Rozwój kompetencji/ /kwalifikacji zawodowych

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Development of the competence standard for innovation management – implementation of the new methodological approach[1]

Opracowanie standardu kompetencji zawodowych dla obszaru zarządzania innowacjami – wdrożenie nowego podejścia metodologicznego

Key words: competence, standard of professional competence, innovation, management.

Słowa kluczowe: kompetencje, standard kompetencji zawodowych, innowacja, zarządzanie.

Streszczenie. Prace rozwojowe dotyczące standaryzacji kompetencji zawodowych trwają od lat w krajach Europy i nie tylko. Podejmują je również międzynarodowe zespoły w ramach programu Erasmus+. Artykuł stanowi kontynuację tematyki zainicjowanej przez autorkę w nr 3/2016 niniejszego czasopisma i prezentuje rezultaty prac wdrożeniowych metodyki przygotowanej w ramach projektu *Communicating Professional Competence.* Eksperymentalnym terenem wdrożenia był obszar zawodowy: zarządzanie innowacjami. Opracowano projekt standardu kompetencji zawodowych dla specjalistów pracujących w tym obszarze. Wykorzystano go do opracowania kwestionariusza samooceny kompetencji zawodowych, który testowała pilotażowa grupa przedstawicieli sektora gospodarki, nauki oraz otoczenia biznesu. Artykuł zamykają konkluzje z realizacji tego etapu prac oraz rekomendacje ich wykorzystania na poziomie kraju.

Characteristic of the occupational field of innovation management. In Poland, just like in entire Europe and even world, effective "bridges" between the

[1] Article was developed on the base of the research and development works executed within an international Project ComProCom (no. 2015-1-EL01-KA202-013960); Programme Erasmus Plus, 2015-2017; http://www.comprocom.eu.

world of science and economy are still searched for. It is about the provision of the flow of knowledge from research centres to enterprises and the efficient implementation of innovative solutions (product, process, organisational, marketing innovations). One of the most important obstacles in this process is constituted by the competency gaps both among the researchers/constructors/inventors who do not know how to sell their "products" and employees/employers who do not know where to find and how to finance innovations (organisational, product or technological) for their companies. They shall be supported by specialists (e.g. in commercialisation, innovation, development, etc.), hired both in the R&D institutions and in the innovation support centres, such as technology transfer centres, innovation centres, technology parks, business incubators. The innovation support centres are to improve the science-business relation through supporting the commercialisation processes, connection of scientific and business partners, promotion of innovation, building the awareness and culture of innovation in both communities, as well as education and consultancy within this scope. Competences of the employees of this type of institutions constitute the barrier limiting the effective accomplishment of the above-mentioned purposes and performance of the tasks for which these centres have been appointed [2].

In order to counteract these barriers, there should be defined the competences that must be acquired by a person participating in the innovation management processes – from the moment of generation of new solutions, through their development and implementation, to commercialisation.

The innovation management requires the interdisciplinary competence. In the Polish classification of occupations and specialisations (KZiS) there is no such profession like "innovation manager", no description of the competence standard and no statistics concerning this profession. While writing about the innovation manager, we think rather about the job role then the profession.

The innovation management entails the organisational, research and analytical, advisory tasks, as well as requires great independence and responsibility.

Main areas of activities (and competence) in the field of innovation management include planning of strategic actions (processes of development or implementation of innovations, possible sources of their financing, effective use of the institution's resources) and performing innovation management itself, which means management of the innovation development and implementation processes, commercialisation processes, advisory services, creation of the "culture of innovativeness". Another competence – performance of the innovation-related analyses, understood as the search for and analysis of quantitative and qualitative information and conclusion on its basis – is connected with this. Both performance of this type of analyses, as well as planning of strategic actions or the management of the process of development, implementation or commercialisation of innovations (often originating from various economy sectors, related to various technologies) usually exceed the capacity of one person. That is why the innovation manager should be able to effectively assemble a team, organise and coordinate its work. In turn, support of the process of generating

innovative solutions or indicating alternative methods of innovation use requires the capacity of exceeding the fixed ideas and stereotypes of creativity.

A very important, almost indispensable element in complex, interdisciplinary innovation management processes is constituted by the competences concerning the one's own work organisation and continuous professional development that ensures the validity of knowledge and skills.

