Project title: "Recognition of professional qualifications for the purposes of transfer on the European labor market" Project number: 2015-1-PL01-KA202-016632

IT tool
for comparison of competence requirements for the professions of electrician and motor vehicle mechanic
REPORT

Prepared by:
Wyższa Szkoła Ekonomiczno-Społeczna (High Economic and Social School) in Ostrołęka (Poland)
Instytut Technologii i Eksploatacji Państwowy Instytut Badawczy (Institute for Sustainable Technologies. National Research Institute) in Radom (Poland)
Agencja Rozwoju Regionalnego Spółka z o.o. (Regional Development Agency Ltd.) in Ostrołęka (Poland)
Handwerkskammer Erfurt (Germany)
Associação Intercultural Amigos da Mobilidade (Portugal)

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1. PURPOSE AND SCOPE OF THE WORKS

General purpose: development of an interactive IT platform supporting the management and development of human resources, i.a. supporting the processes of creation, update and evaluation of descriptions of professional competences in order to build and improve the quality of the programme offer in the professions of electrician and motor vehicle mechanic in Germany, Poland and Portugal.

The point of reference for the creation of the ICT tool were the results of research works under the project "Recognition of professional qualifications for the purposes of transfer on the European labor market"[1] and in particular the *Model of recognition of professional qualifications for the purposes of their transfer on the European labor market in Germany, Poland, Portugal (Fig. 1).*

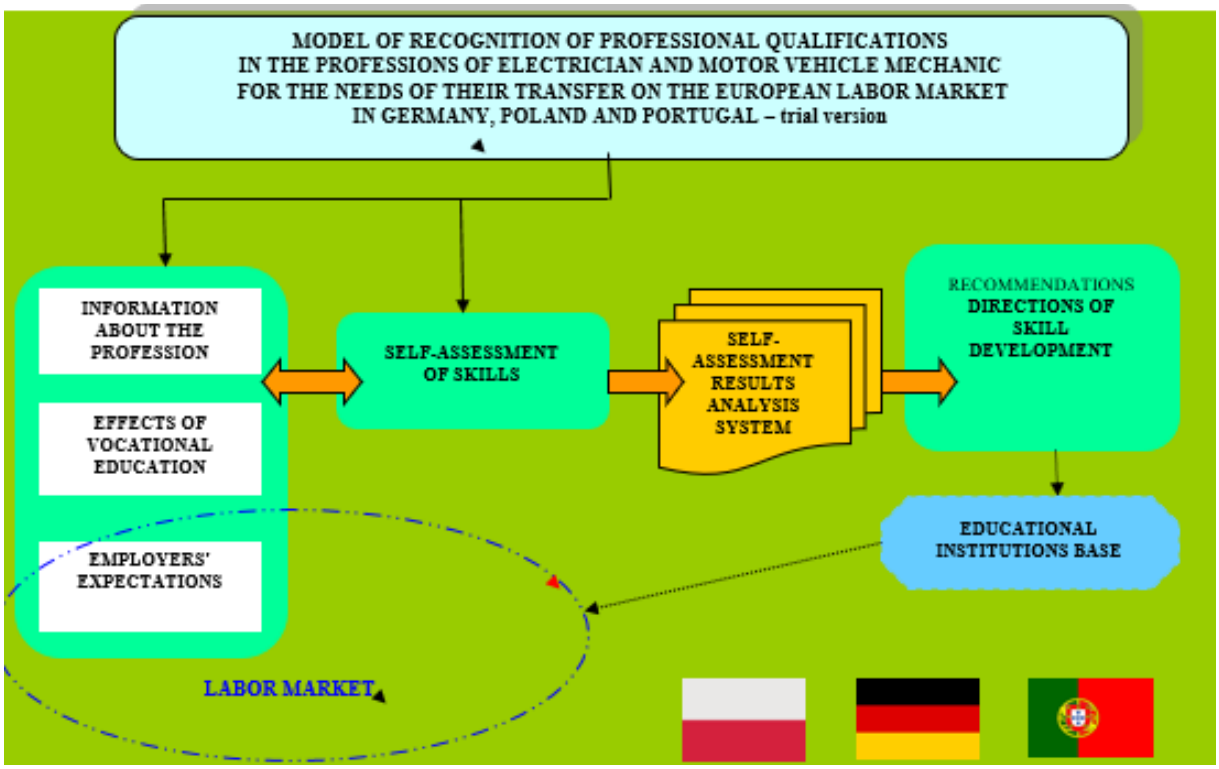

Fig. 1. The model of recognition of professional qualifications in the professions of electrician and motor vehicle mechanic for the purpose of their transfer on the European labor market in Poland, Germany and Portugal, in graphic form
Source: Own elaboration

