



EDTNA/ERCA ENVIRONMENTAL CHECKLIST FINAL PROJECT VALIDATION REPORT

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Validation conducted by:

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1.0. Introduction

The main objectives of this validation report is to validate that the development of the Environmental Checklist application meets the specifications and user functional requirements. One of the main outputs of the functional testing, besides this report, has been defined as preparation for the usage scenarios and as validation for case study for the usability tests. Prototype for acceptance testing by Client was delivered during May, 2021.

1.1. Contact information

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1.2. Objective

The validation objective is an independent assessment of the Environmental Checklist project. Validation will result in a conclusion by EDTNA/ERCA and B. Braun Avitum AG whether the project activity is compliant with the common standards for project of this size and purpose.

1.3. Project description

The EDTNA/ERCA Environmental checklist is a web-based application for renal care centers. The aim of this web-based application is to evaluate renal care centers own environmental performance and seek areas for potential self-improvement. The Environmental checklist consists of 40 questions from 5 different areas:

1. Media consumption
2. Use of chemical substances and mixtures
3. Waste management
4. Clinical procedures and technology
5. Non-clinical procedures and technology

1.4. Project specifications

Logic of evaluation: each user of the Environmental Checklist application must fill all 40 questions to enable the evaluation. Each question has 3 possible answers:

1. Yes
2. No
3. I don't know

If the answer is "Yes", user gets 1 point; if the answer is "No" or "I don't know", user gets 0 points. All questions from all 5 areas have the same value (and two states) - maximum is 1 point, minimum is 0 points for each question.

Method of evaluation: after answering all 40 questions, the checklist evaluation will be available. There are 4 states of results:

- | | |
|-----------------|-------------------------------------|
| 1. 0-19 points | big room for improvement |
| 2. 20-25 points | average environmental performance |
| 3. 26-33 points | good environmental performance |
| 4. 34-40 points | excellent environmental performance |

For each state, the user gets the list of hints with room for improvement - for all questions answered "No" or "I don't know".

For states No. 3. (good environmental performance) and No. 4. (excellent environmental

performance) there is a possibility to fill in two fields:

1. Workplace
2. City, Country

and then generate and download EDTNA/ERCA Environmental Checklist certificate in PDF.

1.5. Other Requirements

The main other requirement is to run the Environmental Checklist application as part of the main EDTNA/ERCA association website.

1.6. Used development tools

Whole web-based application is developed and implemented in Angular (frontend) - Typescript based open-source web application framework - and in Java (backend). Angular framework and Java are free of charge. No other third party applications (paid and unpaid) are used for this project. There is no database used in this project.

1.7. Safety, security, privacy protection

Environmental Checklist application is anonymous and publicly accessible to everyone around the world. The application does not collect any personal or other data (because there is no database in this project). The application uses security cookie only to disable users and internet robots filling the checklist repeatedly again and again (Checklist can be filled again each 30 minutes from one browser).

After generating the PDF certificate, all data are forgotten.

The application has own SSL certificate (HTTPS) to secure all communication.

1.8. Application hosting

The Environmental Checklist application is hosted on servers owned by Trilobite Technologies, s.r.o. These servers are connected to backbone network and they are located in secured datacenters in Prague, Czech Republic.

1.9. Maintenance

JEE Application server for hosting of the Java based applications (ECL) is continuously updated to the last stable version due to security patches and vulnerabilities.

No additional maintenance is needed for this project, all source codes are owned by Trilobite Technologies, s.r.o.

2.0. Testing

Organization and implementation of all testing was set up separately from the development team to test functionalities and also to simulate end users of the Evinronmental Checklist application.

2.1. Testers

UNIT testings, system and integration testing, GUI testing:

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Acceptance testing:

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2.2. Testing types

Unit testing: is the process of validation of small pieces of code to ensure that the individual

parts of a program work properly on their own, speeding up testing strategies and reducing number of wasted tests.

System testing: the entire system is tested as per the requirements. It is a Black-box type Testing that is based on overall requirement specifications and covers all the combined parts of a system.

Integration testing: ensures that an entire integrated system meets the set of requirements. It is performed in an integrated hardware and software environment to ensure that the entire system functions properly.

GUI testing: The objective of this testing is to validate the GUI as per the business requirement. The expected GUI of the application is mentioned in the Detailed Design Document and GUI mockup screens.

The GUI Testing includes the size of the buttons and input fields present on the screen, alignment of all text, tables, and content in the tables.

Regression testing: is performed to determine if code modifications break an application or consume resources.

Acceptance testing: is performed by the client and verifies whether the end to end flow of the system is as per the business requirements and if it is as per the needs of the end-user. Client accepts the software only when all the features and functionalities work as expected.

2.3. Testing results

All of the tests were considered successful and all of the features were functioning well. The test effort is focused on finding and identifying ill-working details. It is not within the scope of this report to present in detail the features that passed the tests and were considered successfully implemented.

3.0. Conclusion

Environmental Checklist application is:

Compliant

Compliant with reserves

Non-compliant

Compliant: recorded results are compliant and anomalies are closed. Residual anomalies don't impair the conformity of the computerized system or of the process.

Compliant with reserves: one or more recorded results are not compliant but the computerized system can be put in service with workaround solutions. Provided that workaround solutions are effective, residual anomalies don't impair the conformity of the computerized system or of the process.

Non-Compliant: one or more recorded results are not compliant. Residual anomalies may impair the conformity of the computerized system or of the process

4.0. Enlargement, help

If there will be requirements in the future to expand or modify the application, there are limited editing options available due the project specifications and missing database. All future requirements needs to be discussed with the supplier.