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MANAGING LOGISTIC CHAINS ON THE ADRIATIC – BALTIC ROUTE

ABSTRACT

Due to today's globalization and driven needs of the competitive freight transport, as a result of the opening of new markets, the necessity for the introduction of a completely new service, such as a special container train from Koper to Gdynia, may arise unexpectedly. The adaptability of the railway operators to the needs of the customer, i. e. the user of the transport service, must be available. The core of the problem of the introduction of such a new service lies mainly in the confrontation between the needs and requirements of the users of the transportation services and their capabilities.

KEY WORDS

Adriatic Sea, Baltic Sea, A-B landbridge, Koper, Gdynia, railway transport, logistics

1. INTRODUCTION

The rail connections between the Adriatic Sea and the Baltic Sea are located on the 7th European railway corridor RNE (Rail Net Europe). Various national railway authorities have made numerous studies of freight flows on this route. The corridor managers are acting as coordinators between the railway operators on the above-mentioned corridor. The above-mentioned corridor will be analysed on the route Koper (Slovenia)–Gdynia (Poland) and will be described as the Adriatic–Baltic landbridge (A-B landbridge).

The launch of container train connection arises as a problem of practical nature, regardless whether the train connection is launched ad hoc, as a special train not included in the timetable, or if its timetable has been planned in advance.

The project of connecting the port of Koper and the Polish town of Gdynia requires the involvement of the national railway operators where the corridor passes through: Slovenian Railways, Austrian Railways, Czech Railways and Polish Railways and the pri-

vate railway operators who offer their services on this corridor.

The suggested solutions for today's problems are considered to be the existing regulations and the communication system. The modernization and restructuring of the European Railway Market will certainly change the procedures necessary for the introduction of new railway services and for launching new train connections.

The organization of a landbridge on the Koper–Gdynia route should be reviewed, especially the introduction of special container trains. The advantages and disadvantages of introducing special trains, determination of recourses and procedures, which could help to improve and simplify the railway transportation process itself, should be stressed.

The main goals of the A-B landbridge are:

- shortening of procedures,
- improvement of communication between participants in the process of introducing a new train connection,
- encouragement of organizers of train transportation to intensify searching for transportation companies on this route,
- identification of potential suppliers and service users on this route.

After a quick market analysis, it can be identified that the connection between Koper and Gdynia does not exist as a special and unique logistics product. The realization of connection between these two extremes is currently a composition of various routes and the engagement of two or more transshipment inland terminals or industrial zones. This kind of service is not competitive with the standard sea connection via the North European ports.

The main reasons for establishing an A-B landbridge are:

- attracting cargoes in direction from Scandinavia to the Mediterranean, Middle & Far East

- to avoid the overcrowded North European ports,
- setting up a shorter and faster way of the north – south direction and to avoid sailing all around Europe,
- setting Vienna as the main hub for cargo flows going in the east – west direction and to turn them to A-B landbridge route,
- use of empty containers in the direction from Europe to the Far East in combination with various minor hubs in Europe,
- introduction of various Trans-European corridors,
- introduction of the Mediterranean Motorways of the Sea in combination with combined transport.

From the abovementioned we can say that the main hypothesis is: “with the incorporation of Slovene, Austrian, Czech and Polish railways it is possible to establish a rapid and effective connection between the Adriatic Sea (Koper) and the Baltic Sea (Gdynia).”

Auxiliary hypotheses are the following:

- the potential users of the new logistics product will use it and will shift from the currently used, if the cost is lower, the level of service equal or higher, the security remains on the same level and the product offers various possibilities to generate additional added value,
- the transit times of the A-B landbridge is determinative/essential and reliable – the transit times in the North European ports are not reliable due to high congestion,
- transit time in the A-B landbridge should be at least 7 days shorter than the current transit time via the North European ports,
- the costs must be at least 5% lower than the current ones.

