D 4.1.3 – ICT infrastructure procurement for Jadrolinija

Activity 4.1 – Hardware procurement

June 2022 – Final version

Partner: **PP7 – Jadrolinija**
Authors: Vanja Svetina
Email: vanja.svetina@jadrolinija.hr

Project Acronym	E-CHAIN
Project ID Number	10048282
Project Title	Enhanced Connectivity and Harmonization of data for the Adriatic Intermodal Network
Priority Axis	4 - Maritime Transport
Specific objective	4.1 - Improve the quality, safety and environmental sustainability of marine and coastal transport services and nodes by promoting multimodality in the programme area
Work Package Number	4
Work Package Title	Platform and Service Implementation
Activity Number	D.4.1.3
Activity Title	ICT infrastructure procurement for Jadrolinija
Partner in Charge	PP7 - Jadrolinija
Partners involved	LP - Municipality of Ancona
	PP1 - Amatori Interestate SRL
	PP2 - Brusutti S.R.L.
	PP3 - G.M.T. S.P.A.
	PP4 - University of Trieste
	PP5 - University Of Rijeka, Faculty Of Maritime Studies Rijeka
	PP6 – Prosoft d.o.o.
	PP7 - Jadrolinija
	PP8 - City of Split
	PP9 - Rathmann d.o.o.
Status	Final
Distribution	Public

VERSION CONTROL

Work Package:	4. Platform and Service Implementation
Work Package leader:	Municipality of Ancona
Activity:	Activity 4.1 – Hardware procurement
Deliverable:	D 4.1.3 – ICT infrastructure procurement for Jadrolinija

Version:	Final
Type:	Technical specifications
Availability:	Public
Responsible partner:	PP7 Jadrolinija
Authors of the document:	Ms. Vanja Svetina
Date:	06 / 2022

TABLE OF CONTENTS

ACRONYMS / ABBREVIATIONS

ACRONYM	DEFINITION
HW	Hardware
SW	Software
WP	Work package

REFERENCE DOCUMENTATION

No	TITLE	REPORT No.	PUBLISHED BY
1	**Application Form – E-CHAIN - Enhanced Connectivity and Harmonization of data for the Adriatic Intermodal Network** 2014 - 2020 Interreg V-A Italy - Croatia CBC Programme Call for proposal 2017 Standard - E-CHAIN	Application ID: 10048282	Lead Applicant: Municipality of Ancona

1. INTRODUCTION
1.1 PURPOSE OF THE DOCUMENT

This document is relevant to the activity 4.1 Hardware procurement of E-CHAIN project - Enhanced Connectivity and Harmonization of data for the Adriatic Intermodal Network.

The purpose of this document is to provide technical specification for ICT infrastructure procurement for:

1. **Server HW/SW**
2. Security appliances and SW
3. Networking devices

Procurement has to be done in order to lay grounds for successful integration between Jadrolinija e-booking system and the E-CHAIN platform.

1.2 BACKGROUND INFORMATION

E-CHAIN (Enhanced Connectivity and Harmonization of data for the Adriatic Intermodal Network) main objective is to enhance connectivity and harmonization of data for the Adriatic Intermodal Network, through the realization of a modular integrated software (E-CHAIN platform) for the management of intermodal transport services in port areas for passenger transport. To enhance the current situation, E-CHAIN will focus on providing new services such as an improved Port multimodal info mobility system for the passengers, a ticketing system integrated with other transport modes, and an advanced touristic co-marketing tool for the operators. These services will be designed and deployed in the selected pilot sites (Ancona, Split, and Venice). A Business model suited to adapt the technology developed in the three applicative contexts will be created and specific needs will be taken into account.

The aim of WP4 is to design platform and services and to prepare the E-CHAIN services for deployment in the pilot sites (Ancona, Split, and Venice). The specific objectives of this WP are to:

- Develop selected services according to the specifics (technical and not) identified in WP3
- Roll out service versions at pilot sites

- Develop WSs to allow the integration between different services/systems for a multimodal and interoperable transportation

2. TECHNICAL SPECIFICATION

Procurement for **Servers, drivers and system software packages** subject to simple procurement procedures based on the Public Procurement Act.

