1. Introduction
Current developments in Europe point toward the formation of continental transport systems and large regional ports as their nuclei. These trends influence an enhanced volume of transport, which in turn attracts numerous and all the more diversified accompanying activities, resulting in a qualitative leap for ports. The impact of these developments on the local and regional economy and beyond it has been substantial and will continue to prevail.

The dominant growth impulse of the general and spatial development of the regions and the countries Slovenia, Italy and Croatia as a whole is particularly supported by the transport infrastructure and cross-border cooperation. The latter has to be viewed upon as an objective need of the region (and attributed to its bordering position), and not as a neglect of the ‘regional awareness’. It concerns mutual interest of the regions (and also countries as a whole) from each side of the border. The Littoral Region ('Primorska') lies on the border area of Slovenia, and the same feature applies to its counterpart in Italy, Trieste with its surroundings, and also to Rijeka in Croatia to an even greater extent. The combining of manufacturing and service activities will be mutually enhanced by the completion of the entire traffic system, information flows and communication mechanisms. With state borders widely open, the economic development will improve the competitiveness of, and support the cooperation between the regions, and thus contribute to an increased flow of goods, capital and services; in particular it will affect the mobility of the population.

2. The single port system - The vision and the opportunities
It is difficult to imagine that adjacent ports such as the Port of Trieste (Italy), Port of Koper (Slovenia) and Port of Rijeka (Croatia), which are in principle directed to the same traffic flows and the same customers, should each be building its own transport chain or system resp. That would be not only against the economic logic, but also contrary to the North-European pattern of transport systems layout.

2.1. The vision
The vision based on the awareness that Trieste needs the broader coastal zone for its further development, comprising the port activities and the urban development of its suburban settlements, to accommodate shipyards, industrial and transport facilities, sprung up already before the World War I (Trieste was the first Central European port at that time) and was presented by Max Fabiani. Between the two world wars, Trieste suffered from crisis due to its severance from its hinterland, therefore the idea on a metropolitan area reaching from Monfalcone in the west of Trieste, to Koper and Piran in the south had died away. After the World War II, in 1952, the then Mayor of Trieste ordered to Fabiani (who was then aged 87) to analyse the development plan of the Trieste Area in the newly emerged circumstances. According to the plan that Fabiani drew up then, Trieste remains the main port of Central Europe, which would - in contrast to the first proposal from the year 1910, when he proposed that Trieste be connected with the suburb settlements by sea – be connected by railway as well. Fabiani did not regard the then state borders round Trieste as an insurmountable impediment to his plan. Due to his in-depth knowledge of the Central European hinterland, Fabiani insisted on the geo-political constant of Trieste as the city – emporium, to which all its developmental options should be subordinated. Some parts of Fabiani’s plan were actually accomplished by the Italian government in 1954 (road and railway bypass roads, among others). At that time Fabiani did not reckon with the emergence of a new port in Koper later on (1957), however, his vision of a single metropolitan area perfectly corresponds to the vision of the single Koper – Trieste port system. Another fact supporting this development is that the role of state border as a line of separation in Europe is disappearing, both in the North Adriatic area and between this urban area of Koper and
Trieste and its Central European hinterland.
In view of the anticipated accession of Slovenia to the European Union (accession of Slovenia to the EU could only occur in 2003-2004, at the earliest), the old vision of the single metropolitan zone in this area, attaching to the transport area, has become highly relevant over again. Recent developments show that with effect of 1st February 2001, Luka Koper d.d. (Port of Koper Corp.) has been taking over the management of Pier VII in Trieste Port, and thus became ‘included into the European Union ahead of time’.

In this sense, the Agreement on association and the document signed (on 29 August 2001 in Trieste) between the Chairman of the Port authority of Trieste, the Managing Director of the Port of Koper (Luka Koper d.d.), and the Managing Director of the Slovenian Railway Company (Slovenske železnice), will be in the long run the groundwork for cooperation not only between the two ports, but also between the two neighbouring cities.