2. SETTING UP THE LOGISTICS SERVICE BETWEEN KOPER AND GDYNIA

Relating to the arrival of a new freight shipment, the forwarder or the administrator of the supply chain notifies the Slovenian railways of the need of a railway transport by a special train.

Steps to be undertaken:

- 1) The customer requests a proposal for a whole train based on a certain transport route (for example between the Port of Koper and Gdynia), the course of the route and the technical characteristics of the train (such as weight and length). The customer should submit the business case, i. e. how much trains are to be sent, etc;

- 2) After obtaining the proposal from all participant railways, the customer is informed about the costs of a complete train transport or a single shipment. The cost of each train transport on the Slovenian railways territory is based on the calculation of train costs;
- 3) The customer is obliged to confirm the proposal in writing and to demand the railway operator who organizes the transport and represents all the other participants, a study of the train path;
- 4) The railway operators propose a certain railway timetable which is then discussed at the FTE conference for timetables;
- 5) Two agreements are signed between the customer and the railway operator, namely, a commercial agreement which defines the train path of the transport or of a single train and a payment agreement if the customer has not signed it previously;
- 6) The number of the commercial agreement is written in the CIM in order to enable data processing, made by the Income Control Dept.

If the customer does not have their own wagons, they must order through the ISUP system a certain number of wagons a day before loading (and unloading) at the freight railway station of Koper. After that the station confirms the order and advises the Port of Koper through the RAZ – VAGA application. The customer should then order a special train with the common procedure. The train that is loaded on the container terminal of the Port of Koper is then shunted to the Koper freight station, where a technical examination is performed before leaving the station.

Based on the distance calculator, available on the internet pages of Deutsche Bahn, the most convenient route of the train is determined. The most convenient route is the one that allows the highest axle load, is the shortest and possibly allows the highest speed of the train. The lines, allowing higher speeds, higher axle loads and higher loads per meter of railway track, should be preferred. At the same time, these lines allow daily bigger freight flow and higher number of trains due to better signalization and safety.

2.1 The proposed route

For the purpose of the A-B landbridge, two different options are being proposed:

- the direct port-to-port connection between Koper and Gdynia, (without stops during the ride), and
- the connection between Koper and Gdynia, which uses inland hub of Vienna as a stop station.

By analyzing the area and all potential connections between Koper and Gdynia, we found out that there are 25 different routes going from Koper to Gdynia, with the length difference of 89 km. The shortest one starting in Koper, passing the border with Austria in

Spielfeld, then passing the border with the Czech Republic in Breclav and the Polish border in Miedzylesie. This route is 1466km long. The longest route also begins in Koper, passing the Austrian border in Rosenbach, then passing the Czech border in Satov and the Polish border in Mieroszow. Till the end in Gdynia, this route is 1555km long.

During the interviews of potential stakeholders, the most convenient transport route for the proposed A-B landbridge options was defined. The route goes from the Port of Koper to Šentilj in Slovenia, from Spielfeld to Bernhardsthal in Austria, from Breclav to Petrovice in Karvine in the Czech Republic and from Zebrzydowice to the Port of Gdynia in Poland.

The chosen route is not the shortest one, but it was proposed due to the reasons listed below:

- very high infrastructure costs in Slovakia,
- poor railway infrastructure in Slovakia and Croatia,
- poor infrastructure in the vicinity of Skalite city, and
- high inclination of the track before Skalite.

2.2 Detailed analysis of A-B landbridge relevant service

The growth of the volume does not depend only on the demand of the potential customers, but it also depends on the capacity of block train per week. For the basic year, the number of containers should reflect the weekly service in both directions, which means nearly 3000 containers per year. With the accompanying marketing activities, a second block train should be added per week after a year of activity. That means nearly 6000 containers per year. Normally a good operator/organizer of the railway service will aim towards daily service at least to and from the hub, which could result in nearly 20,000 containers per year after 6-7 years of quality service.