Technical specifications of the subject of procurement must contain at least the following:

1. SERVER HW/SW

SERVER UNIT

1. DELL PowerEdge R740XD or similar object of equivalent value

— 2.5 "Chassis up to 24 HDD
— 2x - Intel Xeon Platinum 8253, 2.0 GHz, 22MB Cache, HT
— 12x - 64GB RDIMM, 3200 MT / s
— DUALPERC H740P RAID controller, 8GBNV Cache or similar object of equivalent value
— iDRAC 9 Enterprise or similar object of equivalent value
— 2x - 800 GB SSD SAS Mix use 12Gbps 512e, 2.5in Hot Plug
— 6x - 1,6TB SSD SAS Mix use 12Gbps 5l2e, 2,5in Hot Plug
— Dual Hot Plug 1 + 1 PS, Redundant, 1100W
— Intel X550 Dual Port 10Gb Base-TNetwork Adapter + 13502port 1Gb BaseT, rNDC or similar object of equivalent value
— Intel X550 Dual Port 10Gb Base-T Network Adapter, Full Height or Equivalent

2. Licenses and settings

— 2x Microsoft Windows Server 2019 Standard Edition, Factory Installed, 16 CORES
— MS2019 Hyper-V role enabled
— 5x - Windows Server 2019 Standard Edition User CAL
— 5x - Windows Server 2019 Remote Desktop Services CAL
— Performance BIOS settings
— Performance Optimized Memory Settings
— RAID 5 configuration

3. Additionally

 ⎯ Sliding server brackets for accommodation in the RACK cabinet
 ⎯ 4x C13 to C14, 10 AMP.2m

4. Warranty

 ⎯ 3 years "Pro Support" and "Next business day Onsite Service" (24x7x365 technical support remote)
 ⎯ automatic fault detection
 ⎯ automatic fault reporting
 ⎯ arrival at the user's location the next working day or within 4 hours of the failure of the critical component

The above minimum configuration may contain other components that are necessary for normal server operation.

STORAGE UNIT

1. Specification of the security storage system as DELL EMC DD6300 or similar object of equivalent value:

 ⎯ Data can be sent to the device via LAN using CIFS, NFS, NDMP protocols
 ⎯ Data can be sent to the device via SAN 1FC (Storage Area Network 1Fiber Channel)
 ⎯ LAN and SAN methods can work simultaneously
 ⎯ The device must have support for in-line data deduplication
 ⎯ The device must support and use application plug-ins to enable deduplication before sending to the device (Deduplication on the source)
 ⎯ The required bandwidth of the device in "native" mode is at least 8.5 TB / h
 ⎯ The required bandwidth of the device using application plugins for deduplication is at least 24 TB / h

- Deduplication application plugins must support integration with applications through their own native tools for data backup. Supported applications must be IBM DB2, SAP, SAP Hana, MS SQL, and MS Exchange. License for a minimum of 3 TB capacity
- Deduplications must be done with variable block sizes.
- Deduplication must be global, between all shares, folders and VTL pools on device.
- In addition to deduplication, the data stored on the device must be compressed and must be various compression methods supported. (lz, gz, gz-fast)
- The disk subsystem must be protected from failures in RAID 6 configuration
- The device must have at least one spare disk per shelf
- The device must support verification of the entered data
- The device must support the creation of at least 500 snapshots in order to be able to return to the previous condition
- The device must support data encryption for replication
- The device must support replication and deduplication and data compression on the same or a similar device
- The minimum usable capacity of the device must be 34TB and must be expandable to at least 178TB usable capacity.
- The device should have at least 4x 10GbEthernet BaseT ports
- The device must support data archiving with the possibility of retention lock with SEC 17a-4 (t) standard
- The device must support at least 270 concurrent backup streams
- The device must support Multitenancy

2. Warranties and Support

- 24x7x365 technical support remote, automatic fault detection
- Automatic fault reporting
- Arrival at the user's location the next working day iii within 4 hours of the failure of the critical component

D 4.1.3 – ICT infrastructure procurement for Jadrolinija

Activity 4.1 – Hardware procurement

June 2022 – Final version

Partner: **PP7 – Jadrolinija**
Authors: Vanja Svetina
Email: vanja.svetina@jadrolinija.hr