In this Agreement on association, the signatory parties endeavour for the establishment of an integral port system with a common traffic policy, which should grow into an association of ports. This common policy will comprise the regulation and promotion of the united port system. The signatory parties have committed themselves to support (possibly through participation in joint ventures) the construction of a six-kilometre railway track connecting Koper with Trieste – two kilometres thereof on Italian territory, four on Slovenian (the railway line will also provide passenger service). This railway line would be a tangible means to prove that the emerging of a single port system is under way; in turn, the single port system urgently calls for an efficient internal connection. The Italian company Italferr has already prepared the project of the linking railway between the two ports, which would be running through two tunnels. For the sake of a higher efficiency of the Koper-Trieste port system, the signatory parties have committed themselves to start the construction of the second track of Divača-Koper line and an additional track on Trieste-Ljubljana line at the earliest time possible. That would provide an even better connection with the markets in the heart of Europe and in the Balkans.

2.2. The opportunities
The development of the port of Koper, Trieste port and port of Rijeka is affected by the events and on-going processes in the European Union, Central and Eastern Europe, as well as in the Mediterranean area. The adaptation to these developments and the vision will significantly influence the future development. Today, globalisation is increasing the importance of ports, which are seen as vital intersections of the transport systems of individual countries and also of their wider environment. The fact that the globalisation is on the way is highlighted by the figures currently achieved in the worldwide international trade, which reflect a significant growth in general and in particular areas. The data on the worldwide trade achieved in the past (between 1991 and 1996) showed an average growth rate of 6.4 %, and envision a similar growth rate in the coming 15 years (DRI/McGraw-Hill). In the same period, the international trade of Asia was growing by the rate of 11.6 % on average. It is anticipated to grow faster than in the rest of the world, that is at a rate of 8.7 % by the year 2010. In addition to the well-known “tigers”, there are new ones emerging.

For the development of trade in this part of the Mediterranean is most relevant that here, in the Gulf of Trieste and of Kvarner, the Adriatic sea indents farthest to the North and deepest to the continent, which has always been of great importance for the passage from the sea to the mainland. The transport seaway from the North Adriatic ports to the Middle and Far East is shorter by one half than the sea route connecting that part of the world with North European and Baltic ports. Land transport from North European ports by road and by railway to the main industrial centres in Central Europe is approximately 500 km shorter than from North European ports.

Important for the North Adriatic ports is that a new mega-region ‘of New Europe’ be formed in their hinterland, whose economic development had been hindered by non-market based economic systems for long decades and what is more, the iron curtain had severed their traffic flows from their natural routing towards the North Adriatic ports. Having abolished these barriers, the countries of Central and Eastern Europe (CEE) have developed into a fast-growing and promising part of Europe.

In the coming ten years, the growth of GDP in the eastern countries of Central Europe is expected to reach 5 % on average, freight transport will exceed the current volume by 90 %: in some directions such as the Fifth Corridor by 100 % or more. A substantial part of the pertaining traffic flows will be routed to the North Adriatic ports.

The North Adriatic region will have to cope with a further challenge, i.e. an increasing presence of the Asian Pacific economies on the European continent and in the CEE countries in particular. It is estimated that China will become the world’s second exporter (immediately after the USA) by the year 2020, and its purchasing power will outgrow that of the united Europe. Between 1978 and 1995, China’s economic growth averaged 9.4 %; the anticipated annual growth in the coming 20 years will be 6.5 % (estimate by World Bank, Sept. 1997). China is a most important trade partner of the EU. In 1997, the trade exchange between the EU and China amounted to ca. USD 43 billion (Economic Information & Agency, Hong Kong, China’s Customs Statistic). The exchange of goods has been rising from year to year, and achieved USD 44.25 billion in the period January-August 2000. For the traffic flows from this source, the North Adriatic is from the geo-transport aspects the most convenient seaway/ route.

3. Characteristics of the development of transportation in the Mediterranean and in Europe
The priority goal of the European Union relates to the equilibration of regional development within individual member states and the community as a whole. A major role is
assigned to the Mediterranean. With ports playing strategically important roles in national economies, creation of new port capacities is being promoted worldwide. In the Mediterranean, new ports and terminals are emerging and existing ports are creating new capacities with the purpose of enriching the range of services they have to offer.