The innovation management area should be perceived as the area of "complex" professional activity, of great importance and responsibility towards the society. It entails the necessity of keeping the principles of social life ethics, including the observance of the applicable intellectual property rights or compliance with the concept of responsible research and innovation (RRI).

The innovation manager should be prepared to hold an independent, separate position, as well as to combine the competence of innovation management with other professional duties and tasks, e.g. strategic planning manager [occupation code: 1213], research and development manager [occupation code: 1223], small enterprise manager [occupation code: 132][2].

The competence set for the innovation management presented in this document is dedicated to the following target groups:

– enterprise managerial staff, e.g. managers/heads of strategy and planning, R&D managers, HR development managers, heads of sales and marketing, or managers of small enterprises (regardless of a company size or business sector);
– specialists in commercialisation, innovation, development, etc. hired in R&D institutions or innovation support centres, such as technology transfer centres, innovation centres, technological parks, business incubators, etc.

It is quite difficult to estimate, even roughly, the number of people who might be considered as 'innovation managers'. Polish Business and Innovation Centres Association (PBICA) is the biggest association of innovation centres aimed at the support of innovation management in Poland. There are over 200 individual members and supporting members networked. They represent innovation and entrepreneurship centres as well as other institutions operating in the field of entrepreneurship promotion and regional development. The Association is in permanent working contact with over 800 innovation and entrepreneurship centres, including the strong majority of parks and technology incubators, technology transfer centres, business incubators, loan funds, training and consultancy centres, including: 40 technology transfer centres, 40 innovation centres, 60 business incubators, 20 technology incubators, over 230 training and consulting centres, 40 technology parks[3].

Providing an overview of the professional field of innovation management, also enterprises (at least the middle and big size) should be considered. According to data of the Polish Centre for Economic Information, there act in Poland over 2,33 million companies. As much as 2mln of them are micro companies (up to 9 employees),

[2] Used occupation codes correspond with the The Polish Classification of Occupations and Specializations for Labour Market Needs.
[3] Polish Business and Innovation Centres Association http://www.sooipp.org.pl/en/; [access 20.04.2017].

which we can exclude because usually they run day -to -day activity (no strategic planning, less investments etc.). The most probable employment in the field of innovation management will be found in the group of biggest companies (over 250 employees). There is about 3000 such enterprises in our country[4]. It means that there is several thousands of institutions/bodies needed competence in the field of innovation management.

Methodology of the work. The professional competence standardisation process in Poland is not too advanced. So far the standards have been developed for 553 occupations/professions, which constitute only approx. 20% of all occupations (2,443) presented in KZiS. Merely 300 standards have been prepared according to a new methodology, revised in 2012, adjusted to the EQF requirements.[1]

The approach taken in Poland can be described as a form of soft influencing: occupational standards have an advisory rather than statutory status, and their aim has been primarily to inform work-based training rather than formal VET qualifications and courses in educational institutions, although their use to guide qualification content is increasing. [3]

The ComProCom project is designed to improve the way that professional competences are described and represented, particularly in relation to the complex work in higher-level occupations where outcome-based conceptions of competence have proved to be the most challenging. So, our aim is to analyse and describe the competences for a chosen professional field in a flexible and sophisticated style offered in the new methodology developed within the ComProCom project. Respecting the profile of the ITE-PIB, as well as the importance of the processes of innovation transfer for the economy nowadays, the "innovation management" has been selected as the experimental field.

The Competence Framework for Innovation Management was developed by the Polish expert team, which followed the methodological guide[5] and the basic principles of the ComProCom approach (professional, external, centre-outward concept of competence).

Occupational expertise for the field of "innovation management" was provided by the advisory group (5 persons), established by the Polish partner institution. The team included the representatives of inventors/ constructors, specialists in commercialisation, trainers, as well as people experienced in the development of the professional competence standards (methodological experts participated in all national programmes in Poland dedicated for the development of the methodology, as well as of the competence descriptions). There was also a representative of a research institution involved (Innovation Centre accredited by the Polish Ministry of Development), experienced in scientific and development research in the field of technology transfer, innovativeness and entrepreneurial development, foresight

[4] Polish Centre for Economic Information; www.coig.com.pl/spis-polskich-firm_katalog_polskich _firm.php; [access 20.04.2017].

[5] www.comprocom.eu/products/43-methodological-manual.

projects and innovative systems management**.** Thanks to the cooperation with an umbrella organisation gathering about 200 innovation and entrepreneurship centres,[6] their representatives participated in the works on the development of the competence framework for innovation management within the ComProCom project.

