

# DigLogs

## Pilot project Plan

### Deliverable D5.3.1

#### 5.3.2 M2M dialogue (Management solution for passengers and freight maritime transport)

<b>Responsible partner: Port of Rovinj Authority (PP9)</b>			
<b>Involved partners: All</b>			
Version	Status	Date	Author
0.1	Draft 1	28/9/2020	Aksentijevic Forensics and Consulting, Ltd.
0.5	Draft 5	28/9/2020	Aksentijevic Forensics and Consulting, Ltd. and Rovinj Port Authority
0.6	Revised	30/09/2020	Actual IT, WP5 package leader
1.0	Final	30/09/2020	Aksentijevic Forensics and Consulting, Ltd.
1.1	Validated	13/10/2020	Actual IT, WP5 package leader

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## Table of Contents

Introduction: M2M dialogue .....	4
1. Pilot project goals .....	5
2. Pilot project functions and scope .....	7
3. Project methodology .....	9
4. Project preparation.....	11
4.1 Project functional requirements.....	11
4.2 Resource tendering.....	14
4.3 Pilot solution design.....	15
5. Project development .....	20
5.1 Preparation of the Pilot environment.....	20
5.2 Development of the Pilot application.....	25
5.3 Pilot application testing and acceptance.....	25
5.4 Pilot deployment and documentation.....	28
6. Project team .....	29
7. Project Timeline.....	30
8. Project risk management.....	31
References and attachments.....	42

## Introduction: M2M dialogue

As part of DigLogs project, Port of Rovinj Authority has decided to upgrade the existing maritime traffic management system to improve information system functionalities related to vessel traffic monitoring, while also including all the related activities that enhance the port's performance. This upgrade refers to the enhancement of the traditional PCS system, which will serve its purpose as an intermediary between the given software and the National Maritime Single Window – CIMIS. The advantage of having this kind of solution would greatly exceed its nominal value and it would offer best experience to all of its stakeholders.

In the following paragraphs, motivation for such a project, functional/technical analysis and their aspects are going to be explained in more details, to create a path towards project analysis and requirements specification later in the document.

## 1. Pilot project goals

**The project goal** is to establish an alternative to the traditional PCS, which will be interconnected with all of the port stakeholders and improve the quality of the system functionality on all levels. Port of Rovinj would be an excellent example, given the fact that it is one of the most important passenger ports in the whole Mediterranean. This underlines the passenger pilot category, where Port of Rovinj Authority's project neatly fits. At the same time, given the large number of fishing vessels in the port and the transshipment of significant quantities of fish, the implementation of pilot activities will have a significant impact on the freight aspect. Thus, pilot activity will demonstrate direct benefit both to passenger and freight transport.

Rovinj Port Authority will implement the **application that integrates the operational and accounting system of the Port Authority's operations and it will serve as a local PCS**. The application enables mooring reservation system, graphic mooring occupancy management, billing via mobile application, creating daily, monthly and annual reports, generating mooring contracts, automatic invoicing, CRM-Integrated Email System, accounting, paying invoices and automated importing of bank statements.

Given the fact that the desired PCS will be of such a high value, the pilot application would serve as an intermediary between PCS and National Maritime Single Window system – CIMIS, where they would be able to develop conditions for interchange of the documents relevant to the optimal running of the state's national system.

This way, **additional benefits** will be reaped, both by control authorities overseeing traffic and berthing activities via PCS and end user stakeholders – passengers.

**Long term goal of the project** is to broaden the technological base of the Port of Rovinj, and create a technological mesh of solutions, adding a new layer of visibility and constantly increasing the security of maritime traffic in the port basin.

**Decision on the pilot content** was made primarily because of the need to technologically advance the existing way of conducting business, while port of Rovinj heads to the top of the industry

benefiting from the use of the latest ICT available. This system allows for meeting the minimal required conditions and greatly exceeding them, while also meeting all of their stakeholder's expectations.

The application's output documents are a prerequisite for future automation of the communication process with NSW, which is not technically possible at this time. As soon as NSW - CIMIS enables electronic data to be automatically entered and accepted from an external application/source, this system will be ready to establish M2M dialogue

## 2. Pilot project functions and scope

**Main pilot function** is to provide important inputs from the aforementioned system, which eliminates the possibility of making wrong business calls, all while providing the best user experience and creating the space for further development and advancements.

**Scope of the pilot** is requisitioning and purchase of the envisaged equipment, its installation and future desire of functional integration with the existing National Maritime Single Window - CIMIS system, already in use in the Port control center of the Port of Rovinj Authority, and the visualization of the port panoramic presentation for the end user group of passengers using already existing visualization using Web page presentation.

**Exact technical requirements**, connectivity and input-output possibilities are subject to further determination during pilot development and component identification up to its end, as some components might change even during pilot execution. While main components are already identified as a part of analysis and requirements specification, it is possible that some smaller components will be identified later in the pilot execution, so flexibility will be required during later stages.

A **required operational system** must possess adequate technical qualities to support envisaged role. Among initial and required **parameters** that were discussed and considered are:

1. Analysis of all port processes,
2. Modification of the application to the needs of the Port Authority,
3. Testing,
4. Training of employers and stakeholders,
5. Procurement of equipment, and
6. Supervision of the operation and efficiency of the system.

Project **assumptions** are:

1. Time frame dedicated for pilot execution will be adequate,
2. Financial means for pilot requisitioning will suffice,
3. There are suitable locations for uninterrupted installation and operative usage of the system's enabling equipment, and
4. The stakeholders will be interested in the project deliverables (checked during WP4).



### 3. Project methodology

Custom **project management methodology** will be used, based on PMI-PMP methodology. Best practices and concepts from classic project management methodology will be used. It will cover the entire lifecycle of the pilot project implementation. It is best suited to the fast track and relatively short project like this pilot.

