T.2. The Action Plan

for demonstrative action

LP-Dubrovnik Airport

PP1-Dubrovnik Port authority

Document Control Sheet

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CONTENT

1.INTRODUCTION

Intermodal Passengers Connectivity between Ports and Airports (INTER-PASS) is a project approved under the INTERREG V-B Adriatic-Ionian Transnational Cooperation Programme 2014-2020. The programme is funded by the European Regional Development Fund under the European Territorial Cooperation objective, which provides support to regional cooperation between countries of the Adriatic-Ionian Region during the programming period 2014-2020.

The project will be implemented by 8 project partners and one associated partner. The project has started in January 2018 and it is expected to be finished in December 2019. The total budget approved for the project amounts to 1.498.568 EUR, 85% of which is co-financed through the ERDF fund (European Regional Development Fund).

Within the Adriatic-Ionian Region there are many maritime cities which have to deal with a very high number of passengers during the peak season and in which cruise tourism is an important factor of regional and local development. However, most of these “homeports” for cruisers & ferries are suffering from a lack of integration within various modes of transport, especially with regional airports.

The overall objective of the INTER-PASS project is to enhance the intermodal connections between ports and airports in the Adriatic–Ionian Region in order to improve the processing of passengers, mainly cruise tourists and travellers reaching tourist destinations located on Adriatic and Ionian costs during the peak season.

The project will produce 3 specific outputs:

1. Cooperation networks on intermodal and multimodal connectivity between ports and airports located in the Adriatic-Ionian Region. The network will be a place where partners and other stakeholders will exchange knowledge on innovative solutions (techniques, methods, operating codes etc.) that could be easily and successfully adapted in the Adriatic-Ionian context.
2. An action plan for each territory which will define solutions to be tested and implemented in involved cities. The testing of 4 identified solutions to be implemented in Dubrovnik, Pula, Bari and Corfu during the Summer of 2019 with the objective to significantly speed up the tourist processing between ports and airports.
3. Elaboration of a joint Integrated Strategic Plan for multimodal passenger transportation between ports and airports to be shared with other ports, airports, and authorities located in the Adriatic-Ionian Region

Within the project, as part of second technical work package, Action plan for implementing pilot action needs to be implemented in every project region (4 action plans). Hereafter is presented Action plan for Dubrovnik region.

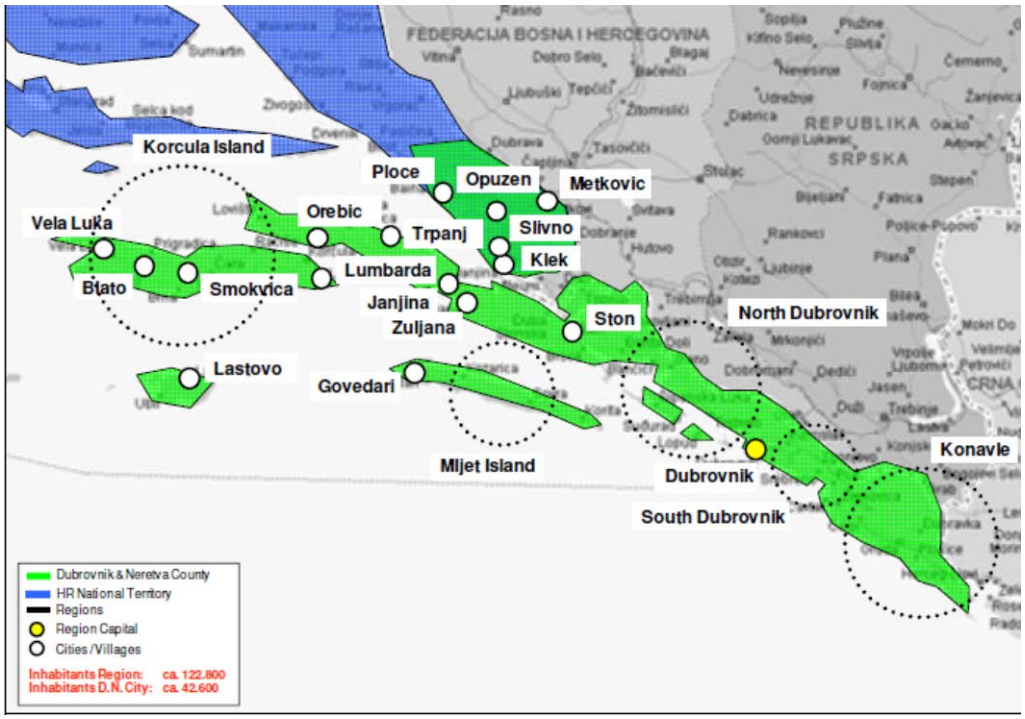
2. THE TERRITORIAL, ECONOMIC AND LOGISTIC CONTEXT OF THE SITE

Territorial aspects

The "Dubrovnik - Neretva County" is the southernmost county of the Republic of Croatia. Croatia joined the European Union on 1 July 2013. The Dubrovnik & Neretva County comprises Croatia's national territory in the south bordering the countries of Montenegro (in the south) and Bosnia & Herzegovina in the east. On landside it is broken into two parts by Bosnia & Herzegovina's sea access. An approximately 10 km wide stretch around the municipality of Neum (BiH) divides the county in two parts and at the same time separates the area around Dubrovnik from the main part of Croatia. Currently, people have to cross the country to reach the northern territories of Croatia but new infrastructure projects should avoid time consuming procedures.

Politically, the Dubrovnik & Neretva County is divided into 5 towns, 17 municipalities and 230 settlements. The main cities in the region are Dubrovnik, Korčula, Metković, Opuzen and Ploče. Dubrovnik is, with almost 43,000 inhabitants (census 2011), the biggest municipality in the region. The total population of the county is currently approximately 123,000 inhabitants. During the main tourist season in summer, the infrastructure is used by significantly more people, seasonal workers and tourists.

Seaside, Dubrovnik & Neretva County consists of several small and two large islands, which are the islands of Korcula and Mljet. The city of Dubrovnik is located in the southern part of the national territory, close to the borders of Bosnia & Herzegovina and Montenegro. The following illustration shows a detailed map of the Dubrovnik & Neretva County including all its islands and main cities/villages:



Picture 1: Dubrovnik-region

Economic aspects

Economic indicators and Gross Regional product

Dubrovnik-Neretva county main economic industry is related to trade, tourism and related services, shipbuilding and construction.

In 2015., Gros Regional Product (GRP) of Dubrovnik-Neretva County contributed with 2,94% in 2015 and is constantly growing.

NUTS 2013 - 2nd level and counties	2011.	2012.	2013.	2014.	2015.
Republic of Croatia	100,00%	100,00%	100,00%	100,00%	100,00%
Continental Croatia	68,58%	68,35%	68,16%	68,02%	68,07%
City of Zagreb	33,52%	33,48%	33,26%	33,36%	33,39%
Zagreb	5,61%	5,64%	5,70%	5,83%	5,88%
Krapina-Zagorje	1,86%	1,87%	1,92%	1,97%	1,99%
Varaždin	3,27%	3,30%	3,38%	3,41%	3,43%
Koprivnica-Križevci	2,41%	2,39%	2,31%	2,26%	2,22%
Međimurje	2,15%	2,18%	2,21%	2,28%	2,28%
Bjelovar-Bilogora	1,87%	1,84%	1,83%	1,88%	1,88%
Virovitica-Podravina	1,20%	1,18%	1,15%	1,08%	1,06%
Požega-Slavonia	1,09%	1,06%	1,06%	1,01%	1,00%
Slavonski Brod-Posavina	2,08%	2,09%	2,10%	2,02%	2,03%
Osijek-Baranja	5,66%	5,57%	5,62%	5,57%	5,56%
Vukovar-Sirmium	2,48%	2,42%	2,42%	2,36%	2,37%
Karlovac	2,21%	2,19%	2,23%	2,18%	2,20%

Sisak-Moslavina	3,16%	3,13%	2,99%	2,81%	2,78%
Adriatic Croatia	31,42%	31,65%	31,84%	31,98%	31,93%
Primorje-Gorski kotar	8,33%	8,80%	8,73%	8,55%	8,37%
Lika-Senj	0,91%	0,88%	0,88%	0,88%	0,87%
Zadar	3,15%	3,17%	3,21%	3,26%	3,29%
Šibenik-Knin	1,92%	1,92%	1,96%	1,97%	1,94%
Split-Dalmatia	8,26%	8,15%	8,20%	8,25%	8,33%
Istria	6,14%	5,99%	6,06%	6,16%	6,18%
Dubrovnik-Neretva	2,70%	2,74%	2,81%	2,90%	2,94%

Source: Statistical office of the Republic of Croatia.

