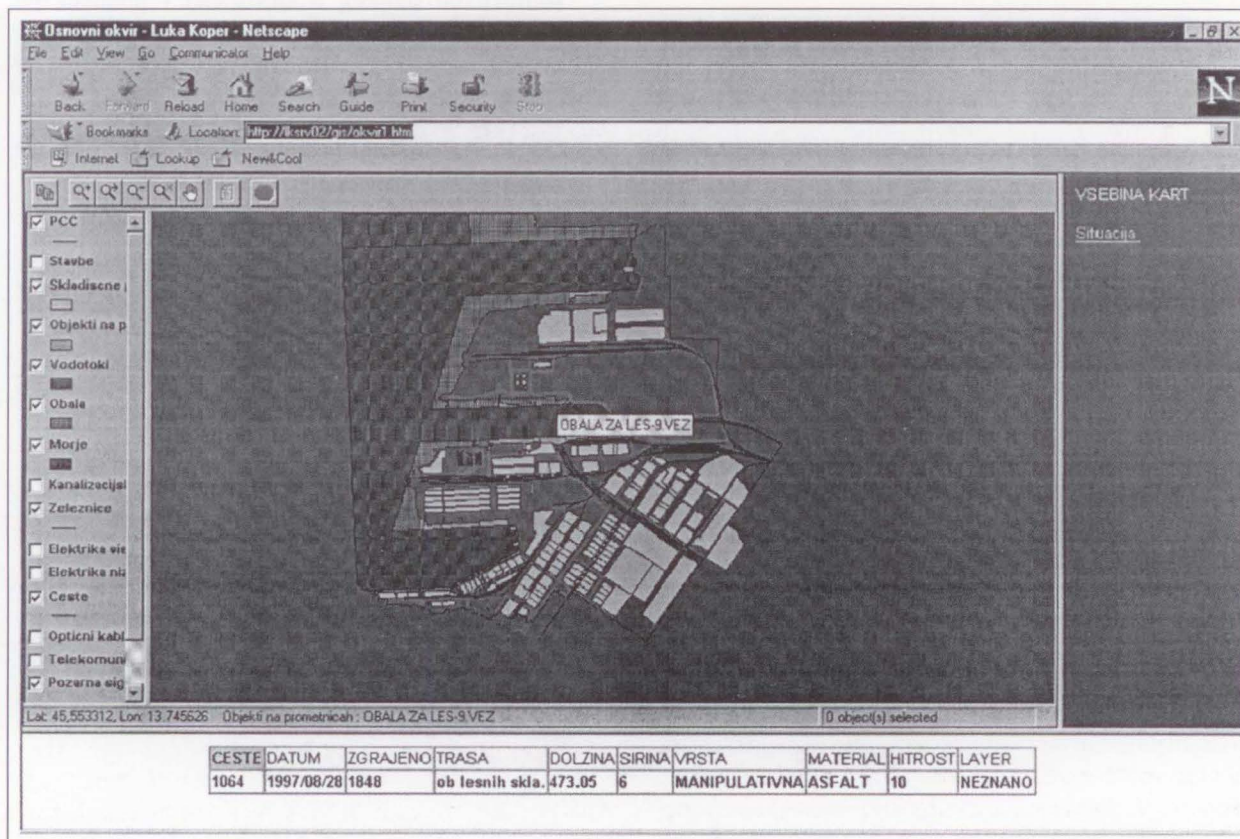


Figure 1

Source: author of the article



1. **Autodesk Map** is the successor of AutoCadMap. It is designed for the basic creation of graphic and with graphics connected data.
2. **Autodesk World** is a GIS tool, designed for analysis of data presentations of different systems in the Microsoft Office environment.
3. **Autodesk Map Guide** is an Internet/Intranet tool for searching and distribution of graphic and connected attribute data.

#### 4. CONCLUSION

The management of Port transport infrastructure is a very wide concept, since it comprises very different spheres and knowledge.

The article describes the model of transport-logistic infrastructure which can connect all the parties involved. The model can represent the basis for system development which can manage the logistic of the Port of Koper.

#### POVZETEK

#### INFORMACIJSKA PODPORA PROMETNO-LOGISTIČNI INFRASTRUKTURI V LUKI KOPER

*Luka Koper kot organizacijska oblika sožitja ljudi, ki nudijo okolju prometno storitev, ob blagovnem toku potrebuje tudi tok informacij v prostoru, ki ga pokriva.*

*V članku je prikazana možnost grafičnega prikaza stanja luške prometno-logistične infrastrukture. Vsak uporabnik prostora ima preko intranet povezave vpogled v sistem. V sistemu dobi vse potrebne podatke za učinkovito eksploatacijo dane infrastrukture.*

*Zaključek nakazuje možnosti uporabe intranet povezave v celotnem poslovnem sistemu podjetja, ki nudi luške storitve.*

#### NOTE

- 1 <http://ww.mapguide.com/proddesc.htm>

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