In order to manage the project, **standard tools** will be used, like internal business information systems of the Port of Rovinj, document management system SharePoint, e-mail and office automation tools (Microsoft Word, Excel and PowerPoint). Furthermore, Gantt chart is used to track the project execution.

**Project team** communicates directly (peer to peer), in person and using remote presence tools (WebEx and Skype). Brief weekly coordination meetings are held in order to inform all project team members with development of the project and to resolve ongoing issues.

**Documents** used in the project planning and implementation can be divided into several categories, based on the document type and ownership:

1. DigLogs set of documents, outlined in DigLogs Application Form (includes this pilot work plan),
2. Documents created by the Port of Rovinj Authority and its consultants, and
3. Documents created by the solution vendors, integrators and developers.

**Expected output** documents that will be produced as a part of the pilot project are:

1. Pilot Work Plan (this document),
2. Functional – technical pilot specification (serves as a basis for tendering documentation),
3. Tendering documentation (used in the public procurement process),
4. Installation and development – sign off logs and related documentation,

5. Equipment delivery and integration (development) services delivery notes,
6. User manuals and additional documentation,
7. Invoicing documentation,
8. Communication archives (emails).

**Monitoring of the pilot project execution** will be executed using the following milestones, in sequence (check points – check off milestones):

1. Compiled draft of the project work plan – approved by LP,
2. Completed project work plan,
3. Written draft of the technical-functional specification, **CHECK OFF MILESTONE 1**
4. Completed rest of the public procurement (tendering) documentation,
5. Issued requests/invitations for quotations,
6. Received commercial offers,
7. Evaluation of offers completed and best offers selected, **CHECK OFF MILESTONE 2**
8. Awarded integration services contracts, **CHECK OFF MILESTONE 3**
9. Integration development services delivered and completed,
10. UAT testing, and
11. Full system functional (pilot development completed). **CHECK OFF MILESTONE 4**

## 4. Project preparation

This chapter describes the **phases** of the Pilot project preparation before the actual development and later phases.

### 4.1 Project functional requirements

Rovinj Port Authority **currently uses several different unrelated** software systems that make it difficult to operate and monitor all business processes. The implementation of a system that integrates all aspects of the Port Authority's operations will enable optimal control over the operations of the Port Authority in all port areas it manages and at the same time enable the control of the mooring capacity occupancy. The application enables better integration of the operational part of business and management. Additionally; it solves the problem of duplicate data entry and possible errors that occur during the input, facilitates access to the data since all the data is digitized and in one place, the software is also available through the mobile application, statistical reports on traffic in the port are generated, significantly reduces the paperwork, radically speeding up processes, digitizing business and enabling better financial control.

The application's output documents are a prerequisite for future automation of the communication process with NSW, which is not technically possible at this time.

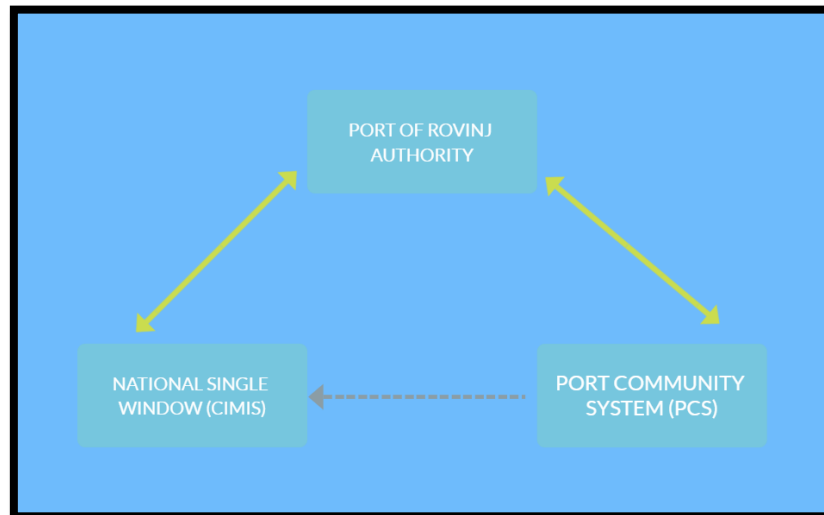


Figure 1. Three main parties and modalities which are envisaged and their correlation

*CIMIS* - Croatian Integrated Maritime Information System is a system that provides information interchange in order to enable the use of electronic business processes and procedures during ship's arrivals and departures in Republic of Croatia while the data used is connected with the SafeSeaNet system.

*PCS* - Port Community System

An information system responsible for collecting, controlling and exchanging data among all of the stakeholders in a port's cluster.

**Advantages** of using a PCS in sea ports exceed the sole purpose of coordinating and communicating through features like:

- Development of Single window system - national level
- standardization of information exchange
- accurate and practical submission of data 24 hours a day, 7 days a week
- centralization of all operations conducted by members of the port community
- requests for internet services
- online payment for services

- flexibility in the delivery of information in multiple formats
- reporting
- savings throughout the port community
- statistical data analysis.

*Lučka Uprava Rovinj - Port of Rovinj Authority*

The port authority, as the administrative body, performs all administrative and inspection works of the safety of the sea in the Republic of Croatia, according to its legal rights and duties. The administrative works enclose particularly keeping the order and safety in harbour, keeping various records and registers, issuing required documents and inspecting the use and regulations about safety of navigation and the ability of ships

Potentially suitable candidate for the project core is identified during preliminary research, and also as a part of previous WP packages - **Marina Master** - highly modular cloud-based system that enables its user to take total control of port's operation with a simple, easy-to-use marina management system which in turn reduces costs, raises productivity, improves customer experience and increases profit. PP9 will aim to introduce this solution, or the one with a similar set of capabilities.