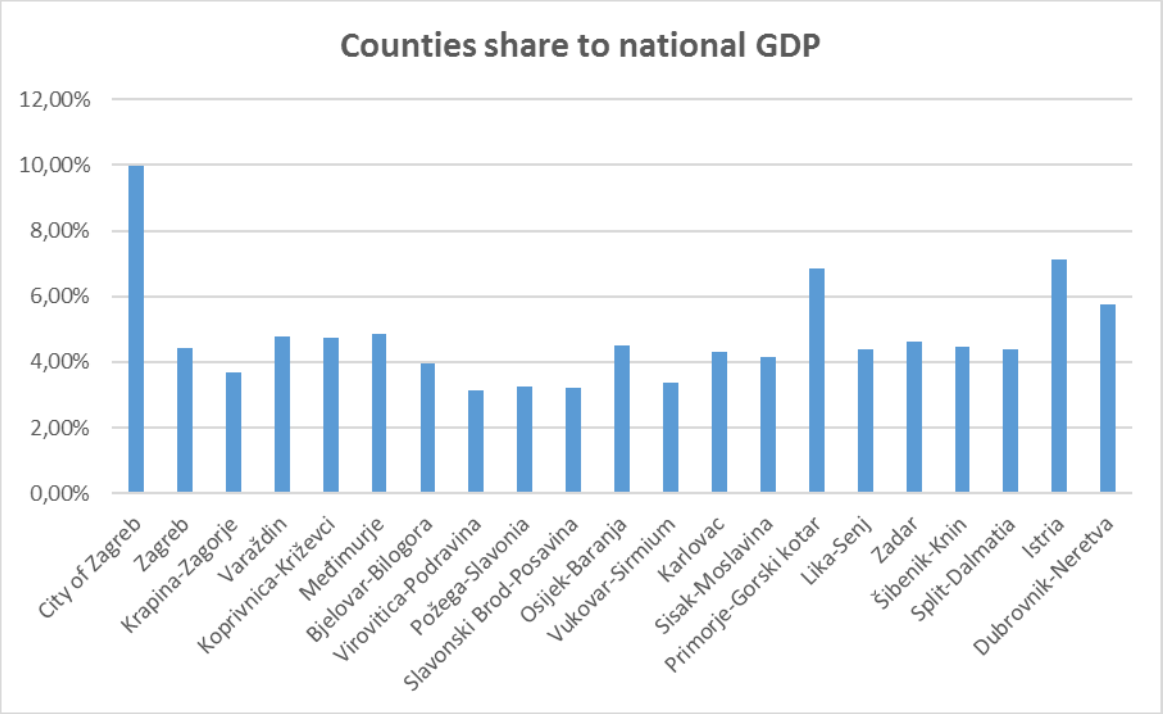
Dubrovnik Neretva county is experiencing huge increase in tourist arrivals and overnights of 11% In 2016, comparing to 2015. In 2016, there were 1,6 million tourist arrival with more than 6,5 million overnights. With almost 4 days overnight in average per tourist.

Most representing markets in Dubrovnik region include tourists from UK, France, SAD, Germany, Spain and Scandinavia

Also, with regards to GDP per Capita, Dubrovnik & Neretva County's holds the fourth position in the country with share of 5,76% in 2015. The highest contribution was recorded by City of Zagreb (9,99%), followed by Istria (7,71%) and Primorje-Gorski Kotar (6,87%). As can be seen from the tables below, share of GDP per capita in Dubrovnik-Neretva county is continuously growing.

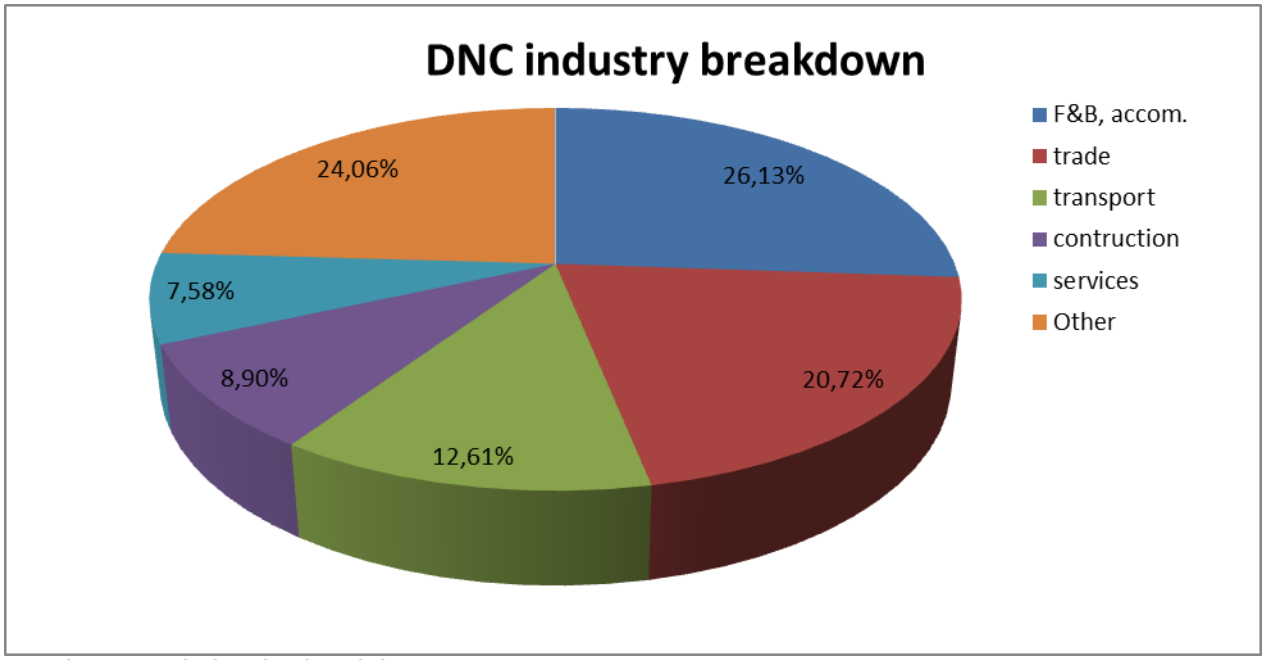
NUTS 2013 - 2nd level and counties	2011.	2012.	2013.	2014.	2015.
City of Zagreb	10,36%	10,29%	10,12%	10,08%	9,99%
Zagreb	4,31%	4,32%	4,33%	4,42%	4,44%
Krapina-Zagorje	3,42%	3,46%	3,54%	3,65%	3,70%
Varaždin	4,55%	4,59%	4,69%	4,74%	4,77%
Koprivnica-Križevci	5,10%	5,07%	4,88%	4,81%	4,73%
Međimurje	4,61%	4,67%	4,71%	4,86%	4,86%
Bjelovar-Bilogora	3,83%	3,80%	3,79%	3,93%	3,95%
Virovitica-Podravina	3,45%	3,43%	3,35%	3,16%	3,15%
Požega-Slavonia	3,42%	3,37%	3,39%	3,26%	3,26%
Slavonski Brod-Posavina	3,22%	3,24%	3,26%	3,17%	3,21%
Osijek-Baranja	4,54%	4,48%	4,52%	4,51%	4,52%
Vukovar-Sirmium	3,38%	3,31%	3,34%	3,29%	3,35%
Karlovac	4,20%	4,20%	4,29%	4,25%	4,31%
Sisak-Moslavina	4,50%	4,50%	4,35%	4,13%	4,15%
Primorje-Gorski kotar	6,87%	7,26%	7,17%	7,03%	6,87%
Lika-Senj	4,38%	4,29%	4,33%	4,37%	4,39%
Zadar	4,51%	4,52%	4,53%	4,59%	4,63%
Šibenik-Knin	4,32%	4,35%	4,45%	4,52%	4,46%
Split-Dalmatia	4,44%	4,36%	4,36%	4,38%	4,40%
Istria	7,21%	7,02%	7,05%	7,14%	7,11%
Dubrovnik-Neretva	5,39%	5,46%	5,56%	5,72%	5,76%

