Workshop on European PES Skills Needs Anticipation Systems 25 & 26 January 2011

Report – April 2011

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Introduction

Following the publication of the Commission communication on 'New Skills for New Jobs' in December 2008 the network of EU Public Employment Services (PES), as one of the key players to deliver the skills agenda, has started further reflections on their role within this initiative. This key role of PES is recognised in the European initiative "New Skills for New Jobs" which calls for them to be one of the main actors in detecting and addressing skills mismatches and preventing the risks of structural and long-term unemployment.

In December 2009 the Heads of PES have agreed on an 'opinion from the public employment services (PES) network to the Employment Committee' on how PES can best deliver on the New Skills for New Jobs policy objectives'.
For more details see: http://ec.europa.eu/social/main.jsp?catId=105&langId=en.

In this opinion the network further defined its role within this initiative and has translated broader policy thinking into the contributions the PES can possibly make with their operational instruments.

In order to deepen the knowledge base of PES on New Skills for New Jobs (NS4NJ) the network has created a working group with NS4NJ specialists from the different public employment services. Its final output will become available in summer 2011.

At the same the Commission has launched an independent external study on 'Anticipating skill needs of the labour force and equipping people for new jobs - Which role for Public Employment Services in early identification of skill needs and labour up-skilling?. Its final results became available in 2011.

For more details see: http://ec.europa.eu/social/main.jsp?catId=105&langId=en

An executive summary of the results of this study is included in this report on page 8.

PES Skills Needs Anticipation Systems Seminar

On 25-26 January 2011 the Commission, in co-operation with the PES NS4NJ working group has organised on request of the PES network this seminar on the skills anticipation systems currently used in daily PES business. The PES from Denmark, Finland, Ireland, Germany, Norway and Sweden presented their skills needs anticipation systems and discussed them with their colleagues from the European network.

The objective of the workshop was to provide each PES with an understanding of how skills needs analysis is carried out by their PES colleagues in the other Member States. It was expected that the different European PES skills needs anticipation systems would contain both strengths and weaknesses. By exchanging information on these different systems, each European PES would be in a position to enhance the efficiency and effectiveness of their own system by incorporating the best aspects of the systems used in the other Member States.

The proceedings of the seminar are now published and may become an anthology with descriptions of the different systems. This anthology with contributions from Austria, Denmark, Finland, Ireland, Germany, Norway, Poland and Sweden is now put at the

disposal of the PES network. Thanks to the contributions from these PES colleagues you will find hereinafter the proceedings of the seminar, enriched by conclusive remarks from the organisers of the seminar and some additional information on related Commission initiatives.

The skills anticipation systems described are following a common outline:

- Description of the anticipation system
- Costs and resources involved in the Skills Anticipation System
- Sources of data
- The Research Methodology
- Research outputs
- Use of the outputs
- Dissemination of the results
- Further development
- Website
- Contact

Conclusive remarks from the organisers of the seminar

The organisation of this seminar on skills needs anticipation systems can be considered as a big success as it provided a platform for mutual learning and sharing of experiences. The proceedings of the seminar are a rich resource for further analysis and will contribute to further develop systems. All systems serve the purpose and deliver outputs in terms of future labour demand. This information on future labour demand is used by employment advisers, jobseekers and PES stakeholders.

Some general observations on the current state of play: it is striking that the anticipation systems are predominantly used on smaller labour markets: either at a regional level, such as in Germany and Poland where there is significant devolved responsibility for delivery or at the national level of the smaller labour markets such as Austria, Denmark, Finland, Ireland, Norway and Sweden. This suggests that anticipation is easier, more feasible and more reliable in a smaller context when it is closer to the points of interventions by PES on labour markets. The Swedish compass system includes a strong geographical dimension which might make it more effective at a local/regional as opposed to national level. It clearly facilitates geographical mobility within the country but is not unique in achieving this as other systems also provide this function.

One other common feature of these systems is that almost all in one way or another use data from employer's surveys as a main input. This seems logical given that meeting employer's demand has to be an immediate priority, this can also be a weakness as it places a strong dependency on the accuracy of the information provided by the employers. To overcome this it is important that employers understand their role within the system and importance of providing as detailed feedback as possible. A comprehensive cross section of employers is also crucial otherwise results can be skewed through over representation from those in sectors where the PES has the highest market penetration or the employers which have the best relationships with the PES.

Almost all the participants at the seminar agreed that the Finnish data mining system was very innovative and has huge potential for wider usage. It allows for good identification of soft skills requirements and might greatly assist in the identification of emerging

occupations and changes in the skills sets of existing occupations. By building up time series from data mining better research becomes possible which can develop the tool into a very useful anticipation system. The Irish system includes a questionnaire asking for skills that are currently not delivered by the market. It often transpires that specific technical skills or a combination of these not normally identified when analysing one occupation are missing.

In the discussion it also emerged that anticipation systems provide only limited recognition of new emerging occupations. ESCO, the new European classification of skills/competences, qualifications and occupations might in future address this problem. It could well become the basis for the future development of PES anticipation systems. For reference some information on ESCO is included in annex 4 of this report.

Several presenters advised that their system outputs required a further reality or plausibility check of the data by experts before they could be used. This involves a cross reference against the results of other research and outputs of other tools before they can be used by PES frontline staff. It was stressed several times that the presentation and visualisation of the data must be user-friendly and preferably interactive mode, so as to enable PES frontline staff and/or jobseekers to quickly use the information. The German system of labour market monitoring is a good example in this respect as it shows the huge potential of interactivity and visualization. It was also stated that PES staff use the results of the anticipation systems for a variety of purposes suggesting that the information gained from anticipation should be presented in different ways.

One of the main questions for PES management is whether the information gained from these anticipation systems is sufficiently reliable and accurate to enable and justify big investment decisions and targeting money to address certain mismatches? In other words are the predictions about future labour market skills needs accurate enough to support investment in costly long-term training and up-skilling of jobseekers/unemployed over a certain period of time (delay to finish training and up-skilling)? Is the information gained valid for longer than just a few weeks or months so as to justify major investments? This question needs further investigation and can only be answered in relation to each individual system. This could obviously be an issue for further common PES research into suitable methodologies.

It was noted that most anticipation systems only focus on the demand side of the labour market; inclusion of supply side data is more unusual. Enriching this with other administrative data widely available within the PES is a future option. The Irish system already operating as a type of data warehouse is an example of the potential from this approach.

In regard to the 'failure' of the anticipation systems to foresee the recent economic crisis, participants remarked that dramatic changes in the labour market such as those that resulted from the 2009 crisis are very infrequent. This kind of deep and severe crisis was not foreseeable with the currently available anticipation systems; it was not appropriate to question the reliability of the PES skills needs anticipation system because of their inability to take into account an unforeseen crisis starting with the financial markets.

Some major methodological problems deserve further attention, remain unsolved and should be tackled in the future. Most systems focus on in-demand occupations not individual skills; occupations are then vey often used as proxies for skills with information broken down to individual skills from the occupational level. There are certain doubts about whether this approach delivers reliable information on future skills demand. It was also noted that information on the level of skills required is also important. Several

participants mentioned that soft skills are gaining in importance but no methodology has been developed so far to integrate these into anticipation systems

The unresolved methodological challenges in addition to the strong interest of the participants of the seminar in further co-operation suggest that the PES network should explore appropriate follow-up activities. Individual bi-lateral exchanges between the participants might address certain questions but a more systematic follow-up is also advisable. The different instruments of the PES-to-PES dialogue i.e. the mutual learning programme from the Commission for the EU PES network offer several options for follow up activities.

The organisers of the seminar – the Commission and the volunteer members of the PES NS4NJ working group – would like to thank all PES representatives for taking an active role in the seminar and delivering the written descriptions of their systems in addition to those provided by the participants of the seminar.

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Executive summary of study on 'Anticipating skill needs of the labour force and equipping people for new jobs - Which role for Public Employment Services in early identification of skill needs and labour up-skilling?

The study was carried out by the Danish Technological Institute DTI, 2011, commissioned by the EU Commission, DG Employment, Social Affairs and Inclusion, study is available at. http://ec.europa.eu/social/main.jsp?catId=105&langId=en
The focus of the study has been the role of PES in anticipation of new skills, in particular PES' use of anticipation methods, strategies and knowledge. The study collected information about these topics through a multilingual online survey to European PES.

Current anticipation strategies and methods of PES

The current organisational focus on and capacity for anticipation is variable among the PES. Some have a dedicated anticipation department whereas others have dedicated staff but no specific department and few do not have dedicated staff. The study also found that there is great variation across Europe as to PES' cooperation with other stakeholders in anticipation and the types of labour market information used. Overall, the PES report that they use most frequently information concerning the demand side, while information of the supply of skills and qualifications are less frequently used.

The surveys of employers are the main source of labour market information used by European PES. Half of them exploit employer surveys to supplement information from other sources when they prepare forecasts. That is why most of PES emphasise the importance of maintaining a close dialogue with employers and their organisations. This dialogue usually concerns current vacancies, it is often not systematic and in most cases it involves only a small subset of employers.

Another type of information used by most of the PES are the quantitative forecasts of future skill needs and supply. There are big differences with respect to the scope of, and data sources used in, the forecasts as well as the frequency with which these forecasts are used. Some are ongoing nationwide exercises, involving large datasets and complex modelling, while others are regional forecasts built on projections of information from employer surveys.

