

IMPLEMENTATION T4

Deliverable D.T4.2.2: Technical
documentation the for web-based tool,
final version

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0 PREFACE

0.1 PURPOSE OF THIS DOCUMENT

- #1 *This document explains technical characteristics of the web-based tool that is to be created as one of major outputs in Interreg Central Europe project called Restaura: Revitalising Historic Buildings through Public-Private Partnership Schemes (CE339).*
- #2 *It is intended to specify technical details in connection with other project documentation, especially document D.T4.2.1: User Requirements for the web-based tool.*

0.2 USE OF THIS DOCUMENT

- #1 *This document shall be used for a technical guidance in construction and development of the web-based tool.*
- #2 *It shall serve as a check-list for investor to specify expectations and requirements for the final implementation of the web-based tool.*
- #3 *The document is open-ended and it shall be modified according to the final round of the implementation of the web-tool. No final solution has been provided for the final vendor as agreed upon with the investor. Differences between this document and the implementation of the web-based tool shall result in appropriate revisions of the document.*
- #4 *In the planning and defining phase of the development-process all types of best-practices shall be included. The revision of the document shall contain suggestions of the Restaura project partners to ensure the best possible technical properties of the solution.*
- #5 *In the designing, building, testing, deploying and implementation phase no further changes shall be made.*

0.4 BASIS OF THIS DOCUMENT

- #1 *This document is based on users' definitions of web-tool requirements.*
- #2 *It's extended with the author's suggestions based on practical experience with similar programs and with theoretical principles for software development.*

0.6 SPECIFIC DESIGN CONSIDERATIONS

- #1 *Specifics regarding design of the web-based tool are considered by user requirements.*
- #2 *Specifics regarding the type and amount of the users are also considered by user requirements.*
- #3 *Specifics regarding different countries participating this project such as multi-language support and different legislatives shall be considered.*

1 INTRODUCTION

- #1 *This part of the document describes the general properties of the solution.*
- #2 *The solution must be web-based.*
- #3 *It must use relational database structures for data storing.*
- #4 *The solution must be developed for use on all web browsers with at least 10% market-share.*
- #5 *Maximal security measures for data storing shall be taken.*
- #6 *Maximal security measures for prevention of unauthorized data access shall be taken.*

1.1 PURPOSE

- #1 *This document will be used in solution development and maintaining.*
- #2 *It contains the technical specification that shall be respected by the developer during the development.*
- #3 *To investor the document serves as a list of capabilities that will be provided by the web-tool.*
- #4 *For maintainer it serves as a guide to a better understanding of the architecture and the scope of the solution.*

1.2 SCOPE

- #1 *The scope of this document are to present all integral parts that the solution shall include during the life-cycle of the Restaura project:*
 - a. *products to be produced;*
 - b. *functionalities of the products;*
 - c. *relevant benefits, objectives and goals as precisely as possible;*
 - d. *security risks associated with the system;*
 - e. *consistency with project documentation.*

1.3 DEFINITIONS, ACRONYMS AND ABBREVIATIONS

- #1 *This section defines important terms, acronyms and abbreviations used in this document.*

Project	Restaura: Revitalising Historic Buildings through Public-Private Partnership Schemes (CE339)
PPP	Abbreviation for Public-Private Partnership
User requirements	Document D.T4.2.1: User Requirements for the web-based tool
Technical documentation	All documentation that defines technical aspects of this project, especially this document
WBT	Abbreviation for Web based tool
Component	A part of WBT that is considered as a complete set of functionalities

Solution	Generic name for WBT, the system of the web-tool and the logic of the tool
Investor	Person or institution that is a subscriber of the contract for the WBT development
Developer	The person or institution that is to develop the WBT
End-user	The person that will use the WBT
Supervisor	The person that controls the WBT development and is responsible to check the compliance with technical documentation
GDPR	European General Data Protection Regulation (GDPR) - Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation)

