PES to PES Dialogue

The European Commission Mutual Learning Programme for Public Employment Services

DG Employment, Social Affairs and Inclusion

Skills-based profiling and matching in PES

Analytical Paper

November 2014

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Table of Contents

Executive Summary

The new context of transitional labour markets highlights the need for a holistic approach to employment support within PES. This comprises moving away from simply gathering information about an individual jobseeker's employment record, work experience, and formal qualifications to additionally capturing and describing a jobseeker's full potential in terms of "generic" and "soft" skills. With this aim, a number of skills-based profiling tools have been developed that better serve to diagnose individuals' strengths and weakness within the context of action planning, aid in assessing an individual's risk of unemployment, inform the segmentation of jobseekers according to their likely level of need, and help target services more effectively for job entry. In addition, skills-based profiling has been used in the matching process, thus enabling employers to include more detailed information on competence requirements, including technical, generic and soft skills in their job vacancy descriptions. This development has led to a better matching process (in terms of quality and efficiency – especially in relation to the potential for automation), and provides support to jobseekers in broadening the occupational job search, enabling them to explore the transferability of their skills to new occupational choices.

Although interviews with PES officials reveal that skills-based profiling and matching tools are intended to support jobseekers and assist PES in placement, to date there is limited evaluation evidence to support the potential gains from skills profiling and matching. However, feedback from the case study countries suggests there is a growing body of anecdotal/experiential evidence to support positive outcomes. In terms of value added and effectiveness, the benefits reported include contributions to the increased exit rate from unemployment, a reduction in the number of long-term unemployed, and a reduction in the average duration of unemployment, as well as increased jobseekers' and employers' satisfaction. In terms of efficiency, skills-based profiling and matching tools seem to have contributed to increasing the number of job-to-job placements by improving the accuracy of matching on job placement offers, enhancing the ability to handle higher caseloads, ensuring consistent service delivery and more efficient management and communication between agencies, raising the number of registered jobseeker profiles and vacancies, and increasing the market share in the job portal sector.

A methodologically challenging issue is how to measure the impact of skills profiling and matching on PES efficiency. The use of quantitatively based cost-benefit analysis tools would be useful in this regard, but have not been applied to date.

Thus, while the qualitative reports of the application of skills profiling and matching are consistently positive, additional investment in evaluation and cost-benefit analysis would provide robust information on the extent to which and how these tools can deliver their full potential in supporting the achievement of the PES 2020 agenda.

This Analytical Paper contains a literature review, supplemented by a number of interviews with PES (VDAB-BE, CZ, DK and DE) and PrES on the new developments regarding skills-based profiling and matching tools.

1   Introduction

The PES to PES Strategy Output paper[1] emphasises the role of the PES as 'transition agencies' in supporting the optimal functioning of the labour market and achievement of the EU 2020 Strategy.[2] The role necessitates an holistic approach to employment support within PES, which can be supported through the use of skills-based profiling tools.

Skills-based profiling tools serve to better diagnose individuals' strengths and weaknesses within the context of action planning, aid in assessing an individual's risk of unemployment, support the segmentation of jobseekers according to their likely level of need (statistically), and help target services more effectively for job entry. Skills-based profiling can be used in the matching process, thus enabling employers to include more detailed information on competence requirements, including technical, generic, and soft skills in their job vacancy descriptions. This is an important advancement as such tools are likely to improve the matching process (in terms of quality, efficiency, and potential for automation), as well as to support jobseekers in broadening the occupational job search and enable them to explore the transferability of their skills to new occupational choices.

This Analytical Paper provides an overview of recent advances in the development of skills-profiling and matching tools within the PES of a number of Member States (Belgium, Czech Republic, Denmark, France, Germany, and the UK) and PrES (private employment agencies) in order to provide better insight into the most recent developments in the design, current use, and impact of such tools.[3]

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[1] Public Employment Services' Contribution to EU 2020, PES 2020 Strategy Output Paper, 2012
[2] Europe 2020: A strategy for smart, sustainable and inclusive growth. European Commission, 2010.
[3] See Appendix A.1 for a description of the questionnaire designed for the interviews with PES.

2 Current developments in skills-based profiling and matching in PES and PrES

2.1 Definition of skills-based profiling

The term "profiling" refers to the assessment performed by PES counsellors of an individual client' 'needs' and their relative 'fit' to opportunities within the current labour market in order to provide a basis for allocating or targeting employment services, and for matching to appropriate/relevant vacancies. It is a combination of a customised approach within the context of the process-oriented organisation of PES service delivery. Profiling tools have been typically used to:

- Diagnose individual strengths and weaknesses in regard to personal action planning.

- Assess the risk of long-term unemployment among unemployed individuals and those about to become unemployed.

- Segment jobseekers according to the level of assistance they are considered to require to successfully achieve (re-)integration.

- Target appropriate services, measures and programmes considered most suitable to meet the requirements of their particular "profile".

- Match jobseekers to vacancies.

Traditional tools have captured core client characteristics, such as gender, age, education, occupation, work experience, and vocational participation, among others and linked these to assessments of the likelihood of unemployment, training needs and occupational choices. In the current context of transitional labour markets, emphasis is placed on the need for a "skills-based profiling" approach in order to respond to the challenge of the increasing demand for transferable skills. In view of these changes, some PES have started to adopt a more holistic approach that entails moving away from simply gathering information about an individual jobseeker's employment record, work experience, and formal qualifications to additionally capturing and describing a jobseeker's full potential in terms of "generic" and "soft" skills (Savickas et al., 2009). This requires the development of tools and methodologies that include skills profiling, and assessment and appraisal.

The assessment or appraisal of skills is being used to increase jobseekers' self-awareness and self-confidence and to capture the full measure of individuals' achievement and potential, and support targeted learning. In addition, skills profiling tools may help to empower jobseekers by giving them the knowledge of those skills that will enable them to move between jobs, occupations, and sectors, with important implications in terms of the quality of matching. As matching is bi-directional, the quality of the process is determined by level of detail collated both in the profiling process for jobseekers and in the specification of vacancies. Thus, skills profiling has to be understood as a process targeted at jobseekers and employers in terms of how demand, their vacancies, are specified. This process therefore requires a common understanding and common language of skills and competences that allows for the construction of standardised lists of skills and competences that should be linked, to some extent, to existing occupational classifications.

2.2 Skills-based profiling and matching tools

2.2.1 Skills classifications

The development of a common understanding and a common language of skills and competences is a prerequisite for effective profiling and matching. A number of Member States have invested in efforts to standardise the description of competence profiles (in the form of occupations or job openings) and to make them comparable. The report on

Skills/Competences Classification in the EU-27[4] describes and analyses the relevant national classifications of skills and competences, and provides an overview on the extent to which countries are using these classifications in addition to occupational classifications. The report reveals three different categories of progress in this regard:

i) Countries with elaborated skills/competences classifications;

ii) Countries with structured skills/competences lists,[5] for example, used for matching and placement;

iii) Countries that have no systematic approach.

In Table 1 we provide a summary of the main characteristics of the skills classification in the countries that we have considered in this Analytical Paper (see the above-mentioned report for a full description in the EU-27), all of which have developed a classification of skills.

A classification of skills and competences – with a tree structure and related terms – is found in BE, CZ, DE, and FR. However, only in CZ and DE can the classification of skills and competences be browsed independently of occupations. The CZ model is unique, bringing together occupations, skills/competences, and qualifications. DK uses structured lists built for the needs of its PES. Structured lists are also under development in the UK PES.

Skills/competences classifications can be based on either "keywords" and/or "short phrases". A keyword approach is used in DK and DE, while BE and CZ mainly use short phrases to describe competences. In FR, both approaches are used for describing basic and specific competences. Finally, the UK uses National Occupational Standards (NOS), which are statements of the standards of performance an individual must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding.

Among the countries analysed, only DK does not incorporate transversal skills, that is, skills that cross the borders of disciplines or occupations and capture generic skills, such as adaptability, abilities of communication, learning, and problem solving, as well as languages and competences in information and communication technologies. DK and DE do not include personal attributes within their skills profiles, such as attitudes and values.