[1] Erasmus Project concerning Recognition of professional qualifications for the purposes of transfer on the European labor market", transVETjob, implemented through the partnership of the following institutions: High Economic and Social School in Ostrołęka, Institute for Sustainable Technologies. National Research Institute in Radom, Regional Development Agency Ltd. in Ostrołęka, Handwerkskammer Erfurt, Germany, Associação Intercultural Amigos da Mobilidade, Barcelon, Portugal, 2015-2018

ICT Tool - result 10 of the above mentioned project addresses the following problems, among others:

- increasing the effectiveness of human resources management,
- increasing the availability of suitable jobs in the professions of electrician and motor vehicle mechanic for both graduates/jobseekers and employees in Poland, Germany and Portugal
- self-assessment of professional competences and identification of vocational education/training needs
- improvement of professional competences of human resources in the professions of electrician and motor vehicle mechanic
- improving the educational and spatial mobility of young people,
- building and improving the quality of the programme offer in the professions of electrician and motor vehicle mechanic in Germany, Poland and Portugal.

The scope of works included the implementation of the following tasks:

- provision and updating the information on the professions of electrician and motor vehicle mechanic,
- analysis of IT solutions available on the market for the development of web applications
- design of a portal with a tool for self-assessment of professional competences
- testing and verification of the developed IT tool.

2. CONDUCTING THE ANALYSIS AND DESIGNING THE IT SYSTEM

On the basis of the conducted analyses of the IT solutions available on the market and the positively evaluated IT systems implemented by ITeE-PIB, conceptual assumptions have been formulated and the design of the IT tool for comparison of competence requirements for professions of electrician and motor vehicle mechanic has been developed. The aim of the designed IT system is to provide a knowledge base concerning the professions of electrician and motor vehicle mechanic in Poland, Germany and Portugal and to enable comparison of employers' expectations in these countries with the level of professional skills of the employees of these professions, after they have carried out a self-assessment of professional skills (Fig. 2).