The development process may be visualised in a schematic simplified way:

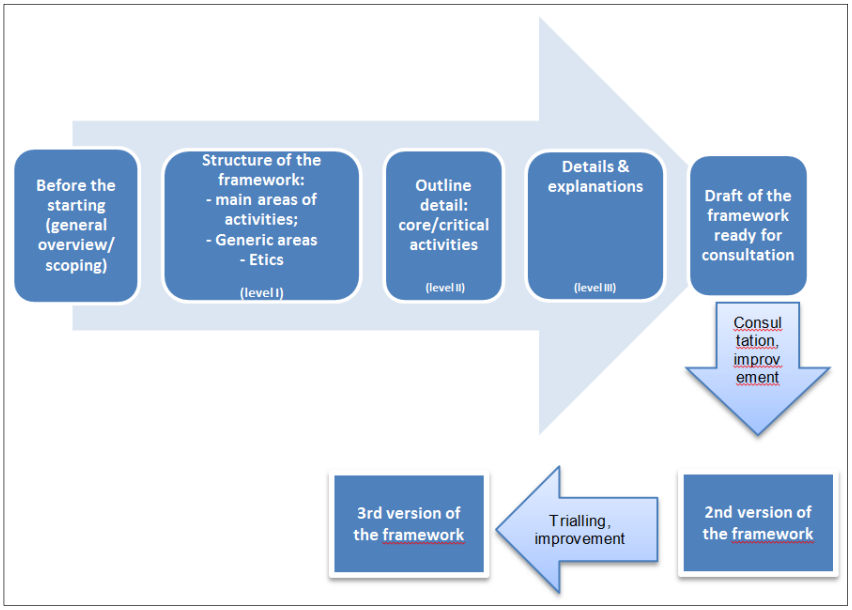

Fig. 1. Schematic procedure of the competence framework development

Next to the expert method, team developing the framework used also some key information relating to the professional area of "innovation management" collected in primary research based on the results of the assessment of competence required by employers (occupational analysis) for such professions like: *Specialist in the commercialisation of innovative technologies*; *Specialist in market analysis and development*, *Product manager*[7].

The team of experts developing the standard for IM was working since March 2016. They based on a cyclical model of competence description. This model describes the areas of functioning in a given professional area in the way specific for four stages of the project cycle, i.e.: Analysing; Decision-making/Planning;

[6] Polish Business and Innovation Centres Association - Association of about 200 members representing innovation and entrepreneurship centres. Its functions is to network people (innovators, managers of innovation) and organizations supporting widely understood entrepreneurship, innovations develop-ment and transfer; http://www.sooipp.org.pl/en/.

[7] Occupational analysis carried out under the national project *Set of National Professional Competence Standards Required by the Employers*. The project executed on the initiative of the Ministry of Labour and Social Policy Development (2012-2014). For more details see the national report *Review of current situation in Poland*; www.comprocom.eu/products/41-review-on-current-situationl.

Implementing; Evaluating. It is completed with the so-called horizontal areas: Management/Work organisation, Communication, Code of ethics [4]. (Fig. 3).

The main part of the standard presents the key skills required for each area of professional activity related to the innovation management mentioned. According to the methodology used by the Partnership, they are structured in three levels: Areas of professional activity (level I); key skills in a given area (level II) and Specification, additional explanations (level III) (Table 1).