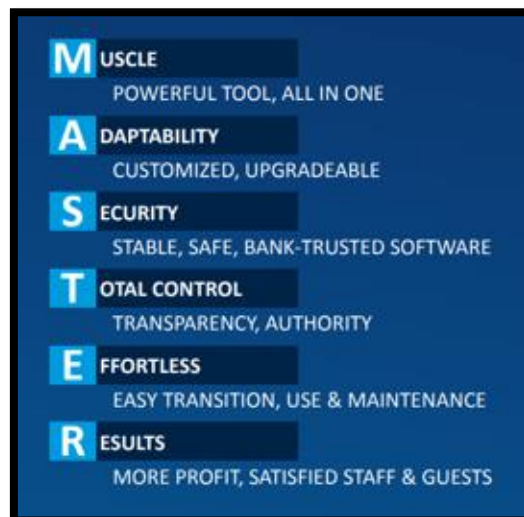


Figure 2. An excerpt from the Marina Master brochure

## 4.2 Resource tendering

In the process of procuring pilot activities, there is no need to hire external experts, but all activities will be carried out by employees of the Rovinj Port Authority.

The Port of Rovinj Authority is implementing simple procurement procedure regarding port management software system (which includes both operational and accounting system). Procurement includes the development and implementation of a software management system for all ports. The software system must unite accounting and operational aspects while also providing access to the system via computers and mobile devices.

This subject of procurement required a market research in order to gain insight whether there are a sufficient number of economic operators capable of executing tasks from the subject of procurement. At least three bids needed to be collected. Call for offers (RFQ) will be sent at least to the following addresses, and additional, if subsequently identified:

- Harba ApS, Valby Langgade, Denmark, E-mail: [jan@harba.co](mailto:jan@harba.co)
- Informatika Fortuno d.o.o., Vinkovci, E-mail: [matej.jurkovic@fortuno.hr](mailto:matej.jurkovic@fortuno.hr)
- Adronaut d.o.o., Pula, E-mail: [sanja@adrinaut.com](mailto:sanja@adrinaut.com)
- IRM d.o.o., Ljubljana Slovenia, E-mail: [tone.britovsek@marina-master.com](mailto:tone.britovsek@marina-master.com)

After the inquiry and communication with economic entities via e-mail, the evaluation will be performed to check which potential vendor has developed a suitable system for port information process management, which includes both the operational and accounting aspect of the port business. Communication with economic operators will be an integral part of the report.

This activity will mark end of procurement/tendering phase of the pilot execution.

### 4.3 Pilot solution design

Highly customizable and modular software solution offers a wide range products and services which would greatly enhance port's business conduct through implementing modules which are considered most suitable after taking into account port's infrastructure and superstructure background.

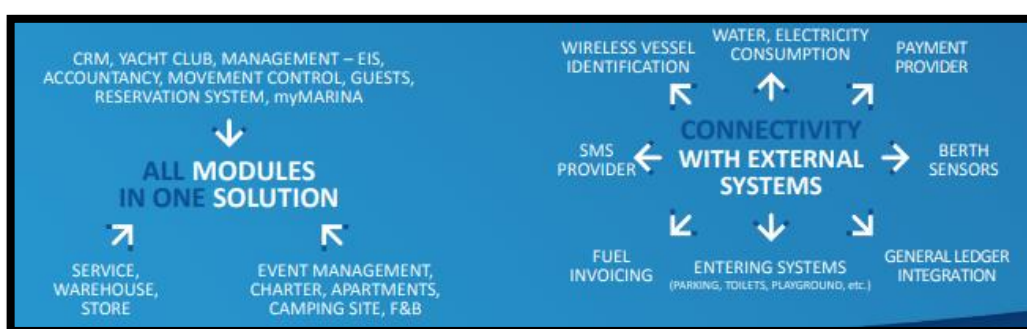


Figure 3. Marina Master software

Some of the modules this PCS can provide are:

#### **CUSTOMER RELATIONSHIP MANAGEMENT- CRM**

Advanced CRM, designed specifically for marinas enables:

- › correspondence with customers and complete information about customer & vessel from any device,
- › automatic contract renewal according to various criteria,
- › printing contracts and invoices in customers' language,
- › automatic email and SMS messaging of relevant information (including offers, business letters),
- › planned sales activities (automated reminders & alarms),
- › electronic document storage

#### **MOVEMENT CONTROL**

- › graphical overview of marina occupancy today & history & future,
- › vessel movements: arrivals, departures, temporary absences,
- › vessel data: berth location, planned lifting out / launching services, expected arrivals.

Different options of automatized **boat identification and movement control**:

- › wireless vessel identification using RFID system,
- › automatic marina control using Ultrasonic Sensors,
- › vessel identification using QR code,
- › berth identification using NFC labels,
- › dock walk integrated in Marina Master Mobile,
- › direct communication via MyMarina



Figure 4. Available options automatized boat identification and movement control

### EVENT MANAGEMENT

Advanced event management enables easy planning & managing all events and resources in marina. Customers are automatically informed about event and are able to fill-in the application form to attend event and other activities.

### RECEPTION DESK-GUESTS

- › quick serving of guests in marina resort with check-in / check-out,
- › simplified vessel-data input and registration,



- › guest registration for authorities if needed,
- › powerful statistical reports

## INVOICING - POS

- › automatic invoicing and email sending,
- › invoices issuing in the selected language,
- › supervision of overdue accounts and their auditing,
- › all POS functionalities included.