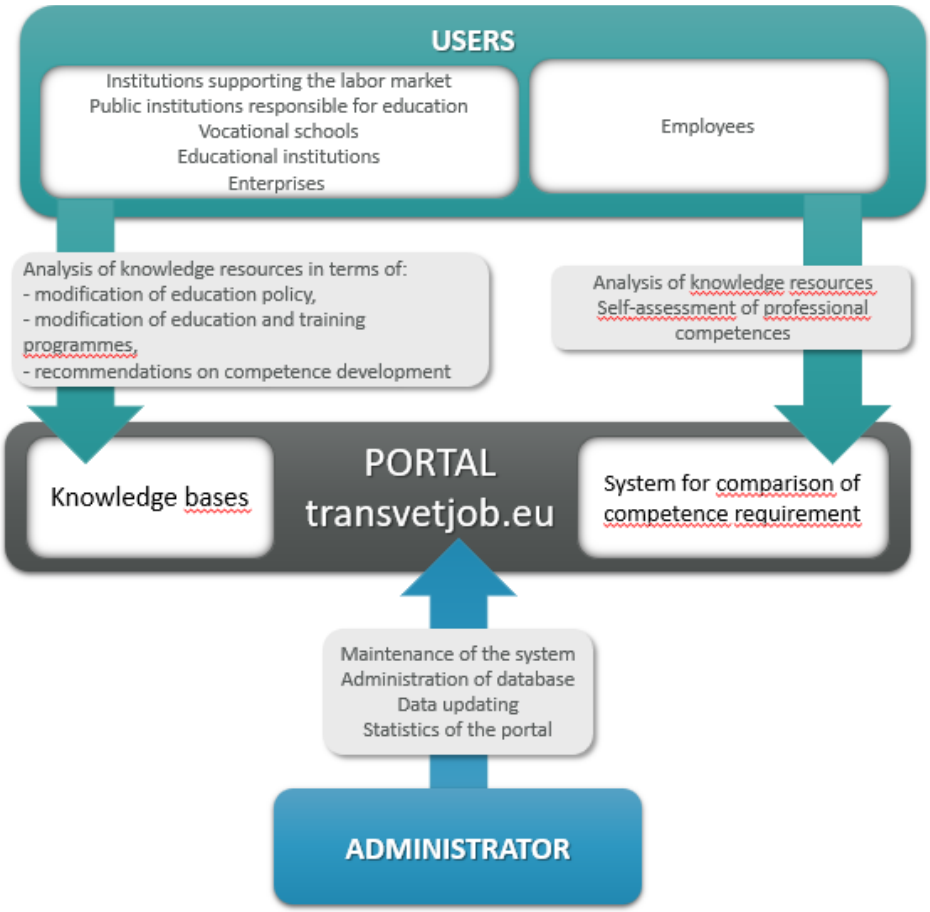

Fig. 2. IT tool design.
Source: Own elaboration

The ICT tool is intended primarily for graduates/people employed or applying for employment in the profession of electrician and motor vehicle mechanic. The portal also serves human resources departments of SME, persons/institutions supporting the labor market, institutions responsible for education, vocational schools, educational institutions (public and non-public), associations, foundations contributing to education of adults interested in using the programmes for vocational education/training, interested in the development of vocational education/training in the above-mentioned professions, shaping the educational policy, modification of the vocational education/training programmes.

It was assumed that the IT system will consist of two parts: a knowledge base of the professions of electrician and mechanic and a system for comparison of competence requirements in the above mentioned professions, which would be developed using scientific and research achievements, and the results of the project "Recognition of professional qualifications for the purposes of transfer on the European labor market".

Assumptions of the knowledge base of professions:

1. gathering and sharing information (knowledge) on:
   - the professions: electrician and motor vehicle mechanic,
   - the project: purpose, results, project partnership,
   - the basic terms adopted in the project and researches;
2. update of information on professions developed in accordance with professional qualification and vocational training standards as well as legislative acts applicable in the given country.
3. multilingualism, knowledge base in 4 languages:
   - in the language versions of the project partners: Polish, German, Portuguese;
   - in English version;
4. development of user statistics.

Assumptions of the system for comparison of competence requirements:

1. gathering and sharing the information on the employers' expectations in the professions of electrician and motor vehicle mechanic in Poland, Germany and Portugal;
2. providing a tool for self-assessment of competences in the professions of electrician and motor vehicle mechanic;
3. graphical presentation of the results of the assessment;
4. supporting multiple users at the same time;
5. multilingualism as for the knowledge base of professions.

3. DEVELOPMENT OF "TRANSVETJOB.EU" PORTAL

The portal has been developed with the use of Joomla! content management system (CMS), written in PHP language and using MySQL database, which allows users to easily publish any content on the Internet. The structure and operation of the platform can be divided into 3 layers (Fig. 3). The first layer of data refers to the server on which the system is installed and the database on which the content is stored. The application layer refers to the main part of the system available from the level of a web browser, in which one can create and manage the content contained in the database, manage additional modules used in the system and manage the graphic presentation of the content in the platform using the administrator panel. The presentation layer is the final view of works connected with management in the application layer, available to users via a web browser at: www.transvetjob.eu.

System functionality:

- administration panel separated from the main page, protected with login and password,
- flexibility and ease of changing the appearance of the platform thanks to templates,
- management of users and access to the content (authorization system),
- advanced content editor in the form of WYSIWYG mechanism,
- a system for managing the installation and operation of additional modules, components and templates,
- support for a multilingual site,
- contact form.