Among the countries analysed, CZ links skills/competences classification to the European Qualification Framework (EQF), while the ROME approach has been 'exported' to two countries: Belgium (COMPETENT will be compatible to ROME v3[6]) and Luxembourg (their system will be compatible to ROME v3 and COMPETENT). In contrast, in other countries with a structured approach, like DE and DK, skills and competences are not linked to an internationally compatible framework.

In most MS included in this paper, the development of the classification framework and the on-going development and maintenance of the skills/competence system are usually undertaken by the same organisation (BE, DK, FR and UK PES).

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[4] DG Education and Culture Framework Contract 02/10 - Lot 1. A project report by 3s Unternehmensberatung GmbH, in association with the Danish Technological Institute (2012).

[5] A "structured list" is defined as having less classificatory elements, i.e. it is only a basic hierarchy, with no relations and no synonyms.

[6] The 'Répertoire Opérationnel des Métiers et des Emploi (ROME)' is the French national classification of occupations. The current version ROME v3 focuses on professional mobility, expressed in the easy transferability between job titles within the same occupational profile/ROME fiche, as well as between job titles from other occupational profiles. It has three levels of mobility: i) job titles within the same ROME sheet; ii) most similar jobs titles from other ROME sheets; and iii) job titles from other ROME sheets that become possible after some further training or competence development. COMPETENT is a system based on ROME v3 and implemented by the *Vlaamse Dienst voor Arbeidsbemiddeling en Beroepsopleiding* (VDAB) (see the report on Skills/Competences Classification in the EU-27 for more detailed information).

Table 1: Summary (overview of the Skills/Competences Classification, EU27)

	Classification	Responsible organisation	Category	Browse independently of occupations	Soft, transversal skills	Internationally compatible
BE	ROME v3 (VDAB/Synerjob (Federation of Public Employment and Vocational Training services in Belgium – VDAB, FOREM, ADG, Bruxelles Formation, ACTIRIS)	VDAB/social partners/SERV – Social and Economic Council of Flanders	Classification, based on ROME v3	No, connected to occupational profiles/COMPETENT sheets	Yes	Yes (ROME v3)
CZ	Centrální databáze kompetencí (Ministry of Labour and Social Affairs)	TREXIMA, Chamber of Commerce, Association of Industry and Trade	Classification	Yes	Yes	Yes (EQF)
DE	Kompetenzenkatalog (Bundesagentur für Arbeit)	BW Verlag	Classification	Yes	Yes (transversal)	No
DK	Jobnet (National Labour Market Authority)	National Labour Market Authority	Structured list	Yes	No	No
FR	ROME (Pôle emploi)	Pôle emploi and CNCP	Classification	No	Yes	Yes: BE, LUX
UK PES	National Occupational Standards (NOS) (Jobcentre Plus)	Jobcentre Plus	Under development	-	Yes	Not yet

Source: Own elaboration based on information from the report on Skills/Competences Classification in the EU-27

These national classifications are intended to align with the development of the ESCO *classification* (European Skills/Competences, qualifications and Occupations).[7] Although still under development, ESCO is aimed at providing occupational profiles showing the relationships between occupations, skills/competences, and qualifications, which is likely to significantly improve the development of skills-based profiling and matching tools. The holistic approach of the Czech and the French ROME systems seems to be the most useful model in terms of developing a system that connects the three pillars of occupations, skills/competences, and qualifications. If the intention is to operate on a very detailed occupational level, the German *Kompetenzenkatalog* (and the connections within BERUFENET) with its 1,200 occupations is the most comprehensive example. Finally, it is important to mention that the development of ESCO, with the definition of a common standard to be achieved in the future, would constitute an important advancement in terms of international compatibility, which could further support cross-border job matching and enhance the potential for labour mobility in Europe.

2.2.2 Skills assessment and skills-based profiling tools

In recent years, there has been a proliferation of skills assessment and appraisal instruments across Europe.[8] Many are increasingly available online for self-administration by users. These tools, which include the review, identification, assessment, and diagnosis of skills, have been developed for a variety of purposes and target groups. Users may employ the tools to update their skills, knowledge, and understanding in their current occupational area; reflect on their current competences in order to determine the type of jobs they could do immediately or in the future; identify skills that need further development; bring together their achievements and learning from different fields, such as education, training, employment, home, community and leisure (learning from all these areas may contain aspects of both formal and informal learning); get a new job; undertake particular learning actions; have their skills assessed; and formulate a personal development plan.

Tables 2 and 3 provide an overview of some interesting examples of the tools currently in use. Some of them are mainly intended for self-evaluation and career guidance/development (Table 2), while others can be categorised as skills-based profiling tools (Table 3). The tables contain a brief description of the aim of each tool, its design and contents, as well as the main target groups. Also summarised is the role of these tools in PES. In many cases the tools are used and administered by PES. This is the case of the Kompetenz-Dienstleistungen (K-DL)[9] (DE), My Jobkompas (DK), and Bilanční Diagnostika (CZ). Other tools can be used within PES but also externally, such as the Skills Health Check (UK), ProfilPASS (DE), and Bilan de Competences (FR), which can be used by career guidance agencies or employers.

Overall, through the application of psycho-diagnostic methods, counselling interviews and schemes, these tools are designed to help clients understand themselves better, improve their self-confidence and self-assessment, and to ensure the optimal utilisation of their capabilities, skills, interests, and motivations in their professional life. Additionally, some tools (e.g., K-DL and My Jobkompas) are used to support profiling, and thus serve to guide jobseekers and PES counsellors through the process of building up a more reliable picture of their job and re-employment prospects.

Although it is an advantage that many of these tools are accessible online, in many cases the information produced with them is more reliable when instructions are provided by PES counsellors. This is something that should be taken into account when

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[7] ESCO is the only multilingual taxonomy of European Skills, Competences, Qualifications and Occupations. ESCO is part of the Europe 2020 Strategy. ESCO systematically identifies and categorises skills, competences, qualifications and occupations relevant for the European labour market, education and training. ESCO is a tool that will enable the shifting of matching from occupation based to skills-based matching. https://eu.europa.eu/esco/home

[8] See for instance, European Commission (2011). Thematic synthesis paper: Profiling Systems for Effective Labour Market Integration. Brussels. Author: Tina Weber.

[9] Previously known as the Kodiak tool.

considering the use of such tools, as they may require counsellors to spend more time with individual jobseekers to gather this holistic information. While this is likely to improve PES efficiency in the long run, no formal evaluation in terms of cost-efficiency has yet been undertaken in this respect.

Table 2: Tools to diagnose competences (self-evaluation and career guidance/development)

Name of tool	Aim of the tool	Design and content	Target Group	Link to PES
Skills Health Check (UK)	Identify any skills and qualifications needs that the customer has, in order to help them to steer and inform their career plans.	Online questionnaires for testing generic, soft and technical skills	All working age adults at all levels of ability	The tool is for both universal use and mediated access with a PES practitioner
ProfilPASS (DE)	Help jobseekers to make their skills and competences visible and aid them in planning career advancement, preparation for re(entering) the labour market, occupational and personal orientation, planning future learning schemes.	Self-assessment tool supported by guidance professionals.	Jobseekers (especially young people)	Not integrated in PES, but results can be used in further counselling by the experts of the PES
My competence folder (DK)	Self-evaluation tool for assessment of general/personal competences developed in the third sector (e.g., non-formal education, participation in all kinds of associations, involvement in sport organisations).	Electronic folder in which the individual may gather documentation for all competences.	All stakeholders, especially education institutions	Used within PES
Bilan de Compétences (FR)	Enable people in work to update / re-assess their skills levels, abilities and objectives in order to (re)define a professional project, request training or look for a placement. Help jobseekers to define and redirect their career plans and employment paths.	Skills-assessment done at specific stages, based on tailored monitoring by an adviser. The assessment report defines or confirms a given career plan or a training project.	Employees, jobseekers, public officials and self-employed (traders, craftsmen, other professionals)	The extended service, Bilan de Compétences Approfondi (BCA), is developed by Pôle emploi to help jobseekers define and redirect their career plans and employment paths