1.4 REFERENCES

#1 *This table contains the list of reference documents of the Project.*

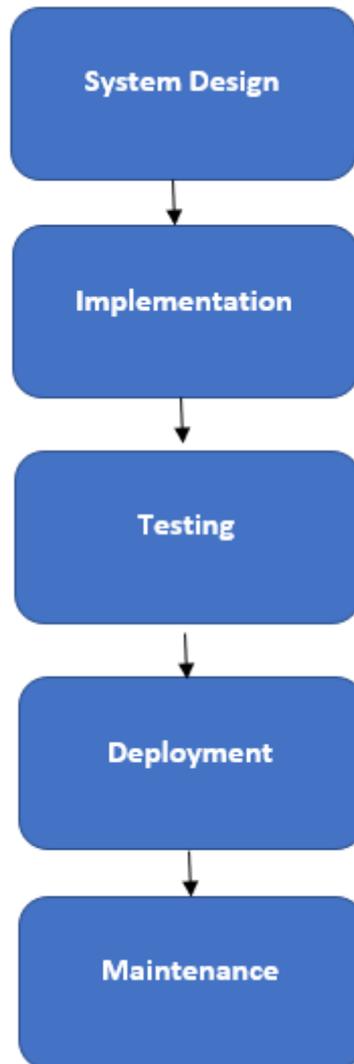
#2 *It should be updated by any changes or revisions of documents stated below.*

Num.	Title (Applicability & Reference)	Author	Date	Issue
Ref1	D.T4.2.1: User Requirements for the web-based tool	Mitja Steinbacher, Matjaž Steinbacher	09/2017	1
Ref2	D.T4.2.1: Technical Documentation for the web-based tool	Ivi Čakš, Hermes	02/2018	1

2 SYSTEM OVERVIEW

#1 *This section introduces the context and design of the system.*

#2 *The diagram below explains the main life-cycle components of the WBT:*



2.1 SYSTEM CHARACTERISTICS

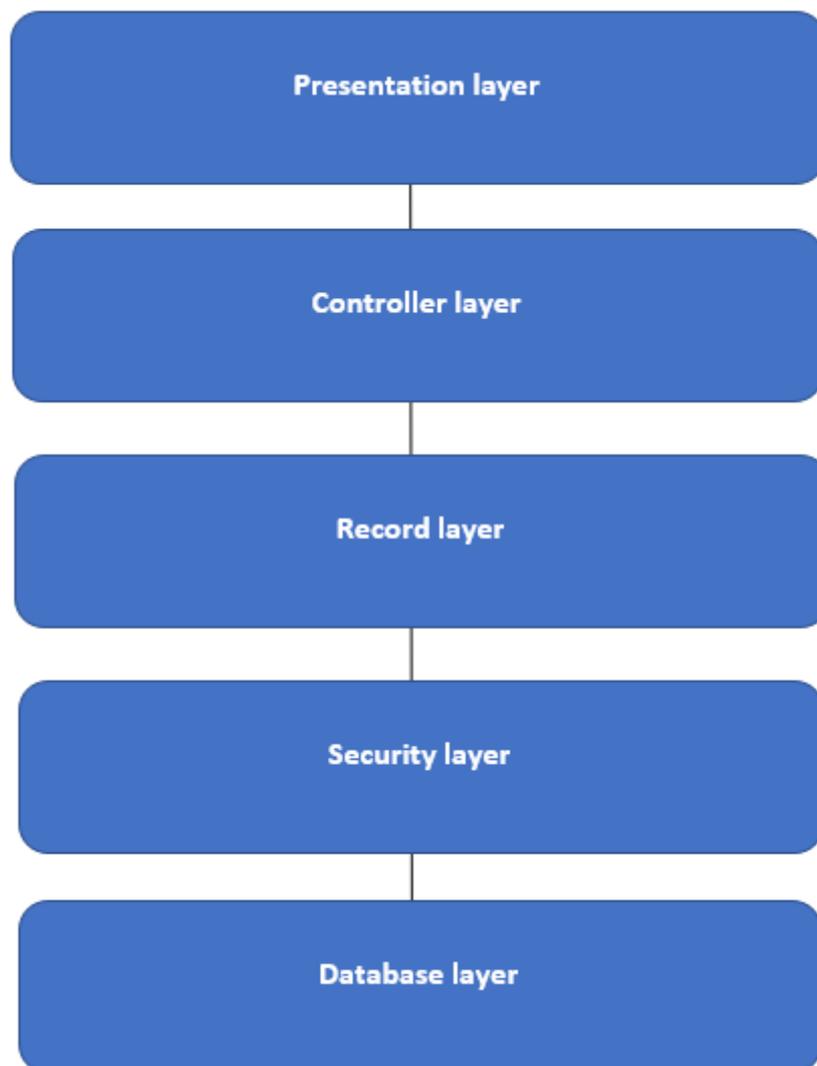
#1 *Systems characteristics are described upon the formal demands of the Project. Additional focus of characteristics is given by the Survey analysis contained in User requirements for the web-based tool:*