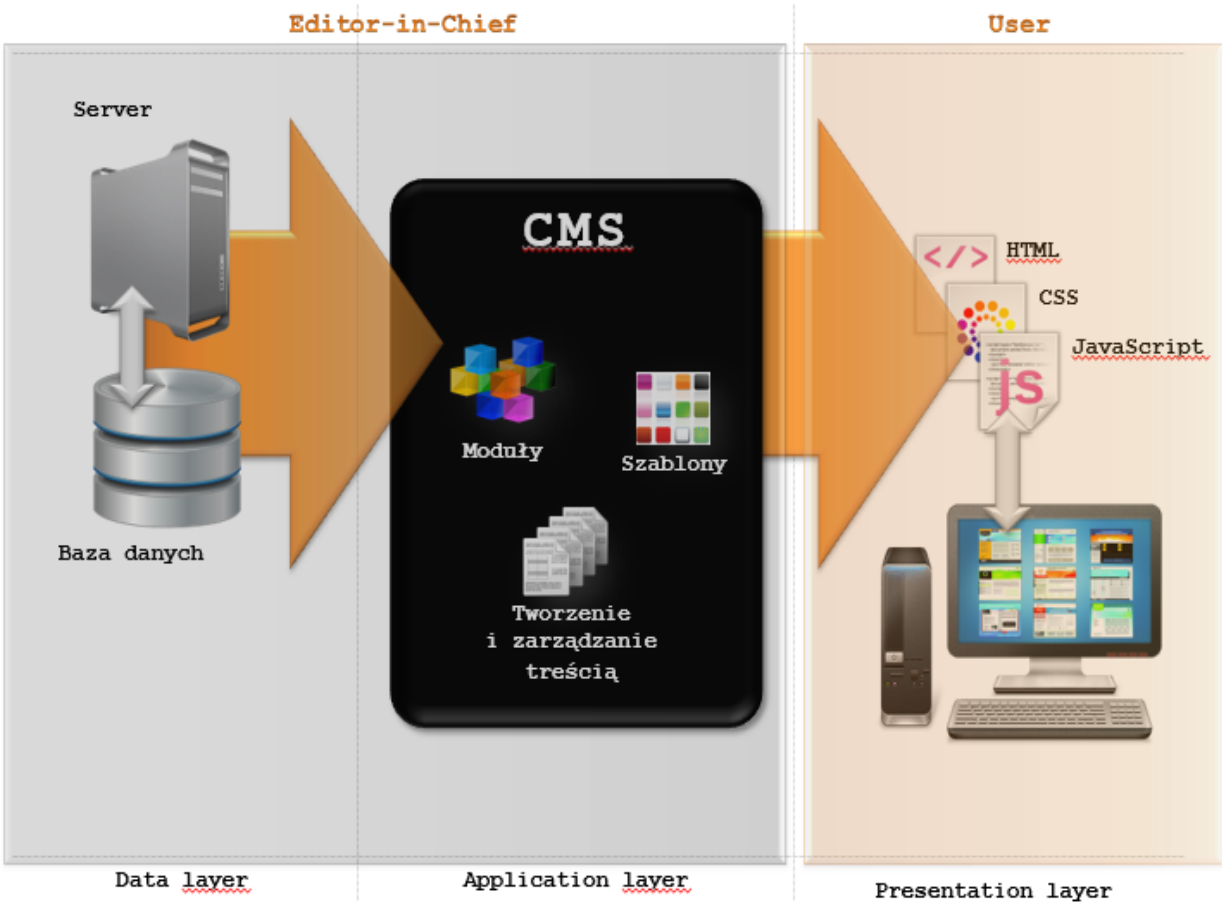

Fig. 3. Portal architecture.
Source: Own elaboration

The platform is managed by an administrator who has an access to the so-called website background through a web browser at a relevant website address. The administrator creates the whole layout of the content and information content:

- creates a menu structure,

- installs modules with additional functionalities,
- using a graphic template of the site, determines when and where different elements are to be displayed on the website, designs the appropriate colors and graphics,
- fills the system in with appropriate content.

Any changes are included in the database and in the structure of files on the server so that changes, after being accepted, can be published in the form of a ready-made website in a web browser available to an external user.

The main structure of the portal consists of 4 main parts:

- flag icons allowing the change of the language (for all sub-pages),
- main menu (for all sub-pages),
- block with main content (different for home page);
- side menu (for all sub-pages, without home page),
- footer (for all sub-pages):
    - quick menu,
    - glossary of basic terms
    - links to partners' websites and Facebook.