Project Acronym	E-CHAIN
Project ID Number	10048282
Project Title	Enhanced Connectivity and Harmonization of data for the Adriatic Intermodal Network
Priority Axis	4 - Maritime Transport
Specific objective	4.1 - Improve the quality, safety and environmental sustainability of marine and coastal transport services and nodes by promoting multimodality in the programme area
Work Package Number	4
Work Package Title	Platform and Service Implementation
Activity Number	D.4.1.3
Activity Title	ICT infrastructure procurement for Jadrolinija
Partner in Charge	PP7 - Jadrolinija
Partners involved	LP - Municipality of Ancona
	PP1 - Amatori Interestate SRL
	PP2 - Brusutti S.R.L.
	PP3 - G.M.T. S.P.A.
	PP4 - University of Trieste
	PP5 - University Of Rijeka, Faculty Of Maritime Studies Rijeka
	PP6 – Prosoft d.o.o.
	PP7 - Jadrolinija
	PP8 - City of Split
	PP9 - Rathmann d.o.o.
Status	Final
Distribution	Public

VERSION CONTROL

Work Package:	4. Platform and Service Implementation
Work Package leader:	Municipality of Ancona
Activity:	Activity 4.1 – Hardware procurement
Deliverable:	D 4.1.3 – ICT infrastructure procurement for Jadrolinija

Version:	Final
Type:	Technical specifications
Availability:	Public
Responsible partner:	PP7 Jadrolinija
Authors of the document:	Ms. Vanja Svetina
Date:	06 / 2022

TABLE OF CONTENTS

ACRONYMS / ABBREVIATIONS

ACRONYM	DEFINITION
Gbps	Gigabits per second

REFERENCE DOCUMENTATION

No	TITLE	REPORT No.	PUBLISHED BY
1	**Application Form – E-CHAIN - Enhanced Connectivity and Harmonization of data for the Adriatic Intermodal Network** 2014 - 2020 Interreg V-A Italy - Croatia CBC Programme Call for proposal 2017 Standard - E-CHAIN	Application ID: 10048282	Lead Applicant: Municipality of Ancona

1. INTRODUCTION
1.1 PURPOSE OF THE DOCUMENT

This document is relevant to the activity 4.1 Hardware procurement of E-CHAIN project - Enhanced Connectivity and Harmonization of data for the Adriatic Intermodal Network.

The purpose of this document is to provide technical specification for ICT infrastructure procurement for:

1. Server HW/SW
2. Security appliances and SW
3. **Networking devices**

Procurement has to be done in order to lay grounds for successful integration between Jadrolinija e-booking system and E-CHAIN platform.

1.2 BACKGROUND INFORMATION

E-CHAIN (Enhanced Connectivity and Harmonization of data for the Adriatic Intermodal Network) main objective is to enhance connectivity and harmonization of data for the Adriatic Intermodal Network, through the realization of a modular integrated software (E-CHAIN platform) for the management of intermodal transport services in port areas for passenger transport. To enhance the current situation, E-CHAIN will focus on providing new services such as an improved Port multimodal info mobility system for the passengers, a ticketing system integrated with other transport modes, and an advanced touristic co-marketing tool for the operators. These services will be designed and deployed in the selected pilot sites (Ancona, Split, and Venice). A Business model suited to adapt the technology developed in the three applicative contexts will be created and specific needs will be taken into account.

The aim of WP4 is to design platform and services and to prepare the E-CHAIN services for deployment in the pilot sites (Ancona, Split, and Venice). The specific objectives of this WP are to:

- Develop selected services according to the specifics (technical and not) identified in WP3
- Roll out service versions at pilot sites

- Develop WSs to allow the integration between different services/systems for a multimodal and interoperable transportation

2. TECHNICAL SPECIFICATION

NETWORKING

As Jadrolinija, Rijeka has its own information network with a speed of 10 Gbps per server, or 1 Gbps per client at the location in Rijeka, Riva 16, and in order to physically separate the network for the needs of the Project, it is necessary within the Project, to procure one 10 Gbps switch with 24 Cisco SG350XG-24T ports.