The growth of international trade reflects in a higher volume of transported goods. Above all, the transportation of containers is growing from year to year: in 1995 it achieved the figure of some 130.000.000 TEU. Between 1985 and 1995, the European container transport grew to 30.000.000 TEU, the feeder services increased threefold to 6.300.000 TEU, whereas the growth in the intra-European transport (national traffic within Europe) achieved a lower rate and resulted in 7.000.000 TEU.

According to some forecasts (Drewry Report), the annual growth in feeder containers will reach 10% in the next five years, primarily in the Mediterranean feeder market. That will result from a higher inclusion of minor and small ports and from developing/emerging markets (chiefly East European Countries). According to the forecasts of Ocean Shipping, the share of West Mediterranean ports in the volume of European container transport will grow from 6.000.000 TEU in 1995 to 8.000.000 TEU in the year 2000, and to 14.000.000 TEU in 2010 (optimistic scenario). North European ports were estimated to achieve the volume of 18.000.000 TEU in 2000, and 35.000.000 TEU by the year 2010.

The development of ports in Europe and in the Mediterranean is going on in an extremely competing environment:

- regional competition of ports,
- competition of ports in different regions, and
- competition of Mediterranean and North European ports.

Nowadays, the "One-stop shop" hub system (strategies), the "hub and spoke" systems enable better effects. The term "One-stop shop" comprises activities such as transport feeder system, block trains, road transport, port services. Therefore, the leading shippers/ship operators (e.g. Sea-Land – the global ocean carrier, which is part of the American group CSX, and specialised in transport and logistics) invest in port installations, terminals and also in railway and road transport. An example of a new type of integrator who employs all transport modes and hence optimises the transport chain is the US Intermodal Marketing Company. At present, such development is not possible in Europe in the same form due to fragmentation, even though there is a significant trend of association (forming alliances, joint ventures of various big operators - also American, who would render that possible). The joint European transport policy and European Directives show a movement to a positive direction.

The White Paper on Railways (1996) speaks about the "Freeway" concept (corridors) for the first time: more information about it was published in "Trans-European Rail Freight Freeways" (1997). This relates to international railway infrastructure corridors. The document "Communication, Intermodality and Intermodal Freight Transport in the European Union", COM (97) deals with systems and action taken to increase the efficiency of intermodal transport and outline the starting points.

The competition among ports is especially explicit when distance is no longer a prevailing factor, and other factors appear in the forefront. Competition will be displayed primarily in the field of quality of services, prices, inter-port connections (foreland), and connections to the hinterland. Competition among ports will be even tougher in the future, on all levels. The struggle for survival in competition will force the ports to seek strategic alliances with other ports (partnership Trieste, Koper, Rijeka?) and also with terminals in the hinterland.

The geographical hinterlands of the North Adriatic ports comprise the markets of Slovenia, Italy, Hungary, Austria, Germany, Czech Republic, Slovakia, Switzerland, and Croatia. This is an area of exceptional economic potential. North Adriatic ports control a substantial share of total overseas potential cargo from above listed countries. The shares relating to the container transport lie significantly below available volume. This proves that the actual hinterland does not only depend on the geographical position, but also on the features of various cargo and markets, or of each logistic chain passing the port.

Furthermore, the hinterland of the North European ports has an advanced infrastructure, which results in a gradual shifting of the gravitational zone of the North European ports further to the South. In order to rise the competitiveness of the North Adriatic ports against the North European ones, an improved mutual cooperation of North Adriatic ports and promotion of their role as transit ports has become vital. The relevant range of maritime services as offered by the North Adriatic ports need to be extended by efficient and competitive land transport services, in particular to establish direct container block trains.

4. More competitiveness through improved land transport train and sea connections

The railway infrastructure is an important factor in the conservation of environment and physical space (at the increasing road traffic), and is indispensable for a higher port valorisation. The performance of the Port of Koper, the Trieste and Rijeka port does, and will depend on the carried and handled goods, therefore all the countries in this area endeavour to attract as much cargo as possible. On the other hand, the quantity of cargo (and the utilisation of the railway and ports) will depend on the economic development of the neighbouring countries, development strategies and strategic connections, the construction of infrastructure, etc. The currently used connections among the states, modernisation and infrastructure construction are in the function of these efforts.