The PES also use information from surveys of students and graduates but considerably less frequently than surveys from employers. PES' interface with organisations on the skill supply side was indeed found to be less solid than the interface with employers. The student and graduate surveys are used to obtain information about the attitude towards the labour market among students, study programme popularity, factors which trigger decisions to seek work abroad, and the extent to which graduates take up jobs in line with their qualification.

The last source of information used by the PES are the foresight studies. A little more than a half of the PES reported that they use such information on a regularly basis or sometimes whereas a third never use it. Foresight studies are regarded as a good instrument to provide information on economic and employment trends as well as trends in skill demand and supply.

Regardless of the source, the PES use anticipatory information at different level for different purposes. At national level, anticipatory information are useful to design the strategic planning of implementation of employment policies i.e. budgeting and allocation of resources, including staff in PES offices, planning of active employment measures, identification of target groups for active measures, and development of ICT-based labour market information systems. At regional and local level, information about future supply of and demand for skills is mainly used for planning purposes such as setting of production targets, development of action plans, budgeting and distribution of resources to offices. Finally, anticipatory information is mostly used by PES staff delivering services as an input to activities targeted at the unemployed.

Barriers with respect to anticipation in PES

The study also identified barriers and structural conditions that may hamper or prevent the anticipatory of the PES. The first barrier is the limited access to and insufficient quality of data or studies which is connected in some cases to the absence of efficient and comprehensive statistical infrastructures. The second barrier is the limited capacity in some PES to obtain and utilise forward looking labour market information. Few resources are dedicated to thus type of activities compared to the daily activities such as profiling and matching. The third barrier pointed out by the PES is the lack of focus on anticipation. Even in countries where anticipation activities take place, PES respondent still report limited access to or non-existence of such work. This indicates that there is a need for the PES to consider whether their internal systems are sufficiently efficient in gathering intelligence and ensuring that results of existing knowledge about future skill needs and potential skill mismatches inform their services to jobseekers and employers.

The way forward and the future role of PES

The French PES gave one quite important pointer when it called for a "forward looking culture in the PES". The study has indicated that such a culture is till not very widespread in many of the PES. To this could be added a need for a more "outward looking culture" of the PES in the sense of a culture more oriented towards European/international trends. The study has clearly demonstrated that many PES are not sufficiently informed about what is going on in anticipation of skill needs and skill supply in their own countries and in Europe at large.

The PES would benefit from dedicating resources to developing partnership with other government departments and agencies, as well as other organisations such as educational and research institutions that are involved in producing such information. Such partnerships could make up for the issue of limited range of sources for anticipation highlighted in the study.

In the PES that currently perceives many barriers with respect to the use of statistical data, the way forward (in addition to working at changing the situation) may be to refine the methods being used. Where the contact to employers is not well structured, the PES can develop a more systematic approach, for instance, by carrying out surveys or meetings at fixed intervals. This will improve their ability to identify trends in the employers' demand for certain skills.

In addition to input into resource planning, guidance and counselling of jobseekers, anticipatory information is useful for a large number of other activities in the PES described by the respondents to the survey. However, the study indicates many PES could benefit

from a more focused approach when utilising the information. This can be achieved by systematically examining the information needs of stakeholders in regional and local labour markets and devising mechanisms for delivering information to each of these stakeholders. This requires that the resources that are already used for developing and maintaining partnerships be prioritised, so that anticipation becomes a shared issue in the partnerships.

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Finland

I. Skills Anticipation System 1: Employer Interviews

I.1. Description of the "Employer Interviews" tool used in Finland

Employer Interviews serve the Employment and Economic Development Offices (TE-offices) and the Centres for Economic Development, Transport, and the Environment (ELY-centres) in the planning of employment services and training supply but also in the planning of the strategic development of the region in general. Information is collected via telephone, electronic surveys, and personal visits. Large number of Employers are interviewed by telephone and sample of employers are interviewed by the officers of TE-offices.
The aim of the employer interviews is to gather updated information quickly and efficiently on the need for labour, the training needs and plans for developing business activities of the various companies. On a more general level aim is to acquire versatile information on the use of labour, the sectors, and characteristics special to the region.

I.2. Costs and resources involved in the Skills Anticipation System

Telephone interviews are coordinated and funded by national development project. Budget of the project is less than 1 000 000 Euros a year and at the moment there are four people working in the project.
The personal interviews take 1-2 hours. The cost of the consultant firm which produces the final report of the personal interviews and which implements the expert panel is ca 10 000€.

I.3. Sources of data

Telephone interviews, electronic questionnaires and personal interviews. Telephone interviews are conducted by external call centres and the personal interviews mostly by the officers of TE-offices. Personal interviews have been also outsourced to educational institutions in some cases.

I.4. The Research Methodology

Telephone interviews are conducted by external call centres which have lists of companies to be interviewed in a certain region. The results are saved in a separate database and are available to the TE-offices and ELY-centres on the day following the interview.

The information collected in the interviews is used in real time. User rights for the databases are granted separately to the persons appointed by the TE-offices and ELY-centres.

Telephone interviews are performed as structured interviews. The interview form contains 21 questions, 18 of which are common to all areas, and three are defined regionally. The size and branch of the companies is considered in the questionnaire.

The interview covers four extensive themes: the development prospects and current situation of the company, the recruitment plans, the training needs for the employees, and the development of the company's business operations. The companies are asked about:

- their growth prospects for the coming year,
- their volume of orders and work situation,
- the development of the number of employees within two years,
- their immediate and near future recruitment plans,
- their recruitment problems,
- their plans for educating the employees,
- their plans for developing the business operations, regarding investments and facilities, for example.

The opportunities of the company to offer apprenticeship or traineeship are defined through separate questions.

Personal interviews target a few branches every year. For example during the years 2004-2005 eight sectors were interviewed in a year in the area of ELY-Centre for Southwest Finland. Nowadays 2-3 sectors are interviewed in a year. These interviews collect information from sample of companies within a certain branch through personal interviews by the officers of TE-offices.

Telephone interviews and personal interviews include same themes. More in-depth information can be gathered through personal interviews than in the telephone interviews. When the interviewers are experts in labour policy, the interview questions will particularly concentrate on the use of labour, problems related to recruitment, changes in the different occupations, and changes of the required competence.

Decisions regarding the sectors in which the personal interviews should be focused have been made in the annual negotiations held between the ELY-centre and the TE-office. In conjunction with these negotiations, the TE-offices have proposed important sectors in which they would like the interviews to focus.

The Offices have also selected the businesses to be interviewed. The number of interviews the TE-office will conduct in the agreed sectors has been decided in the above-mentioned negotiations between the parties. There has been no systematic method for selecting the businesses. Instead, the TE-offices have strived to achieve a comprehensive sample based on their own expertise.

The interview questions are related to the need for labour anticipated by the companies, need for training, changed competence needs, problems related to recruitment, and economic prospects. The results include regional information on the sector that is specific to the TE-office in question and based on the estimates by the companies of their current state as well as their future. This information serves the TE-offices and the ELY-centres in the planning of education supply but also in the planning of the strategic development of the region in general.

Once the results from the interviews have been completed, they are outlined in a summary to be delivered to the panel of experts. The ELY-centre is responsible for drafting the summary. Sometimes, external experts are used as leaders of the expert panels and creators of the summary reports.

Expert panels include representatives of all central operators in the development of the sector, including the ELY-centres, TE-offices, labour market organisations, employee and employer organisations, educational organisations, and regional corporate service organisations. The expert panels are often gathered specifically for the Employer interview process, but an existing structure can also be used.

Expert panel analyse the results and create a SWOT analysis for the sector, to be used by the experts to formulate tangible suggestions for actions of the sector. The objective of the expert board operations is to identify the weak signals of the sector. A final report is drafted for each sector where interviews are performed, consisting of the results of the interviews together with the SWOT analysis created by the experts. The final reports will present tangible suggestions and recommendations for the development of the sector.

One of the objectives of the work of the expert panel is to create a network between the key regional operators. The Expert panel will create a SWOT analysis of the sector in question based on the results of the interview, and identify weak signals and megatrends. The boards will use the Delphi method and Ning Forum as their forms of working.

Members of the expert panel and the personally interviewed employers will participate in the Deploy questionnaire. The Deploy questionnaire is an electronic survey form, which is used to collect the views of the expert board and respondents, for instance on the proposed measures prepared by the expert panel. The Delphi questionnaire is used to ascertain how respondents prioritise the proposed measures, for example.

The Ning Forum is a networking solution similar to other social media. Through it, members of the expert panel and representatives of the interviewed businesses can comment on the results of the interviews as well as on the SWOT analysis and proposed measures prepared by the expert panel. The forum provides the opportunity for broader discussion in order to establish a foundation for the analysis of the interviews. The discussion on the Ning forum is followed by the completion of the final report prepared by the expert panel on interviews in a particular field.

A final report is sent to the interviewed employers (interviewed by TE-office) and to the members of the panels of experts. Likewise, the report shall be delivered to government ministries, the development centres of provincial sub-regions, educational institutions, TE-offices, etc.