	Help employers in their promotion decision.			
Bilanční Diagnostika (CZ)	Help individuals to know themselves, their capacities, and possibilities better; to improve their self-confidence and self- assessment; and to ensure the optimal utilisation of their skills, particularly in their professional life.	Psycho-diagnostic methods, counselling interviews, and schemes.	Jobseekers	Used almost exclusively in PES

Table 3: Tools to diagnose competences (skills profiling)

Name of tool	Aim of the tool	Design and content	Target Group	Link to PES
Kompetenz-Dienstleistungen (K-DL)10 (DE)	Diagnostic tool which delivers information about the client's skills/competences and strengths to both the clients themselves and the placement officer. They serve to improve chances of integration, for further counselling, and for the matching process. Also to support profiling as part of the German 4-phases model.	K 1 Overview: Create an initial profile or on-going analysis about their strengths K 2 Perception: To capture the client's intellectual capability (the ability to analyse and solve problems) K 3 Focus on performance: Different aspects of the client's intellectual capacity is assessed by a psychologist K 4 Assessment Centre: To assess social-communicative competences	Adult clients with work experience and the goal of self-evaluation of their behaviour in the worklife Adult clients for whom a shorter qualification measure (ca. 2-8 months) is planned Adult clients who require more detailed information about their performance and motivation Skilled workers with enough specialised competences, newcomer with many years of work experience or graduates, who should start a new job with a sophisticated client contact or entrepreneurs	Administered and facilitated by psychologists within PES (IT tool integrated in the 4-phases model)
My Jobkompas (DK)	To allow jobseekers to assess their strengths, as well as offering suggestions for job opportunities that match their profile To propose specific and preferably vacant jobs, which match the citizen's	Self-help tool (online questionnaire) to assess soft skills.[11]	Jobseekers (especially unskilled workers that experience long-term unemployment)	Used within PES (prior registration of jobseekers)

[10] See Appendix A.2 for a full description of the tool
[11] See Appendix A.3 for a description of the entire set of soft skills included in this tool.

	competences in the best way. To propose specific jobs, which demands that the citizen gain further education.

2.2.3 Based profiling and matching in PES

Most PES have developed tools for jobseekers and employers in order to facilitate placement and to secure better jobs, many of which are available online.

In Germany, the so-called 4-phases model – 1) profiling, 2) goal definition, 3) selection of intervention strategy, and 4) implementation and monitoring – has been implemented in the framework of the "Virtual Labour Market" project. The *Virtual Labour Market Platform (VLM)* is the largest online job portal and consists of three different components: Jobbörse, VerBIS, and JobRobot. **Jobbörse** is used by jobseekers who register online to create their personal profile. When creating their profile, jobseekers can select skills and competences from the occupation's skills profile. This is followed by an interview with a counsellor where personal data is reviewed and an "integration plan" is developed. In a first counselling interview, the placement services and consulting expert analyses the strengths of the clients based on the previous occupation(s). This analysis is based on four basic skills: i) professional-methodological skills; ii) social-communicative skills; iii) activity and transformation skills; and iv) personal skills.[12] At the same time, companies post their job vacancies on Jobbörse, which is followed by a personal interview with the PES. Details of job vacancies can be provided, which includes job descriptions and requirements for applicants. Skills/competences can be chosen from the occupation's skills profile. In addition, an employer can also define "knockout criteria", which identify skills or competences that a jobseeker must have in order to get to a job interview.

The VLM comprises an intelligent job matching system with soft search and bidirectional matching based on competences. The matching can be initiated by the placement officer as well as by the clients themselves. The experts in placement services use the search technique either to fill vacancies or to provide counselling to clients. On the Jobbörse Internet platform, clients can either search manually or use a search assistant, which automatically conducts searches for job vacancies in user-specified cycles, about which the customer is automatically informed. The main characteristics of this bidirectional matching comprise: i) recording of all applicant profiles and job offers based on a consistent structure; ii) integration of all recorded applicant profiles and vacancies into the matching process; iii) consideration of 40+ criteria with different weightings; and iv) visualisation of the results according to degree of consensus. The bidirectional job matching is based on a "fuzzy search", which uses defined similarities and finds the most suitable result, as well as alternatives with lower match scores. Additional features provide the transparency of search results and allow for improved data quality and more specific profiles according to market demand.[13]

There is no special use of the 4-phase model of work integration and profiling for specific groups of jobseekers and/or job vacancies. The 4-phase model of labour market integration is continuously observed and examined. The results of these observations and analyses are further developments and modifications. A working group located at the headquarters of the BA (*Bundesagentur für Arbeit*) takes up the respective findings. The latest update of the 4-phase model (December 2013) included a firm commitment to a strength-targeted client orientation, as well as the implementation of the recommendations of the BA quality management project.

Online services for both jobseekers and employers are available in the Czech Republic on the website of the Ministry of Labour and Social Affairs, the main public authority dealing with employment and social policies (http://portal.mpsv.cz/). Jobseekers can search for vacancies in specific towns and municipalities through http://portal.mpsv.cz/sz/obcane/vmjedno. When the vacancy search is performed according to occupational category, the jobseeker can find a description of skills requirements in the job offer. Skills and competences are divided into soft skills (15), generic hard skills (8), and specific hard skills (about 18,000), all of which are included

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[12] See Appendix A.4 for a full description of the skills.
[13] See Appendix A.4 for a graphic description of the bidirectional matching.

in a Central Database of Competences (CDK). Skills must meet 3 basic requirements: i) be observable; ii) be measurable; and iii) be accessible to change and development. Furthermore, each skill contains two components – one related to the job sector and another to the occupational category. Jobseekers can also submit a job wanted ad online. Once registered, they can view the advertised vacancies, agency (PES) tools, information on employment of different groups, and other information. Although during the job search process jobseekers can add their final Bilanční Diagnostika report, which includes some kind of skills assessment, the PES does not use this competence assessment during the matching process. The assessment is only used by employers for their own purposes. Finally, one important observation is that the development and updating of the tools are limited to the minimum requirements established by law. Further development in this area, with a preliminary testing of profiling and matching, is currently planned in the ESF "Job vacancies" project.

Jobnet is the public job centre website for all jobseekers and employers in Denmark. Registration is obligatory for all jobseekers. Within this online placement service, employers can search for and fill in skills and competences for their job advertisements, and jobseekers can fill in skills and competences on their CVs. Skills profiling takes place after registration, and matching is not completely automatic as it requires the support of PES counsellors. The PES is currently working to improve the matching technology of Jobnet to enable automatic matching in the future. The *Jobbing* tool, developed by the National Board for Labour Market and Recruitment, is a voluntary matching tool that has been designed to assist jobseekers in finding better jobs. The primary target group of the tool are jobseekers with at least a bachelor degree, but it also assists jobseekers with lower educational attainments. It matches jobseekers with relevant jobs based on their skills, job requirements, work experience, and education.

In France, the Pôle emploi provides online registration for job applicants and employers, as well as a direct link to the EURES portal. ROME is used in various IT systems of Pôle emploi. In particular when i) entering skills in the jobseekers' profiles; ii) entering skills in job vacancies; iii) matching jobseekers and job vacancies; iv) career counselling; and v) skills assessment and training. Employers can also get free online access to job applicants' CVs according to the search criteria they choose. CVs can only be viewed anonymously. Additionally, employers can enter online job offers that will be automatically sent to jobseekers. The employer can also decide to advertise the offer on www.pole-emploi.fr.