On the home page of the portal in the main block there are blocks with slogans encouraging to take advantage of the portal functionality, access to the self-assessment module and two blocks for the professions of electrician and motor vehicle mechanic divided into modules (Fig. 4):

- Information on the profession, i.e. profession name, profession code, EQF qualification level, synthetic description of profession, description of formal education path (including graphics),
- Effects of education in the profession - a database of descriptions of qualifications and education effects for the profession obtained in the formal vocational training system,
- Expectations of employers, which means professional competences expected by the employers in Germany, Poland and Portugal identified as a result of surveys2, the expected personal and social competences and the key competences, typical job positions,

[2] Report entitled *Comparative study of assumed formal education effects for the professions of electrician and automotive technician with the expectations of employers on the labour market in Germany, Poland and Portugal,* High Economic and Social School in Ostrołęka, Institute for Sustainable Technologies. National Research Institute in Radom, Regional Development Agency Ltd. in Ostrołęka, Handwerkskammer Erfurt, Associação Intercultural

- Educational institutions - a list of educational institutions or public Internet portals where professional and social competences as well as the key ones in a profession can be trained/improved.

To build a system for comparison of competence requirements, an additional module compatible with Joomla! content management system has been purchased. The Form Maker module is a tool for creating forms with a user-friendly drag and drop interface that allows easy moving of the form fields ensuring simple management (Fig. 5).

The module allows creating multi-page forms and setting the fields that will be required, preventing the user from sending the form without filling the fields. The Form Maker extension allows you to fully control the transfer of data from the forms. The platform administrator can view and manage all requests, receive statistics and export them in CSV or XML format.

A person who starts self-assessment of their competences evaluates them using a diagnostic questionnaire programmed with the use of the Form Maker module (Fig. 6). The self-assessment questionnaires have been designed in four language versions for both professions: electrician and motor vehicle mechanic. Each survey is divided into 4 parts according to the list of professional, social and key skills. A user completes the form in accordance with the actual state, evaluating his/her skills on a 5-point scale: where "5" means a very good level of mastery of the skill and "1" a very low level of the skill being assessed. When filling in the questionnaire, all boxes have to be checked.

Amigos da Mobilidade, Barcelon, Project Title: "Recognition of vocational qualifications for the purpose of transfer on the European job market"