I.5. Research outputs

The strength of the telephone interviews lies in their high success rate of reaching the companies. Approximately three out of every four companies are interviewed, regardless of the region. Only a very small percentage of the companies decline the interview.

The operating method enables short reaction times in situations of sudden structural changes: for example when information is needed quickly on the future prospects and plans of companies in a certain region. Despite the large number of interviews, systematic analysis of the results is made possible by the service groups and reports.

During the past two years, the TE-offices around Finland have analysed the service needs of more than 50,000 companies.

The first telephone interviews were performed in March 2009. After this, more than 190,000 companies have been called, and at the moment, almost 140,000 companies have been interviewed.

The effectiveness of the interviews can be monitored, for example, by the assignments received during the interviews in certain region (vacant job positions, training positions, subsidized job positions, apprenticeship positions…).

I.6. Use of the outputs

The information gathered in the interviews can be used in many ways and stages. The service needs and opportunities of companies are identified through service groups. Approximately half of the companies interviewed by telephone are categorised in some service group. The groups can be used to systematically cover all the service needs, and therefore, to analyse large amounts of interview data. Approximately 25 per cent of the companies are only included in one service group. Another 25 per cent are included in more than one service group. Only one-fifth of the companies are in acute need of services or present a service request. This means the need or requests for further information regarding immediate recruitment or recruitment in the near future. The rest of the service needs mostly concern a service opportunity.

The automatically generated reports can be utilised in planning the operations in the long term. In addition to the automatically generated reports, the results can be flexibly handled in the ELY-centres and the TE- offices. Comparisons between regions or branches are easy from the perspectives of the general development prospects, recruitment plans, retiring rate, or need for labour, for example.

Employer interview results can be applied:

At the TE- offices:

- in planning and obtaining local labour market training
- in employment services (companies adding to their workforce and companies in which recruiting is problematic)
- in location guidance and networking activities (sub-contracting needs, outsourcing, premises needs)
- activities safeguarding during change
- in communications profiling employment offices, in image-building

At the ELY-Centres:

- in planning and acquisition regional and local adult training
- in other planning and development, development projects, special projects?

- in business environment analyses, labour market analyses, in economic and business condition reviews, probe reports etc.
- in identifying new business potentials and outlines for innovation (new business ideas, outsourcing plans, networking and sub-contracting needs)
- in communications
- in business services (i.e. in considering measures for development)
- in implementing strategy: in reducing recruiting difficulties cf. ensuring the availability of labour, in improving regional competitiveness cf. skill development

In government ministries:

- in drafting regional economic reports
- in drafting business field reports

In regional developer organizations:

- in planning training in educational institutions (training projects, training needs, contacting companies)
- in planning and developing areas in focus for provinces

Information concerning the essential results shall be sent to the media. If necessary, a briefing about the interview results can be arranged. The report shall be published on the Internet on the regional (and national) webpage.

I.7. Dissemination of the results

At the moment, there are approximately 1,500 users of the database. All 15 ELY-Centres and 72 all of the 74 TE-offices participate in the operations.
The information collected in the interviews can be utilised in real time by the TE-offices and the ELY-Centres.

The information collected is also available to the other development and education organisations in the region, particularly for the forecasting of the needs related to labour and education.

I.8. Further development

In the future, the intention is to use a unified model for performing employer interviews and utilising information in the whole Finland. The different areas have used various forecasting tools and operating methods for their forecasting operations.

Several methods will be used for the interviews in the future as well. Information is collected via telephone, electronic surveys, and personal visits. The results of the interviews should be utilisable from the perspectives of both company-specific service needs and forecasting, which means that the database should be connected to the customer relationship

management systems used by the TE-offices and the ELY-centres. This issue is currently being developed.

I.9. Website

Some of the information is open to all. Those reports can be found from www.yritysharava.fi. Currently the web page is only in Finnish.
The reports of the personal interviews are in www.luotain.fi – only in Finnish. Reports are from the year 2004-2011.

I.10. Contact

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II. Skills Anticipation System 2: Data Mining

II.1. Description of the "Data Mining" tool used in Finland

The purpose of the "Data Mining" project is to develop a tool (computer application) that can be used to easily and efficiently determine profession-related capability requirements in job advertisements. The application makes searches with help of headwords. As a result we can get requirements and their importance (frequency) for occupations. The Data Mining Tool can be used for example planning different training contents or giving an information for a job seeker or a student of skills needed in a certain occupation.

II.2. Costs and resources involved in the Skills Anticipation System

Development of the Data mining tool has so far cost under 100 000 €. The Data mining tool as a "program" has been bought from an external provider (company). In-house costs include working time costs of two project workers (approximately 1/4 of their working time inside 1 year). Development of the tool is still on the process. There will be also extra costs to maintain on-line server in the internet later on.

II.3. Sources of data

The Data Mining tool automatically collects information on profession-specific capability requirements from open job advertisements. The profession-specific qualifications can at the moment only be identified in job advertisements posted on the public employment service website (www.mol.fi). A future goal is to allow the tool collect information also from other/private job advertisement websites.

II.4. The Research Methodology

The application collects data from profession-related capability requirements in job advertisements. The application collects also frequency of different requirements inside an occupation as well as location information. It uses "word search" as logic of collecting a data. Words have to be input to the application which takes a lot of time in a first time but gets easier all the time when new updates have been made. The application can remember the old headwords and only new ones have to be input to the system. It's also possible to search certain requirements e.g. "German language" through whole database despite of occupation. It gives us possibilities to see, where in nationwide certain skills are needed. So far the database has been collected on a server of external provider (company). Later on there should be a different solution how to deal with warehousing of data. The external company provides also the platform of the application and it reforms the tool according project's needs.

II.5. Research outputs

The Data Mining tool automatically collects information on profession-specific capability requirements from open job advertisements. It also collects information on what expectations the employers have with regard to their employees. The tool enables the monitoring of changes in the capability requirements within professions. The forecasting is also possible by comparing increasing and decreasing qualifications (inside certain occupation). The South-West Finland Centre for Economic Development, Transport, and the Environment has been working on developing a clear and easy-to-use interface to utilise the information. The goal is to nationalise the regional project.

II.6. Use of the outputs

The Data mining tool is not an official tool in Finish PES and development of the tool is still on the process. So far it has been used on a couple of educational planning processes in South-West Finland to define qualifications of different occupations. The opportunities of the tool are much wider than that:

- to promote different educational processes e.g. to define content of different trainings (PES and institutional)
- to produce up-to-date information of different occupations to job seekers / students
- to promote career consultation (institutions and PES)
- to promote career guidance officers (PES)
- to produce information to researchers and labour market experts
- to link information to other suitable labour market applications

II.7. Dissemination of the results

As earlier mentioned, the Data mining tool is not an official tool of PES and development is still on the process. It supposed to be "ready" to wider use at the end of year 2011. So far it has been tested in some occasions in South-West Finland. The plan is to provide results of the Data mining tool in internet (up-to-date) for various user groups (e.g. job seekers, career planers, study advisors). It's also possible to bring information to these user groups in different interfaces if it seems appropriate. The splendid detail of the Data mining tool is the possibility to disseminate the solution to other countries quite easily and without big costs.

II.8. Further development

To use data mining to pick up qualifications from job advertisements is so new application that new utilization possibilities are invented all the time. In the near future it will be discussed to link results of the tool to couple of national web services. The other plan is to provide easy to use user interface, where users could pick up a lot of important

information according the occupations from one website (compare Swedish "Yrkeskompassen"). The information would be brought from other sources that already exist but are used impracticable separately.

II.9. Website

There is not such website yet but it's on the process. It supposed to be ready at the end of year 2011. In the beginning it would work only in Finnish language.

II.10. Contact

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III. Skills Anticipation System 3: Occupational Barometer

III.1. Description of "Occupational Barometer" tool used in Finland

The occupational barometer shows a forecast of shortage and surplus occupations in the region. It is based on a view of the TE-offices (Employment and Economic Development Offices) on the development of the labour market situation in the coming half year. It can be used for example to promote mobility of the workforce or planning of different trainings for job seekers.

III.2. Costs and resources involved in the Skills Anticipation System

The evaluation has been made in TE-offices and the evaluation meeting takes approximately two hours. Staff involved in a task depends much a size of TE-office; usually 2-15 workers are doing the evaluation in a region of South-West Finland.

In the ELY-centre of South-West Finland (The Centre for Economic Development, Transport, and the Environment), which is locally coordinating functions of TE-offices, are working two persons with the occupational barometer. It takes about one day work from both of them, every time the barometer has been published (2-3 times a year).

A planning of an outfit and a printing of the barometer are done by external providers. The planning in two languages costs about 700 € and the printing about 2000 € (100 copies of size "A1" and 4000 copies of size "A4").

In South-west Finland there is also a development group which meets about 6 times a year in two hours meetings (4-7 persons).

Elsewhere in Finland works one person who takes care of a functionality and development of an user interface. The evaluations are made there by TE-offices. The ELY-centre collects the information regionally from the user interface and takes care of barometers way to posters. The costs of the developer aren't divided regionally.
Delivering the posters to stakeholders takes also a little bit posting costs.