## myMARINA

Is a modern way of communication through any mobile device. myMarina enables marina customers:

- › ordering services: boat lifting/launching, bottle of champagne on arrival and more
- › communication with marina staff,
- › complete overview of boat data,
- › requesting berth/car assistance before arrival,
- › viewing their vessel current situation live through stream camera footage (expert CCTV solutions, DASH),
- › advanced services: boat/berth sharing.

myMarina **enables** marina staff:

- › communication with marina customers, sending proposals,
  - › automatically received SMS or sound alarm after customer request for berth/car assistance,
  - › viewing live streams of berths to confirm availability and occupancy,
  - › controlling, supervising services and situation in marina anytime from any device and more.



Figure 5. Visual representation of MyMarina mobile application

## YACHT CLUB

The Membership module is designed specifically for marina-based Yacht Club and provides full member integration between marina, food & beverages facilities and processing of membership data, resulting in Yacht Club centralized management. It enables you quick data entering & access, system's alarms & controls, automatic invoicing and efficient contract management

## ACCOUNTANCY

The Accountancy module covers the entire process of monitoring financial documents from their origin to posting to the General Ledger:

- › customer and supplier balance,
- › financial and material accountancy for service administration,
- › automatic interest adjustment and revaluation,
- › overdue claims preparation.

## MANAGEMENT-EIS

- › complete monitoring of marina activities,
- › physical and financial indicators,
- › service, income and expenses analysis,
- › future cash flow,
- › data mining by various criteria: profit-centre, location, vessel length, services, flag,

- › comparison of financial data over years.

### **SERVICING AND WAREHOUSE ADMINISTRATION**

- › complete overview of customer requests about vessel,
- › planning individual services and workforce administration,
- › managing of derricks and equipment,
- › supervision of service work on each vessel and overview of work efficiency.

### **APARTMENTS**

- › bookings and reservations,
- › offers,
- › guest registration,
- › invoicing and accountancy,
- › check-in / check-out.

### **STORE**

The Store module is easily used with barcode readers:

- › register of new products in a warehouse,
- › receipt issuance.

Every transaction directly affects accountancy and stock inventory.

### **FOOD & BEVERAGE**

The Food & Beverage module with built-in touch screen support is a sophisticated and complete tool for catering services in bars and restaurants. Orders and payment receipts are created fast and easy.

### **CHARTER**

- › shared bookings of charter vessels,
- › profit sharing with vessel owners

## 5. Project development

This section describes the **phases** of Pilot project development. It is covering the following topics (subchapters), as follows.

### 5.1 Preparation of the Pilot environment

Main idea behind the pilot is bringing the port to a point where port's business processes and procedures are taken to the extent of making **business flow smoothly at an optimal rate**. The most plausible way of doing this is through the implementation of a marina-oriented *Port Community System*, which has a role of mediator between the port's business conduct and the National Maritime Single Window for the period needed, until the two become completely integrated. For now, automated integration is just not an option yet, but this would definitely be a step towards that goal.

Complexity of the Rovinj port operations are shown in the Figure 6 on the following page.