- *to operate in real-time with no expected extra-traffic time periods*
- *classical web tool with specific group of users*
- *number of concurrent users is not expected to be very high*
- *most important attributes are:*
 - *functionality*
 - *accuracy*

- *user friendliness*
- *security features to protect data*
- *scaleability and maintainance (future)*
- *divided into an open part (for all users) and a close part (for registered users only)*
- *search engine (PPP legislation), information about PPP projects, monitoring of PPP during reporting period and implementaiton*
- *guidelines to access PPP projects*
- *back-up facilities to protect important data.*

2.2 SYSTEM ARCHITECTURE

#1 *The architecture of the system is explained in the scheme below:*



-
- #2 *The database layer stores data. It consists of relational database that contains all the data from the system and other components such as different types of files in the file-system.*
 - #3 *Security layer ensures access control to the specific data that investor specifies. It also serves as the GDPR to ensure prevention of personal data abuse.*
 - #4 *Record layer contains classes that contain data only. It's not intended to have any functional methods.*
 - #5 *Controller layer responds to events and invokes data changes or database searches.*
 - #6 *Presentation layer displays forms, controls, images, documents and reports. It serves as an end-user connection with the system and creates the user-experience.*

2.3 INFRASTRUCTURE SERVICES

- #1 *The Infrastructure shall allow only an authorized access to the system.*
- #2 *It shall provide the following functionalities:*
 - a. *Security – strong user name/password policy*
 - b. *Audit – auditing of user access and data access*
 - c. *Logging – automatically creating change-log for all data*

3 SYSTEM CONTEXT

- #1 *The whole system is constructed as a web solution with different types of access:*
 - a. *System administrator – inserts crucial information such as information about users*
 - b. *Local administrator – can perform CRUD operations on single PPP projects*
 - c. *Registered user – can access more detailed information about PPP projects*
 - d. *Unregistered user – can access common information about projects, PPP legislation etc.*
- #2 *The system consists of its own data and links to other data sources (data files, web pages...).*
- #3 *The solution must be created using common components that can be used on wide set of web browsers.*

4 SYSTEM DESIGN

- #1 *System will be designed following the traditional waterfall method.*
- #2 *All the documentation that is created during the system design shall be added to this document. The list of additional documents is provided in Chapter 11 of this document.*

4.1 DESIGN METHOD AND STANDARDS

- #1 *The decision about the design method and design standards is left to the developer.*
- #2 *The selected method and standards shall be strictly implemented during the development cycle.*
- #3 *The implementation of methods and standards shall provide consistency to the system and guarantee scalable and maintainable usage with possibility to further development of the solution (if necessary).*

4.2 DOCUMENTATION STANDARDS

- #1 *The developer can propose an own documentation standard.*
- #2 *If developer proposes no standard, a commonly accepted documentation standards must be used.*
- #3 *A brief description of documentation standard should be included in chapter 11.*