In the past, one of the most important tasks of the railway in the Alpine-Adria Region was to provide an efficient, fast and cheap transport between the Adriatic ports and their
hinterland (major economic centres). The “Südbahn” – the Southern Railway Line was the first railway track to connect the Danubian Area with the Adriatic and has an important impact on the railway traffic. In the Austro-Hungarian Monarchy, this line connected the ports in Trieste, Rijeka and Pula. It was designed as a double-track line in the length of 577 km, linking the capital Vienna with Trieste. The construction work on this railway line lasted from 1839 to 1857, and it was considered as a most important European railway connection, which can be attributed both to its economic relevance and the difficulty of construction. The Southern Railway Line has a major impact on both, the Austrian inland transport and international transport between Austria and North Adriatic ports.

However, over 130 years old railway connections can no longer satisfy today’s needs, therefore modernisation of railway infrastructure is the key to an efficient integration in the European transport network. Austria has already made a plan for the reconstruction and modernisation of the infrastructure. The strengthening of the southwest-northeast connection is the principal purpose of the study which has revealed the technical, ecological and economic potential of the new line:

Vienna – Adriatic / Upper Italy

The realization of the part Graz - Klagenfurt (132 km) will represent the connection / junction to the Pontebba Railway Line. The improvement of the present condition on the Italian side will be most beneficial to the ports of Trieste and Venice. The railway line is technically feasible and ecologically acceptable, however, it will be open to traffic in the year 2010 only, and in the whole capacity after the year 2020. The increase forecast in the freight transport is expected to be 50 %, in some sections even 100 to 150 %.

In Italy, the modernisation of the Pontebba Line connecting the port of Trieste with Villach and Munich was initiated on the basis of the needs for better connections with the hinterland, as assessed for the North Adriatic ports. The line is laid out past Slovenian/Italian border (the Slovenian alternative to this railway track is Sezana-Ljubljana-Šentilj). The construction of the new marshalling yard in Cervignano was vital for the Pontebba Line, the port of Trieste and the appertaining area. It is located by the railway track Cervignano-Palmanova-Udine (in the vicinity of Pontebba Line).

The strategic economic interest of Italy is in the exchange with the countries of Eastern Europe. This has risen recently and its trend is still growing. Italy is the most important partner with these countries on the EU side, immediately after Germany. Therefore it is in the interest of Italy to improve the connections with these countries through Slovenia and Austria.

Immense increase in the volume of international and transit freight and passenger transport in Slovenia by the year 2015 (Prognos 1996) requires a more rapid construction of the highway and railway network, chiefly in the main transit connections through Slovenia - Slovenian traffic cross. The new railway track Puconci-Hodoš - Bayansenye-Zaalovo (which was opened for traffic on 10 June 2001) stands for a new railway connection between Slovenia and Hungary, running from Trieste, Koper, via Ljubljana, Budapest and Bratislava to Lvov. The new railway connection means the shortest traffic route between the North Adriatic ports and Northern Italy on the one hand, and Hungary and the East European countries on the other hand.

The strategic interest of Croatia are better connections with West and East Europe. Very important for the Port of Rijeka is the new foreseen connection Rijeka - Zagreb - Graz - Wien/Linz- Wels, which will improve rail transport (among others transport time will be 50% shorter).

On the level of the EU there are several initiatives for modernisation of railway infrastructure. One of the most concrete initiatives to improve the infrastructure of railways, roads and waterways is the “Vienna Paper” (Brioni, 1994, Conference of Ministers of Transport of the Central European Countries, Brioni, 3-4 February 1994): this is a programme document on the construction of transport infrastructure of Slovenia, Austria, Croatia, the Czech Republic, Hungary and Slovakia, with precise information on price and time schedule, length of main roads and railways, and even facilities.

The future eastwards enlargement has more recently added to the need for a global spatial strategy for Europe (“continent-wide approach”) through pan-European networks (priority multimodal corridors). In order to facilitate this integration, the EU has launched a “needs assessment process” in the field of transport infrastructure known under the name TINA (Transport Infrastructure Needs Assessment), which covers all the modes of transport, including the port and maritime sectors (the need to link the seaports and maritime corridors to the TENs - Trans-European networks was already stressed at EU level in 1992).