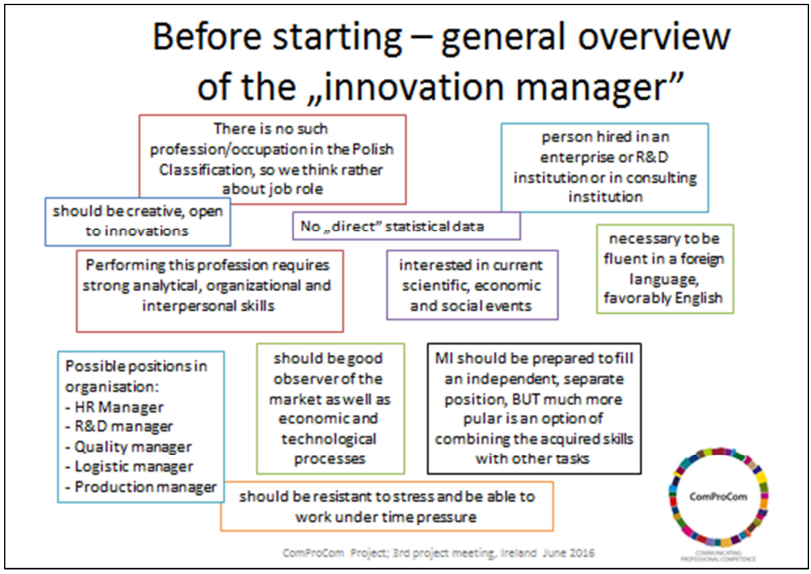

Fig. 2. Exemplary slide presenting results of the background research on the professional area of innovation management

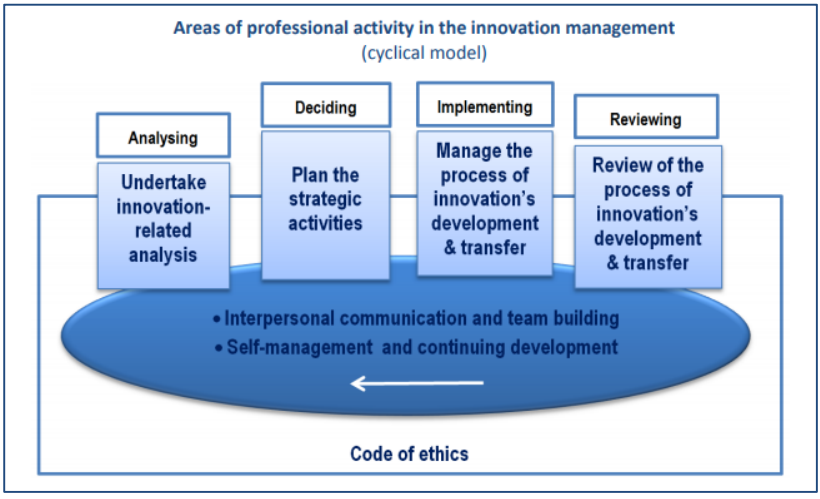

Fig. 3. Professional competence standard for the professional area of innovation management http://www.comprocom.eu/products/42-competence-frameworks

Table 1. Professional competence standard for innovation management (chosen fragments)

Areas of professional activity (level I) and key skills in a given area (level II)	**Specification, additional explanations (level III)** *fragments*
1. Performance of the innovation-related analyses *In this area of activity you must be able to:* 1.1. Analyse the market with regard to the innovation demand and supply 1.2. Assess the innovativeness of solutions 1.3. Analyse innovative solutions with regard to economy **2. Planning of strategic pro-innovative actions** *In this area of activity you must be able to:* 1.4. Plan the innovation management strategy 1.5. Plan the effective use of the institution's resources in the innovation management process **3. Innovation management** *In this area of activity you must be able to:* 1.6. Manage the innovation development and implementation process 1.7. Manage the innovation commercialisation process 1.8. Provide the advisory services 1.9. Create the culture of respect for and support of innovativeness **4. Evaluation of the innovation management processes** *In this area of activity you must be able to:* 1.10. Evaluate the organisation's innovative potential 1.11. Evaluate the processes of development, commercialisation and/or implementation of innovations **5. Organisation of one's own work and continuing development** *In this area of activity you must be able to:* 1.12. Manage your own work in the way ensuring the achievement of assumed goals and adopted arrangements 1.13. Plan and continuously develop your competence within the scope necessary for effective innovation management 1.14. Support professional development of other team members to ensure the performance of pro-innovative undertakings **6. Interpersonal communication and team building** *In this area of activity you must be able to:* 1.15. Build the team to deal with development, commercialisation and/or implementation of innovations 1.16. Organise and manage the team work in the way ensuring the achievement of assumed goals and adopted arrangements **7. Code of ethics** *In this area of activity you must be able to:* 1.17. Act according to the applicable law 1.18. Take responsibility for undertaken actions	**1. Performance of the innovation-related analyses** **1.1. Market analysis with regard to the innovation demand and supply** *Including:* – *analysis of the innovative solutions available on the market,* – *analysis of potential innovation providers corresponding with the identified needs, including an analysis of the organisation's own potential,* – *application of the methods to assess the new solution's commercial potential (e.g. Quicklook, In-Depth, expert methods, etc.),* – *analysis and synthesis of qualitative and quantitative data in order to obtain the information necessary to plan strategic pro-innovative actions.* **1.2. Assessment of the innovativeness of solutions** *Including:* – *application of the methods to assess the new solution's innovativeness (e.g. comparative methods, expert descriptive methods),* – *application of the methods to assess the innovative solution's implementation maturity (e.g. assessment methods of TRL – Technology Readiness Levels).* **1.3. Economic analysis of innovative solutions** *Including:* – *application of the financial analysis ratios for the proper assessment of risk related to the innovation implementation (e.g. financial liquidity, debt level),* – *analysis and interpretation of results of the undertaking's financial viability assessment (e.g. based on the current net value, period of return on the investment, profitability-related data) in order to make a proper decision on continuation of or resignation from pro-innovative actions.* **2. Planning of strategic pro-innovative actions** **2.1. Planning of the innovation management strategy** *Including:* – *planning of the process of development or implementation of innovations, including e.g. formulation of the SMART purposes (Specific, Measurable, Achievable, Realistic, Time-bound), schedules, tasks, milestones, success indicators, etc., and considering the current recommendations, guidelines, standards, purposes, priorities included in regional, national, international strategies for development or promotion of innovativeness of the economy,*