Source: Statistical office of the Republic of Croatia.



Graph 1: Counties share to national GDP

In Dubrovnik Neretva County there are 3.960 enterpreneurs in 2017 with combined gross revenue in the amount of 11,1 billion HRK. Most relevant industries relate to food and accommodation, trade, transport, construction and services.



Graph 2: DNC industries breakdown

Unemployment rate

Dubrovnik-Neretva County unemployment rate for 2016 was at 18,3% and has slightly decreased from 2015. Also, in past three years Dubrovnik region is experiencing lower unemployment rate due to the expansion of tourism and new jobs created.

County of	2011.	2012.	2013.	2014.	2015.	2016.
Republic of Croatia	19,1	19,7	21,5	22,2	19,3	16,9
Zagreb	18,0	18,6	21,5	21,9	18,2	15,1
Krapina-Zagorje	18,2	19,8	21,3	21,1	17,7	14,6
Sisak-Moslavina	30,9	33,2	34,8	36,2	34,4	32,3
Karlovac	25,0	25,7	26,2	25,6	24,0	21,2
Varaždin	15,0	15,4	16,9	15,8	12,4	9,5
Koprivnica-Križevci	18,7	20,4	23,9	24,4	19,7	16,7
Bjelovar-Bilogora	28,8	29,0	30,2	32,0	31,0	27,5
Primorje-Gorski kotar	15,7	15,6	17,0	17,9	14,9	13,0
Lika-Senj	22,3	20,9	23,0	24,6	23,3	22,3
Virovitica-Podravina	32,5	35,4	36,2	38,1	35,8	32,7
Požega-Slavonia	26,2	27,6	30,5	31,4	26,2	22,8
Slavonski Brod-Posavina	33,8	34,7	37,0	38,0	30,8	27,1
Zadar	21,0	21,1	22,5	22,5	17,7	16,0
Osijek-Baranja	28,5	29,3	32,1	34,3	31,9	28,8
Šibenik-Knin	23,3	24,0	24,8	25,5	23,3	22,5
Vukovar-Sirmium	32,2	32,9	35,8	38,0	33,6	29,7
Split-Dalmatia	24,0	25,8	27,9	28,6	26,1	24,1
Istria	11,5	10,9	12,6	12,9	9,9	8,4
Dubrovnik-Neretva	18,8	19,0	20,5	21,5	20,5	18,3
Međimurje	16,8	18,0	18,7	18,7	14,7	12,1
City of Zagreb	9,4	9,5	10,8	11,2	9,6	8,2

3.DESCRIPTION OF THE SITE AND ITS MAIN NEEDS

3.1 DESCRIPTION OF THE PROCESSING PHASES OF INTERCONNECTIVITY

The international and national accessibility of Dubrovnik is dominated by the airport of Dubrovnik located in the municipality of Čilipi and Konavle. There is no direct motorway connection to Dubrovnik, as the motorway currently ends at the western borders of the Dubrovnik-Neretva County at Ploče. The region is not accessible by rail, as the Croatian railway network ends in Split and the narrow gauge railway line built before World War I, connecting Dubrovnik with Mostar and Sarajevo (BiH), was dismantled in 1975.

Therefore, the main transport modes in the region are air, road and sea transport. The public transport system is based on bus services connecting the municipalities in the region as well as the international airport close to the "Jadranska Magistrala". Boat services connect the locations along the coast line and ferries provide accessibility to the islands (Korčula, Lastovo, Mljet, Šipan, Lopud and Koločep).

Dubrovnik region development plans are closely related to National Transport Strategy (approved 2014, updated 2017) which defines the objectives of the sector development:

- *Short term:* Development and guarantee of operations of the international airport of Dubrovnik for international and national accessibility; improvement of the local and regional accessibility, in particular after Croatia would join the Schengen area, by either constructing a road corridor through the Bosnian corridor or a bridge at Komarna from the mainland to Pelješac peninsula in order to provide inner EU access within the county.
- *Mid to long term:* Continuation of the construction of the Adriatic-Ionian motorway from Ploče towards Montenegro. However, due to the specific location of the Dubrovnik agglomeration, it is envisaged to construct the continuation of the motorway on Bosnian territory in order to protect the cultural heritage along the coastline.

Road transport

The A1 motorway (Croatian: Autocesta A1) is the longest motorway in Croatia, spanning 483 kilometres. As it connects Zagreb, the nation's capital, to Split, the second largest city in the country and the largest city in Dalmatia, the motorway represents a major north–south transportation corridor in Croatia and a significant part of the Adriatic–Ionian motorway. The motorway was extended in 2013 to the Port of Ploče as the end point to the south. From there, the old "Jadranska Magistrala", a 2x1 main road is running along the coastline through the Neum corridor to Dubrovnik and further to Montenegro. This road provides local and regional accessibility within the county.