As pointed out in the previous paragraph, the frequency of the service should be developed from one block train per week in the first year to daily service from/to hub within 7 years. The whole transport logistics requires a common IT platform, which should be able to communicate with national IT systems already installed by railway and logistics operators. The IT system should perform a service for marketing and sales operations and the control of the service.

The transport logistics should focus not only on the operations connected among the railway, but also on the distribution of cargo in port and inland hub and last but not least, on the utilization of empty containers along the transport route.

For the selected two A-B landbridge options (mentioned in Chapter 2.1), we propose a block train. The characteristics of the proposed model are:

- 500 meters of train length,

- 16 wagons per train,
- 2 x 40" containers per wagon (total 32 x 40" containers per train) or 3 x 20" containers per wagon (total 48 x 20" containers per train)
- 1200 tons of gross weight (without the locomotive),
- two-way directions.

The quality of the service depends strongly on the reliability and security of the product, thus service providers should set up high performance at the beginning of the service with both factors at the minimum of 95%.

2.3 Required capacities and capabilities of a new service

Starting a service of a container block train between the Central and East-European countries is a complex business. All the national and local legislation should be taken into consideration as well as organization particularities and obstacles, therefore, the use of a wide range of logistics and transport providers should be foreseen, all integrated into one head organization supported by an efficient IT system. All the necessary major participants are:

- logistics integrator for the entire route (i. e. forwarder),
- the Port of Koper,
- the Port of Gdynia,
- the inland terminal of Vienna,
- state railway operators (Slovenian railways, Austrian railways, Czech railways and Polish railways),
- private railway operators and
- local forwarders.

The integration of such a wide range of partners is still an element of doubt, but on the other hand the final supplier of the product will cover all the technical, technological, organizational and legal requests of the service.

2.4 Calculations for the selected route

Based on the collected data, it is obvious that Freight Freeways train paths should be chosen to organize container train on the route Koper–Gdynia and to fulfil the requirements and demands of freight forwarders, since the abovementioned train paths are high-quality paths, internationally recognized and promoted by infrastructure managers. This is applicable in case the planned train routes have their timetable prepared in advance for Freight Freeways train paths, according to offered train paths (where available). Otherwise, these paths are built up according to the demand on free capacities as RNE products and are published in the yearly timetable, which is available to all the carriers interested.

In case the train route is ordered for the period within a valid timetable, the most appropriate is a tailor-made Freight Freeways train path, proposed only after a specific request from the carrier at Infrastructure managers and disposable remaining capacities, which turned out in lower quality (with passing or waiting for other trains, unfavourable time schedule ...).

The most convenient transport route is not always the shortest one, as there are many aspects to be taken into consideration, such as:

- maximum speed,
- maximum burden,
- maximum axle load,
- maximum train length allowed,
- route elevation,
- signal-security equipment,
- total number of border crossings (rail operators involved),
- route electrification etc.

During the validity of the timetable, the train route must be ordered at least 48 hours prior to the planned transport, in most cases several days before. In the case of transporting big containers, which could eventually exceed the rail-loading profile, ordering of the train route should be made from 3 weeks to 1 month in advance.

When ordering a train route in the phase of preparing the timetable, users' requirements should be taken into consideration first, which means the order has to be made at least 8 months prior to the timetable validity.

Table 1 - Price calculation of the direct port-to-port connection between Koper and Gdynia without stops

Roundtrip Price traction:	Price in EUR
Koper–Spielfeld	10,078.14
Spielfeld–Breclav	16,650.00
Breclav–Zebrzydowice (Gr.)	7,250.00
Zebrzydowice (Gr.)–Gdynia Port	19,190.00
Total roundtrip price traction	53,168.14
Terminal Costs:	
Koper	500.00
Gdynia	500.00
Total terminal costs per trip	1,000.00
Additional Mark-on	
Administration 4 %	2,126.73
Profit for the railway operator 4 %	2,126.73
Total administration mark-on per trip	4,253.46
Grand total per roundtrip	58,421.60

Source: Prices obtained by railway operators

The roundtrip price is based on the route, which starts and ends in Koper. The price from Koper to Gdynia of 29,210.80 euro per block train is the basic price.