The VDAB is the public employment service in Flanders (Belgium). It uses a database (COMPETENT) built on ROME3 to arrange the skills, activities, and knowledge needed for job profiles. During registration, jobseekers indicate their level of competences. Each vacancy is accompanied by a list of (COMPETENT) competences that the user can self-assess. Self-assessment by the user is taken into account in the matching process (the different possible scores will lead to different matching results). The PES is developing a system that validates competences by previous employers. Currently, they rely on the veracity of the information provided by the user. In the current system, skills profiling is used first during the registration process and then after vocational training when the skill profile is adjusted. There are a number of instances where skills profiling tools could be valuable, for example, when drawing up clients' personal development plans, and defining the competency gap between their present profile and the one required for a different job. The PES has a process of agile software development, whereby a basic set of functionalities is developed and activated, which are then gradually optimised and extended based on users comments, thus ensuring that each new feature adds business value. A communication programme was launched in 2012 to introduce the new tool to employers and VDAB counsellors. The programme included demo sessions and manuals on the website. To ensure optimal use, on-going communication and additional actions are being carried out. A key lesson was the need to invest in the effective introduction of the tool to counsellors.

Created by the Department of Work and Pensions (DWP) in the UK, Universal Jobmatch is a government powered job board which replaced the former online JobCentre Plus website and Employer Direct Online. Universal Jobmatch, the new online job posting and matching service, has been launched in order to help jobseekers to search for employment and to allow employers to upload and manage their own vacancies whilst searching for prospective employees. It allows employers to post jobs online, explore the number of potential jobseeker matches before posting a job, and receive an anonymous list of matches, as well as a list of the most suitable candidates. Then employers may, online, review the CVs matched to their job vacancies and choose those jobseekers who they want to apply. In addition, they may invite jobseekers to apply for jobs online and respond to jobseekers' requests for feedback by using a simple drop down menu. Jobseekers will be matched primarily against their suitability to the job title included in the vacancy description. The results will then be ordered based around any skills/keywords described by the employer when creating the job posting. The matching system takes into account factors like jobseekers' associated skills or job titles, recently used skills, and location. Finally, Universal Jobmatch enables jobseekers to review their skills and identify skills gaps by looking at how successful they are in their applications. It should be noted that Universal Jobmatch is an on-line, e-service tool only and is not integrated into the PES counsellors' work.

2.2.4 Skills-based profiling tools in PrES

Online skills assessment and matching tools have also been developed by PrES for their use in several contexts, such as recruitment, staff development or career guidance. Appendix A.5 provides a detailed description of some examples. Most of the examples rely on online psychometric testing to assess skills including soft skills (*The Art of Assessment*, *SelfAwareness*, tools developed by *MAXIMUS* (UK), *The Vienna Test System* (Schuhfried) or *The Competency Scan Online* (Hudson)) in order to provide applicants with an evaluation of their personalities, innate aptitude, and abilities that characterise the basis of their skills. There are other tools that generate and compare candidate and job requirement profiles according to professional skills, experience, personality, focus, and attitudes (*The JobMatchProfile*) and which provide information about the possible consequences of mismatch. Finally, others focus explicitly on career planning and guidance for graduates (TARGETjobs). Interviews were conducted with *SelfAwareness* and *MAXIMUS*, revealing interesting information on the design, contents, and use of skills-based profiling and matching tools in PrES.

At *SelfAwareness*, the psychometric profiling tool has been specifically developed to assess soft skills, learning styles, enterprise/entrepreneurial soft skills, and work-role preferences. This profiling tool, which was initially implemented in the UK, combines i) highly accessible language for assessments and reports; ii) a competence and behavioural assessment with an emphasis on personal development (and coaching); iii) a motivational approach to reporting aimed at building self-confidence and helping an individual to articulate their soft-skills by identifying potential 'coping strategies' for areas where they may be less confident/competent; iv) assessment of learning styles within the context of approaches to work – how individuals respond to new situations and challenges; and v) validation by the University of Cambridge. In addition, it includes a Job-Matching function that helps employers articulate the soft skills they require for a particular job (i.e., the person specification part of a job description) and then to match this profile with the soft skill profiles of individual candidates. Educationalists, psychologists (both occupational and educational), and researchers were all involved in the development of the tool from initiation through to piloting, refining and validation.

This diagnostic tool can be (and is) used extensively by PES:

- To help people who are at risk of redundancy, in the process of being made redundant, recently redundant, and/or longer term unemployed to better understand their soft skills, working preferences, and how they respond to new challenges and learning.

- To help individuals to articulate these effectively in CVs, letters of application, and at interview.

- To build confidence, self-esteem, and motivation.

It is reported as a valuable tool for profiling soft skills, including the entrepreneurial soft skills that so many employers seek. In addition, using the automated Job-Matching tool, PES organisations can work with employers to determine and describe the soft skills they seek in prospective employees and then match these across prospective candidates to select those with best fit.

MAXIMUS (UK) has developed a bespoke range of diagnostic assessments and intuitive tools that enable employment consultants and customers during appointments to identify the clients' circumstances and obstacles to employment, diagnose the activities required to support the client in overcoming the obstacles with an action plan, and sign post to specialist support. By bringing together best practice questions and processes that have been 'tried and tested' and tasks into a framework that identify, diagnose, measure, and signpost, the tools were developed to assist clients' progress to securing work, starting work, and sustaining work. An example of such a tool is the 'Transferable Skills Quiz', which identifies job options by selecting statements to designate a suitable industry for the client. Each assessment determines skills gaps along with key activities, which define the client action plan to employment. Regarding the matching process, at initial assessment clients' skills are matched using the step assessment tools, along with specific step tools as required. Then, at subsequent appointments ongoing matching of the customers' skills to job goals and job requirements continues.

All tools at MAXIMUS are reviewed for further development, changes, and improvements based on user feedback, monitoring, and measurement of effectiveness. Some paper-based tools are currently being added to their case management system such as the 'Transition Assessment', a tool that assesses if a customer is prepared to start and able/ready to sustain their retention in work. This tool has been built into fundamental processes to ensure that a quality and consistent service is provided to all clients. The tools are bespoke to MAXIMUS services and can be applied to any employment contract they deliver. They have skills matching elements but are fundamentally diagnostic tools to tailor the customer journey – which they would hope to have a positive impact on general skills profiling and matching that could be valuable for PES.

2.3 The application of skills-based profiling and matching

2.3.1 The purposes of skills-based profiling in PES

A number of purposes for skills-based profiling and matching tools were identified based on interviews with PES officials in BE (VDAB) , CZ, DE and DK. These are summarised in Table 4 below and are categorised according to whether they assist the jobseekers or the PES.

In terms of the support to jobseekers, the tools are accessible to all those seeking new employment opportunities. With the exception of CZ, the tools are designed to help jobseekers to better define their skills, measure their individual achievements and increase their self-confidence, and identify job options. In all countries where the interviews were conducted, the tools also aim to support the jobseekers' learning and to define and focus their action plans and career aspirations.

In addition, the tools in the four countries also assist PES in improving the information provided to employers on candidates and in evaluating the effectiveness of training programmes. In DE, DK, and BE (VDAB), the tools also aim to increase the speed,

efficiency, and effectiveness of the matching process; improve employment outcomes and jobseekers' and employers' satisfaction; and better define the target groups for active labour market policies (ALMPs).

Table 4: Purpose of skills-based profiling and matching tools

	DE	CZ	DK	BE (VDAB)
To support jobseekers				
Define their skills set from their education/work experience (i.e. provide them with the relevant vocabulary)	YES	NO	YES	YES
Measure individual achievement and increase their self-confidence	YES	NO	YES	NOT SPECIFICALLY
Assist jobseekers in identifying job options (to explore a wider range of opportunities or define more realistic options given their current skills)	YES	NO	YES	YES
Support learning (through identifying skills gaps)	YES	YES	YES	YES
Help define and focus action plans and career aspirations/goals	YES	YES	YES	YES
To assist the PES				
Improve the information provided to employers on candidates	YES	YES	YES	YES
Evaluate the effectiveness of training programmes (i.e. in filling skills gaps or meeting the needs of individuals and employers)	YES	YES	YES	YES
Ensure the speed, efficiency, and effectiveness of matching candidates to vacancies	YES	NO	YES	YES
Improve employment outcomes through better matching	YES	NO	YES	YES
Improve customer service/satisfaction from employers through better matching	YES	NO	YES	YES
Better define the target groups for ALMPs	YES	NO	YES	YES
Commission better targeted training and ALMPs (i.e. to skills gaps)	YES	NO	YES	YES

2.3.2 The integration of skills-based profiling and matching in the provision of services to jobseekers

Core services provided by PES to jobseekers include, among others:

- Job placement services: Job search assistance services, regular meetings with a personal employment advisor (job search follow-up, update of employment plan, identification of the needs of unemployed or special support within employment programmes, etc.), direct referral of jobseekers to vacancies, job search skills training programmes, job application and interview preparation, CV composition and submittal, job and vacancy fairs, and informational interviews.