III.3. Sources of data

Sources of data is actually a knowledge and information that officers of TE-offices have about the local labour market. The officers have a lot of different connections to employers (e.g. 60-70% of open vacancies are open in a PES websites) and employees (e.g. an unemployed job-seeker have to be registered in the PES system that he/she would be allowed to an unemployment benefits). It can be said that they have locally the best knowledge to do such an evaluation.

III.4. The Research Methodology

TE-offices assess the demand of 200 occupations in one year. They assess also the balance between the demand and supply of 200 occupations. These 200 occupations are classified into three categories; a) shortage b) balance c) surplus of jobseekers. Officers of TE-offices should use their knowledge and information that they get from every day work with employers and employees as they do the evaluation. They have also a little bit historical data (number of jobseekers and vacancies) as an assist but they have to remember clearly that they are evaluating a future situation and not be grounded on a historical data. The evaluations of TE-offices are gathered in every region and results are printed easy-to-use posters in Finnish, Swedish and English.

III.5. Research outputs

The Occupational barometer gives foresight information (half year ahead) about shortage and surplus occupations in the region. It also gives information (half year ahead) in which occupations there are increasing and decreasing recruiting needs. If there are possible "bottle necks" factors in certain occupations, it can also be seen on the barometer.

III.6. Use of the outputs

- Vocational guidance
- Employment services, matching
- Promotion the mobility of workforce (regional and occupational)
- Planning of adult and vocational training
- Planning of immigration
- EURES-services
- Labour market analysis (the prospects of occupations, shortages…)

III.7. Dissemination of the results

Generally the posters are printed of key results and they are disseminated to TE-offices, schools, educational institutions and all the other relevant actors in a region. Also conferences and seminars are suitable places to deliver information forward. The posters can also be seen on a couple of websites.

III.8. Further development

All the ELY-Centres in Finland (one in each region) are implementing the OB 2011 under the guidance of the Ministry of Employment and the Economy. The plan of internationalization is to spread the occupational barometer at least in Baltic Sea countries in a near future.

III.9. Website

At this moment the website is behind passwords. Later on there are plans to open it in the internet. The system works in three different languages Finnish, Swedish and English.

III.10. Contact

- jouni.marttinen@ely-keskus.fi
- timo.vahtonen@ely-keskus.fi

Ireland

1. Description of the anticipation system in Ireland

The Irish Public Employment Service is an integral component of FAS, which is the Training and Employment Authority of Ireland.

FAS is responsible for many other labour market functions, in addition to the functions associated with public employment services. It delivers training programmes to job-seekers in its training centres and through contracted trainers throughout the country. It also manages a range of employment programmes, including a major community employment programme.

FAS has a Planning and Research Department which contains three units, a Library and Technical Information Unit, a Survey Unit and a Skills Unit. The latter is called the Skills \and Labour Market Research Unit (SLMRU) and it is responsible for the identification of the skills needs of the Irish economy.

2. Costs and resources involved in the Skills Anticipation System

The first and most important institution associated with the Skills Needs identification model in Ireland, is the Expert Group on Future Skills Needs (EGFSN). The EGFSN monitors the balance between skills demand and supply in the economy and it advises Government on measures to resolve any identified shortages. It reports to both the Minister of Education and Skills and the Minister for Enterprise, Employment and Innovation.

The Group has a tripartite structure under an independent chairperson. It includes representatives of the Social Partners, the relevant Government Departments (i.e. Department of Finance; Department of Enterprise, Employment and Innovation; Department of Education and Skills) the Economic Development Agencies (IDA Ireland; Enterprise Ireland;) and the Agencies involved in policy in relation to post secondary education and training (Higher Education Authority; FAS; Skill-Nets; Vocational Training Committees).

The administrative functions of the EGFSN are provided by a secretariat of approximately five persons - all of whom are employees of the National Policy and Advisory Board for Enterprise, Trade, Science and Innovation (Forfas).

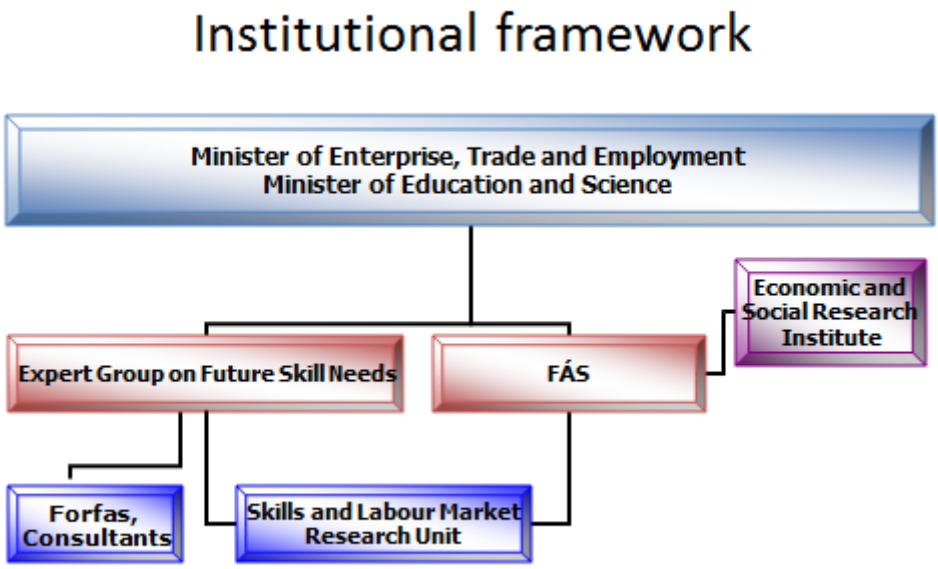
The on-going in-house quantitative and qualitative research requirements of the EGFSN are provided by the Skills and Labour Market Research Unit; the EGFSN contract with external consultants from time to time to provide research studies, usually on specific sectors of the economy. However, even in these cases, the background quantitative analysis is usually carried out by the SLMRU.

The SLMRU has a permanent staff of 6 and one person under contract. The 6 staff members consist of a research manager, a senior research officer, 3 research officers and an administrative assistant. The total annual budget of the SLMRU is €450,000. This covers the cost of salaries and commissioned research.

Finally, the Economic and Social Research Institute, which is the largest private sector institute in Ireland, also play a role in the skills needs identification system. They provide the SLMRU with five year total sector employment forecasts which are based on their macro-economic model of the Irish economy (HERMES).

A visual representation of how the model works is provided in figure 1 below.

Figure 1:
Profile of the Skills Needs Identification System in Ireland



The model has three distinct strengths. Firstly, as the EGFSN reports to both the Minister of Education and Skills and the Minister for Enterprise, Employment and Innovation, it brings together in a formal integrated structure, the Department which is responsible for the formulation of policies on the supply of skills (i.e. the Department of Education and Skills) with the Department who is responsible for the formulation of enterprise policy, which ultimately determines the demand for skills.

The second strength of the model is that as senior figures in the relevant Government Departments are represented on the EGFSN, the Group has the authority to implement the recommendations of the reports it commissions. These recommendations are reviewed on an annual basis, with a view to ensuring that they are being implemented by the appropriate authority.

Thirdly, the EGFSN has access to comprehensive, timely data on skills supply and demand in the Irish economy. The provision of such data is the responsibility of the SLMRU; the data is held in the National Skills Database (NSD).

3. Sources of data

A list of the data variables, the source of the data and the frequency it is inputted into the NSD is shown in table 1 attached. The single most important data-base in the NSD is the National Household Quarterly Survey from the Central Statistics Office (i.e. formerly the Labour Force Survey). This contains about 100,000 records which is equivalent to over 2.5% of the population. This data-set provides very detailed and comprehensive data on the characteristics of the employed. The NSD has such data spanning over 10 years, which provides for good time-series and trend analysis and for forecasting.

Every five years, there is a Census undertaken of the population and this data is also inputted into the NSD. The NSD contains the relevant Census data since 1996.

The NSD contains three databases on vacancies. The NSD collects data on notified vacancies and vacancies filled from the (FAS) Public Employment Services on a monthly basis. This database, however, only represents about 25% of annual notified vacancies in Ireland and it is biased towards traditional industrial and construction occupations.

To address this bias and to increase the share of vacancies covered by the NSD, the SLMRU also collects vacancies from the Irish Times – a newspaper which has a strong readership among the professions, and which carries most of the notified vacancies for professional occupations. The NSD also contains data from the largest internet vacancy site in Ireland, www.Irishjobs.ie

The SLMRU also carries out a twice annual on-line survey of all recruitment agencies. This survey provides information on the vacancies which recruitment Agencies find most difficulty filling and the reasons why they experience these difficulties.

