SOFTWARE DEVELOPMENT PLAN

eVET (ONLINE VOCATIONAL EDUCATION AND TRAINING PLATFORM)

Project Number | 2017-1-TR01-KA202-046541

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### Project Coordinator

**The Governorship of Istanbul**  
**GOI**

### Partners

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<th>Bogazici University (BOUN)</th>
<th>Euregio-Berufsbildung e.V. (EBEV)</th>
<th>Universita Degli Studi Guglielmo Marconi – Telematica (MARCONI)</th>
<th>Ortaköy Zubeyde Hanim Mesleki ve Teknik Anadolu Lisesi (OZHMTAL)</th>
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1. Identification

This document amplifies the software development plan of eVET Platform- Online Vocational Education and Training Platform (2017-1-TR01-KA202-046541), on which VET providers (VET schools, workplaces, governmental organizations) can connect and collaboratively develop KA1 VET projects.

1.1 Document overview

This document contains the software development plan of software eVET - Online Vocational Education and Training Platform. In the first part of the document, the aim of this document, the abbreviations, the glossary, and necessary references will be explained. In the second part of the document, software development activities will be clarified under three main titles; software development process, software development tools, and software development rules and standards. In the third part of the document, development process phases will explained. Finally, in part four, responsibilities will be listed.

1.2 Abbreviations and Glossary

1.2.1 Abbreviations

eVET: Online Vocational Education and Training
SRS: System Requirement Specifications
SDP: Software Development Plan
UDD: User Documentation Description
SDD: Software Design Description
SIDD: Software Interface Design Description
SDF: Software Development File
SCR: Source Code Record
EOCR: Executable Object Code Record
SUR: Software Usability Report
2. Software Development Activities

The section lists and describes the software development activities of eVET software development project.

2.1 Software development process

The software development process chosen for the project is the waterfall. Waterfall methodology follows a sequential, linear process and is the most popular version of the systems development life cycle (SDLC) for software engineering and IT projects. Once one of the eight stages are complete, the development team moves onto the next step. Waterfall is best used for simple, unchanging projects. Its linear, rigid nature makes it easy to use and allows for in-depth documentation. Waterfall methodology has been chosen for this project because it is easy to use and manage. Thus, every phase in Waterfall has a start and end point, and it’s easy to share progress with stakeholders and customers. Finally, Waterfall requires documentation for every phase, resulting in better understanding of the logic behind the code and tests.

2.1.1 Overview of process phases

The lifecycle of the software development project is as follows:

1. Analysis
2. Design
3. Development
4. Test and Delivery
5. Maintenance
2.1.2 Phases details

- **Phase 1: Analysis.** The first phase involves understanding what need to be design and what is its function, purpose etc. Here, the specifications of the input and output or the final product are studied and marked.

- **Phase 2: Design.** The design specifications created in this phase are used in the coding phase to actually write the code. The requirements are studied and evaluated, and the design of the system is prepared. The team’s goal is to understand what actions need to be taken and what they should look like.

- **Phase 3: Development.** The actual coding of the software begins. Any flowcharts or algorithms created in the design phase are translated into a programming language.

- **Phase 4: Test and Delivery.** Once the code is complete, the software needs to be tested for any errors. When the testing is finished, the software is delivered to the customer.

- **Phase 5: Maintenance.** Once customers have been using the software in the real world, they may find additional problems. The development team will need to resolve, change, or modify the software to continue to be effective.

2.1.3 End of phases reviews

The phases of the lifecycle will be ended by following reviews:

- Software specification: software specification review,
- Software detailed design: software detailed design review,
- Software integration: integration test review,

2.1.4 Technical documentation

The following documentation is produced during the design phases:

- Software specification: SRS, SDP
- Software detailed conception: updated SRS, SDD, SIDD
- Coding and unit tests: SUR

2.1.5 Deliverables

The following items are delivered at the end of the process:
- Technical documentation,
- User documentation: user guide, administration procedures and installation procedure,
- Software and its configuration files.

2.2 Software development tools

2.2.1 Workstation

A mobile workstation which has following specifications will be used:

- Intel Core i7 2.4 Ghz+ CPU
- 8 GB RAM
- 250 GB SSD Storage
- 20 Mbps+ internet connection

2.2.2 Development Environment

A fully virtualized private server which has following specifications will be used:

- 2 GB RAM
- 40 GB SSD Storage
- 2.00 Ghz x 2 Cores CPU
- 100 Mbps internet connection
- Centos 7 OS
- PHP 7
- MariaDB 5.5
- Apache 2.4

2.2.3 Production Environment

A fully virtualized private server which has following specifications will be used:

- 2 GB RAM
- 40 GB SSD Storage
- 2.00 Ghz x 2 Cores CPU
- 100 Mbps internet connection
- Centos 7 OS
• PHP 7
• MariaDB 5.5
• Apache 2.4

2.2.4 Requirements management and documentation

Necessary updates will be performed for requirements management.

2.2.5 Software Design

Tools used for software design:
• Microsoft Visio
• MySQL Workbench
• phpMyAdmin

2.2.6 Coding and automated tests

Tools used for coding and automated tests.
• PHPStorm for coding
• Travis CI for automated tests

2.2.7 Configuration management

Tools used for configuration management and bugs management:
• Github will be used for version control and issue tracking

2.2.8 Obsolescence management

Obsolescence of software development tools will be:
• updated when a new version comes up

2.3 Software development rules and standards

2.3.1 Coding Standards

2.3.2 PHPDoc

Below is an example of a valid documentation block. Note that the `@param` attribute is followed by two spaces, the argument type, two more spaces, and finally the variable name:

```php
/**
 * Register a binding with the container.
 * @param  string|array  $abstract
 * @param  \Closure|string|null  $concrete
 * @param  bool  $shared
 * @return void
 */
public function bind($abstract, $concrete = null, $shared = false)
{
    //
}
```

3. Development Process Phases

Work Breakdown structure of the project can be observed in the following Gantt Chart. System Development Life Cycle will be used for this project. Traditional waterfall approach will be applied. The main development phases of eVET platform can be listed as follows:

1. Analysis
2. Design
3. Development
4. Test and Delivery
5. Maintenance

3.1 Software Specifications

3.1.1 Input data

- Internet Research of Related Platforms
• Interview with VET Schools
• Interview with Workplaces

3.1.2 Content

Functional, performance and safety requirements, and interfaces are given in SRS_Evet document. User documentation is given in UDD_Evet document.

3.1.3 Output data

Output data will be:

• SRS: Software Requirement Analysis
• SDP: Software Development Plan
• UDD: User Documentation Description
• SDD: Software Design Description
• SIDD: Software Interface Design Description
• SDF: Software Development File
• SCR: Source Code Record
• EOCR: Executable Object Code Record
• SUR: Software Usability Report

3.1.4 Review and acceptance criteria

This phase ends with a software specifications review:

• Participants: All partners
• Data reviewed: All documents

The results of this phase shall be verified with the following criteria:

• Requirements traceability
• Coherence with external systems
• Internal coherence
• Testability
4. Responsibilities

Responsibilities for the activities are given below.

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<th>Activity</th>
<th>Document</th>
<th>Responsibility</th>
<th>Staff</th>
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<td>Project management</td>
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<td>A. Murat Ugur</td>
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<td>Software specifications</td>
<td>SRS</td>
<td>Bogazici University and The Government of Istanbul</td>
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| Software Testing | SUR  | Marconi University | Monica Fasciani  
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| User Documentation | UDD  | Bogazici University and The Government of Istanbul | Birgul Kutlu Bayraktar  
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