Of vital importance for the North Adriatic region are the rail and road corridors, going through the major gravitational area of the North Adriatic seaports: the 5th and 10th Paneuropean traffic corridor.

![Fig.1: Paneuropean corridors](source: Traffic Institute)

Fig. 2 shows the land connections used for block trains or non-grouped wagons from Koper, Rijeka and Trieste to the important markets in the hinterland.
Besides better land transport connections in particular direct container block trains an opportunity for the growth of container turnover in the future presents itself in the development scenario in the area of transportation by sea. At present, the trend in ship capacities of the range of 7,000 – 8,000 TEU is rising. For the year 2010, ships with capacity over 10,000 TEU, that is the so-called “Malacca Max” ships carrying 15,000 (18,000) TEU are forecast. Ships of this size should operate on the East-West routes, the closest to the Equator. The number of calls in a line voyage should be as low as possible – approximately 5 to 6 calls at “mega hub” ports on the entire voyage from Los Angeles past Hong Kong and Singapore, through the Suez and to the Carribean. In the near future, the present division of ports to the ‘hub/feeder’ will be replaced by the new division to ‘hub/regional hub/feeder’.

This development will greatly affect the circumstances in the Adriatic too, which lacks the underlying maritime and market conditions (a satisfactory hinterland) to be fit to receive ships of above-stated dimensions. Regardless of that, the market potential of the North Adriatic allows for the existence of a port ranking as a “regional hub”. Today, only the port of Trieste has got the conditions for that category. The role of a “regional hub” for the North Adriatic will result in excellent connections with the “mega hub” port for Europe (expected location in the West Mediterranean) and evtl. with the Arab “mega hub” in the Red Sea, with direct feeder services to other nearby regional hubs, and with line connections with selected destinations in the Mediterranean and also beyond the Suez. As a “regional hub”, Trieste would also have the role of a consolidating port for other minor ports in the North Adriatic.

Taking into consideration the expected size of ships, the service between a “mega hub” and Trieste will be operating by ships in the size of 3,000 – 4,000 TEU. Local feeder lines would be linked to Trieste by means of rotation lines employing ships of under 1,000 TEU.

In July 2000 was started a new maritime link by N-Xpress of Abu Dhabi, member of the Norasia group. Short transit-time (18 days) from Hong Kong to the main destination in Central Europe - Austria, Switzerland, Germany and Northern Italy confirms the strategic location of the port of Trieste, regains the role of terminal port of call on the Far East and South-East Asia routes and also serves to the exports with the aim to boost traffic (mainly by block trains) from Central Europe, which at present is serviced by Northern European ports.

5. Napan (Northern Adriatic Ports Area Network)
In order to rise the competitiveness of the North Adriatic ports against the North European ones, an improved mutual cooperation of North Adriatic ports and promotion of their role as transit ports has become vital. The statement that there is a time for a more intense joint approach of the Northern Adriatic ports has been reached on the Conference about EU and Cross-Border Regional Cooperation: The Northern Adriatic Ports of Trieste, Koper and Rijeka in 1998 in Porto-Roz. In cooperation with Northern Adriatic ports Trieste, Koper and Rijeka the conference was coordinated by l’Institut d’études européus Université catholique de Louvain (Belgium) and was supported by the Central European Initiative (CEI), European Commission and EBRD. The conference was organized by the Economic Chambers of Slovenia and Croatia and by Institute for Studies and Documentation EU and Eastern Europe (ISDEE) from Trieste. Representatives of the Working Community Alp-Adria, individual regions in the hinterlands of Northern Adriatic ports, European Seaports Organization (ESPO), academic institutions and ports, state and regional governments from the countries of Northern Adriatic ports area participated at the conference.

On the conference it was decided that the closer cooperation must lean on joint Research projects about the Mid-and Long-Term prospects of Northern Adriatic Ports:

1) Current flows and projections (for years 2005 and 2020) of maritime cargo between third countries and NAPAN countries through Northern Adriatic ports with particular emphasis on TEN and Pan-European Corridors

2) The impact of trade globalization in maritime transport in Northern Adriatic ports

3) Assessment of current and potential future EU policies on single Markets and common transport policy. Their impact on the position and growth potential of Northern Adriatic ports (new EU regulations on ports, such as “user charges”, TEN and Pan-European Corridors connecting Napan area with its broader hinterland).