- Counselling services: Career/job counselling, vocational counselling, legal counselling on PES services and rights, as well as obligations for newly registered unemployed

- Specialised services: Setting up of individual action plans; surveillance of independent job search; and in-depth assessment of skills, abilities (aptitude testing), and occupational skills

- ICT services: Internet (viewing jobs and training places), national call centre service (a jobseeker can find out about jobs, training, and unemployment security), e-mail notification which provides clients with information on jobs and training options, and CV net (posting of CVs on a freely accessible online service).

Advancements in skills-based profiling and matching tools have aided PES in the provision of some of these services to jobseekers. More specifically, almost all of the interviewed countries have integrated the tools into the jobseeker's 'customer journey.' In most cases, the tools offer online registration, information on and referrals to job opportunities, training, and other forms of assistance, as well as information on employment policy measures and registration for benefits.[14] In some cases, the tools also facilitate the provision of individual case-management services of individualised assistance (e.g. intensive counselling and guidance, job search assistance, and personalised action plans based on information obtained from the skills/competences assessment). For instance, the Bilan de Compétences (FR) provides an assessment report that defines a career plan or training project that is intended to better prepare the jobseeker for (re-)entering the labour market. Similarly, K 2 (DE) comprises psychometric tests of cognitive ability and thereby assists the placement officer to determine the most suitable training level for the jobseeker. The self-assessment results of ProfilPASS (DE) are also used by officers in planning the jobseekers' career progression and training, even though the tool is not *formally* integrated into PES provision. A final example is the Universal Jobmatch in the UK, which differs from the previous tools mentioned insofar as it stands alone: the tool is made available to all jobseekers on a self-service basis and sits outside of the PES counselling and advisory services.

Individual action plans are particularly useful for those jobseekers who have multiple barriers to employment, such as a lack of skills, a lack of prior labour market experience, and social needs. To the extent that skills-based profiling and matching tools contribute to a better assessment of an individual's employability, they may aid significantly in the design and implementation of the most appropriate personalised action plans intended to improve the chances of employment and to reduce the risk of skills mismatch.

An interesting example that can be mentioned in this respect is the K-DL tool (DE) that serves to assess the prospects for successful placement in the desired occupation, successful attendance of a training course, the general compliance of the client's participation in the integration process, and the client's willingness to change the personal integration plan.

Skills based profiling tools can enhance the job matching process and reduce the time it takes for jobseekers to find work and for employers to fill vacancies, with important positive effects in terms of PES efficiency and effectiveness. This is the case for the VLM (DE) and *Jobbing* tool (DK), both of which provide automatic vacancy matching.

2.3.3 Implications for the role and competences of advisers

The role and function of PES advisors is shifting from simply administrative tasks to a set of tasks that combine the role of broker, counsellor, and social worker. This implies that specialised training for PES staff, in terms of interviewing and counselling competences, is needed to offer quality services for jobseekers and employers, and to optimise the outcomes of skills-based profiling tools. Information from PES interviews reveals some observations regarding the need for training provision for PES staff derived from the implementation of skills-based profiling and matching tools.

Centrally-trained implementation experts supported the introduction of the VLM in Germany. The experts were in charge of instructing the management staff, who in turn instructed their personnel. Eventually, all employment counsellors were trained to

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[14] Online registration for unemployment benefits is available, for instance, within the *VerBIS* component of VLM (DE).

acquire the respective skills. Staff training was conducted in different workshops lasting several days and no recruitment was undertaken.

In Denmark, PES staff participated in several training workshops in the tools, but there has not been any raising of the bar in relation to entry requirements for counsellors. In terms of task changes, Jobnet has had the largest impact. Every unemployed person on Jobnet is required by law to have an approved CV. For those who receive unemployment benefits, the approval is made by their Fund, while for all others it is the PES staff who have to approve the CV, which means going through the CV and ensuring that the information entered offers a correct description of the jobseekers' skill profile and their work experience.

BE (VDAB) is rolling out a comprehensive plan to focus the role of their front office staff much more on the mediation and matching process, which entails eliminating routine tasks (and having those tasks dealt with through online channels), and also involves making much more use of the available matching tools. Although training programmes have been conducted, until now they have been on a voluntary basis. VDAB is currently "working hard towards a change in tasks performed by the PES-staff, but they are not yet there". Moreover, there have been changes in the requirements for new recruits as all their counsellors are expected to be good mediators, thereby needing a broader set of competences (e.g., labour market knowledge and insights, intensified use of competences rather than just professions, a client-oriented viewpoint).

Extensive staff training of advisers and practitioners has also taken place in the process of implementing skills profiling tools in some PrES. At SelfAwareness there is a commitment across all their EU partners to substantial training as part of the implementation process. Something similar occurs at MAXIMUS (UK). As regards the implementation of the tools, employees received on-going communication and involvement in shaping the final products (tools). This resulted in a faster adoption of the tools and successful transition to daily usage. The collaboration across a wide level of business departments was time consuming and had implications for the speed of development, but produced better tools and products.

2.3.4 Linking skills-based profiling to ALMPs and resource allocation

The differentiation, or targeting, of client needs is increasingly necessary to optimise the positive impact of diminishing resources (StaghØj et al., 2010). This has become one of the main goals of PES in countries that have typically linked decisions concerning resource allocation with the information provided by statistical profiling tools, which enable an early diagnosis of the risk of long-term unemployment and customer segmentation. Recent progress towards more holistic profiling tools (skills profiling including soft skills) might be aligned with decision making over resource allocation. To the extent that these tools allow jobseekers to gain better knowledge of their strengths and weaknesses and to direct their search more efficiently through the use of more individualised action plans, they are likely to allow for more effective targeting of ALMPs and resource allocation. This is particularly the case in DE, where profiling within the 4-phase model analyses the issues of jobseekers, thus permitting barriers to integration to be determined with exactitude, as well as the use of some ALMP measures that can be specifically targeted at the individual user.

2.3.5 Digitalisation and the development of skills-based profiling and matching tools

Most PES have recently made significant progress in the digitalisation and multi-channelling of their services. This has impacted on the provision of skills-based profiling and matching insofar as these services can *only* be implemented digitally. As such, they represent an additional service offer that has come about as part of the PES' overall digitalisation strategy.

Effective digitalisation has been pointed out as one of the key success factors of the VLM project in Germany. Due to the complexity and the size of the VLM project, the

software-realisation approach based on common methodologies and frameworks was a key factor to conduct the project efficiently. In addition, the combination of proven web-based technology and leading-edge software components was key to meeting the challenging technical requirements (e.g., performance). In the case of VLM, the use of digital platforms has led to a range of clear benefits. It has ensured consistent service delivery, more efficient management of agencies, and more efficient communication through centralised software and processes. Moreover, digitalisation has led to:

- A significant increase in registered jobseekers and published profiles
- A significant increase in registered employers and published vacancies
- Increased market share in the job portal
- Increasing use of interfaces to other job portals and to employers

The interviews with PES respondents in BE (VDAB), CZ, and DK also highlighted the importance of digitalisation in the application of skills-based profiling and matching tools and gaining the full benefit from their use. In CZ, digitalisation mainly contributes to improving the availability and clarity of the tools, as well as facilitating the job search and updating. As in the case of Germany, the online presence of these services has led to a significant increase in registered jobseekers and published profiles, an increase in registered employers and published vacancies, and to an increased market share in the job portal. Skills-based profiling and matching tools are fully digitalised in Denmark, which has contributed to increasing the number of caseloads. The situation in Denmark is similar to that of Germany in that online services have also led to consistent service delivery, and to increased numbers of registered jobseekers and published profiles, as well as an increase in the market share in the 'job portal' sector. Finally, in Belgium, the matching system can now map jobseekers and vacancies through an extra layer of information (i.e., skills and competences); a process that can now be initiated and commanded by the self-supporting individual rather than requiring in all cases the mediation of PES employment counsellors.