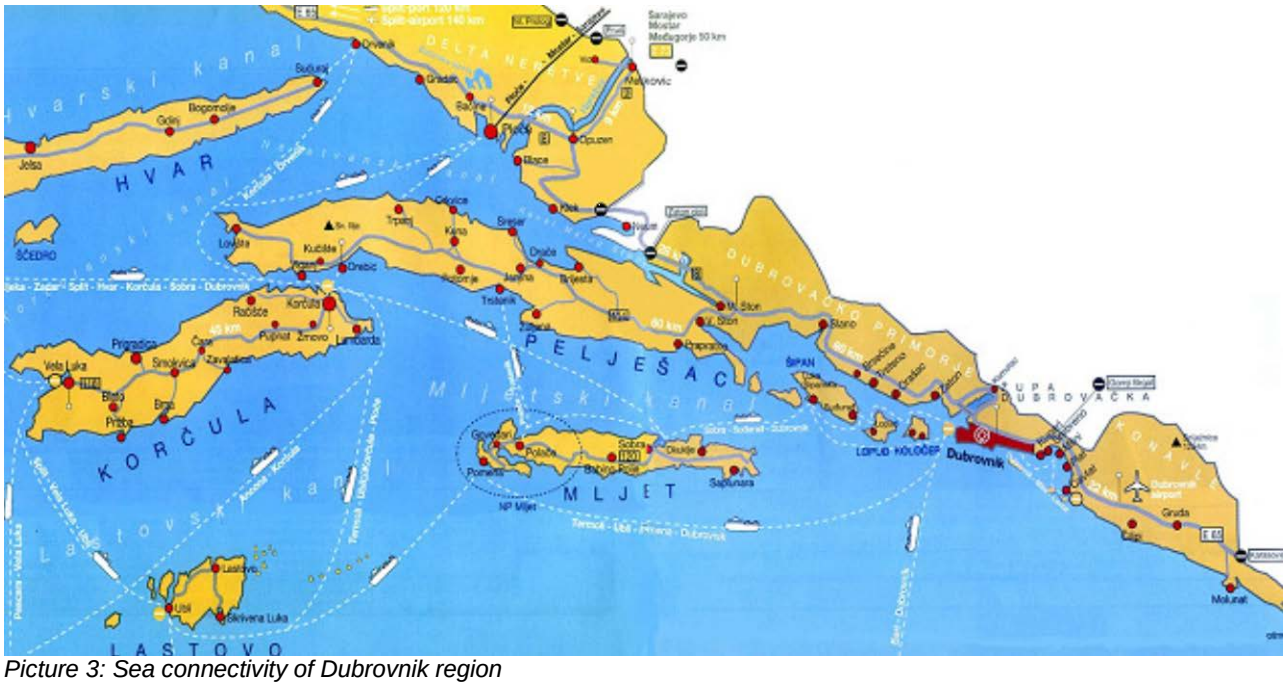
The Adriatic-Ionian transport corridor stretches along northeast Adriatic and Ionian coastline, passes through seven countries (Italy, Slovenia, Croatia – approx. 34% of its length, Bosnia and Herzegovina, Montenegro, Albania and Greece – approx. 30% of the corridor length), from Trieste in Italy to Kalamata in Greece, in the length of approx. 1.500 kilometres. As an integral transport corridor, the Adriatic-Ionian corridor integrates all road infrastructures in longitudinal connection of the seven countries: road complex, rail segment, sea complex and air transport.

Picture 2: Road connectivity of Dubrovnik region

Dubrovnik-Neretva County future road spacial plans consists of expanding motorway to Dubrovnik (on Adriatic-Ionian corridor),. construction of Peljesac bridge (construction is underway) and construction of fast road Dubrovnik-Ćilipi-Debeli brijeg.

Sea transport

The following illustration shows the sea routes of Dubrovnik City and the Dubrovnik & Neretva County combining the county's islands of Korčula, Mljet and Lastovo as well as the Hvar Island of the Split Dalmatia county and international destinations:



Picture 3: Sea connectivity of Dubrovnik region

Next to Rijeka, Ploče port is the second largest cargo port in Croatia. Due to Dubrovnik's location close to the sea entry and supported by the direct connection with the Pan-European Transport Network Corridor system, the region is very attractive for cargo operations as well. Besides cargo operation, Dubrovnik & Neretva County operates a lot of various domestic destinations.

Within the County, the destinations Rijeka, Split, Hvar, Korčula, Mljet, Sućurađ and Elafiti are served. The international destination served is Bari in Italy. Except for scheduled connections, a number of cruise ships operate Dubrovnik and the region. The most important cruise ship port is seaport of Dubrovnik city in Gruž which is of minor importance for cargo traffic but attractive for passenger traffic. The reason is its close distance of 3 km from the old town and also the fact that it is a deep sea port, which means that large vessels up to 5.000 passengers can use the port. The port is undergoing modernisation. Once completed, Dubrovnik Port Authority expects to have a modern port with cruise passenger terminal, large multipurpose trade centre, public garage, city congress hall and a huge range of different leisure and entertainment facilities. This ship category (up to 5.000 PAX) is seen as high potential for future expansion and acquisition of new cruise operators.

Besides continuous works on modernization of seaport of Dubrovnik, future Dubrovnik County spacial plans comprises of construction of new seaport terminal in Vela Luka (Korcula island) for international and domestic ferries and for cruise ships.

Air transport

Dubrovnik-Neretva county is mainly an air destination due to its isolated road connections and cross border to Neum City which separates county from the rest of Republic of Croatia and from the rest of European Union. More than 65% of tourists arrive in Dubrovnik by air. Air transport is achieved through Dubrovnik Airport which is recognised as the most significant entry point in Dubrovnik Neretva county and is considered as main economic and tourist development driver.

3.2 DESCRIPTION OF THE PROCESSING PHASES OF INTERMODALITY

Dubrovnik Airport is situated at the south of Republic of Croatia in Konavle municipality near the City of Dubrovnik (25 kilometres from the City of Dubrovnik).

Dubrovnik Airport (IATA-Code DBV; TEN-T comprehensive network) was constructed in 1960; the runway was upgraded in 1971. In 1991-1992, the airport was closed and largely destroyed due to the War of Yugoslav Succession. The gradual development of the airport to its current state started in 1993. In addition to limited maintenance-driven investments into the runway, the apron and the taxiway, the newly constructed terminal building part "C" was put into operation in 2017.The main destinations related to Dubrovnik Airport are:

- in Great Britain – London, Manchester, Birmingham
- in Croatia – Zagreb
- in France – Paris
- in Germany – Frankfurt, etc.

The main aeroplane types using the airport are: Airbus A319, Boeing B737, Airbus A320-200, Airbus A32-200 and Bombardier DH4.

Characteristics of the airport

The traffic distribution of the airport is extremely imbalanced with more than twenty times more traffic in the peak month (more than 450,000 passengers per month) compared to the off-season (18,000 passengers per month). The top 10 airlines that use Dubrovnik Airport are Croatian Airlines and Easy Jet, followed by Norwegian Air Shuttle, Lufthansa, British Airways, Jet2Com, Finnair, Austrian Airlines and Vueling Airlines. Dubrovnik is the third busiest passenger airport in Croatia after Zagreb and almost as busy as Split Airport. Freight air transport is not significant, the transported freight tons have been diminishing since 2010. In 2018., Dubrovnik Airport has processed 2,3 million passengers out of which more than 60.000 relates to cruise passengers.

Dubrovnik Airport is currently undergoing a huge investment project „Dubrovnik Airport Development project" in the amount of 225 million EUR which is partly financed through EU funds. Project includes reconstruction and renovation of the runway, taxiways, aprons, fuel farm, ground handling facilities, the passenger terminal complex, airport rescue and firefighting facilities, administration facilities, water supply, waste water and waste management facilities, energy supply facilities as well as the development of the landside facilities, including the access roads and car/bus parking.

Besides „Dubrovnik Airport Development project", Dubrovnik Airport has identified several other improvement areas especially in respect of safety, security and environmental. One of those areas is closely related to „Cruise and Fly" concept which should partly be resolved through „INTER-PASS" project in cooperation with Dubrovnik Port Authority.