Table 2
List of the main data variables which are systematically inputted into the NSD

Variables	***Brief description***	***Frequency***	***Source***
Labour force Employment	The National Household Survey	Quarterly	Statistics Office (CSO)
Unemployment	Census of Population	5 Years	CSO
Vacancy data	Public Employment Services	Monthly	FAS
	Newspaper	Monthly	Irish Times
	Internet	Monthly	www.Irishjobs.ie
Difficult to fill vacancies	Survey of Recruitment Agencies	Twice annually	SLMRU
Job-closures/openings	Daily monitor of newspapers	Daily	SLMRU
Immigration data	Data on immigrants from outside the EEA area entering Ireland under the Green-card and Employment-Permit systems and their occupations		Department of Enterprise, Trade and Employment
Applications to third-level colleges	Data on the preferences of students in respect of third-level colleges	Annual	Central Applications Office
Student/trainee enrolment and graduation	Vocational training	Annual	FAS/DES/FETAC
	Sub-degree programmes	Annual	HEA
	Degree and higher	Annual	HEA
Destination of students and trainees	Vocational training	Annual	FAS
	Schools	Annual	DES
	Third-Level Education	Annual	HEA

Redundancies	Notified redundancies to Department	Annual	DEEI
Jobseekers	Registrations at employment offices	Monthly	FAS

The SLMRU also collect data on the skills of those who immigrate to Ireland from outside the European Economic Area[1] under the Green-card system (i.e. for highly skilled labour) and the Work Permit system. This data is provided to the Unit by the immigration section of the Department of Enterprise, Trade and Employment.

Data on those who apply, enrol and graduate from the third-level education system is also included in the National Skills Database. This data is systematically gathered from the Higher Education Authority, the Department of Education and Science and the Central Applications Office (CAO). The SLMRU also collects data from FAS and the second level education system on enrolments and graduations from post-secondary vocational training programmes and apprenticeships.

Finally, data on FAS jobseekers, unemployment and redundancies are also included in the NSD.

4. The Research Methodology

The methodology used by the SLMRU to provide timely and comprehensive data to the EGFSN consists of data warehousing and primary research.

a. Data warehousing.

The main instrument which the SLMRU use to inform the EGFSN of trends in skills demand and supply is the National Skills Database (NSD). The NSD is an electronic storehouse containing all of the data relevant to the supply and demand for skills which is produced by the public authorities in Ireland. The NSD also includes data from private sources and the Unit pays a fee for such data. Finally, NSD also includes data which is gathered through surveys conducted by the Unit.

The software underpinning the NSD is Microsoft SQL Server Database and the data is analysed using ACCESS and Excel. While the data can be interrogated using ACCESS, the NSD also contains a large volume of analysis which is already programmed in the model. This is because there is a large volume of analysis which is regularly requested by the EGFSN.

All of the demand-side data in the model is coded to the standard occupational classification (SOC 90) which is the official occupational nomenclature used in Ireland and the United Kingdom.[2]. The supply-side data is all coded in ISCED.

A special sub-committee, comprised of representatives of the public authorities who regularly provide data to the database (Higher Education Authority (HEA); National Qualifications Authority (NQA); Central Statistics Office (CSO); Department of Enterprise

[1] Workers within the expanded European Union and Switzerland and Norway are entitled to work in Ireland as of right.
[2] SOC has a correspondence with ISCO '88 and the occupations can be relatively easily translated into ISCO codes for European comparisons.

Employment and Innovation (DEEI); the Department of Education and Skills (DES) and FETAC meets quarterly under the auspices of the EGFSN. This committee provides a forum in which issues relating to data can be discussed and resolved.

The NSD contains two databases; the first and primary database contains the variables which are required for the Unit to carry out its primary function; to monitor trends in the demand and supply of skills and to produce annual reports outlining these trends and the implications for national labour market policy.

The second database contains the demographic data and the data required for forecasting.

b. Primary research

Currently, the SLMRU conducts a twice yearly survey of recruitment agencies. This survey is carried out on-line. Its objective is to identify any skills sets which recruitment agencies are finding it difficult to source in Ireland.

The Unit also monitors job-openings and closures on a daily basis.

However, the SLMRU plan to initiate two new surveys in 2011. The first is a monthly survey of a sample of employers who have notified vacancies to FAS in the previous three months. The purpose of this survey is to establish the extent to which employers are experiencing difficulties filling vacancies and to identify the salient characteristics of these vacancies.

It is also intended to conduct twice yearly surveys of FAS employment officers, again to establish if, and in what circumstances, they have experienced difficulties filling vacancies.

5. Research outputs

The SLMRU produce three reports on an annual basis; the National Skills Bulletin; Monitoring Ireland's Skills Supply and the Vacancy Overview Report. It also produces detailed employment forecasts every two years.

a. The National Skills Bulletin:

The report monitoring trends on the demand side of the labour market is called the 'National Skills Bulletin'. The main focus of the Bulletin is the analysis of employment at occupational level over the previous five years. Each occupation is examined in terms of data in the NSD. These include its employment profile and five year trends; the number of employment permits issued to non-EU nationals by the Department of Enterprise, Employment and Innovation; an indication of difficulty in filling positions from the twice yearly Survey of Recruitment Agencies; movements in the number of vacancies advertised through FÁS, the Irish Times and IrishJobs.ie; an estimation of the supply emerging from the Irish education and training system as provided by the Higher Education Authority, Higher Education and Training Awarding Council (HETAC), Further Education and Training Awarding Council (FETAC), Department of Education and Science, State Examinations Commission and various private providers; any other relevant findings from the EGFSN's sector studies and the SLMRU sector studies.

By synthesizing all of the above information in the Bulletin, it is possible to arrive at a reasonably reliable estimation of the balance between the demand and supply for each

occupation. Identified shortages are defined in terms of their characteristics, i.e. skill shortage or labour shortage, expected duration and significance.

This information is summarised in respect of over 100 occupations in a table in the Bulletin. A page from that table is shown in Table 3 below for illustrative purposes.

Table 3 Example of Demand and Shortage Indicators for Selected Occupations

Occupations	*Numbers employed*	*% female*	*Part-time*	*Unemployment*	*% >55*	*% Non-Irish National*	*Annual average growth rate 2001-2006*	*Work permits 2006*	*Work Visas/ Authorisations 2006*	*Difficult to fill vacancies*	*Replacement rate*	*Shortage indicator*	*Comment*
Natural scientists	9,700	59.7%	7.1%	Below Average	5.6%	7.3%	7.1%	39		17	2.8%	No shortage	
Chemists	2,400	17.9%	2.0%		5.4%	5.5%	6.7%	3		7	2.8%	Skill shortage	F
Biological scientists	4,400	61.1%	10.0%		10.0%	5.0%	10.0%	13	2	8	2.8%	Skill shortage	F
Physicists & other natural scientists	2,900	52.7%	7.4%		0.0%	11.7%	3.7%	23	1	2	2.8%	Skill shortage	F
Engineers and technologists	45,200	12.1%	2.7%	Below Average	7.4%	11.3%	6.0%	281		142	2.8%	Skill shortage	
Civil/mining engineers	11,500	7.6%	0.8%		9.1%	10.5%	9.3%	6	105	28	2.8%	Skill shortage	S,C,F
Mechanical engineers	5,200	4.9%	1.3%		8.3%	11.2%	7.5%	0		6	2.8%	Skill shortage	F
Electrical engineers	4,000	4.2%	1.5%		6.9%	7.9%	5.8%	3		6	2.8%	Skill shortage	C,F
Electronic engineers	3,500	11.5%	4.3%		5.3%	10.0%	-0.1%	23		0	2.8%	Skill shortage	C,F
Software engineers	10,200	20.9%	5.8%		2.3%	11.5%	4.9%	174	313	7	2.8%	Skill shortage	S,C,F
Chemical engineers	1,600	5.9%	2.3%		3.1%	13.2%	9.1%	0		3	2.8%	Skill shortage	C,F
Design & development engineers	1,900	25.2%	3.6%		7.8%	17.7%	7.8%	19		7	2.8%	Skill shortage	C
Planning & quality control engineers	1,800	27.9%	0.0%		12.9%	11.3%	-0.6%	5		22	2.8%	Skill shortage	C
Other engineers & technologists n.e.c.	5,700	12.0%	2.7%		12.1%	13.0%	6.1%	51		63	2.8%	No shortage	
Health professionals	17,200	43.5%	13.1%	Below Average	15.7%	14.7%	5.6%	719		0	2.8%	Skill shortage	
Medical practitioners	10,400	39.1%	12.7%		16.2%	19.1%	7.2%	620	33	0	2.8%	Skill shortage	S,C,F
Pharmacists/pharmacologists etc	2,800	70.2%	16.2%		17.9%	9.9%	3.8%	94		0	2.8%	Skill shortage	C
Dental practitioners	1,500	68.2%	20.7%		9.5%	0.0%	2.9%	2	1	0	2.8%	Skill shortage	S,C,F
Veterinarians	1,900	82.0%	7.2%		14.7%	6.1%	5.8%	3		0	2.8%	No shortage	
Teaching professionals	84,200	70.9%	14.9%	Below Average	14.5%	4.6%	3.9%	97		0	2.8%	No shortage	
University and IoT lecturers	11,800	45.6%	13.0%		17.4%	13.6%	5.6%	53		0	2.8%	No shortage	
Secondary and vocational education teachers	32,100	68.2%	13.2%		16.2%	3.9%	4.0%	2		0	2.8%	No shortage	
Primary & nursery education teachers	32,000	82.0%	8.1%		11.4%	2.1%	4.4%	9		0	2.8%	No shortage	
Legal professionals	10,700	46.1%	5.5%	Below Average	11.0%	2.8%	5.8%	15		11	2.8%	No shortage	

b. Monitoring Ireland's Skills Supply; Trends in Education/Training Output;

The report monitoring the supply of skills in called 'Monitoring Ireland's Skills Supply; Trends in Education/Training Outputs'. The objective of this report is to provide an indication of the current and future supply of skills to the Irish Labour Market from the formal education and training system. It examines these outflows across 7 levels of the 10-level National Qualifications System (i.e. levels 3-10). At each level, the supply of skills is examined under the following indicators;

- Graduate output: It is used as an indicator of future supply.
- Student inflows: this is used as an indicator of the potential future supply of skills
- Gender: this is used as an indicator of gender balance.
- Discipline: This is used as an indicator of the supply of skills by broad range.
- First destination: this is used as an indication of the student's destination following graduation.