3   Lessons for effective practice

3.1   The value added of skills-based profiling and matching

In an increasingly evolving labour market where workers are required to engage in continuing skills acquisition involving frequent transitions to different occupations and the acquisition of new skills sets, often through informal or non-certified means new tools are needed to fully capture people's skills and competences. Qualifications and occupational work history do not provide a fully comprehensive picture of an individual's current competences nor their potential. A more holistic approach has started to characterise the provision of employment services in most EU countries, which has been closely intertwined with the concepts of classifying and capturing individuals' skills – including transferable skills (generic skills and personal attributes).

An important question is whether skills-based profiling tools and methods within PES lead to better labour market outcomes by increasing the matching rates between jobseekers and employers, reducing unemployment and vacancy duration, improving the quality of the job matches, and reducing job turnover, among other things? Historically, many employers have been less than fully satisfied with people referred by the PES and the role of the PES in the job matching process (Larsen et al., 2011). One of the reasons stems from the fact that it is difficult for PES advisers to distinguish and match the critical attributes required by an employer for a specific vacancy (including technical ability, but especially generic skills and attitudinal attributes). Skills-based profiling and matching approach including skills assessments (apart from qualification, occupation and work history) constitutes a value added in this respect inasmuch as it better informs the job search process and is therefore likely to increase employers' trust in PES. To the extent that the new tools allow employers to gain better knowledge of jobseekers' skills, this would encourage the use of PES services by employers, thus increasing the use of the PES channels for vacancy posting, job search and selection. In addition, an increase in matching jobseekers and vacancies is likely to increase the exit rate from unemployment, especially among low-educated and low-skilled workers who use this job search channel more often than their high-skilled counterparts.

3.2   What evaluation evidence exists to assess the effectiveness of skills profiling and matching?

More detailed recording of vacancy details and jobseeker profiles, through the development of skills-based profiling and matching tools, may play a key role in optimising the efficiency and effectiveness of PES for a number of reasons. Firstly, as online or automated tools, they are likely to reduce face-to-face communication, which has been proven to lead to efficiency gains, cost savings, and the freeing up of resources for those requiring more staff-intense services (European Commission, Pieterson, 2011; Bukowski et al., 2010; Mierina, 2008). It may also offer a possible way to reduce errors and improve the speed of administrative handling (Pieterson 2011, p. 15).

Secondly, to the extent that skills-based profiling and matching helps the PES raise the level of sophistication of vacancy description and jobseeker profiles, it may also increase the 'fit' between the referred candidates and employer requirements. In this case, employers' satisfaction is expected to increase, and the risk of skill mismatch and the consequent productivity loss could be reduced significantly.

Thirdly, skills-based profiling and matching would allow jobseekers to gain better knowledge of their strengths and weaknesses and to direct their search more efficiently through the use of more individualised action plans. In addition, it would allow for more effective targeting of ALMPs and an increased volume of job offers, thus reducing the search costs and increasing the exit rate from unemployment. Shorter unemployment spells translate into lower expenditure on unemployment benefits, and thus into important cost savings.

Finally, skills-based profiling and matching may enable the handling of larger caseloads, that is higher ratios of unemployed clients to caseworkers, which is likely to influence

the effectiveness of the assistance, as well as the administrative costs of PES. This is especially important in the current context of economic downturn, where the PES of many countries are tackling high levels of unemployment, and the consequent increase in caseloads.

To date there is limited robust evaluative evidence to support these potential gains from skills profiling and matching. Views on the impact and effectiveness of skills-based profiling was collated through the interviews with case study respondents. No additional formal research or evaluation studies were provided. However, the feedback from the case study countries, as illustrated below, suggests there is a growing volume of anecdotal/experiential evidence to support positive developments.

The primary goal of the German 4-phase model of profiling and work integration is to support employment agencies and job centres in fulfilling their legal mandate of providing a professional and customer-oriented range of services to their clients. It therefore provides a business model that ensures that tasks are fulfilled efficiently and at a high quality standard. This is done in accordance with the law, as well as with the goals for management and experts in placement services and consulting. Furthermore, it enhances the possibilities for effective and professional management through increased transparency and improved operational management. So far a formal evaluation regarding this issue has not been undertaken; however, the view is that:

- High quality profiling has important positive effects on the matching process leading to an increase in the outflow rates and the filling of vacancies.

- An acceleration of the matching process and the corresponding reduced duration of unemployment or vacancies, respectively, have a positive effect on caseloads.

- An appropriate match between the job requirements and competences of customers has fewer errors and thus leads to more effective matching.

- A client-oriented service, which detects individual problems and offers solutions as well as more effective matching lead to an increase in employers' and jobseekers' satisfaction.

- Profiling within the 4-phase model entails dealing with jobseekers' personal problems and permits the exact determination of barriers to integration. The use of ALMP measures can be targeted at the individual's situation.

- An acceleration of the matching processes, shorter unemployment periods, and higher customer satisfaction will have positive effects on the BA's i) image; ii) financial savings; iii) increased staff satisfaction; and iv) more effective achievement of objectives.

Table 5 summarises the main effects of the VLM.

Table 5: Effects of the VLM in Germany

Accelerated job market balancing	Optimised business and processes
Increased job market transparency	Consistent services delivery through centralised software and processes
Decrease in number of registered unemployed as well as unemployment rate	More efficient management of agencies through common centralised database
Reduction in the number of long-term unemployed people	More efficient communication using integrated eGovernment processes
Reduction of average duration of unemployment	Improved corporate image
Advanced job placement quality	**Successful eGovernment solution**
Increase in number of job-to-job placements	Significant increase in registered jobseekers and published profiles
Enhanced percentage of successful job placement offers	Significant increase in registered employers and published vacancies
Improvement in accurate fitting of job placement offers	Increased market share in the job portal sector
Increased labour market flexibility through matching-based search approach	Increasing use of interfaces by other job portals and employers

Source: Information provided by German PES official

Lessons learned regarding the design and implementation of VLM, and which are likely to contribute to the increased effectiveness of the matching process are:

- Comprehensive change in management is needed to garner the constant support of all users (PES staff, jobseekers, and employers).

- Early involvement of key users in the realisation of core functionalities reduces the amount of rework and supports the introduction process.

- Early user and usability tests significantly increase user acceptance.

- Accompanying organisational changes and their transition phases must be aligned with the software introduction process.

- Set up a dedicated user group with members from all affected functional departments to configure and fine tune the matching.

- Different user groups will use the system in a very different way; find the right balance between common processes and degrees of freedom for the individual user.

Despite the lack of a formal evaluation of the effectiveness of skills-based profiling and matching tools in the Danish and the Czech PES, and PrES, some observations are possible. In CZ, the use of the tools has increased the exit rate of unemployment and the rate of vacancy filling, while contributing to the more effective targeting of ALMPs. In DK, in contrast, there is no hard evidence of any of these effects, but positive effects are anticipated in the future, especially as regards more effective targeting of ALMPs. In Denmark, however, skills-based profiling and matching tools are viewed to have increased jobseekers' and employers' satisfaction. This observation is shared by some PrES (MAXIMUS), where customers who have been asked are satisfied with the tools.

In both DK and CZ, the use of the tools has increased the number of registered jobseekers and published profiles, as well as the market share in the job portal sector. In CZ, it has also increased the registered employers and published vacancies.