Picture 4: Dubrovnik Airport after expansion

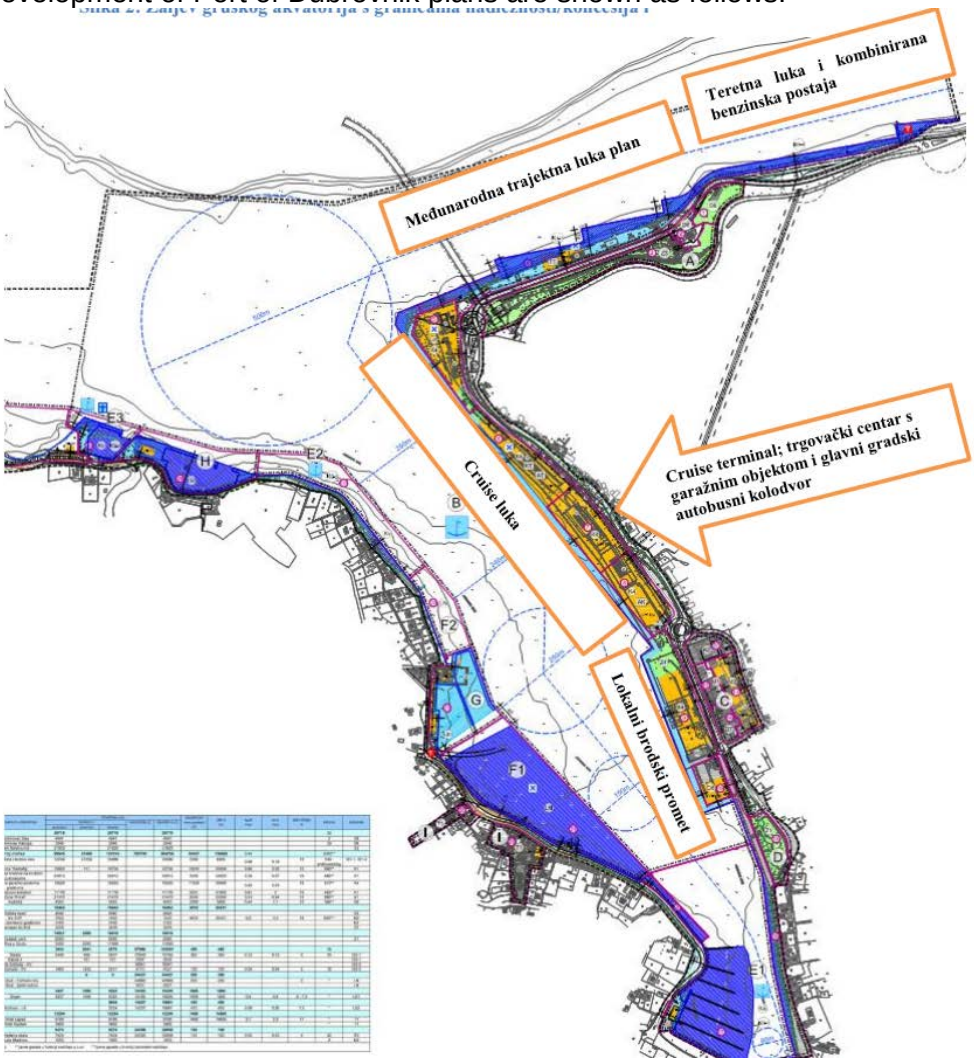
Dubrovnik Port Authority was established as a non-profit organization by Government of Croatia 1997 for manage and develop of Port of Dubrovnik Its main activities are:

- construction, maintenance, management, supervision, protection and development of maritime domain – port area,
- management of all kind of port traffic,
- providing Public service for which economic interest do not exist,
- Operative territory surface:

Technical characteristics of Porto of Dubrovnik:

- Operative surface: 120 000 m²
- Total length of quays: 1455 m
- Number of quays: 7
- Draft: 6 – 12 m
- Maximum ship dimensions for berthing: unlimited

Future development of Port of Dubrovnik plans are shown as follows:



Picture 5: Development plan of Dubrovnik-Port

Dubrovnik Port Authority development plans have been adopted in accordance to regional strategies of developing Gruž bay. Once constructed, Port of Dubrovnik will consists of international ferry port, cargo port with combined gas station, cruise port and port for local transport. Also, within premises of future Port of Dubrovnik, trade center is planned together with garage building and main bus station.

In 2017., passenger turnover in Port of Dubrovnik was 1,3 million, out of which 68 thousand were homeport passengers.

From 2015, beginning of May, every year until the end of October, there is Home Port operation in Dubrovnik for ship Thompson Celebration (capacity 1200 pax). This is more 150 aircraft operations to six destinations (more than 60,000 pax). Two of those destinations were new routes to DBV. In 2015 this operation contributed to the overall passenger number growth with 3%. From 2015 Thomson / TUI is one of most important DBV business partners and it is constantly increasing frequency and passenger numbers on its regular flights to DBV. The Home Port operation as

organized in 2015 is still operational in 2018, with small changes in airport infrastructure. In the 2019 the new bigger ship is scheduled with capacity 2000 pax. This means that Dubrovnik home port is successful and it has prospective to grow.

Dubrovnik Airport and Dubrovnik Port Authority are connected only through main state road D8, there is no railway nor metro connection between the two parties. Other possible connection is through sea from Dubrovnik Port to Cavtat and then by road from Cavtat to Čilipi. However this connection is considered to be non-economical nor practical due to its bottlenecks in sea transport as well as in road transport from Cavtat to Čilipi.

3.3 BOTTLENECKS

Major problem in connecting Dubrovnik Airport and Dubrovnik Port is existence of only one possible connection, via road D8. This road has been built in 1960's and was suitable for limited traffic and number of vehicles in the past. However, as Dubrovnik is growing rapidly as a tourism destination, limitations of this road are becoming major problem in connecting two parties. Future spacial plans of Dubrovnik-Neretva county includes construction of fast road from Dubrovnik Airport to City of Dubrovnik which hopefully will resolve traffic jams in the seasonal months on road D8.

Passengers from/to Dubrovnik Airport and Dubrovnik Port are transferred via dedicated bus lines directly to the Terminal building of airport or port. Passengers that have returned from the cruise are already checked in upon their arrival for their flight. Their luggage is transferred via busses in organisation of their maritime agents. Upon arrival to Dubrovnik Airport, luggage is processed by Dubrovnik Airport staff. It is crucial that luggage is processed as quickly as possible, so shortening time of processing luggage was one of objectives that should be reached by „INTER-PASS“ project to avoid bottlenecks in airport facilities.
Therefore, Dubrovnik Airport will perform upgrade of automated baggage screaning system, and purchase and installation of security equipment in order to fasten up processing time and enhance level of security.

Also, within „INTER-PASS“ project, Dubrovnik Port Authority will purchase and install canopy in front of port terminal, monitors for information purposes of flight schedule to cruise passengers and meteo station for more information in order to increase passenger satisfaction.

4. THE ROLE OF THE SITE IN LOCAL NETWORKS AND IN THE TEN-T NETWORK

The Trans-European Transport Network (TEN-T) is a European Commission policy directed towards the implementation and development of a Europe-wide network of roads, railway lines, inland waterways, maritime shipping routes, ports, airports and rail-road terminals. It consists of two planning layers:

- The Comprehensive Network: Covering all European regions,
- The Core Network: Most important connections within the Comprehensive Network linking the most important nodes.

The ultimate objective of TEN-T is to close gaps, remove bottlenecks and eliminate technical barriers that exist between the transport networks of EU Member States, strengthening the social, economic and territorial cohesion of the Union and contributing to the creation of a single European transport area. The policy seeks to achieve this aim through the construction of new physical infrastructures; the adoption of innovative digital technologies, alternative fuels and universal standards; and the modernising and upgrading of existing infrastructures and platforms.

Dubrovnik region is a part of TEN-T network. Also, Dubrovnik Airport development project is recognised as one of the most important projects in Republic of Croatia and is in line with TEN-T general and specific objectives:

- General objectives relating to the development of the Dubrovnik Airport are: 3, 5, 6, 7, 8, 9. Measure A.1. Development of the Dubrovnik Airport (TEN-T comprehensive network),
- Specific objectives related to Measure A.1. Development of the Dubrovnik Airport (TEN-T comprehensive network) are:
  - to complement the touristic sector development as the main economic factor in some parts of Croatia where relevant by adequate transport development especially in favour of PT and green mobility,
  - to improve accessibility to remote areas of Croatia (for example island, Southern Dalmatia…).