Fig. 4. Portal home page
Source: Own elaboration

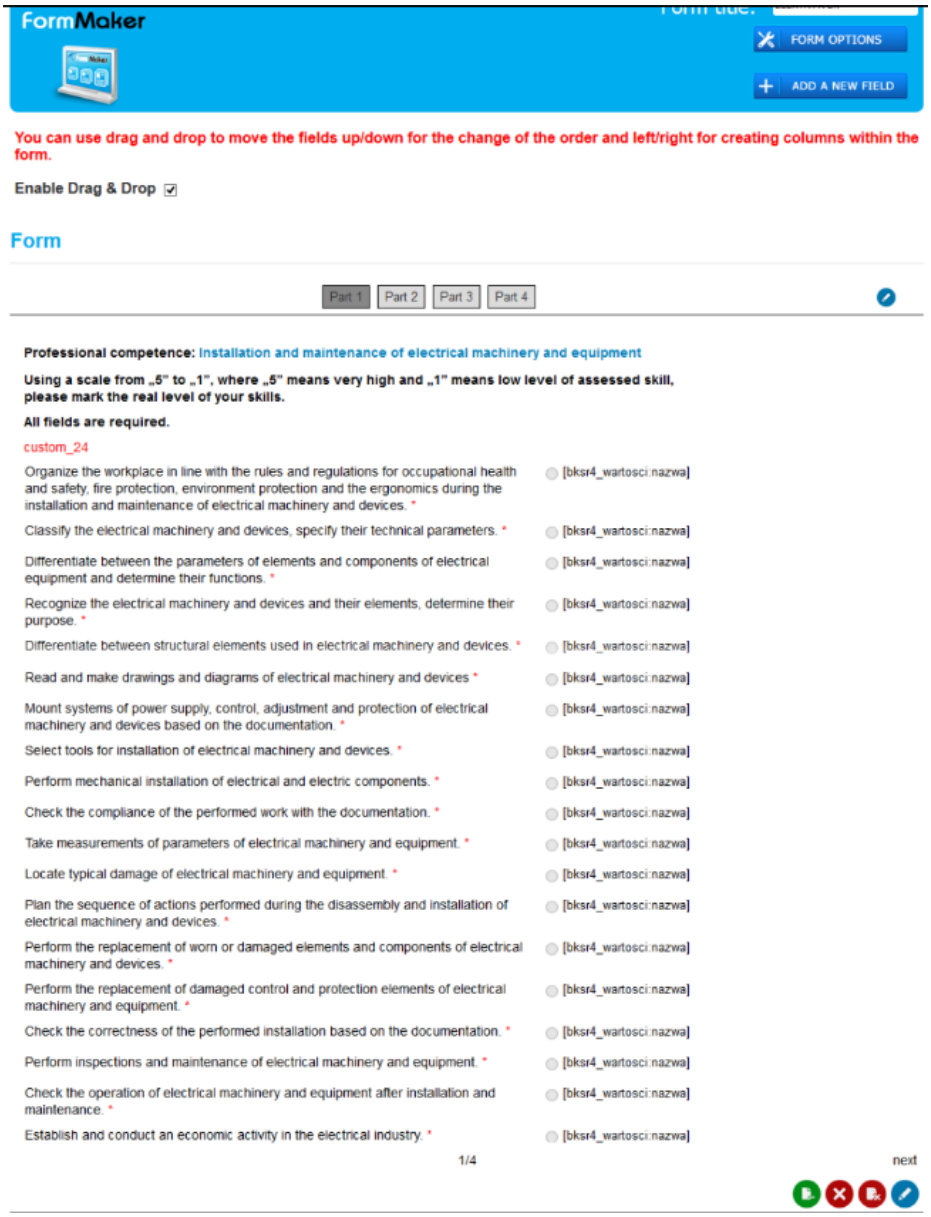

Fig. 5. Edition of the competence self-assessment form for the profession of electrician.
Source: Own elaboration