BACKUP AND RECOVERY

The existing Dell DD6300 Storages in Rijeka and Zagreb are used, among other things, for the backup of all production servers in Jadrolinija via Veem B&R Software, in order to ensure a backup and the possibility of Recovery in the event of a disaster, and for the needs of the Project, it would deem necessary to lease licenses for an additional 5 servers/clients.

D 4.1.3 – ICT infrastructure procurement for Jadrolinija

Activity 4.1 – Hardware procurement

June 2022 – Final version

Partner: **PP7 – Jadrolinija**
Authors: Vanja Svetina
Email: vanja.svetina@jadrolinija.hr

Project Acronym	E-CHAIN
Project ID Number	10048282
Project Title	Enhanced Connectivity and Harmonization of data for the Adriatic Intermodal Network
Priority Axis	4 - Maritime Transport
Specific objective	4.1 - Improve the quality, safety and environmental sustainability of marine and coastal transport services and nodes by promoting multimodality in the programme area
Work Package Number	4
Work Package Title	Platform and Service Implementation
Activity Number	D.4.1.3
Activity Title	ICT infrastructure procurement for Jadrolinija
Partner in Charge	PP7 - Jadrolinija
Partners involved	LP - Municipality of Ancona
	PP1 - Amatori Interestate SRL
	PP2 - Brusutti S.R.L.
	PP3 - G.M.T. S.P.A.
	PP4 - University of Trieste
	PP5 - University Of Rijeka, Faculty Of Maritime Studies Rijeka
	PP6 – Prosoft d.o.o.
	PP7 - Jadrolinija
	PP8 - City of Split
	PP9 - Rathmann d.o.o.
Status	Final
Distribution	Public

VERSION CONTROL

Work Package:	4. Platform and Service Implementation
Work Package leader:	Municipality of Ancona
Activity:	Activity 4.1 – Hardware procurement
Deliverable:	D 4.1.3 – ICT infrastructure procurement for Jadrolinija

Version:	Final
Type:	Technical specifications
Availability:	Public
Responsible partner:	PP7 Jadrolinija
Authors of the document:	Ms. Vanja Svetina
Date:	06 / 2022

TABLE OF CONTENTS

ACRONYMS / ABBREVIATIONS

ACRONYM	DEFINITION
HW	Hardware
SW	Software
WP	Work package

REFERENCE DOCUMENTATION

No	TITLE	REPORT No.	PUBLISHED BY
1	**Application Form – E-CHAIN - Enhanced Connectivity and Harmonization of data for the Adriatic Intermodal Network** 2014 - 2020 Interreg V-A Italy - Croatia CBC Programme Call for proposal 2017 Standard - E-CHAIN	Application ID: 10048282	Lead Applicant: Municipality of Ancona

1. INTRODUCTION
1.1 PURPOSE OF THE DOCUMENT

This document is relevant to the activity 4.1 Hardware procurement of E-CHAIN project - Enhanced Connectivity and Harmonization of data for the Adriatic Intermodal Network.

The purpose of this document is to provide technical specification for ICT infrastructure procurement for:

1. **Server HW/SW**
2. Security appliances and SW
3. Networking devices

Procurement has to be done in order to lay grounds for successful integration between Jadrolinija e-booking system and the E-CHAIN platform.

1.2 BACKGROUND INFORMATION

E-CHAIN (Enhanced Connectivity and Harmonization of data for the Adriatic Intermodal Network) main objective is to enhance connectivity and harmonization of data for the Adriatic Intermodal Network, through the realization of a modular integrated software (E-CHAIN platform) for the management of intermodal transport services in port areas for passenger transport. To enhance the current situation, E-CHAIN will focus on providing new services such as an improved Port multimodal info mobility system for the passengers, a ticketing system integrated with other transport modes, and an advanced touristic co-marketing tool for the operators. These services will be designed and deployed in the selected pilot sites (Ancona, Split, and Venice). A Business model suited to adapt the technology developed in the three applicative contexts will be created and specific needs will be taken into account.

The aim of WP4 is to design platform and services and to prepare the E-CHAIN services for deployment in the pilot sites (Ancona, Split, and Venice). The specific objectives of this WP are to:

- Develop selected services according to the specifics (technical and not) identified in WP3
- Roll out service versions at pilot sites

- Develop WSs to allow the integration between different services/systems for a multimodal and interoperable transportation

2. TECHNICAL SPECIFICATION

Procurement for **Servers, drivers and system software packages** subject to simple procurement procedures based on the Public Procurement Act.