Sources: http://www.comprocom.eu/products/42-competence-frameworks.

Consultation and trialling. Consultation with the group of practitioners in the field of innovation management started in October 2016 and took two months. Channels used for contacts with participants of the consultation phase: face to face, in writing (by email), by phone. Researchers based on the professional contacts of the project partnership and the request for participation was directed to the intentionally selected persons representing proper expertise. Following target groups were chosen for the consultation phase: professionals in the field of innovation management – specialists working in companies, in research institutions or in innovation and entrepreneurship centres, which are organisations supporting widely understood entrepreneurship, innovation development and transfer; experts in the field of standardisation of professional competence (generally); trainers in the field of innovation management.

Thirteen responses were received from people having expert insights into the area of innovation management and representing different contexts of professional work: Managers and employees of companies interested in development and/or transfer of innovations (four persons); Managers and researchers of R&D institutions interested in commercialisation of their innovative solutions (five persons); Employees of the "business environment institutions" and consulting institutions specialising in management consulting, interested in the creation of an offer of innovation support in companies (one person); Methodical experts in the field of description and standardisation of the competence/ qualifications (three persons).

Tools used for the opinions' collection included the competence standard itself and the questionnaire asking about opinions in the form of open questions. There were applied seven questions agreed on with the project partnership, related to both the framework structure and content:

1. *How easily understandable is the description? If it could be clearer, please say where.*
2. *Does the description give a good summary of what someone needs to be able to do in order to be effective in [area]? If not, please say what should be changed.*
3. *Is there anything obviously missing?*
4. *Is there anything incorrect or out of date?*
5. *Is there anything else that you think will become out of date over the next 5–10 years?*
6. *Is the description workable in the different contexts relevant to the field? Contexts could include different types and sizes of organisation, the public/ /private/voluntary sectors, different specialisations, (within reason) different job roles?*
7. *Is there anything in the description that would be difficult or not appropriate for some people who work competently in innovation management to do, for instance because of their training, type, size or culture of the organisation they work in, or the way their work is organised?*

Most important findings from the consultation phase were following:

- Consulted draft was assessed as generally clear and well-structured;
- Respondents noticed that the applied terminology was too specific (too much theoretical or even academic style), difficult to be understand by some practitioners (on the base of that some elements of the draft framework were reworded after the consultation phase);
- Contend was assessed as relevant and updated, but too general for some respondents (pointed mainly by representatives of the economy sector);
- Terminology confusion was noticed for the term "competence standard" or "competence framework". During consultation it was confirmed that the word "framework" is in Poland "reserved" for national qualification frameworks. According to that, title of the document was changed ("competence standard" instead of "framework");
- Level of detail: there were voices of representatives of the economy sector for more detailed description, otherwise the framework would be useless (some specific places in the framework content were pointed out; some respondents' suggestions were considered);
- Experts in the standardisation stressed the lack of references to the European or national tools like EQF or NQF, International Standard Classification of Occupations developed by ILO (ISCO) or International Standard Classification of Education ISCED etc.