Taking into consideration that it is possible to transport 32 x 40" containers or 48 x 20" containers, the assessed total costs in case of 100% utilization are:

- 912.83 euro for a 40" container, or
- 608.55 euro for a 20" container.

Table 2 - Price calculation for the Koper–Gdynia connection using Vienna as an inland hub

Roundtrip Price traction:	Price in EUR
Koper–Spielfeld	10,078.14
Spielfeld–Vienna Lobau Hafen	14,170.00
Vienna Lobau Hafen–Breclav	2,480.00
Breclav–Zebrzydowice (Gr.)	7,250.00
Zebrzydowice (Gr.)–Gdynia Port	19,190.00
Total roundtrip price traction	53,168.14
Terminal Costs:	
Koper	500.00
Vienna	500.00
Gdynia	500.00
Vienna	500.00
Total terminal costs per trip	2,000.00
Additional Mark-on	
Administration 4 %	2,126.73
Profit for the railway operator 4 %	2,126.73
Total administration mark-on per trip	4,253.46
Grand total per roundtrip	59,421.60

Source: Prices obtained by railway operators

The prices in Tables 1 and 2 are based on the plan of 45 roundtrips per year. The same as in Table 1, also in Table 2 the round trip price is based on the round route, which starts and ends in Koper. The price from Koper to Gdynia of 29,210.80 euro per block train is a basic price. Taking into consideration that it is possible to transport 32 x 40" containers or 48 x 20" containers, the total costs per container in this case are:

- 928.46 euro for a 40" container, or
- 618.97 euro for a 20" container.

Table 3 shows the required transit time for a roundtrip from the Port of Koper to the Port of Gdynia and back is written.

The duration of a train ride with all the necessary stops (border controls, engine changing, technical and braking controls ...) in the first phase (i. e. direct connection between Koper and Gdynia excluding the stop

Table 3 - Transit times Koper–Gdynia–Koper

Route	No. of hours
Manipulation in the Port of Koper	9
Koper–Vienna	17
Manipulation in the Vienna Terminal	6
Vienna–Breclav	3
Breclav–Zebrzydowice	6
Zebrzydowice–Gdynia	18
Manipulation in the Port of Gdynia	9
Gdynia–Zebrzydowice	18
Zebrzydowice–Breclav	6
Breclav–Vienna	3
Manipulation in the Vienna Terminal	6
Vienna–Koper	17

Source: transit times obtained by railway operators

at the terminal in Vienna) lasts approx. 106 hours (4.4 days). In the second phase (i. e. connection between Koper and Gdynia including stops (with all the planned manipulation at the terminal in Vienna) the transit time lasts 118 hours (4.9 days).

The transit time in one direction, i. e. from Koper to Gdynia, in the case the train does not stop in Vienna, is 62 hours (2.6 days), otherwise it takes additional 6 hours i. e. 68 hours (2.8 days).

To perform the exact calculation and designation of the proposed route the standard maritime transport should also be calculated. Let us take, for example, the price calculation of the roundtrip from a city in the Far East (for example Singapore) to Gdynia in both directions.

Table 4 - Price calculation for the trip Singapore–Gdynia and the opposite direction

Singapore–Gdynia:	Price in USD	Price in EUR ¹
20" container	2800	1999
40" container	5000	3569
Gdynia–Singapore:		
20" container	700	500
40" container	1300	928

Source: Prices obtained by shipping companies

The transit time for this classical maritime transport is approx. 34 days.

After that, the financial calculation of the roundtrip Singapore-Koper (in both directions) and the financial and transit time comparison should be performed using the A-B landbridge service, which should be added at the final destination. In this manner, the entire trip is calculated.