International comparison: This is an indicator of how Ireland performs internationally in terms of education flows.

c. Vacancy overview

The SLMRU produce an annual report on employment prospects based on an analysis of the three vacancy databases in the National Skills Database, the recruitment survey and the monitoring of job-closures and job-openings.

d. Forecasts of employment by occupation.

The Unit, in partnership with the Economic and Social Research Institute produce employment forecast roughly every three years.

The ESRI has developed a comprehensive macro-econometric model of the Irish economy called 'Hermes'. This model takes into account all of the domestic and international influences which impact on Irish economic performance.

The forecasts are of 29 industry sub-groups and 43 occupation sub-groups and cover a five year period. These forecasts are highly influential and they have an influence on Government fiscal and social policy.

6. Use of the outputs

The Skills needs Identification model performs a number of important functions

Skills mismatches: Firstly, the model identifies where there are imbalances between the demand and the supply of skills. These imbalances are often used by the EGFSN as the basis for recommendations for increased VET provision in certain key areas, such as software engineering.

Career guidance: The analysis from the model is used to inform school-leavers and job-seekers about the relative employment prospects associated with different occupations and qualifications.

Industrial policy: Data on the supply of skills is often used as an indication of the availability of skills in certain local areas. This information is very valuable to industrialists who are deciding on where to locate a particular plant.

Education policy: The model is also used to monitor the targets set out in the National Skills Strategy regarding the qualifications of the workforce in 2020.

Immigration Policy: For persons living outside of the European Economic Area (EEA), Ireland has an immigration policy which is primarily based on the skills needs of the economy. One of the key functions of the research outputs of the SLMRU is to identify which skills-sets cannot be sourced within the EEA and to provide this information to those who advise the Government on immigration policy.

Active labour market measures: The analysis from the model provides a major input into the design of active labour Markey measures, especially, but not exclusively, the portfolio of training courses offered to the unemployed by FAS. The analysis identifies those types of training interventions which are most likely to achieve good employment outcomes for the participants.

7. Dissemination of the results

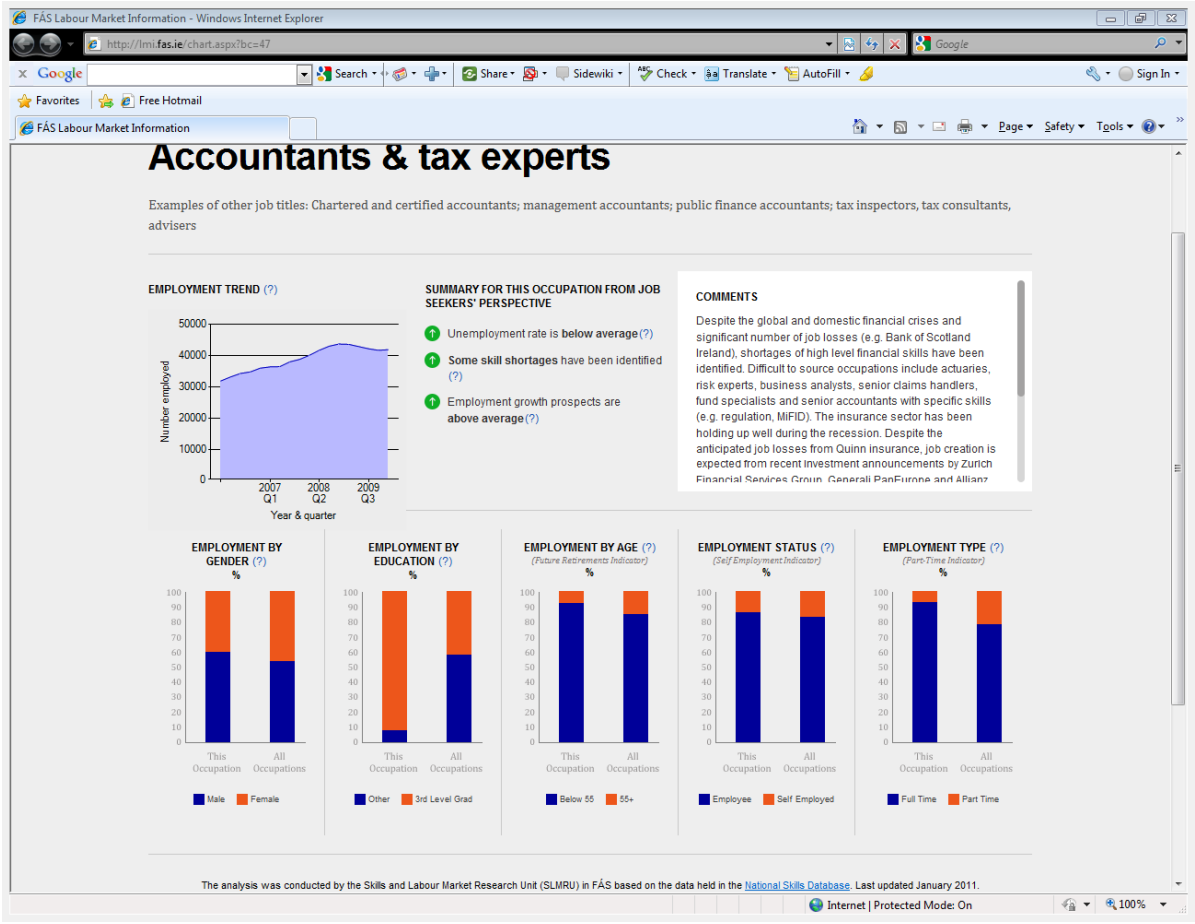
Published reports: The reports produced by the SLMRU, especially the three standardised annual reports; the National Skills Bulletin, Monitoring Ireland's Skills Supply and the Vacancy Overview are widely circulated in both paper and electronic formats to all relevant stakeholders, including career guidance officers, policy analysts and State librarians

Web-based occupation profiles: The research results are synthesised on a web-based skills monitor that provides information on the relative employment prospects of approximately 150 occupations. The monitor assesses each occupation in terms of three dimensions; is unemployment in the occupation above or below the national average; any evidence of current skill shortages associated with the occupation and the 5 year average employment growth forecast.

The skills monitor is available on the FAS Career Directions site and a number of other career related internet sites. An example of an occupation profile is shown below in figure 2.

Presentations: The Staff of the SLMRU make presentations on the skill requirements of the labour market at numerous conferences throughout the year. They also make presentations at schools and career guidance seminars and other relevant forums.

Figure 2: Example of occupation profile



8. Further development

There are both strengths and weaknesses in the Irish skills needs identification model and these are summarised below.

Key Strengths

- There is an appreciation in Government that a national system of skills needs identification is critical to the future success of the Irish economy. Consequently, both the EGFSN and the SLMRU work within a supportive environment which encourages the public authorities to provide data to the SLMRU and which also facilitates the implementation of the recommendations of studies commissioned by the EGFSN.

- Through the EGFSN, there is a high level of formal co-ordination between those who are responsible for economic development and those who are responsible for the provision of training and education. Thus the demand-side and the supply side of the labour market are brought together in a centralised structure. This co-ordination is exemplified in the fact that the EGFSN reports to both the Minister of Enterprise, Employment and Innovation (i.e. those who influence the demand side of the labour market) and the

Minister of Education and Skills (i.e. those who influence the supply-side of the labour market).

- The National Skills Database is also a major strength of the system because it means that any analysis of the demand or supply of skills required by policy-makers can be made available – based on the most up-to-date data – within a few days at most. It also means that consultants can focus exclusively on bringing 'added-value' to sector studies rather than being concerned with collating secondary data to provide statistical profiles and forecasts.

- The creation of a skills research unit within the Skills Needs Identification System means that the expertise developed through conducting sector studies and forecasting exercises is retained and developed within the system.

Key weaknesses

There are a number of features of the Irish system which could be considered weaknesses in the context of any consideration regarding the adoption of this system *tout court* in another country.

- The SLMRU does not carry out an economy-wide enterprise survey for the purpose of acquiring information on skill shortages, nor does it involve employers in focus groups or panels. The views of employers are sought only in the context of studies of specific sectors. However, it is intended to undertake monthly employer sample surveys in 2011.

- The SLMRU does not use the information collected by the tax authorities unlike for example the systems in Germany and Austria. This information is useful for identifying skill shortages because it provides data on salary levels and it is difficult to find reliable data on salaries. However, it is likely that the SLMRU will have access to at least some of this data in 2011.

- The official occupation nomenclature used by the SLMRU has only 3 digits. It is also out-of-date. Consequently, there is a danger that the Irish skills needs identification system will not 'capture' emerging skills which are in short supply. The SLMRU is attempting to address this issue through its surveys by collecting data on 'job descriptions' rather than occupation categories.