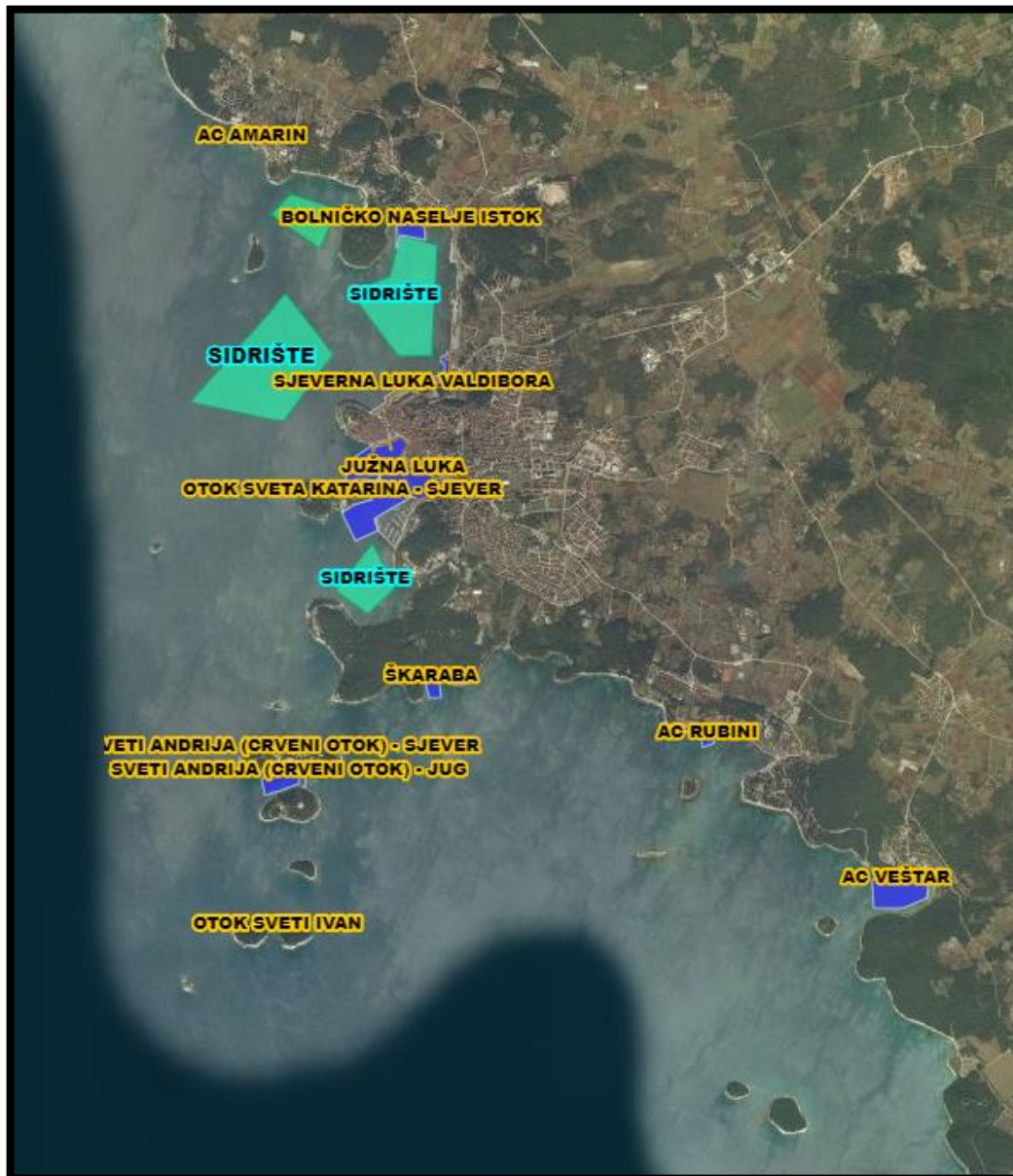


Figure 6. Aerial footage of the Port of Rovinj Authority area

In order to have a complete **overview of Rovinj's total of 4 anchorage areas and 9 berthing areas**, the Port Authority needs to adopt one of the latest ICT solutions.

Ability to have a system which unites operational and accounting systems instead of several different unrelated software systems that make it difficult to operate and monitor all business processes would mean a huge improvement for such an important international port. The greater part of the port area of the Rovinj Port Authority is intended for passenger traffic and mooring of nautical boats, passenger and excursion boats, yachts, and cruisers, but one part of their operation also pertains to fishing boats and transshipment of fish, which represent freight transport. Regarding this, improving the operations of the Rovinj Port Authority and introducing IT innovation can be considered as a combined pilot activity.

The operation and functioning of the Port Authority are very **complex**, especially given the need to communicate with a large number of stakeholders. It needs to be balanced between the administrative requirements of the state on the one hand and the private interest of the users on the other. The function of the Port Authority is to manage the port area in such a way that it optimizes the operation of all processes and always strives to maximize commercial results. Of course, taking into consideration the business conditions prescribed by the state government and which all port users must satisfy and fulfil.

In that sense, the Port Authority must strive to **improve all processes** in order to provide users with the best conditions. This especially concerns functioning and administrative operation. First and foremost, whether concerning the fishing boats (freight) or cruisers/yachts/nautical boats (passengers), their users require information from the Port Authority about the availability of berths, the possibility of booking berths and, later on, information regarding the water and electricity supply. This operational information must be accurate and prompt, as well as approved in the National Single Window System (CIMIS). Furthermore, in administrative terms, the usage of berths should be formalized by signing a contract and issuing an invoice that must be accurate and transparent. This is just one segment of interaction and communication between the users, the State Administration (NSW - CIMIS), and the Port Authority. Unfortunately, it currently includes **several separate and unrelated applications**. This results in unnecessary piling up of documents, the longer procedure duration, and, consequently, **reduced efficiency of the port and economic competitiveness of the users.**

Rovinj Port Authority will implement an application that **integrates the operational and accounting system** of the Port Authority's operations and it will serve as **a local PCS**. The application enables mooring reservation system, graphic mooring occupancy management, billing via mobile application, creating daily, monthly and annual reports, generating mooring contracts, automatic invoicing, CRM-Integrated Email System, accounting, paying invoices and automated importing of bank statements.

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The application's output documents are a **prerequisite for future automation of the communication process with NSW**, which is not technically possible at this time. As soon as NSW - CIMIS enables electronic data to be automatically entered and accepted from an external application/source, this system will be ready to establish M2M dialogue.

**Passenger terminal facilities** where most end stakeholders congregate have the following characteristics:

1. Information desk,
2. Restaurant, small shops, bathroom,
3. Free wi-fi,
4. Walking distance into town is 150 m,
5. Shopping kiosks,
6. Rental car area,
7. Segregated metered taxi marshalling area,
8. Protected from wind and wave conditions (all-weather), and
9. Capable of accommodating a small and medium size cruise ship.

**Pilot planning** was basically performed from the beginning of the DigLogs project, through participation in previous phases of the project and WP1, WP2, WP3 and WP4. Basis for the planning was set during tele conference and live meetings, and they are set out in the roadmap for particular projects within passenger sector.

**Selection of the innovation** to be a base for the project was based on the DigLogs innovative technologies and project portfolio and real needs of port of Rovinj. Definition of technical characteristics was done in cooperation with field experts and vendors, where in direct consultations, most appropriate solution was selected from a selection of different solutions.

**Pilot budget** was allocated from DigLogs funding and budget in order to guarantee equipment purchase, installation and development of accompanying application.



## 5.2 Development of the Pilot application

During **pilot integrative development**, deeper insight into “as-is” situation was gathered and technical documentation used in similar projects in other ports was studied in depth, in order to get more information about real life implementations. Existing solutions were studied, and a number of teleconference calls and live meetings were held in order to transfer previous experience. Common elements were identified, and joint decision was made to proceed with the project but incorporating identified experience.

For **purchase of development services**, it will be crucial to prepare timely the technical specifications. Technical specifications are a part of public tender invitation. No public call had to be made, as the public procurement rules allow to make decision based on several collected offers by direct solicitation, if the value of services is less than 30.000 EUR+VAT. The company selected is the same one that originally developed the system.

As basis for the development of the **end user information panel**, internally used Rovinj Traffic software is used. This business information system utilizes information related to vessels, arrival time, berth, agent and status, and it is used by the Port Control Center to track vessel activity in the area of interest, determine free berths and berth utilization and oversee port control activities.