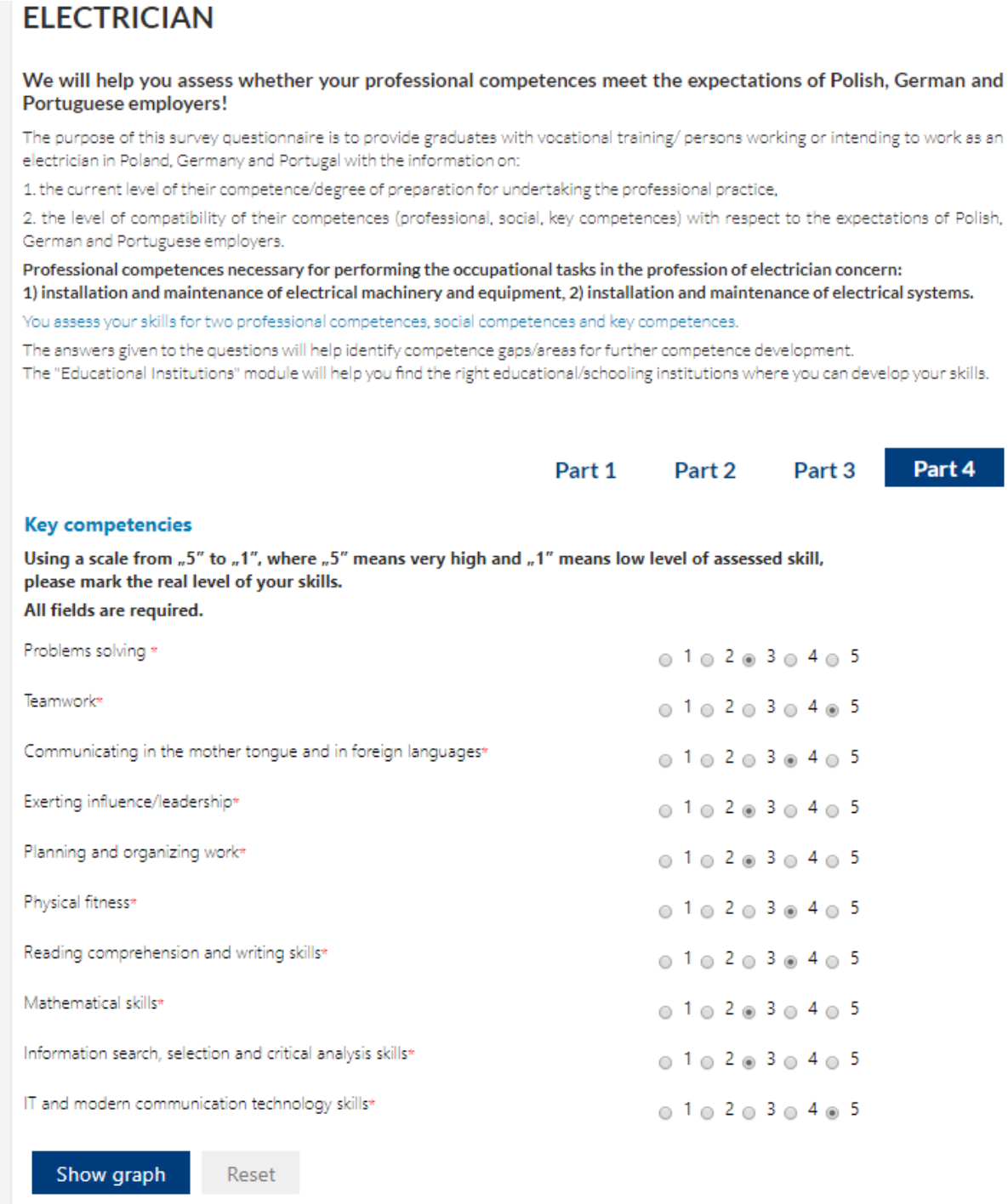

Fig. 6. Fragment of the questionnaire for the profession of electrician.
Source: Own elaboration

Graphical presentation of self-assessment results has been programmed with the use of a free library of RGraph scripts, which uses standard HTML5 elements to create graphs. The library allows creating bar, line and circular graphs which can be combined in order to create different types of graphs in one element (Fig. 7).

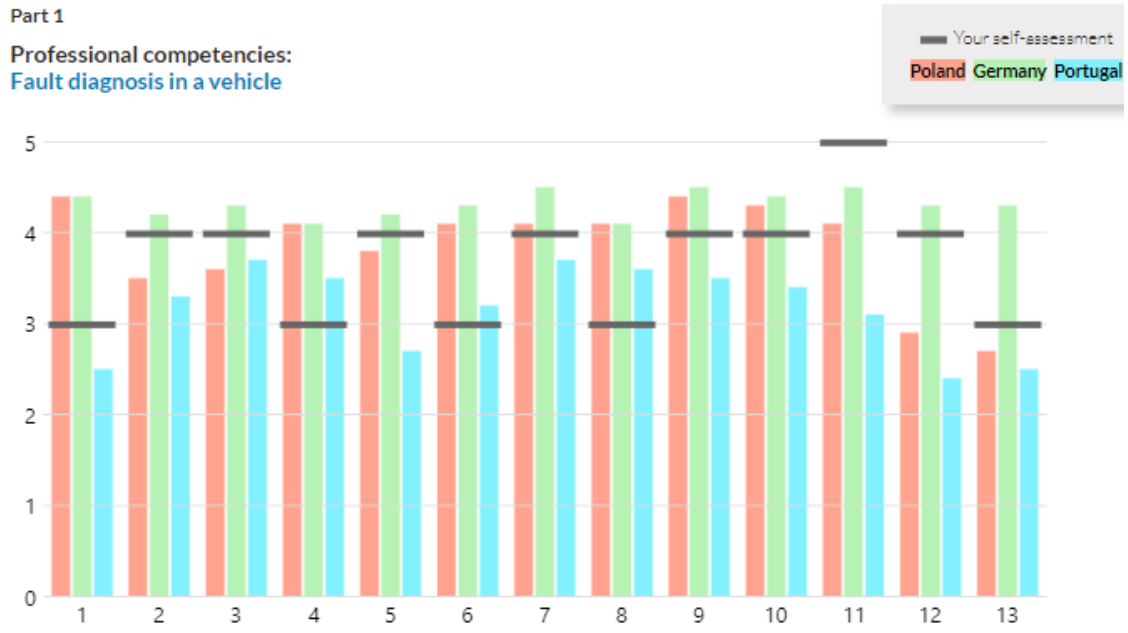

Fig. 7. Fragment of the graphic presentation of the results of self-assessment of a motor vehicle mechanic compared to the expectations of employers.
Source: Own elaboration

After completing the diagnostic questionnaire correctly, the user receives a graphic presentation of the self-assessment carried out. The graphs show the level of self-assessment of professional, social and key competences (black horizontal lines) in relation to the competences expected by Polish, German and Portuguese employers (bar chart). The horizontal scale (digits from 1 to n) means the specific skills the names of which are shown in the legend. Moreover, at the bottom of the screen for self-assessment of competences there is general information for the user, e.g. on the possible need for further vocational training (professional, social or key competences) to meet the expectations of the employer and to get a chance for employment in the selected country. The results of the analysis of the professional competences self-assessment can also be printed out.