9. Websites

- www.skillireland.ie
- www.fas.ie

10. Contacts

John.mcgrath@fas.ie & jasmina.behan@fas.ie

Sweden

1. Description of the anticipation system in Sweden

The current model of the Swedish PES Skill Needs Anticipation System was introduced in the early 1990's. Employers are seen as the key actors, having the best knowledge about their recruitment needs and recruitment difficulties. An employer survey conducted by PES front staff, and an Occupational Tendency Survey (also called the Occupational Barometer) filled out by the same staff, therefore form the corner stones of the model. The core objective of the model is to enhance labour market knowledge at all levels of the PES organisation. Hence the whole organisation is involved in the Skill Needs Anticipation System. It is also important that the methodology is thought to be beneficial for the local agencies as well as the PES Department of Analyses.

The model can largely be seen as an active instrument to get information about the need for recruitment at the local level. The knowledge is used to facilitate the matching process. In addition company contacts are improved and networks enhanced as a positive side effect to the model. Good contacts with employers facilitate the introduction of vulnerable groups to the labour market.

2. Costs and resources involved in the Skills Anticipation System

Since the Swedish Skill Needs Anticipation System involves the whole organisation there are quite a lot of resources involved. In the scheme below the different levels and categories, as well as their main tasks in the system, are listed. For the Department of Analyses there is a figure for the number of persons (as in heads) involved in the system. Most of the persons involved have other tasks as well. Recalculated to full time annual manpower it equals 15 persons for the whole Department of Analyses. The same kind of estimation for the local agencies gives 20 persons annually. But since the agencies only are involved 10 weeks per year the actual number of employment officers involved is a lot more during these weeks. There is no exact figure since the manager of each agency is free to involve as many or as few as s/he wishes. An approximation of the number can be reached by checking the number of people with access to the application where the results from the interviews are registered. During the previous interview period in the autumn of 2010 1240 people had been logged in to the system. Since more staff tends to be involved in doing the interviews than registering the answers this is probably a low count though.

THE SWEDISH SKILL NEEDS ANTICIPATION SYSTEM

ORGANISATION, RESOURCES

DEPARTMENT OF ANALYSES
NATIONAL ANALYSES AND FORECASTS
Analyses, development of methods, quality control, etc
4 people
REGIONAL ANALYSES AND FORECASTS
Analyses, quality control
22 people
OCCUPATIONAL ANALYSES
Analyses, interviews, skills and competences
5 people
ADMINISTRATIVE ASSISTANCE
1 person

LOCAL AGENCIES
Administration, interviews, quality control

IT
Maintenance, Support and Development

Apart from the costs in terms of staff, there are also the costs of:

- Buying the representative sample of employers and other data from Statistics Sweden: approximately 14 000 Euro per year,
- Travel and accommodation costs (for different meetings, since the regional analysts are spread all over the country): an annual cost of approximately 50 000 Euro.

3 & 4. Sources of data and research methodology

Two surveys are, as mentioned in the introduction, the cornerstones of the Swedish Skill Needs Anticipation System. The system is not only based on surveys however. It is rather based on a wide range of data sources and other forms of labour market information. These can be categorized into 3 groups: PES' surveys, other related data sources and expert views. They are all presented in more detail below. The following image shows an overview of the system.

THE SWEDISH SKILL NEEDS ANTICIPATION SYSTEM

MAIN SOURCES OF DATA AND INFORMATION

PES SURVEYS

- EMPLOYER SURVEY
Conducted by PES front staff

- OCCUPATIONAL BAROMETER
Assesments by PES front staff

OTHER RELATED DATA SOURCES
Economic indicators
Statistical trends (LFS, PES data)
Industry specific indicators

EXPERT VIEWS
Publications and reports
Interviews with occupational experts
Sector councils
Occupational expert council

PES' Surveys:

The Employer Survey

Twice a year, in March-April and September-October, a sample survey to employers is conducted by employment officers. The random sample, which is stratified by industry, region and size of workplace, is drawn from Statistics Sweden's company database.

The following information is considered the most relevant for the analyses of skill needs:

1) qualitative indication on actual outcomes and future expectations on demand (for the goods and services of the company), which captures the sentiments among the employers,

2) indication of the capacity utilisation of resources,

3) quantitative information on the number of employed (outcome and future expectations), as well as recruitment needs,

4) recruitment difficulties experienced by the employers.

(For further information on the questionnaire see Annex 1)

There is only one question (Q5) that captures skill needs by qualification requirements. However the answers are given in free text, which makes them difficult to systemize and structure. The problem does not stem from the model though, but from the lack of a structured and well defined classification on competencies and soft skills, not the least. But since the survey is conducted by PES front staff the knowledge is not lost. The employment officers get a lot of valuable information, besides what is given as answers in the questionnaire. We try to benefit from that, and spread the knowledge in the organisation, as much as possible, for instance through the Occupational Tendency Survey (see below). Although there is only one question explicitly linked to skills the survey provides valuable information – on national and regional level – on labour market outlooks, and the tendencies in different industries; information that is necessary for the skill needs analyses.

Survey to employment officers – The Occupational Tendency Survey (Barometer)

An Occupational Tendency Survey is also launched twice a year; in early May and early November, thus after the employer survey. Its objective is to provide a clear assessment of the balance between the demand for and the supply of labour at the local labour market – at present and in one year – for a number of selected occupations. The survey has been conducted since 1999 and is primarily based on the assessments of the local public employment offices. The assessments are thus based on the employment offices' expert knowledge, that they gather during the company interviews and through everyday work with employers and job seekers.

The method is actually quite simple. The employment offices are asked to grade the occupations existing on their local labour market on a scale from 1 to 5, where 1 represents large surplus of labour and 5 large shortage of labour. From the results a "shortage index" is formed by estimating the mean of all the responses. The results are

weighed for the counties and the country as a whole, depending on population size of the Labour Market Area[3]. The survey covers almost 200 occupations and the results (the shortage index) is estimated for the national level, as well as the regional and local level.

- Other related data sources

Apart from the surveys there are other data sources that are important for the skill need analyses. There is not a lot of data (if any) on skills and competences however, and only a limited number of (more or less) reliable data sources on occupational, ISCO 4-digit level. PES administrative sources on vacancies and job seekers are important of course regarding occupational data, and so are the Labour Force Surveys. Statistics Sweden has quite a large sample for the LFS (almost 90 000 people a quarter) which allows for detailed information on occupation on a quarterly basis. Statistics Sweden also provides a register on gainfully employed by occupation (ISCO 4-digit level). These are yearly data and can be divided by municipality, gender and age. However there is quite a time lag (15 months roughly) in the updating process of these data.

Other related sources of data are used as a complement to the employer survey to help form the economical context necessary for sound labour market analyses and skill needs anticipations. Their purpose is to confirm or to add information to the results from PES own surveys and administrative sources. These data include economic indicators, industry specific indicators and data on statistical trends on the labour market.

- Expert views

One of the greatest challenges of conducting skill needs analyses is that data on skills and competencies are very scarce in Sweden (as in most other countries). Hence the need of multiple methods and a more qualitative approach. The Occupational Tendency Survey is one method. But in addition the views of different actors considered as occupational experts play an important role in many parts of the anticipation model, both for quality control – and thereby getting them "on board", supporting the results – but also to get deeper information on skill needs. Presented below is a list of different ways that occupational experts are implicated in the Skill Needs Anticipation System:

Interviews with occupational job incumbents and occupational experts

An important part of the occupational analyses is interviewing job incumbents to get information on work activities, tasks and content, skills and competence needed etc. This work is done by our Occupational Analysts, and is not really a part of the Skills Needs Anticipation System. However it provides good knowledge and understanding of different occupations, which is a necessary base when conducting interviews with occupational experts (which is also done by our Occupational Analysts), such as experienced employment officers, social partners or a sample of larger employers. Interviews are not conducted for all occupations, but for those where we feel the need of extra information or where we want to double check the results.

Sector councils

[3] The weight system is about to be changed so that it takes into account the number of employees by occupation – instead of population size – in each Labour Market Area.

PES has established sector councils for some of the larger and most important industries/sectors (they are seven altogether, at present). There are both national and regional councils, consisting of social partners, employer representatives, employment officers and chaired by a PES manager (either at the national level or regional level depending on the forum). At the council meetings the preliminary results of the labour market and skill needs analyses are presented and discussed (among other things). There are multiple reasons for this: to inform the representatives, to get feedback on (and hopefully confirmation of) the results, but also to present and discuss the greatest challenges envisaged from the analyses and try to come up with solutions and shared responsibility between the partners.

Occupational Expert Council

Before publishing the skill needs analyses in the Occupational Compass the results are handed out to a panel of occupational experts, that we call the Occupational Expert Council. The council consists of representatives from different labour and employer organisations as well as from Statistics Sweden's Forecasting Institute. The objective from our side is to make sure in advance that we have support for our results. And to sort out the differences in assumptions and analyses if there are diverging opinions on the labour market outlooks for a certain occupation.

5. Research outputs

There are two types of products emanating from the Skill Needs Anticipation System: reports in terms of Labour Market Outlooks and Occupational Tendency Surveys, and information presented in a web based tool called the Occupational Compass.