## 5.3 Pilot application testing and acceptance

**Testing** will be performed using several levels and each time, development and installation team, Port of Rovinj Authority and end users would be involved. A test on a real population is required in order to measure adoption of the technology by end users (operators and passengers). This is the main objective of a pilot action immediately preceding the final system deployment. Internal testing needs to be done first by the developer’s team, and then UAT (user acceptance test) will be performed by the Port Traffic Control experts. Final configuration and testing will be set for the final phase of the pilot deployment when the user interface of the software had started its simulation while including large representation of the end users participating in the pilot testing.

**Pilot integration testing will include several phases:**

1. *Unit testing* - separate testing of parts of pilot (specification, hardware, cabling, software). This test is usually performed primarily by the vendor, using development environment, during development phase,
2. *Integration testing* - already tested modules will be combined and tested as a group, within certain functionalities,
3. *System testing* - check of functionalities and reliability of the completed pilot, using test scenarios covering all processes.
4. *Performance testing* - testing and check of functionalities, includes stress test and reliability of the system as a whole
5. *User acceptance testing* - performed at the end of development and installation, during system deployment. User acceptance testing encompasses functional and operational landscapes of the pilot.

All found and known **errors and issues** will be **classified** to a few categories and handled in order of importance until all were fixed:

1. *Critical errors* - all errors that could cause the system to be inoperative were identified and fixed,
2. *Less important problems* - such errors will be treated using workarounds, and
3. *Requests for Enhancement (RFE)* - this is input that will be gathered during testing, but after the plan was drafted, and services procured.

**User acceptance** test will be conducted through several target groups whose interests are greatly influenced by this pilot application, and they are divided into following categories:

1. Local, regional and national public authorities
2. Regional Development Agencies

3. Enterprises, transport and multimodal transport operators (MTO) including operators of multimodal logistics hubs, infrastructure providers
4. Transport Association
5. Education and training organisations

**Involvement** of local, regional and national public authorities is increased through the activities of WP2 and WP5 to motivate higher commitment towards interoperability and improved efficiency of multimodal transport services and service harmonization for passengers. Representatives from this category were port authorities and Chambers of Commerce whose interests were not greatly afflicted by the implementation of pilot activities but their role of monitoring development would be of a great value in the future.

**Engagement of the Regional Development Agencies** manifests through better involvement of SME-s and to promote the project results at local level. To this purpose WP2 foresees also the organisation of local events at regional level. Moreover, the regional agencies can assure a bigger project's impact including their networks in the project. Agencies will benefit from the increased knowledge while also monitoring the whole process of development.

**Enterprises, transport and multimodal transport operators (MTO)** including operators of multimodal logistics hubs, infrastructure providers - strengthen their involvement and to increase the project's impact, and support project's outputs durability and transferability a dedicated Forum will be created to motivate higher commitment towards empowerment of interoperability and supply chain visibility. Representative entities are going to be from the groups of transport operators, MTO-s, shippers, passenger and freight terminals and shipping companies. All of their expertise is expected to be upgraded through the engagement on the pilot implementation, monitoring of the development and as a result they are all expected to benefit from increased knowledge about the ongoing implementation and technology breakthroughs.

**The Transport Association** are afflicted because the impact of the considered technologies will strongly affect labour market changing the way people work and working environments.

The role of the **education and training organisations** is to boost the impact of the project results in the academic sector. This will allow the Programme area to develop a common strategy towards transport digitalisation and to better orientate research on applicable solutions. Group exemplar are universities and research institutes who will be on the monitoring side while also benefit from the experience and knowledge gained.

**Stakeholders** within identified target groups will be informed about the pilot's go-live by means of e-mail, direct and telephone contact and posts on project social media.

With completion of these steps, the pilot will pass from the planning phase through development and execution to the production/exploitation phase of the project.

**Validation (sign off)** on the project on the whole at this stage will be done at the level of the PP9 and its consultant, development vendors and again, PP9, during acceptance test.

#### 5.4 Pilot deployment and documentation

Following the completed procurement procedure for the software developer, the Rovinj Port Authority will start the **integration into the internal system**. Following the aforementioned test procedures, a fully functional system will be developed and the project objectives will be achieved.

The entire procedure, starting from the procurement until the completion of the test phase and full functionality will be properly documented in accordance with regulations and DigLogs Application Form requirements.

## 6. Project team

**Core project team** tasked with project execution is comprised of the following resources with identified roles and responsibilities:

1. Donald Schiozzi, internal team member, job role: Port of Rovinj Authority director, project role: Project manager, in charge of top-level project steering,
2. Sara Carić, internal team member, job role: project role: Project Assistant, responsible for overall project governance, and financial and organizational aspects of the project,
3. Sandra Cvek, internal team member, job role: Administrative Assistant, project role: project assistance

**Extended project team** includes members of the vendors and DigLogs WP5 leader:

1. 1. Karmen Krivičić Spajić, external team member, job role: Project manager for PP5 team involvement within DigLogs, project role: DigLogs WP5 package leader, in charge of WP5 steering, progress assurance and compliance assurance with the Application Form
2. Representatives of respective vendors, external team members, project role: vendors, tasked with delivery of project requisitioning goods and integration services.

## 7. Project Timeline

Project timeline for the duration of the entire pilot project is shown in table 1. below, along with the most important milestones.

Activity number	Activity title	Year and month														
		2020												2021		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	Creation of the pilot work plan draft	█	█	█	█	█										
2	Creation of the pilot work plan		█	█	█	█	█	█	█							
3	Creation of the technical-functional specification	█	█													
4	Completed public procurement documentation	█	█													
5	Awarded system integration contracts			█	█	█										
6	Development and system integration					█	█	█	█							
7	Fully integrated system UAT testing								█	█	█	█	█			
8	Full system deployment in production													█	█	█

Table 1. Project timeline

## 8. Project risk management

Common risk register methodology was developed by the LP of the WP4, in earlier stages of the project, and it will be used to identify and mitigate risks that might arise from the pilot execution.