In DK, the tools have also led to consistent services delivery, to more efficient management, and to a slight improvement in the accurate fitting of job placement offers. There is also qualitative feedback of consistent services delivery and of improved accurate fitting of job placement offers in MAXIMUS. None of these effects are observed in CZ where, in contrast, the tools have raised the percentage of successful job placement offers. Successful job placement offers seem to be a consequence of skills-based profiling and matching tools in MAXIMUS, where employment consultants have provided qualitative feedback that the tools have also helped to support customer job placement and to prepare and match customers to vacancies. Finally, the ability to manage an increased number of caseloads due to the use of the tools has only been reported in DK.

No evidence of evaluation and impact of skills-based profiling and matching tools has been reported by the VDAB, where there is not yet any real operational monitoring, and therefore no observations have been provided in this respect.

While it is methodologically challenging to assess the efficiency of the new skills-based profiling and matching tools, techniques such as cost-benefit analysis can be used to robustly and quantitatively assess the efficiency and effectiveness of such tools. Specific questions that would be useful to explore include:

- Has the use of these tools increased rates of transition from unemployment to employment, and/or reduced the length of time that jobseekers are registered as unemployed at the PES?

- Has the use of these tools reduced skill mismatch?

- Has a reduction in skill mismatch translated into a more efficient allocation of resources, higher incomes for the individuals concerned – due to increased productivity – and a lower risk of future unemployment?

- Has all of this had an impact on transfer payments?

- Has the total production of goods and services available for consumption increased, and have the real resource costs of participation in labour market programmes decreased?

- Have the tools helped to reduce turnover and recruitment costs for employers?

- Has employers' and jobseekers' satisfaction significantly increased?

4   Conclusion

In recent years, European labour markets have been characterised by less predictable job prospects and more frequent job transitions. This has translated into changing employment demands and changing requirements for workers when developing skills and competences on an ongoing basis. In view of these challenges, PES are moving towards transition management approaches. These approaches aim to deliver and coordinate the provision of more personalised services in order to ensure that their clients are equipped with the skills needed for labour market (re-)integration.

The development of skills-based profiling and matching tools constitutes a key element of such approaches insofar as it has the potential to better target services for individual jobseekers and allocate resources more effectively and efficiently. However, most PES have yet to fully measure and understand how and to what extent skills-based profiling and matching tools increase efficiency and effectiveness of service and policy design and delivery. While qualitative reports on the application of skills-based profiling and matching are positive, additional investment in evaluation and cost-benefit analysis would provide more robust information.

Anecdotal evidence from case studies for this Analytical Paper also points to the tremendous potential of digitally enabled profiling and matching tools. However, in conclusion, it is worth noting that the development and maintenance of skills-based profiling tools is costly – the development of ESCO and the number of skills-based profiling tools that are already in place, suggest that there could be cost savings for PES looking to introduce these tools by adopting and tailoring existing products. The effective application of skills-based profiling tools is dependent upon on an advanced and well implemented digitalisation strategy, where the role of e-services and their application within the overall PES service offer is clearly identified. While there is a wide range of potential uses and benefits from the introduction of skills-based profiling, it is unclear whether the tools have been fully exploited and have delivered the anticipated returns. Benefits realisation is work in progress for most PES, which is partly due to early implementation and recognition of the skills and processes that PES need to put in place to implement and operate these tools effectively.

This Analytical Paper provided an insight into recent developments by specific PES in designing and implementing skills-based profiling and matching tools. The analysis is supported by a number of interviews with PES and PrES, which helped to fill some gaps in relation to the functioning and implications of these tools vis-a-vis labour market outcomes. However, further evaluation is needed to assess how and the extent to which these tools can deliver their full potential to PES.

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Appendix A.1: Questionnaire to PES and PrES

1. ARCHITECTURE AND DESIGN OF THE TOOLS

- How were skills defined? What criteria/scheme was used to structure the definition of skills?
- For what different purposes was the skills profiling tool developed?
  - To support jobseekers
    - Assist jobseekers to define their skill sets from their education/work experience (i.e. provide them with a relevant vocabulary)
    - Measure individual achievement and increase their self-confidence
    - Assist jobseekers in identifying job options (to explore a wider range of opportunities/ or define more realistic options given their current skills)
    - Support learning (through identification of skills gaps)
    - Help define and focus action plans and career aspirations/goals
  - To assist the PES in:
    - The speed, efficiency and effectiveness of matching candidates to vacancies
    - To improve employment outcomes through better matching
    - Improve the information provided to employers on candidates
    - To improve customer service/satisfaction from employers through better matching
    - Better define the target groups for ALMPs
    - Commission better targeted training and ALMPs (skills gaps)
    - Evaluate the effectiveness of training programmes (i.e. in filling skills gaps or meeting the needs of individuals and employers)
- How has digitalization contributed to these purposes?
- What is the involvement of PES staff in the design of the tools? Were employers or other stakeholders involved in the development of the tools? In what stages of the development were they most engaged?
- Are the tools being developed still further? What are the main areas/applications/tasks for development?

2. CURRENT USE OF THE TOOLS

- What was the process for implementing the skills-based profiling and matching tools (management, communication, staff engagement, investment in IT) and what were the implications (organisational and team design, job design, competences and training of advisers, performance measurement metrics). Have there been any lessons learned from the processes of implementation?
- To what extent is skills-based profiling used with specific groups of jobseekers and/or job vacancies?
  - Why is it used with these specific groups?
    - To what extent is skills-based profiling linked to ALMPs measures for jobseekers? Is skills profiling used differently across the different measures (for instance, more linked to training and subsidies but less to job counselling)?

- At what stage of the customer journey is the skills profiling used – prior to registration (e.g. at risk of redundancy), on first registration, after a given period of time (e.g. with the longer term unemployed)?

- When the skills/competences assessment is used to aid placement of jobseekers (into a job, to training or onto a programme), how does the skill matching take place? Fully automated profiling and matching or with some support from the PES advisers/practitioner? What is the role of PES staff in this respect?

- Is there an exchange of information/data with other stakeholders outside PES (for instance private employment agencies) in order to facilitate the matching process?

3. IMPACT OF THE TOOLS

Has a formal evaluation been under-taken of the impact of using skills-based profiling and matching tools? (please, clarify whether the answers to the following are based on opinion or a study)

- In terms of added value and effectiveness of skills-based profiling vs other types of profiling; have you

    – Observed an increase in exit rates from unemployment (reduced unemployment spells) as well as an increase in the rate of vacancy filling?

    – Observed an increase in employers' and jobseekers' satisfaction and/or reduced skill mismatch?

    – Experienced more effective targeting of ALMPs?

    – Do skills-based profiling and matching tools constitute an asset for the PES?

    – Is administrative data available to analyse the impact of the skills-based profiling and matching in terms of job outcomes? For instance, micro-data on unemployment duration, and skill mismatch for groups of jobseekers who used these tools through the job-matching process and those who did not.

- In terms of efficiency:

    – Have skills-based profiling and matching tools led to cost-saving, reduced errors and improved speed of administrative work?

    – Have these tools enabled larger caseloads?

    – Have these tools increased the entry requirements for the positions of employment counsellors? Has new or current staff been engaged in specific training programmes to improve efficiency from the use of the skills-based profiling and matching process?

    – Are PES working on a cost-benefit analysis to assess the efficiency and effectiveness of these tools? If so, how long has CBA been in place and are there any results that can be shared?

Appendix A.2: The Kompetenz-Dienstleistungen tool (DE)

K1: Create a first profile or continuing analysis about their strength. A comparison to a norm group can help to stabilize the individual competence characteristics of the client on a frame of references.

K2: To capture the intellectual capability (the ability of analyzing and solving problems) of the client. The result can clarify where the intellectual capability compared to other adults should be rated and where the strengths and the potential of the client is. Furthermore it also shows if the client is qualified enough for the theoretical requirements of the qualification he/she is targeting.

K3: Via an examination in the form of a structured interview the different aspects of the intellectual capacity of a client will be assessed by a psychologist. The report will show different aspects of the capacity like self-initiative, motivation/commitment, independent working, goal orientation/concentrated on the results and willingness to learn. Furthermore it will answer all the questions of the placement officer.