- Specific objectives for air transport related to Measure A.1. Development of the Dubrovnik Airport (TEN-T comprehensive network) are:
  - to improve the operations and operational reliability of Dubrovnik airport in order to safeguard the accessibility of Southern Dalmatia,
  - to improve the accessibility of the airports in general and in relation to PT in specific,
  - to improve the safety standards on the airports and in air traffic,
  - to improve the compatibility with Schengen requirements where applicable.

5. THE INTERNATIONAL INVESTIGATION AND CAPITALISATION MANUAL

As a part of first technical package of the project “INTER-PASS”, International investigation should have been performed in order to identify existing intermodal transport solutions already experimented and implemented around the world which could easily be adapted in local context of each partner. International investigation was performed by University of Ionina in cooperation with all partners. It consists of several chapters:

- chapter 1 illustrates the current situation in the field of intermodal transportation explaining travel patterns and analyzing the procedure for low carbon supply chain management,
- chapter 2 examines the procedures and policies that take place in a European level and on national basis concerning ADRION countries involved in INTER-PASS project,
- chapter 3 depicts some of the major guidelines regarding the technique and methods that are used as well as applications that have been developed in the field of intermodal transportations,
- chapter 4 is closely affiliated with the best practices and case studies arising from the national and international experience,
- Chapter 5 describes the constraints and conflicts when planning intermodal strategies and policies far from route distance criteria and time restrictions,
- Chapter 6 includes port – airport intermodal modes and case studies,
- Chapter 7 is mainly elaborating marine transport issues and especially the cruise case
- Chapter 8 outlines the SWOT analysis for the case study area of INTER-PASS and finally,
- Chapter 9 concludes the future expectations both from the side of customers and also from the side of public authorities in conjunction with the obstacles and opportunities created.

Parallel to International investigation, capitalisation manual preparation activities started which included fulfilment of specially designed questionnaires by each partner regarding their own entity and intermodal connections. Also, other types of questionnaires have been fulfilled by stakeholders of each region in order to identify current existing intermodal solutions and future plans in each region.

The capitalization manual constitutes a primary guide for the replicability and adaptability of intermodality solutions that could be adopted by four (4) territories of the Adriatic Ionian area involved in INTER-PASS project, namely Corfu Greece, Bari Italy, Pula and Dubrovnik Croatia. Prior to the capitalization manual an international investigation took place in order to identify and record the existing international intermodality situation on an international level. Significant schemes such as useful data related to intermodality, best practices, innovative solutions, procedures and techniques, SWOT analysis for the area of interest and funding issues were examined in an elaborative investigation of intermodal solutions that could be adapted in the Adriatic Ionian area.
The main conclusions of this survey were focused on the major need for efficient planning, design and implementation of intermodal routes in terms of decreasing transport costs and time and improve the quality of passengers’ experience.

The capitalization manual aims to summarize all identified solutions and analyze their replicability and adaptability in the four (4) territories of Dubrovnik, Pula, Corfu, Bari that are located in strategic geographical positions in the macro region of Adriatic-Ionian for the passengers' intermodal connectivity.

Capitalisation scenario for Dubrovnik region

Main challenge: Integration of information provided to the passengers in port/airport and shortening processing time of departing passenger baggage of homeport operation in the airport.

Objectives:

- to design and operate an automated baggage handling processing system and promotion of new integrated services between involved partners
- increase the passengers' level of satisfaction

Integration with the International Investigation:

- Efficient connections between different modes, convenient baggage accommodation and traveler services, tourists require convenient user information and signage. From the point of arrival until the return departure, tourists in general, suffer from a transport information deficit when compared to local residents. Whether due to a lack of familiarity with the surroundings or a language barrier, tourists require additional assistance to navigate their way around or between different transport networks
- The Port of Rijeka, Croatia has efficiently incorporated the application of ICT tools. The Port uses the secondary, structural-information system as long-term infrastructure for systematic and operative application of electronic business; while operational segments are closely affiliated with vessel Traffic Service, Vessel Traffic Management Information System and Management Information System, aiming to economic development and facilitation of wide usage of ICT technologies.

Expected results:

- Information Display System integrated with Port Communication System aiming to insure higher efficiency of Dubrovnik Port staff,
- Improved services provided to the passengers with the aim of small scale investments,
- automated baggage handling processing for Dubrovnik Airport,
- upgrade and synchronize Port Communication System with the Information Display System.

6. THE DESCRIPTION OF THE INTERVENTION

Dubrovnik Airport

According to Application form, specific objective that needs to be reached in Dubrovnik region relates to shortening the processing time of passengers' baggage handling of home-port operation.

From 2017 Dubrovnik Airport has remote baggage sorting area for home-port operation. The part of the baggage sorting is also baggage security screening for which equipment is used from old terminal building. As this equipment was not originally planned to be used for home-port, it was adapted to fit home-port operation. The homeport baggage screening system prior to implementing INTER-PASS project consisted of parts of an older decommissioned system for baggage screening. Main part of the system is automatic explosive detection unit integrated with part of Baggage handling system. In mentioned configuration system, it is connected to baggage conveyers but EDtS device is not fully integrated with BHS automation system. As a consequence, system is operating in manual mode requiring operators to evaluate and separate every piece of hold baggage.

Therefore, passenger baggage handling processing time is reduced to a much slower level. Also, potential error in manual processing of baggage is higher compared to automated one.

In order to switch to automated baggage handling processing following steps will need/have been to be taken:

1. Create documentation and design of new system including As Build documentation for mechanical and electrical systems in the new configuration.
2. Bring system and all of the components to fully automatic mode with automatic detection, evaluation and separation (routing) of uncleared bags to Level 3.
3. Upgrade of PLC based automation system including software upgrade for automatic mode, supervision, alarm management and operator panel installation.
4. Review of system safety at work compliance under the new regulations and possible upgrade of work safety systems (emergency stops, barriers etc.).
5. Increasing the system throughput up to nominal 1800 objects per hour (maximum system performance, expected real system performance due to limited space in baggage sorting area is up to 1.000).
6. Commissioning of the new staff operated CT or X-ray detection system for Level 3.
7. Increasing safety and security of the system and operations.
8. Training for the operators of screening and detection equipment.
9. Training for the maintenance personnel for EDtS, conveyor system and automation system.

Also, Dubrovnik Airport has purchased security equipment (ETD device) which will increase safety and security standards.

The implemented pilot action should shorter processing time of passenger baggage handling of home-port operation which will minimise the possibility of delays to airlines. Also, automated BHS should ensure higher level of safety and security when processing baggage and increase the system throughput up to nominal 1800 objects per hours, expected performance 1.000 objects per hour (current capacity was 850 objects per hour, due to manual mode of processing real capacity is up to 200 objects).

Dubrovnik Airport, together with Dubrovnik Port authority, is planning to increase number of home-port operations in next two years, so automated system with mentioned capacity shall be the vital point for increasing home-port operation turnover and minimizing possible delays in processing passenger baggage.

Dubrovnik Port

The existing Dubrovnik Port passenger terminal for home port operations is adapted warehouse building. In these conditions, it is questionable how suitable the terminal is for long-term home port development, especially taking into the consideration that the Dubrovnik Port Authority as strategic goal has increase of size and number of home port operations in next two years.