4.3 NAMING CONVENTIONS

- #1 *Developer is obliged to use a naming convention (consistent) for all the objects and elements of the solution.*
- #2 *The naming convention should shall be appended as a part of the technical documentation together with the solution and has to be reviewed by the investor.*

4.4 PROGRAMMING STANDARDS

- #1 *Programming standards of the developer shall follow commonly accepted good practices for the development of the software.*
- #2 *Programming standards need not be documented in the technical documentation of the solution.*

4.5 SOFTWARE DEVELOPMENT TOOLS

- #1 *The decision about software development tools is completely up to the developer. Investor has no particular preferences in this respect as long as development tools enable a full functionality of the web-tool according to main user requirements (User Requirements for the Web-based Tool).*

4.6 OUTSTANDING ISSUES

- #1 *Outstanding issues in this document are any unresolved issues about the web-based tool that are covered by the Technical documentation for the web-based tool.*
- #2 *Unresolved issues are designated by the TBD (to-be-defined)*
- #3 *In all versions of all subordinate documents to this document the same documenting standard shall be used.*
- #4 *By default, a final version of any document shall not be designated by TBD.*
- #5 *If for some reason TBD's are included in final version of the document, the way of resolving these issues shall be provided.*

4.7 DECOMPOSITION DESCRIPTION

- #1 *The solution has to be separated into parts. The scheme of the parts:*



- #2 *Each part of the solution can be a single module or can be merged with any other part.*
- #3 *The intra-modular communication shall not impact responsiveness or capacities of the system.*

5 IMPLEMENTATION

- #1 *The implementation process should be described in a document **Implementation plan for a web-based tool**.*
- #2 *This document should contain at least the following parts:*
- *The description of steps needed for implementation*
 - *Persons responsible for providing each step*
 - *The exact time-table of the implementation*
- #3 *This document is to be added to the table in Chapter 11.*

6 TESTING

- #1 *The testing-scheme of the web-tool shall be described in a document **Testing-scheme for a web-based tool**.*
- #2 *The testing scheme document shall contain at least the following parts:*
- *The testing protocol (who/what/how)*
 - *The testing patterns*
 - *The testing results*
- #3 *The testing scheme document is to be added to Table in Chapter 11.*

7 DEPLOYMENT

- #1 *The deployment process shall be described in a document **Deployment of a web-based tool**.*
- #2 *This document shall guide through the deployment process.*
- #3 *This document is optional. The investor decides about the way of deployment and the need for this kind of document.*
- #4 *If prepared, this document is to be added to the Table in Chapter 11.*

8 MAINTENANCE

- #1 *The maintenance of the solution is to be discussed by the investor and the developer.*
- #2 *All maintenance documents are to be added to the Table in Chapter 11.*

9 COMPONENTS DESCRIPTION

- #3 *The components from decomposition description are to be produced in one piece or divided into submodules.*
- #4 *The division into components is not made by the hierarchy.*
- #5 *Data structure definitions should be made by the developer to achieve the goals of the component implementation.*

9.1 WEB PAGE

- #1 *The web page is intended to be the entry portal for each user regardless of the type or place in the users' hierarchy.*
- #2 *It shall display the common data regarding PPP's, special data regarding Restaura project, links to other sources.*
- #3 *It should also contain entry to registered-users' area.*

9.1.1 Type

- #1 *Developer proposes the template for page design.*
- #2 *The template must be confirmed by the investor.*

9.1.2 Purpose

- #1 *The purpose of the web-component is to meet user requirements stated in the User Requirements document.*
- #2 *It also serves as a work-framework that can be used by other components*

9.1.3 Function

- #1 *Common user requirements are described in the document User requirements for the web-based tool.*
- #2 *Investor can specify special requirements for this component and-or the look-and-feel interface.*

9.1.4 Subordinates

- #1 *All other components of the final solution are subordinates to the web-tool component.*