K4: With the help of exercises and tasks, the social-communicative competences like "empathy", "communication skills", "customer focused" and "be a team player" can be observed and estimated. This is for selected professional fields (professions in the social-nursing, commercial-technical fields of the field of sale and distribution, including IT-professions), also for people who plan to set up a business. The result will be written down and the identified strengths and the potential will be described in detail, furthermore advice on further developments and recommendations will be given. The result can also show an inconsistence.

Appendix A.3: List of soft skills included in My Jobkompas (DK)

Sense of details	Focuses on details rather than on totality; works methodically and likes to keep things in order
Prioritizes and plans	Creates an overview of the situation and thinks out and evaluates each element
Far-sighted	Always has a plan "B" Good at seeing what future brings
Modest	Does not like to be in the centre of events and prefers to be praised together with other people
Systematic	Works structured and methodically – and preferably according to plan. Thrives on knowing the start and end of a task
Orthodox	Prefers not to ask questions to superiors and authorities Does what the boss says
Careful	Likes to consider all aspects and details before making a decision Is often quiet when being with other people
Thorough	Is thorough in his work
Sense of orientation	Is good at finding his way in new surroundings and has a natural curiosity in this. Is good at feeling at home in the surrounding world
Effective	Works systematically with tasks and often at a rapid pace Gets the right task carried through in the right way
Thinks twice about things	Considers a task thoroughly before starting up. Considers if the work plan seems reasonable and gives a good result.
Alert	Notices suddenly arisen changes and acts quickly on changes
Draws on her experience	
Results oriented	Sets clear targets and likes to set aside other things and persons in order to reach the goal
Visionary	Likes to invent new and different ways to solve tasks and problems
A sense of orientation	Knows how to find the way to and the way back from a geographic point
Energetic	Finds it hard to sit down and often works with several things simultaneously
Takes the lead	Likes to take the initiative and is often impatient and action-oriented
Straightforward type	Is easy to talk to and feels comfortable meeting other people

	Other people feel well
Determined	Thinks over the situation and quickly reaches own conclusions
Curious	Has a natural interest in other people and new things and likes to know and try more!
Considerate	Is aware of other people's needs and offers his help unasked
Open	Likes to listen to other people's arguments and looks positively at new possibilities
Sets her foot down	The ability to say no
Inspiring	Knows through his behaviour how to engage and motivate other people
Patient	Is not irritated by waiting time or people acting slowly and takes the time to explain and solve a task
Talkative	Talks willingly and uncomplicated with other people about both professional and everyday subjects
Conscientious	Carries through tasks within the agreed time and extent and likes to invest both time and resources in the task if necessary

Appendix A.4: Skills profiling and matching (DE)

Description of skills

The bidirectional matching (VLM)

Appendix A.5: Some examples of tools in PrES

	Tool's description and aim	Content and Design	Delivery attribute
The Art of Assessment	Online psychometric testing: Assessment for recruitment, employees' evaluation and talent management process.	Personality Tests: To assess personality, motivation and skills • Professional Profile: Personality traits for executive positions. • Big Five Profile: Five principal personality traits (all positions) • Sales profile: Select the best sale force (all sales related positions) • CTPI-R: Work personality and leadership skills (for executives and managers) • Occupational interest inventory: Guide to career management (for students, job-seekers and employees)	• Profile summary • Graphs and tables • Customized comments • Analysis of strengths, weakness and areas to develop • Profile matching with job-positions
		Aptitute Tests: To predict performance • Reasoning tests (for students, job-seekers and employees) • Emotional intelligence tests (for students, trainees and employees) • Business English tests (for students, job-seekers and employees) • French tests (for any non-native French speaker pursuing a career in the French-speaking world) • General knowledge tests (for students and employees)	• Scores • Graphs and charts • Summary candidate profile • Customized comments and solutions

	Tool's description and aim	Content and Design	Delivery attribute
Self Awareness	Self Awareness online Footprint® diagnostic: Online questionnaires to: • Create behavioural job profiles and skills lists	Online Footprint® questionnaire: To capture behavioural working preferences, innate approach to new tasks and acquiring new skills	• Self-Awareness profile (overview of preferred working style, qualities, foundations, motivators and values to an organisation)

	• Compare candidates' behaviours, abilities and competencies against what the job requires Job matching tool (In-Tune® Job Matching system compares candidates' profiles against that determined for their vacancy to give an indication of soft skills fit)		• Candidate Feedback • Candidate Profile • Enterprenurial skills profile • Approach to new learnings and skills profile
		Online Job Role diagnostic: To quickly and easily generate a Soft Skills Summary for any vacancy.	• Soft skills summary: Profile of the soft skills requirements for Job Vacancies

	Tool's description and aim	Content and Design	Delivery attribute
Schuhfried	(Vienna Test System) Psychological tests and test sets for recruitment and suitability assessment aimed to helping employers to: • Define the characteristics and skills that employees need to have • Assess the extent to which the individual matches the requirements profile	Personality tests (for instance, "Big Five Inventory of personality in occupational situations") Intelligence tests (for instance the "Adaptability Numerical Flexibility test" to assess flexibility in mathematical problem-solving) Ability tests (for instance, "English Language Skills Tests) Interest tests (to define educational and vocational interests) ……	Scores of different test reported as: • Table • Profile • Progress chart (to compare results of different tests) • Test protocol (respondent's reactions, working time, and corrections made to answers. Word report: A report template is provided for all test sets and tests.

	Tool's description and aim	Content and Design	Delivery attribute
Hudson	(Competency Scan Online (CSO)) Online testing platform to optimise and increase the efficiency of the screening process	• Business Attitudes Questionnaire: To predict how a candidate will behave in a professional workplace The BAQ personality test to assess the "Big Five" personality domains	
		• Reasoning Ability	Report with:

		Questionnaire	• One general score: to indicate level of the applicant
		– Reasoning tests: to assess abstract, verbal and numerical reasoning ability – Aptitude tests: to assess specific skills (ability to plan, technical insight, speed and accuracy, spatial insight and analytical insight)	• Three sub scores: to reflect the working style of the applicant.
		Career Fit Indicator: To help companies to detect candidates with the personality features, motivational mindset and cultural preferences that match their organisation.	

	Tool's description and aim	Content and Design	Delivery attribute
PerformanSe	Behaviour assessment and cognitive skills in a professional environment on the French labour market	Behavioural Inventory at Work (PERF ECHO): Based on the "Big Five" model to describe personality	• Simple and effective graphical depictions • Text section describing the profile with more detail
		Programme for the Assessment of Cognitive Potential (PEPCo): • Rigorous and objective tests • Generic or configurable modules Recreational and interactive exercises	
		Individual Talents (Way by PerformanSe): Online self-evaluation questionnaire to identify talents and the professional circumstances in which these talents are the most likely to be expressed	

	Tool's description and aim	Content and Design	Delivery attribute
JobMatchProfile	Online job-matching tool to screen, compare, prioritize and rank all applicants in accordance to	(Garuda Toolbox) • Personal Profile (for job-seekers): Personality related competencies and skills in relation to a given job profile (cognitive, social	• Graphic Profile • Interpretational texts

	professional skills, experience, personality, focus and attitude.	communicative and performance competences)	• Statement Analysis
		• Job Requirement Profile (for employers): Define the personal competencies for a specific job position	

	Tool's description and aim	Content and Design	Delivery attribute
TARGETjobs	Career planning tool: • Generate a list of careers that matches individual's skills • Investigate jobs, employers and postgraduate courses • Understand capabilities, key motivators, career interests • Create action plan	Personality Questionnaires ("cut-e" group technology): Assess competencies as a manager, entrepreneur and expert	Reports with: • Competency-based guidelines • Additional featuring of development tips • Action plan and goals • Interview guidelines
		Values Questionnaires ("cut-e" group technology): Assess individual, job-related values, motives and interests.	Profile chart, or alternatively narrative reports
		Ability Tests ("cut-e" group technology): Measurement of aptitudes and assessment requirements: • Numerical abilities • Verbal abilities • Abstract logical abilities • Specific cognitive abilities • Special knowledge skills	Profile chart, or alternatively narrative reports

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