The goal of pilot actions is to increase levels of service to arriving / departing passengers processed during home port operations, and to lower necessary passenger process time at the terminal. This will be achieved through innovative adaptations of infrastructure that will include design and production of movable canopy that will provide cover from the terminal to the ship for passengers that are waiting for ship boarding. This is one of the challenges that Dubrovnik Port has during processing of home port passengers, as existing terminal only has a check-in waiting area and passengers that are check need to wait on open space before boarding starts. As this is challenge only during the home port operation (a large number of passengers arriving in short time), and fixed canopy can't be installed because it would close part of port seaside, blocking standard service roads and cargo maneuverable areas; canopy needs to be movable and appropriately adapted for cruise ships. This also raises the question of feasibility if this investment would be financed with Port Authority own resources, due to fact that this kind of canopy is not necessary and would not suit regular ferry ships on regular ship lines that are handled in Dubrovnik Port.

In order to make arriving / departing passenger process time more effective and in order to raise levels of service, as part of pilot action it would be necessary to install Information Display System that would provide basic information to passengers in front and inside of the Terminal Building. The home port operation is characterized by a large number of departing passengers that need to be processed in short time accordingly to their final destination. Also, due to the large number of arriving passengers it is necessary to have them informed prior ship boarding. This system should be programmed according to the needs of home port passengers and requirements of Dubrovnik Port Passenger Terminal. As part of this pilot action it is necessary to upgrade and synchronize Port Communication System with the mentioned Information Display System in order to obtain adequate functionality of both systems.

The pilot action should result in higher satisfaction of Dubrovnik Port passengers processed during Home Port Operations. As cruise ship regularly survey passengers in the form of questioners, we expect positive and quantified feedback from cruise ship operators.

The more effective process time will increase capacity of the passenger terminal and Information Display System integrated with Port Communication System will insure higher efficiency of Dubrovnik Port staff.

The final result that we expect is more sustainable Home Port Operation with higher satisfaction of all stakeholders without major investments in port infrastructure.

7.RECOVERY PLAN

7.1 THE TIME FRAME

Risk identification

Dubrovnik Airport and Dubrovnik Port Authority have organised several meetings in order to discuss project implementation and to coordinate project activities. During this meetings specialised group from experts from both parties which included project managers, thematic and technical experts and other employees necessary for testing pilot actions performed discussions in order to identify possible risk and recovery procedures as well as risk mitigation measures.

In addition, Dubrovnik Airport and Dubrovnik Port Authority have performed qualitative risk analysis for different stages of Action plan implementation as follows:

- Preparation phase – includes steps that need to be fulfilled prior to developing an Action plan
- Implementation phase – includes steps that need to be taken for purchase of equipment or software necessary for testing pilot action
- Testing phase – includes steps that need to be undertaken during testing phase of the Action plan.

Per each phase of the Action plan lifecycle, engaged partners will perform following activities:

- Risk identification – all types of risks that can occur needs to be identified and addressed,
- Risk assessment – based on prescribed methodology, each risk shall be measured and assessed based on the probability of occurrence and impact on the project objectives achievement,
- Corrective measures / mitigation measures – measures prescribed by engaged parties in order to mitigate risk to acceptable level. Acceptable levels of risks are moderate or below, other risk levels should be addressed by appropriate measures.

Methodology for risk assessment

The qualitative risk analysis is based upon a combination of impact and probability and is evaluated according to the below risk matrix.

Impact/ Probability	I	II	III	IV	V
1	Low	Low	Low	Low	Moderate
2	Low	Low	Low	Moderate	High
3	Low	Moderate	Moderate	High	High
4	Low	Moderate	High	Very High	Very High
5	Moderate	High	High	Very High	Very High

Table: Qualitative risk analysis per Action plan phases

PREPARATION PHASE						
Type of risk	**Risk description / Effect on the project**	**Prob.**	**Impact**	**Risk**	**Measures implemented / mitigation measures**	**Status after measures on 13.1.2019. /new deadlines**
Delay in start-up of project activities	Possible delays in signing of Subsidy contracts, Partnership agreement or delays in establishing internal project team could result in not achieving prescribed timeframe for deliverables nor spending forecast and consequently in project budget decomittment.	IV	V	**Very high**	According to internal rules and procedures of DBV and DPA, internal project teams can be established from the official date of the project (1.1.2018) and prior to signing the SC and PA in order to start implementing activities on time.	Project has started in delay (AP in delay also), DBV and DPA teams are established, procurements are done for the action plan, risk is still on very high level. **Corrective measures:** AP needs to be adopted by the end of February 2019.
Delay in adopting of Programme guidelines	Delay in adopting Implementation manual could severely influence partner's capability for preparing procurement procedures which can result in mistakes during procurement process and financial corrections..	IV	IV	**Very high**	Eventhough there was a delay in prescribing Implementation manual, DBV and DPA needs to follow National guidelines for procurement and establish adequate procurement plan in order to avoid possible financial corrections..	DBV and DPA have adopted procurement plan and performed all procurements. FLC has performed control of all procurements related to AP for DBV, no corrections were issued. **Risk is mitigated to low level.**
Not adequate input / conclusion form International Investigation study	If best possible solutions for intermodal connectivity between ports and airports in different regions are not properly identified, then quality of Action plans as well as purchased equipment may not be in line with project objectives, which can result in project decommitment.	III	III	Moderate	International investigation study (IIS) together with Capitalization manual shall be discussed within the partners and within the experts from TTAB in order to identify adequate input and solutions for Action plans in each region. IIS shall be adopted as of 31.12.2018. as agreed on SC in Bari.	There is a significant delay in finalising IIS. Risk has escalated to high level. **Corrective measures:** IIS needs to be adopted in Arta meeting in order to produce AP till end of February.
Replacement	Due to the envisioned timeframe of the	III	III	Moderate	Project procedures needs to	Internal project procedures

of key personnel	project, key personnel may change positions within the Company or leave Company which can result in delays in closing the project. Information level of the person taking over the position will inevitably be lower than for the one leaving the position.				include clear directions on what measures are to be taken to secure information hand-over when a key person is replaced. This includes e.g. a hand-over meeting and a hand-over memorandum. The hand-over process will be supervised to ensure that it is thoroughly executed.	identifying hand over procedures are adopted. There were no changes in project team till 13.1.2019. **Risk is mitigated to low level**
Lack of sufficient communication between TTAB and partners	Not adequate communication between partners and TTAB in producing Action plans may result in unadequate Action plan design especially regarding identifying testing phases and evaluation criteria's.	III	IV	High	Each partner should name TTAB member as soon as possible. TTAB procedures should be developed not later than 31.12.2018. TTAB should evaluate and comment all Action plans prior to approval.	TTAB members have not been nominated, however TTAB roles and responsibilities have not been prescribed. **Risk has escalated to very high level.** **Corrective measures:** After meeting in Arta, not later than 30.1.2019. TTAB procedures as well as roles and responsibilities needs to be adopted.
IMPLEMENTATION PHASE						
Type of risk	**Risk description / Effect on the project**	**Prob.**	**Impact**	**Risk**	**Measures implemented / mitigation measures**	**Status after measures on 13.1.2019. / new deadlines**
Procurement plan not adopted	If all necessary procurements related to the project are not adopted and approved on time within the partners organization, equipment and related service may not be contracted and project objectives will not be met.	II	V	Moderate	Procurements related to the INTER-PASS project should be adopted within the annual procurement plan of the Company in order to secure procurement funds.	Procurement plans have been adopted and all procurements have been finished and contracts signed.. **Risk is mitigated to low level.**
Delays in	If public procurements are not published on	III	IV	**High**	DBV and DPA shall appoint public	Procurement plans have been