4) Existing ports capacities and infrastructure development in Northern Adriatic ports, connecting markets along TEN and Pan-European corridors.

5) Prospects and benefits resulting from cooperation between Northern Adriatic ports in different types of transport...
(containers, combined, multimodal transport, short sea shipping, ferry, joint development, use of port and transport infrastructure etc.).

6) Recommendations for the Action Plan for ports, Association of Northern Adriatic ports, regional, and national authorities, including potential roles for EU, CEI, Alps Adria Working Community, OECD, EBRD, and other international institutions.

The NAPAN network has to be considered in the light of global associating, alliances, concentration and cooperation in the world. At the same time, this project is also Europe-oriented, in the sense of ‘disappearing borders’ in this area. The purpose of associating North Adriatic ports is to include the representatives of local authorities, chambers of commerce and industry, institutes, interested businesses and also to exploit the existing cross-border cooperation programmes, to support regional development, and to apply the EU research programmes. This association should help to select the most adequate forms of cooperation, association, division of work and specialization of these ports, as well as the possibility of their attaching to the Transeuropean Transport Network (TEN) and to the programme of Transport Infrastructure Needs Assessment (TINA). The final aim would be to gradually transform the present three North-Adriatic neighbour-ports into a single integrated port system in which each individual infrastructure would have its own recognized specialization. This transformation is also in the interest of the EU and its principles (intra-regional-cross-border cooperation), and the EU is prepared to support it.

6. Conclusion

It is clear that good opportunities as: 1) market development in Europe (chiefly East European Countries) and also in global environment, 2) development of infrastructure and connections to the important markets in the hinterland (particularly direct container block trains), 3) scenario of maritime transport as well as 4) supporting factors, stand for the predominant developmental impulse to the development of a joint large continental system gravitating to the central part of the North Adriatic. Such consideration will become even more topical after accession of Slovenia and later of Croatia to the EU.

The cross-border cooperation of the Koper area with the neighbouring Trieste and also Rijeka area has become of vital importance, and also a relevant developmental factor, in particular from the view of moral and financial support to this cooperation provided by the EU programmes. This extensive coastal area would sustain economic activities that would, in one way or another, lean on the underlying maritime-transport activities and/or link to the traffic flows generated thereby. To acquire cargo (containers, cars, etc.) the installation and modernisation of port infrastructure and a rise in the quality of services should be permanently improved. As well, efforts must be directed more to the hinterland and to the foreland to initiate and organise various participants of the transport-logistics chain (the trends in maritime transport and modern forms of transportation have to be considered). Industrial activities will primarily develop in port industrial zones and will largely depend on the logistical and transport facilities. In addition to the conventional transport-oriented tertiary activities (freight forwarding, agency, and transport broking), the activities of the advanced tertiary would also accommodate banking and insurance; this range of activities would be underlying for the research and developmental activities with university institutions (the University of Trieste, the Third Slovenian University in the process of establishment on the Slovenian Littoral Region, ‘Primorska’, University of Rijeka).

NOTES

1 Max Fabiani was born in the Karst area, he lived and worked in Vienna before the World War I, and on the Littoral Region between the two wars. He belonged to the most widely known Central European architects of his era.

2 Slovenian traffic cross: Šentilj - Maribor - Ljubljana - Koper, with branches towards the Hungarian border and in the South West to Nova Gorica; then direction Jesenice - Ljubljana - Dobova towards Zagreb. The first leg signifies the connection with the international line Barcelona - Milan - Ljubljana - Budapest - Kiev (5th corridor); the second leg denotes farther connection with Zagreb - Belgrade - the Balkan states - the Near East (10th corridor).

3 On Friday September 7, 2001 the departure of the first container block train from Koper to Austria took place. This train denotes the start of a regular service linking the Port of Koper with the main Austrian business centres. Since than it has been running twice weekly in both directions, operated by Intercontainer Austria (ICA).

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