Table 5 - Price calculation for the Singapore-Koper trip and back

Singapore–Koper:	Price in USD	Price in EUR ²
20" container	2938.70	2204.03
40" container	4244.10	3183.08
Koper–Singapore:		
20" container	849.80	637.35
40" container	1356.20	1017.15

Source: prices obtained by shipping companies

The transit time for this trip is approx. 23 days.

For the complex analysis of the proposed A-B landbridge service, the price and time values of the road transport are presented in Table 6. From these figures the significance of the proposed A-B landbridge connection in comparison with road transport can also be analysed.

Table 6 - Price calculation for the route Koper–Gdynia

Koper–Gdynia:	Price in EUR
20" container	2800
40" container	2900

Source: Prices offered by road haulier companies

The guaranteed transit time for this kind of transport from Koper to Gdynia is 2.5 days.

3. POTENTIAL USERS OF THE NEW SERVICE

The potential users of the new service are divided in the following groups: ports, railway operators, freight forwarders and inland terminal operators.

In this case, the ports group is composed as follows:

- the *Port of Koper* which is the only Slovenian port with a 100% market share. The port is located in Koper, the capital city of the Obala–Kras region (the Coast and Karst). The Port of Koper is a public limited company which provides port and logistics services. The company has the administrative and operational function,
- the *Port of Gdynia* is one of the two biggest Polish ports, estimating approx. 30% of market share. The administrative function is within the Port Authority and is 100% owned by the state. Within the operational function, the Port of Gdynia gives concessions to various different companies, which manage other terminals.

From the point of view of the landbridge, the two ports represent the beginning and the end in the

landbridge. The ports in the entire route will represent the intermodal and interchange point.

In the group of railway operators there are two major sub-groups:

- *state railway operators* (Slovenian railways, Austrian railways, Czech railways and Polish railways) and
- *private railway operators* (Adria Transport, GKB, LTE ...).

If the segment of market sharing is being considered, the state railway operators are bigger than the private ones, but due to the historical development of this activity in East European countries the state companies are much more rigid than the private ones. The way to perform business in the private railway companies is always market driven and the organizational structure is leaner. The general definition of private railway operators is that they are more agile.

There are many freight forwarders. A few of them, that were also interviewed for the purpose of the research are mentioned here:

- *Adriakombi*: the leading Slovenian company specialized in organizing combined transport. Their market share in the field of combined transport is 100%;
- *Schenker Slovenija*: is a member of the second biggest world-forwarding group. Regarding the turnover, the company is the third biggest forwarder in Slovenia, mainly specialized in organizing railway transport;
- *Kühne & Nagel Slovenija*: is a member of the third biggest world-forwarding group. The company entered the market as one of the last, but due to the group orientation in East Europe they are growing in Slovenia very fast;
- *Intereuropa*: is a group of companies operating in Eastern Europe. Considering the turnover, the company is the biggest forwarder in Slovenia. The company performs all types of transport. Intereuropa is also the biggest owner of warehouses in South-Eastern Europe. The group offers a part or complete logistics solutions;
- *Fersped*: is a forwarding company, which is 50% owned by the Slovenian railways. Fersped is mainly specialized in organizing railway transport. Regarding the turnover the company is the second biggest forwarder in Slovenia.

As far as terminal operators are concerned, there is just the inland terminal of Vienna.

The following reasons lead to establishing new A-B landbridge:

- forwarders search an alternative way to supply the Central and Eastern European region, which will provide faster (in sense of transit times), cheaper and more reliable transport compared with the

congested North European ports. The principal example is the automotive industry where all the logistics is working on the Just-in-Time bases. The congested ports can not offer a reliability for those kind of logistics service,

- transport operators search a possibility to organize quality intermodal service, which will be comparable to the West European services. A successful A-B landbridge is one of the main criteria for intermodality,
- ship owners are looking for new cargo to utilize empty space in containers, which arises as a consequence of the unbalanced import and export from/to Far East.