public procurement publication	time or delayed due to appeals, equipment will not be purchased on time to recover depreciation costs which may than be bared by the beneficiaries. Also, contracting of services related to performing testing actions may be delayed resulting in delay in achieving project objectives and outputs				procurement expert and publish all procurements related to testing of pilot actions not later than 30.8.2018.	adopted and all procurements have been finished and contracts signed.. **Risk is mitigated to low level.**
TESTING PHASES						
Type of risk	**Risk description / Effect on the project**	**Prob.**	**Impact**	**Risk**	**Measures implemented / mitigation measures**	**Status after measures on 13.1.2019. /new deadlines**
Not adequate testing plan	If testing plan does not include all necessary details and testing timeline, testing results may not be in accordance to project needs and project outputs underlined.	III	IV	**High**	DBV and DPA should develop adequate testing plan including timeframe of testing, testing methods to be used and sample to be chosen should be developed in cooperation with TTAB in order to ensure achieving of project objectives. Plan shall be developed till 30.1. 2019 in order for testing procedures to be implemented in summer season 2019.	Adopting of IIS as well as AP is in delay and consequently adopting of testing plans and testing procedures. **Risk has remained at high level.** **Corrective measures:** AP needs to be adopted till end of February.
Testing procedures not performed according to plan	If testing procedures are not performed according to prescribed plan, testing results will not be in line with project objectives and project outputs which can result in project funds decommitment.	III	III	Moderate	Testing procedures should be performed according to methods agreed with TTAB and on representative sample to ensure adequate testing results.	N/A
Cruise and fly concept	If cruise and fly concept is cancelled due to the different reasons (market	II	III	Low	DBV and DPA will closely monitor execution of cruise and fly	Cruise and fly concept will remain in 2019, so there are

cancellation	condition…), pilot action testing may not be possible to execute and project objectives reached.				concept.	no risks related to project objectives in this area.

Identified risks shall be monitored and evaluated through entire Action plan lifecycle. TTAB shall also continuously monitor different risk performances and should discuss on regular meetings risk strategy and risk mitigation plans.

8. THE INVESTMENT AND THE MANAGEMENT COSTS

Action plans should be accomplished with following budget per partner:

Dubrovnik Airport:

- Equipment costs that includes RTG device for baggage screening device in the purchase amount of 45 thousand EUR,
- Equipment costs that includes Explosive trace detector (ETD) device in the purchase amount of 35 thousand EUR,
- External expertise costs that relates to developing as build documentation and upgrade of existing automated baggage screening system in the purchase amount of 55 thousand EUR,
- External expertise costs of 2.000 EUR for evaluation of passenger satisfaction survey,
- Staff costs in the amount of 44.000 thousand EUR for testing of pilot actions,

Out of mentioned budget items, Dubrovnik Airport has performed purchase of specified equipment and has designed and upgraded baggage screening software.

Dubrovnik Port Authority:

- Equipment costs that includes purchase of movable canopy in the amount of 6.500 EUR,
- External expertise costs that includes purchase and installation of Information Display System with integrated meteo station in the amount of 20.000 EUR,
- External expertise costs of 2.000 EUR for evaluation of passenger satisfaction survey,
- Staff costs in the amount of 12.000 EUR for testing of pilot actions,

Out of mentioned budget items, Dubrovnik Port Authority has performed purchase of specified equipment and has installed Information Display System.

8.1 THE CONSTRAINS

There are no constraints resulting in budget allocation for performing activities described in Action plan. For risks identified and corrective measures please see Recovery plan section.

8.2 THE FAVOURABLE CONDITIONS

All procurements are finished within set deadlines and within set budget. DBV and DPA are prepared for testing pilot actions.

9. TESTING PHASES

After adoption of Action plan, DBV and DPA shall undertake testing of implemented pilot actions through following steps:

- Testing plan adoption,
- Testing execution,
- Testing evaluation report.

Testing plan

DBV and DPA shall develop its own testing plans with milestones for each testing activities.
Testing plan shall consist of following:

- Description of situation before and desired situation after the implementation of pilot action, underlying results and benefits that implementation should bring to partners,
- Description of purchased equipment and services implemented during the action plan implementation,
- Identification of testing techniques and methods to be used by each partner,
- Identification of methodology for sample selection,
- Timeframe of performing testing procedures and identification of involved employees and stakeholders.

Testing plan shall be reviewed by TTAB in order to ensure its adequacy and compliance to IIS conclusions and project objectives set up in AF.

Testing execution

After adoption of testing plan, partners shall undertake procedures for testing the pilot actions. Following steps needs to be obeyed during execution of testing:

- Roles and responsibilities of each involved employee, subject or stakeholder needs to be clearly identified,
- Methodology for sampling needs to be clearly followed and sample evidence archived,
- Testing methods and testing procedures identified in testing plans needs to be closely followed,
- Evidences collected through testing executions needs to be stored according to internal procedures,

Testing results

Once testing execution is performed, testing results needs to be summarised and evaluated. Besides employees of partners, testing results shall also be evaluated by TTAB in order to ensure transparency and compliance to project objectives.
Evaluation of testing results shall be presenting through Testing evaluation report which conclusions will then be used in production Integrated Strategic Plan.

Testing plan of each partner is integral part of Action plan and is given in Attachments to AP.

10. INVOLVED SUBJECTS AND STAKEHOLDERS

During preparation and execution of Action plan involvement of different subjects and stakeholders is necessary. List of involved subjects and stakeholders is given in Attachments II. of the Action plan: *List of stakeholders.*

11. CONCLUSION

Dubrovnik-Neretva region is located at the south of Republic of Croatia and is divided by the land barrier in Neum from the rest of the country and from the EU. Therefore, there is no direct motorway connection to Dubrovnik and road accessibility of Dubrovnik region is limited by the cross borders and by the congestion of "Jadranska magistrala". Also, there is no railway connection to Dubrovnik region because current railway ends in Split.
Sea transport is organised via port Ploce for Cargo and via Dubrovnik Port for passenger transport. Air transport is organised through Dubrovnik-Airport whereas more than 65% of tourists come to Dubrovnik by air.

In order to investigate existing intermodal ways of transport between ports/city's and airports International investigation has been performed in order to identify best possible intermodal solutions of transport for each region. Also, specific SWOT analysis has been performed for each region identifying major weaknesses and opportunities for implementing some of identified solutions.

From 2015., Dubrovnik has become centre of Homeport operation for ship Thomson Celebration (capacity 1.200 pax) with more than 65.000 passengers per year and 150 flight operations. In 2019., capacity of ships will be increased to 2.000 passengers with major need to increased efficiency of homeport operation, especially in the field of processing of passengers and their luggage.

Dubrovnik Airport and Dubrovnik Port are connected only through the state road which is very congested during the summer season months, which can cause delays in processing of passengers and their luggage from Dubrovnik Port to Dubrovnik Airport (or from Dubrovnik City to Dubrovnik Airport). While Dubrovnik Airport cannot influence road accessibility, it can influence fastening of processing of luggage of homeport passengers. Also, Dubrovnik Port can influence level of satisfaction of passenger through higher level of information provided in their premises.

Therefore, based on provided International investigation, SWOT analysis performed and Capitalisation scenario identified for Dubrovnik region, following capitalisation scenarios have been identified for Dubrovnik region to be in line with prescribed project objectives:

- to design and operate an automated baggage handling processing system and promotion of new integrated services between involved partners
- increase the passengers' level of satisfaction.

Dubrovnik Airport has performed upgrade of existing semi-manual baggage handling system to automated one with higher capacity for processing passenger luggage and has also purchased explosion trace detector (ETD) device to improve level of safety, while Dubrovnik Port has purchased Information display system and perform integration of the system with airport software in order to perform information to the passengers on departing flights upon arrival in the port. Also, Dubrovnik Port has purchased movable canopy to protect passengers from the sun while waiting to increase passenger satisfaction..

Moreover, Dubrovnik Airport and Dubrovnik port have developed procedure for testing implemented pilot actions.