Technical specifications of the subject of procurement must contain at least the following:

1. SERVER HW/SW

SERVER UNIT

1. DELL PowerEdge R740XD or similar object of equivalent value

- 2.5 "Chassis up to 24 HDD
- 2x - Intel Xeon Platinum 8253, 2.0 GHz, 22MB Cache, HT
- 12x - 64GB RDIMM, 3200 MT / s
- DUALPERC H740P RAID controller, 8GBNV Cache or similar object of equivalent value
- iDRAC 9 Enterprise or similar object of equivalent value
- 2x - 800 GB SSD SAS Mix use 12Gbps 512e, 2.5in Hot Plug
- 6x - 1,6TB SSD SAS Mix use 12Gbps 5l2e, 2,5in Hot Plug
- Dual Hot Plug 1 + 1 PS, Redundant, 1100W
- Intel X550 Dual Port 10Gb Base-TNetwork Adapter + 13502port 1Gb BaseT, rNDC or similar object of equivalent value
- Intel X550 Dual Port 10Gb Base-T Network Adapter, Full Height or Equivalent

2. Licenses and settings

- 2x Microsoft Windows Server 2019 Standard Edition, Factory Installed, 16 CORES
- MS2019 Hyper-V role enabled
- 5x - Windows Server 2019 Standard Edition User CAL
- 5x - Windows Server 2019 Remote Desktop Services CAL
- Performance BIOS settings
- Performance Optimized Memory Settings
- RAID 5 configuration

3. Additionally

— Sliding server brackets for accommodation in the RACK cabinet
— 4x C13 to C14, 10 AMP.2m

4. Warranty

— 3 years "Pro Support" and "Next business day Onsite Service" (24x7x365 technical support remote)
— automatic fault detection
— automatic fault reporting
— arrival at the user's location the next working day or within 4 hours of the failure of the critical component

The above minimum configuration may contain other components that are necessary for normal server operation.

STORAGE UNIT

1. Specification of the security storage system as DELL EMC DD6300 or similar object of equivalent value:

— Data can be sent to the device via LAN using CIFS, NFS, NDMP protocols
— Data can be sent to the device via SAN 1FC (Storage Area Network 1Fiber Channel)
— LAN and SAN methods can work simultaneously
— The device must have support for in-line data deduplication
— The device must support and use application plug-ins to enable deduplication before sending to the device (Deduplication on the source)
— The required bandwidth of the device in "native" mode is at least 8.5 TB / h
— The required bandwidth of the device using application plugins for deduplication is at least 24 TB / h

⸺ Deduplication application plugins must support integration with applications through their own native tools for data backup. Supported applications must be IBM DB2, SAP, SAP Hana, MS SQL, and MS Exchange. License for a minimum of 3 TB capacity

⸺ Deduplications must be done with variable block sizes.

⸺ Deduplication must be global, between all shares, folders and VTL pools on device.

⸺ In addition to deduplication, the data stored on the device must be compressed and must be various compression methods supported. (lz, gz, gz-fast)

⸺ The disk subsystem must be protected from failures in RAID 6 configuration

⸺ The device must have at least one spare disk per shelf

⸺ The device must support verification of the entered data

⸺ The device must support the creation of at least 500 snapshots in order to be able to return to the previous condition

⸺ The device must support data encryption for replication

⸺ The device must support replication and deduplication and data compression on the same or a similar device

⸺ The minimum usable capacity of the device must be 34TB and must be expandable to at least 178TB usable capacity.

⸺ The device should have at least 4x 10GbEthernet BaseT ports

⸺ The device must support data archiving with the possibility of retention lock with SEC 17a-4 (t) standard

⸺ The device must support at least 270 concurrent backup streams

⸺ The device must support Multitenancy

2. Warranties and Support

⸺ 24x7x365 technical support remote, automatic fault detection

⸺ Automatic fault reporting

⸺ Arrival at the user's location the next working day iii within 4 hours of the failure of the critical component