The advisory group analysed the feedback from the consultation phase and verified the content of professional framework, if justified. Verified version of the competence standard for innovation management was developed in November 2016.

Next step, in accordance with accepted approach, was trialling, which was launched in November and lasted until January 2017. It was agreed within Partnership, that the most appropriate way to trial the validity of the competence frameworks/ standards is to work with a small sample of individuals to carry out a detailed self-assessment. While looking for a proper group of the trialling participants, there were implemented the recruitment rules similar to those for consultation. It means that we choose people intentionally, ensuring that standard would be tested by persons from across the different contexts. The project team accomplished its purpose and finally 13 responses were received. An improved version of the competence standard for innovation management was tested by following group: Research and development institutions (four persons); Companies (four persons); "Bridge institutions" such as technology transfer centres, innovation centres, technological parks, business incubators etc., supporting development and/or transfer of innovations (five persons).

As the self-assessment was the chosen method for trialling, the tool have been developed. The questionnaire consisted of three parts: questions related directly to the professional activities, general assessment of the questionnaire and its content and characteristics of the respondent.

There was quite positive feedback from trialling phase. Structure was assessed as clear and understandable and description was easy to understand for respondents. No

issues were stressed as obviously missing, wrong, out of date or becoming out of date over the next 5–10 years. There were few activities (level II) assessed by one trialling participant as "not particularly relevant" and there were some suggestions for additional (more detailed) content on level III. The majority of respondents was interested in the further development of their competences needed for more than one critical activity (level II); there were also additional proposals beside those suggested by the project team.

Matters arising and conclusions. The development process was successful in establishing a standard for the professional area of "innovation management". For Polish team it was the first attempt to describe the standard for professional area, instead of separate profession/occupation. Professional competence standard developed according to the agreed methodology was very useful for self-assessment (easy to transfer standard's content into the self-assessment questionnaire). People participating in the development process, as well as the "end users" enjoyed the simplicity of the proposed standard's structure and conciseness of its content (11 pages all together). As far as the detail is considered, "the golden mean" is needed. The chosen professional area (innovation management) is very complex, possible job roles are diverse. Therefore it is very difficult to develop a universal standard, which covers all professional contexts (e.g. strategic planners, innovators, quality managers, marketing experts). It means the standard that is general enough, but also detailed enough to ensure its usability. It should be rethought whether a model with subsets of standards/ sub-categories or a hybrid approach () would be better for this specific professional area[8].

Considering the Polish reality of the standardisation process of competences, the most critical point expressed by the participants of consultation and trialling was the question concerning the need for other (new) model than quite "fresh" one developed and tested within the national strategic project (2012–2013)[9]. It was needed for the project team to explain very clearly what the differences between those two approaches were and what our expectations were. The most important methodological differences in the ComProCom approach in comparison to the Polish approach were as follows: competence is described only by one category – skills, instead of three categories (knowledge, skills, social competence) used in the Polish model; no obligatory additional information related to the general description of the profession (like e.g. work environment, health requirements, occupational development prospects, competence validation); no relationship between professional competences and qualification levels according to EQF, and finally the stronger focus on ethical aspects of the work in specific professional areas (which was very important for us). The most important similarities in both approaches: the key role of employers,

[8] Methodological guide p.15, www.comprocom.eu/products/43-methodological-manual.

[9] For more details see the national report *Review of current situation in Poland*; www.comprocom.eu/products/41-review-on-current-situationl.

professional associations as the sources of information on the required professional competences are assumed; concise content (up to 15 pages in both cases).

In the current legal status, the professional qualification standards do not constitute an obligatory document in Poland. Their use is recommended by the Ministry of Labour to a very broad range of entities, including units of public employment service, ministries and central offices, schools and public centres for vocational education and training, employment agencies. Therefore they comprise relatively much additional information. If the content would be reduced (according to the ComProCom model), maybe the Polish standards would have been more popular and more effectively used in the future.

Research team of ITeE–PIB is going to use the experience in the conceptualisation and implementation works of the national project, which will be realised with the Institute's involvement at the request of the Ministry of Family, Labour and Social Policy.[10] This project assumes development of modern, attractive and up-to-date descriptions for one thousand professions existing on the Polish labour market.

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[10] Rozwijanie, uzupełnianie i aktualizacja informacji o zawodach oraz jej upowszechnianie za pomocą nowoczesnych narzędzi komunikacji INFODORADCA+.