4. THE EVALUATION OF THE NEW SERVICE

To make a quality evaluation we have to assess the financial and transit time side of every single possibility.

Table 7 - Cost comparison for the Singapore–Gdynia trip with and without using the A-B landbridge

Type of container	Singapore–Gdynia (in EUR) – direct maritime transport	Singapore–Koper–Gdynia (in EUR) – using A-B land-bridge ³
20" container	1999	2823.00
40" container	3569	4111.54

Source: Prices obtained by shipping companies and railway operators

In the case of direct connection between the Baltic Sea and the Far East, the A-B landbridge corridor is not feasible in sense of price, because the prices are higher in all cases.

Table 8 - Cost comparison for the Gdynia–Singapore trip with and without using the A-B landbridge

	Gdynia–Singapore (in EUR) – direct maritime transport	Gdynia–Koper–Singapore (in EUR) – using A-B land-bridge ⁴
20" container	500	1256.32
40" container	928	1945.61

Source: Prices obtained by shipping companies and railway operators

In the opposite direction from Gdynia to Singapore the direct maritime connection is also more convenient, as it was in the previous case.

When the transit time is required as the main criterion, we can determine that routes from Singapore to Gdynia (and back) using the A-B landbridge corridor are much shorter.

Table 9 - Time comparison for the Singapore–Gdynia trip and back with and without using the A-B landbridge

Singapore–Gdynia ⁵ (in days) – direct maritime transport	Singapore–Koper–Gdynia ⁶ (in days) – using A-B landbridge	Singapore–Koper–Vienna–Gdynia (in days) – using A-B landbridge
34	25.6	25.8

Source: Transit time data obtained by shipping companies and railway operators

Table 10 - Costs comparison (road and rail) for the Koper–Gdynia route and back

Type of container	Koper–Gdynia (in EUR) – road transport	Koper–Gdynia (in EUR) – rail transport	Koper–Vienna–Gdynia (in days) – rail transport
20" container	2800	608.55	618.97
40" container	2900	912.83	928.46

Source: Prices obtained by road haulier companies and railway operators

When we compare the road and rail possibility for the land transport, we find out that the rail option is much more convenient than the road one.

Table 11 - Time comparison (road and rail) for the Koper–Gdynia route and back

Koper–Gdynia (in days) – road transport	Koper–Gdynia (in days) – rail transport	Koper–Vienna–Gdynia (in days) – rail transport
2.5	2.2	2.5

Source: Transit time data obtained by road haulier companies and railway operators

The analysis of the transit time in the A-B landbridge shows the rail transport is a bit more convenient (direct transport Koper–Gdynia) than road transport. If the train is going through the hub in Vienna then there is no difference between rail transport and road transport.

5. PROPOSALS AND RECOMMENDATIONS

Based on the interviews with the stakeholders and on the analysis made during the research, it is recommended to consider the following:

- *Railway infrastructure*: Large sections of railway infrastructure on the route are underdeveloped in the sense of capacity, speed and inclination of tracks, the most critical being in Slovenia and Slovakia (if used). Coordinated activities on the

entire A-B landbridge area towards regional, national and EU responsible authorities are recommended.

- *Administrational issues*: Handover of trains/wagons at the borders is slow and complicated because of national legislation and/or work organization at border shunting stations. The immediate implementation of new EU regulation of liberalization of the market is recommended – out of that the new simplified border administration activities have to be adopted.
- *Lack of multi-system trains*: National and EU incentive programs are recommended to enhance the purchase of multi-system locomotives both in public and private sector.
- *A common IT platform of the entire route*: The platform should be implemented in order to coordinate all participants of the service as well as communication with costumers. A consortium funded by EU funds should be established and its main task would be the development of the common IT platform for managing different landbridges.
- *A common Way Bill* (EU waybill) part of IT coverage, and
- *A common marketing of Koper–Gdynia logistic product* and the implementation of Koper–Gdynia point office.