4. TESTING AND VERIFICATION OF THE IMPLEMENTED WEB PORTAL

The survey was conducted among the project partners' representatives (13 experts) in the ITeE-PIB Innovation Laboratory in Radom (November 2017) using the "brainstorming" technique. The subject of the research covered i.a. the technical, substantive and visual aspects of the portal.

The experts positively assessed the state of works related to the development of the ICT tool. They submitted minor comments concerning e.g. active hyperlink to the project website, subtitles of the portal pages in Portuguese, adding towns where the institutions cooperating within the project are located to the partnership graph.

The task leader - ITeE-PIB representative has presented for consultation two proposals of graphs showing the level of self-assessment of competences in comparison with the expectations of employers in particular countries. The German partner presented for consideration another proposal of graph showing the level of skills of the person performing self-assessment compared to the expectations of employers in each country separately. The ARR representative proposed adding a message encouraging employers to use the portal to the platform information.

The verification of the ICT tool was carried out in the following areas:

- the visual aspect of the portal
- the access to content in all language versions
- the functionalities of the portal
- the proper functioning of the diagnostic questionnaire and the graphic presentation of results of the self-assessment of professional competences.

5. OPPORTUNITIES FOR FURTHER DEVELOPMENT OF THE ICT TOOL

The IT tool designed, built, tested and verified under the project entitled "Recognition of professional qualifications for the purposes of transfer on the European labor market" may be the basis for developing the ICT tool for other professions or selected labor markets. However, certain conditions have to be met:

Objectives

1. Building and/or updating the Database of professions, conducting analyses and monitoring the trends in the development of the professions, in particular:
   a. analyzing legal regulations in the field of education, vocational training, professional competence standards, certification systems and recognition of professional skills in a given profession,
   b. analyzing the competence gaps of vocational training graduates, employees of enterprises and job-seekers,

c. analyzing the development trends and changes in the economy,
d. analyzing the training/educational needs and their trends,
e. estimating the directions of development of education and training programmes,
f. analyzing regional and national differences within the scope of demand for specific qualifications/training needs (designing and conducting surveys of employers' expectations in specific countries, in specific professions,
g. forecasting the economic migration of graduates in a given profession.

Range

1. Maintenance and development of the www.transVETjob.eu portal created as part of the project entitled *Recognition of professional qualifications for the purposes of transfer on the European labor market* ERASMUS+:
   a. Server maintenance,
   b. Providing access to a high-speed Internet connection,
   c. Safety certificates, personal data administrator,
   d. Providing maintenance service,
   e. Ensuring software development.
2. Promoting and implementing the transVETjob portal among vocational training graduates, employees interested in working abroad, entrepreneurs, labor market institutions, educational institutions, vocational schools:
   a. Conducting promotional campaigns, attracting users,
   b. Conducting events related to the use of the system functionalities,
   c. Supervising the use of the system, providing technical support.
   d. Conducting research and analyses aimed at improving the system functionalities,
3. Conducting a wide promotional campaign of the system for people seeking job both in their home country and abroad.
4. Preparation of reports and analyses.

CONCLUSION

The IT tool for comparison of competence requirements for the professions of electrician and a motor vehicle mechanic serves for transfer of professional competences I the above professions to the European labor market in Germany, Poland and Portugal.

The "transVETjob.eu" IT portal is a link between potential employees and employers. It makes it possible to compare the situation of the above mentioned professions on the Polish, German and Portuguese labor markets, to strengthen the knowledge on the systems of continuing vocational education, the effects of education in the professions and the expectations of employers in individual countries. Self-assessment of professional skills made by people planning to take up employment abroad and, above all, the results of the self-assessment will enable them to make a decision, among others, on adapting their skills to the expectations of employers abroad, through targeted professional development in educational institutions.

The ICT tool supports the educational and spatial mobility of young people and employees, as well as the building and improvement of the quality of the programme offer in the professions of electrician and motor vehicle mechanic in Germany, Poland and Portugal, and facilitates access to jobs in the above mentioned professions both to school graduates and persons seeking job on the Polish, German and Portuguese market.