Goal of the risk management of the pilot project is to address all foreseen risks from various aspects:

- Use preventive measures and risk avoidance, where possible, in order to avoid risk occurrence (most favorable),
- Use mitigation measures, where possible, to lessen the risk impact (less favorable),
- Use risk transfer (to third parties), to lessen the risk impact, and
- Establish a clear list of actions and contingencies including escalation path towards WP5 leader and LP and have informed opinion on residual risk.

However, the project will be relatively short in duration (pilot execution), so it is logical that this fact will help significantly in its successful completion.

No high level of technical risks is anticipated, so mostly common project risks may reasonably be expected.

Used risk register is shown in Table 2. below, on the next pages.

ID	Date raised	Risk description	Likelihood of the risk occurring	Impact if the risk occurs	Severity	Owner	Mitigating action applicable to pilot project action	Contingent pilot project action	Progress on pilot project actions	Status of the registered pilot project risk
1	[risk identification date]	Pilot project purpose and need is not well-defined	Medium	High	High	LP/SC	Complete a business case for the harmonization pilot if not already completed and ensure purpose is well defined according to project plan	Escalate to the LP/SC and inform WP5 leader with an assessment of the risk of runaway costs/never-ending project.	Business case re-written with clear deliverables and submitted to the LP/SC for acknowledgment	[Open/Closed]
2	[risk identification date]	Project design and deliverable definition is incomplete.	Low	High	High	LP/SC	Define the scope in detail via design details, workshops and meetings with PP/LP and input from subject matter experts.	Document assumptions made and associated risks. Request high risk items that are ill-defined are removed from scope.	Design workshops and meetings scheduled.	[Open/Closed]
3	[risk identification date]	Project schedule is not clearly defined or understood	Low	Medium	Medium	PP	Hold scheduling workshops with the project team (internal and external providers) so they understand the plan and likelihood of missed tasks is reduced.	Share the plan and go through upcoming tasks at each weekly project progress meeting.	Workshops scheduled.	[Open/Closed]



4	[risk identificati on date]	No control over staff priorities	Medium	Medium	Medium	PP	<p>PP should brief internal team managers on the importance of the project.</p> <p>Soft book resources as early as possible and then communicate final booking dates ASAP after the scheduling workshops and meetings.</p> <p>Identify back ups for each project team member engaged on the project.</p>	<p>Escalate to the PP's top management and bring in back up resource, inform LP/PSC and inform WP5 leader</p>	<p>PP's top management has to agree to hold briefings. Identification of suitable arrangements (meeting room, teleconferencing tools)</p>	[Open/Closed]
5	[risk identificati on date]	Consultant or subcontractor delays	Medium	High	High	PP	<p>Include late penalties in pilot project contracts.</p> <p>Build in and protect lead time in the schedule.</p> <p>Communicate schedule early.</p> <p>Check in with supplier's progress regularly.</p> <p>Query statements like '90% done'. Ask</p>	<p>Escalate to LP, SC and top management of the supplier and inform WP5 leader. Implement late clauses.</p>	<p>Lead time from each contractor built into the project schedule.</p> <p>Late penalties agreed to and contracts signed.</p>	[Open/Closed]

							again and again if the supplier or consultant requires additional information.			
6	[risk identificati on date]	Estimating and/or scheduling errors	Medium	High	High	PP	<p>Break this risk into two parts: 'cost estimating' and 'scheduling errors'.</p> <p>Use two methods of cost estimation, and carefully track costs and forecast cost at completion making adjustments as necessary.</p> <p>Build in 10% contingency on cost and scheduling.</p> <p>Track schedules daily and</p>	<p>Escalate to LP and SC and inform WP5 leader.</p> <p>Raise change request for change to budget or schedule.</p> <p>Pull down contingency.</p>	Contingency agreed by the top management of the PP; LP informed.	[Open/Closed]

							<p>include schedule review as an agenda item in every project team meeting.</p> <p>Flag forecast errors and/or delays to the Project Board early.</p>			
7	[risk identificati on date]	Unplanned work that must be accommodated	Low	High	Medium	PP	<p>Attend project scheduling workshops.</p> <p>Check previous projects, for actual work and costs.</p> <p>Check with peer companies for actual events during similar projects.</p> <p>Check all plans and quantity surveys. Document all assumptions made in planning and communicate to the vendor's project manager</p>	Escalate to the vendor's project manager with plan of action, including impact on time, cost and quality.	PP's team attending scheduling workshops.	[Open/Closed]

							before project kick off.			
8	[risk identification date]	Lack of communication, causing lack of clarity and confusion.	Medium	Medium	Medium	LP/SC/PP	<p>Write and discuss a communication plan which includes frequency, goal, and audience of each communication.</p> <p>Identify stakeholders early and make sure they are considered in the communication plan.</p> <p>Use most appropriate channel of communication for audience e.g. don't send 3 paragraph email to</p>	Correct misunderstandings immediately. Clarify areas that are not clear swiftly using assistance from Project Sponsor if needed.	Communication plan in progress.	[Open/Closed]

							developers, have a call instead.			
9	[risk identificati on date]	Pressure to arbitrarily reduce task durations and or run tasks in parallel which would increase risk of errors.	Low	High	Medium	PP	<p>Share the schedule with key stakeholders to reduce the risk of this happening.</p> <p>Patently explain that schedule was built using the expertise of subject matter experts.</p> <p>Explain the risks of the changes.</p> <p>Insist on contractual obligations towards pilot project vendors.</p>	<p>Escalate to LP and SC with assessment of risk and impact of the change and inform WP5 leader.</p> <p>Hold emergency risk management call with decision makers &amp; source of pressure and lay out risk and impact.</p>	Awaiting completion of the schedule.	[Open/Closed]