6. CONCLUSION

The transport connection between the Adriatic and the Baltic Sea causes many positive effects on the countries somehow involved in this A-B landbridge, such as:

- using the geo-transport advantages and shortening the transport routes and consequently the transport time,
- increasing the use of Adriatic and Baltic ports,
- direct traffic connections,
- reducing the existing traffic congestions and rationalizing transport flows,
- adjusting the technical and the technological exploitation standards,
- adjusting the supply chain management with traffic infrastructure.

The traffic connections on this corridor are very important for all types of cargo, gravitating to the Indian Ocean and the Suez Canal. For example, the duration of combined transport of cargo (railway–road–sea) on the Baltic Sea–Adriatic Sea route is shorter by 7 to 8 days compared to the transport from the Baltic area through northeast of Europe and Central Europe to the Indian Ocean. In case of further development of multi-modal transport, this difference will only increase in favour of land connections.

The research shows that at this moment, there are no train services on this route (at least not in overall section) and this is the main reason why there are no sample timetables. It is necessary to offer this connection between the two ports and present the advantages of rail transport, such as:

- shorter transport time compared to sea transport,
- excellent response and flexibility of rail operators (which is actually very rare),
- capability of mass transport (except a few negative exceptions, such as one track railway section Koper – Divaca in Slovenia),
- possibility to offer complete logistic solutions on the transport route ...

It is necessary to hurry up and to get cargoes for this route, to use wisely the existing infrastructure and to upgrade it with up-to-date tracks and equipment and try not to be overtaken by other Adriatic countries, which are also seriously considering similar projects.

The conclusion based on the interviews with the stakeholders is that there is an enormous amount of work to do to reach the same level of service, which is currently provided by shipping lines, especially in the terms of reliability of the service. However, the ports of the North Europe are facing bigger congestions, which should favour the new A-B landbridge. In case the transit time is required as the main criteria, the route from Singapore to Gdynia using the A-B landbridge corridor is much shorter and is therefore a priority of a new logistics product. The biggest obstacle is currently represented by the price of the service. In this case, the usage of A-B landbridge corridor is not feasible as far as price is considered, as the prices are higher in all modalities of the service.

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POVZETEK

UPRAVLJANJE LOGISTIČNIH VERIG NA JADRANSKO – BALTSKI POTI

Zaradi pojava globalizacije in vedno večje potrebe po konkurenčnem tovornem transportu, ki je posledica odprtja novih trgov, lahko nepričakovano pričakujemo potrebo po predsta-

vitvi čisto novih sredstev, kot je posebni kontejnerski vlak na relaciji Koper-Gdynia. Zmogljivost železnic mora biti potrebam strank, kar pomeni uporabniku prevoznih sredstev, prilagojena tako, da jim je vedno na voljo. Bistvena težava pri predstavitvi tovrstnih novih sredstev je predvsem v primerjavi med potrebami in zahtevami uporabnikov prevoznih sredstev ter zmožnostmi le-teh.

KLJUČNE BESEDE

Jadransko morje, Baltsko morje, A-B landbridge, Koper, Gdynia, železniški prevoz, logistika

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1. The price in EUR was obtained from the conversion of USD by the official currency issued by the Bank of Slovenia on the date of 21st of September 2007. The currency is 1,4009 USD for 1 euro.
2. The price in euro was obtained from the conversion of USD by the official currency issued by the Bank of Slovenia on the date of 21st of September 2007. The currency is 1,4009 USD for 1 euro.
3. In this calculation we took into consideration the proposed route with a stop at the inland hub in Vienna. If we take the direct port-to-port connection, the price is 15.63 euro lower.
4. Ibidem.
5. The same is for the opposite way from Gdynia to Singapore.
6. The same is for the opposite way from Gdynia to Koper and from Koper to Singapore.

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