9.1.5 Data

- #1 *The component does not have its own data.*

9.2 SYSTEM ADMINISTRATION

- #1 *System administration is intended only for user(s) with the system administration rights.*

9.2.1 Type

- #1 *Component must have a common user interface.*
- #2 *Look-and-feel of the component must follow the designing standards of the solution.*

9.2.2 Purpose

- #1 *The purpose of the component is to administrate users, roles and country specifics that are included in the solution.*

9.2.3 Function

- #1 *Typical CRUI operations on data which are needed to administrate the system.*
- #2 *Investor can specify special requirements or business rules for this group of data.*

9.2.4 Subordinates

- #1 *No other component is directly subordinate to 9.2.*
- #2 *Components 9.3 and 9.4 are indirectly subordinated to 9.2. They implement system settings created by this component.*

9.2.5 Data

- #1 *The data component deals with data tables which contain information about users, roles, countries and user-rights.*
- #2 *Special care has to be taken about the personal-data handling and use.*
- #3 *A list of data that is marked as personal and the regime of handling them has to be documented separately.*

9.3 PROJECT ADMINISTRATION

- #1 *Project administration is intended for users with project administrator rights.*

9.3.1 Type

- #1 *Component must have a common user interface.*
- #2 *Look-and-feel of the component must follow the designing standards of the whole solution.*

9.3.2 Purpose

- #1 *The purpose of a component is to administrate the data of projects such as project name, timeline, value, description, status and other data.*
- #2 *Additional purposes for this component shall be specified by the investor.*

9.3.3 Function

- #1 *Typical CRUI operations on data which is needed to administrate projects.*
- #2 *Investor can specify special business rules that describe which attributes of the project can be visible to a certain role.*
- #3 *Functionality of attaching different documents to projects to describe them more in details shall be performed.*

9.3.4 Subordinates

- #1 *No other component is directly subordinate to 9.3.*
- #2 *Component 9.4 is indirectly subordinate to 9.3. It implements projects settings created by this component.*

9.3.5 Data

- #1 *The component deals with data-tables which contain information about projects and documents attached.*
- #2 *Additionally, the data component uses data about users, roles, countries and user-rights.*
- #3 *Special care has to be taken about personal-data usage.*
- #4 *A list of data that is marked as personal and the regime of handling them has to be documented separately.*

9.4 PROJECT-GRID

- #1 *Project-grid is intended for every user to list available projects and to see their details and documents attached.*
- #2 *It should be available for registered users only.*

9.4.1 Type

- #1 *Component must have a common user interface. Data should be reachable with as few clicks as possible.*
- #2 *Look-and-feel of the component must follow the designing standards of the whole solution.*

9.4.2 Purpose

- #1 *The purpose of a component is to list the available projects and to see their details and documents attached.*
- #2 *With a single click every document attached shall be opened with its default programme.*
- #3 *Additional purposes for this component may be specified by investor.*

9.4.3 Function

- #1 *Typical grid with functionalities of browsing, searching and filtering data.*
- #2 *Investor can specify special business rules that describe which attributes of the project can be visible to a certain user or role.*

9.4.4 Subordinates

- #1 *No other component is directly or indirectly subordinate to 9.4.*

9.4.5 Data

- #1 *The component deals with data-tables which contain information about projects and documents attached.*
- #2 *Additionally, it uses data about users, roles, countries and user-rights.*

DOCUMENT CONTROL

Title: Technical documentation for the web-based tool
Issue: Issue 1 / Draft 1
Date: 31.01.2018
Author: Ivi Čakš
Filename: Technical documentation for the web-based tool
Control: Reissue as complete document only

DOCUMENT SIGNOFF

Nature of Signoff	Person	Signature	Date	Role
Author	Ivi Čakš			
Reviewer	Mitja Steinbacher			

DOCUMENT CHANGE RECORD

Date	Version	Author	Change Details
31.01.2018	Issue 1 Draft 1		First complete draft
23.02.2018	Issue 1 Draft 2	Mitja Steinbacher	Language corrections