10	[risk identificati on date]	Scope creep	Medium	High	High	PP	<p>Document the pilot project scope in a Project Initiation Document or Project Charter and get it authorised by the PP.</p> <p>Include the full scope in the contract.</p> <p>Refer to it throughout the project and assess all changes against it also ensuring alignment of any changes with the business case of the pilot project.</p>	<p>Document each and every example of scope creep NO MATTER HOW SMALL in a change order and get authorisation from the project board BEFORE STARTING WORK.</p> <p>This includes ZERO COST changes.</p>	Scope clearly defined in the contract.	[Open/Closed]
11	[risk identificati on date]	Unresolved project conflicts not escalated in a timely manner	Low	Medium	Medium	PP	<p>Hold regular project team meetings and look out for conflicts.</p> <p>Review the pilot project plan and stakeholder engagement plan for potential areas of conflict.</p>	<p>When aware immediately escalate to LP and PSC and gain assistance from LP to resolve the conflict. Inform WP5 leader</p>	Project team meetings scheduled.	[Open/Closed]
12	[risk identificati on date]	Proposed pilot action becomes obsolete or is undermined by external or internal changes.	Low	High	High	PP	<p>No ability to reduce likelihood, but make sure early warning is given by reviewing</p>	<p>Initiate escalation and project close down procedure.</p>	Project close down procedure confirmed with Project Board.	[Open/Closed]

							pilot action on regular basis with the LP/PSC prior to stipulating the contract.			
13	[risk identification date]	Delay in earlier project phases jeopardizes ability to meet fixed date. For example delivery of just in time materials, for conference or launch date.	Medium	High	High	PP	<p>Ensure the project plan is as accurate as possible using scheduling workshops and work breakdown structure.</p> <p>Use Tracking Gantt and Baseline to identify schedule slippage early.</p>	Consider insurance to cover costs and alternative supplier as a back up, if possible.	Awaiting completion of the schedule.	[Open/Closed]
14	[risk identification date]	Added workload or time requirements because of new direction, policy, or DigLogs project changes	Low	Medium	Medium	PP	No ability to reduce likelihood.	Acquire advanced notice from PSC/LP if possible. Inform WP5 leader	Pilot project management reviewing options.	[Open/Closed]
15	[risk identification date]	Inadequate testing by the project team or involved (aimed) stakeholders leads to large post go live snag list.	High	High	High	PP	<p>Ensure that test cases/quality checks are timely prepared and testing/quality assurance window is protected.</p>	<p>Raise risk immediately and raise issue if it is clear that UAT testing is inadequate.</p> <p>Stakeholders could extend testing &amp; bring in additional resource.</p>	Stakeholders preparing test cases.	[Open/Closed]

16	[risk identificati on date]	Legal action delays or pauses project.	Low	Medium	Medium	SC/LP/PP	<p>Ensure all contracts signed before starting the pilot project.</p> <p>Follow all regulatory requirements and complete stakeholder management plan.</p>	<p>Escalate to the PP's management who will notify legal department.</p> <p>Follow instructions from legal department and inform LP/PSC and inform WP5 leader</p>	Contracts issued.	[Open/Closed]
17	[risk identificati on date]	Stakeholder or PP refuses to approve deliverables/milestones or delays approval, putting pressure on project manager to 'work at risk'.	Medium	Medium	Medium	PP	<p>Ensure that PP's decision maker with budgetary authority is identified before project start and is part of the project board.</p> <p>Communicate dates for sign-off points up front.</p>	Escalate to PP's management and LP and recommend action e.g. - to stop the project. and inform WP5 leader	Pilot project manager is confirming their sponsor / top management of the supplier.	[Open/Closed]
18	[risk identificati on date]	Theft of materials, intellectual property or equipment.	Low	High	High	PP	<p>Follow security procedures, ensure Non-Disclosure Agreements (NDAs), &amp; compliance certificates are in place along with required confidentiality clauses.</p> <p>Verify all physical security measures in place. Secure</p>	<p>Notify appropriate authorities e.g. police, legal department, LP, PSC and initiate internal investigations. Inform WP5 leader</p>	<p>NDAs issued.</p> <p>Security certificates confirmed for contractors/suppliers working on the pilot project.</p>	[Open/Closed]



							insurance, if applicable.			
19	[risk identificati on date]	Acts of God for example, extreme weather, leads to loss of resources, materials, premises etc.	Low	High	High	PP	<p>Ensure insurance in place and valid.</p> <p>Familiarise project team with emergency procedures. Where cost effective put back up systems in place, if applicable.</p>	<p>Notify appropriate authorities.</p> <p>Follow health and safety procedures.</p> <p>Notify stakeholders, LP and PSC. Inform WP5 leader</p>	Public Liability Insurance confirmed along with additional premises insurance at site / for the pilot project.	[Open/Closed]
20	[risk identificati on date]	Pilot project stakeholder's action (or lack of) delays project.	Low	High	High	PP	<p>Identify interested and dedicated stakeholders before start of the pilot project, analyze power and influence and create a stakeholder engagement plan.</p> <p>LP/PSC to check and if applicable, authorise the plan.</p> <p>Revisit the plan at</p>	<p>Notify appropriate authorities and follow internal procedures e.g. for activist demonstrations. Inform WP5 leader</p>	Stakeholder involvement analysis in progress.	[Open/Closed]

						regular intervals during pilot project execution to check all external stakeholders are managed.  Consider getting additional insurance.			
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## References and attachments

- [1] Screenshots – n/a
- [2] Links – n/a
- [3] Documents used – n/a
- [4] Information sources – n/a
- [5] Other references – n/a