Labour Market Outlooks

These reports are published twice a year, in June and December, and cover a general macro economic overview as well as the tendencies on the labour market (as for employment, unemployment and supply of labour, but also the tendencies in different sectors), based on analyses of the results from the PES employer survey and other sources. There is one national report and 21 regional reports, one for each county. The county reports also contain the results of the Occupational Barometer for each county.

The Occupational Tendency Survey

The Occupational Tendency Survey is a national report published twice a year, in June and January. The report presents the results of the Occupational Barometer at the national level together with forecasts for broad occupational sectors. Time series of the "shortage index" by occupation are enclosed in Annex of the report.

The Occupational Compass

The Occupational Compass is a web-based service presenting labour market information and outlooks for a number of selected occupations (almost 200; the same as in the Occupational Tendency Survey). The service was launched in 2008. The idea behind the

service was to co-ordinate and increase the accessibility of our forecasts and occupational information on our web site. The Occupational Compass is intended to serve as a tool for young people (and other job seekers of course) in need of occupational guidance as well as for people working with career guidance. Hence an important part of the development of the service was to create a web design that presented the information in a way that is easy to digest and comprehend for the target group.

6. Use of the outputs

One objective of the labour market and skill needs analyses is that they provide PES with greater opportunities for making sound staffing and operational plans (local level) and setting priorities for labour market policy programs and the focus of labour market training (national and regional level). The results of the analyses are also used for informing and influencing other external actors, such as the government, municipalities and other authorities, schools and universities, social partners, media and the general public.

The Occupational Compass is used as a tool for occupational guidance. It is used by jobseekers as well as people working with career guidance. In addition the Occupational Compass is used in encounters between employment officers and jobseekers during the first encounter, when discussing job opportunities and setting the individual action plan. One of many uses is to encourage occupational and geographical mobility.

7. Dissemination of the results

The results are disseminated in several ways: through press releases, press conferences, distribution of reports, presentations on seminars and other fora where the analysts at PES are invited. The dissemination is explained further below:

- PES organizes press conferences to present the results of the Labour Market Outlooks and the Occupational Tendency Survey. The press conference at the national level is given by the DG and the Head of forecasts. Press conferences are also held at the regional level, for local press and media.
- Media is very interested, especially in the results of The Occupational Tendency Survey, so we get a good dissemination through media.
- Reports are distributed (according to a list of subscribers) to different authorities and organisations such as the Government, the Central Bank, the Swedish National Agency of Education, County Boards, Trade unions etc.
- Information about the Occupational Compass is disseminated to target groups; school leavers (through a pamphlet with other types of useful information, sent out by PES to all school leavers) and vocational counsellors and study guidance counsellors (e.g. through seminars at the university for students studying to become career counsellors).

8. Further development

A project, still in pre-project phase, started in the autumn of 2010, which aims at enhancing our occupational forecasts by enriching the dimension of skills and competences. Some ideas of development involve for instance collecting information (in our employer survey and the Occupational Tendency Survey) in a more systematic and structured manner. We've also let a private company conduct some data mining and text analyses on the vacancies published on our web site, an interesting method but the tool needs yet to be developed further. The information can hopefully be of use in our occupational analyses and our Skill Needs Anticipation System. The basic problem however is that we still lack a structured classification on competencies linked to specific occupation names and also a well defined classification of soft skills.

9. Website

The Occupational Compass can be reached at:
www.arbetsformedlingen.se/yrkeskompassen (information only available in Swedish)

10. Contact

For questions or further information about the Swedish Skill Needs Anticipation System please contact:

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Denmark

1. Description of the anticipation system in Denmark

The Danish Labour Market Balance was developed in 2006 as a part of a National surveillance strategy. The Labour Market Balance shows job opportunities for about 1,100 occupations in each of the four employment regions in Denmark. The occupations cover the entire labour market.

The purpose of the Labour Market Balance is to support the daily work of job centres, the unemployment insurance funds, other parties and the employment regions. The Labour Market Balance is an instrument in active employment efforts, helping to ensure case workers a good foundation for targeting their efforts in relation to the unemployed and for being able to show the unemployed the quickest way into employment.

Every six months –end of June and end of December- the employment regions publish a new Labour Market Balance on their websites.

2. Costs and resources involved in the Skills Anticipation System

The Labour Market balance is made as cooperation between the National Labour Market Authorities and the four employment regions. The National Labour Market Authorities has 2-3 persons who work with the balance (around 1 fulltime person) and each region uses one-two persons (around 2 fulltime persons all together). For the employment regions this also involves time used for dissemination.

The administrative costs for uploading new balances and maintaining their websites are around 70.000 Dkr. a year (9.500 euro).

An external provider is used for making the employer survey. It costs around 1.5 million Dkr. a year (200.000 euro).

3. Sources of data

The Labour Market Balance is compiled on the basis of a wide range of quantitative data on supply and demand of labour in the regions.

Data used for assessing demand of labour:

Employer survey: Every half year an employer survey is made by an external provider. Around 18.000-19.000 companies are contacted and at least 14.000 companies answer (covering almost 50 pct. of the Danish employment). The answering rate is around 70-75 pct. It is a web-based survey, but telephone interviews are made as follow-up and ensuring the answering rate.

The main question of the survey is: "Has the company within the last two month tried to recruit new employees in vain"? If the answer is yes, the company is asked how many, and

which occupations. To be able to choose between the 1.100 different occupations, a tree which folds out is used. It starts with 20 broad groups and ends in the 1.1000 occupations. If a company has difficulties with finding the right occupation, they are guided by telephone.

Since data is a sample it is up scaled to cover the entire labour market.

Data on employment and job openings: Yearly register data from Statistics Denmark on employment and job openings.

Data for assessing supply of labour:

Data on unemployment: Number of registered unemployed who have received public benefits for at least three month. The unemployment data follows the same period as the recruitment survey and is based on the Danish RAM-register.

4. The Research Methodology

By analysing the 1.100 different occupations, on the basis of data about supply and demand of labour, they are put into the following categories: *less good job opportunities, good job opportunities, and excellent job opportunities.*

The category excellent job opportunities is divided into three sub-categories: *Paradox problems, Labour shortage and Cross-sectoral and structural labour shortage*.

Table1.
The Structure of the Labour Market Balance

Less good job opportunities	**Good job Opportunities**	**Excellent job opportunities**		
		Paradox-problems	**Labour shortage**	**Labour shortage and Cross-sectoral and structural labour shortage.**
Occupations without recruitment problems but with high unemployment and low employment turnover	Occupations without recruitment problems but with low unemployment and high employment turnover	Occupations with recruitment problems and high unemployment	Occupations with recruitment problems and low unemployment	Occupations with particularly extensive recruitment problems and extraordinarily low unemployment

Labour Market Balance step-by-step

The following is a step-by-step outline of how the Labour Market Balance is compiled.

1. Breakdown of shortage and no shortage
The first step outlines how all occupations are broken down by two groups:

Shortage - occupations where the companies asked in the employer survey have stated that they have failed to recruit people.

No shortage - occupations where the companies asked in the employer survey have not stated that they have failed to recruit people.

2. Shortage - Grouping of occupations where the enterprises have failed to recruit people

All occupations where companies have stated that they have failed to recruit people, are analysed to break them down into the three sub-categories: *paradox problems, labour shortage,* and *cross-sectoral and structural labour shortage.*

This grouping is done on the basis of the extent of the labour shortage compared with the level of unemployment. The following table 2 shows the fundamental principles of breakdown of occupations under the three sub-categories:

Table 2
Overview of breakdown into shortage and unemployment, respectively

	High unemployment	**Medium unemployment**	**Low unemployment**
High shortage	Paradox problems	Cross-sectoral and structural shortage of labour	Cross-sectoral and structural shortage of labour
Medium shortage	Paradox problems	Labour shortage	Cross-sectoral and structural shortage of labour
Low shortage	Paradox problems	Labour shortage	Labour shortage

The extent of labour shortage of each occupation is defined by calculating the relationship between labour shortage and the level of unemployment. The level of unemployment for each occupation is defined by calculating the relationship between the number of people affected by unemployment with more than three months of continuous unemployment, and employment.

The grouping of occupations in accordance with the criteria in table 2 results in nine gross lists for high shortage/low unemployment, high shortage/medium unemployment, high shortage/high unemployment etc.

To illustrate whether there is a labour shortage for the individual occupation, all the lists are subject to separate analysis. Occupations will be eliminated from the lists in cases where failed recruitments are solely based on responses from one single company. If the number of people affected by unemployment by more than three months of unemployment is

higher than the shortage of labour for such occupations, they will be transferred to the gross list for no shortage.

The list entitled *cross-sectoral and structural shortage of labour* is then analysed with a view to illustrating whether the shortage in the occupations included has a specific volume. All occupations where in fact recruitment of less than *three people* has been unsuccessful, will be transferred to the list for labour shortage.

3. No shortage- Grouping of occupations where the companies have not failed to recruit people

All occupations where no companies have stated that they have failed to recruit people are analysed to distribute them into the two categories: *good job opportunities and less good job opportunities.*

The grouping is based on the employment turnover and unemployment levels. The calculation of employment turnover for each occupation is carried out by calculating the relationship between the number of job openings and employment. Unemployment levels for each occupation are indicated by calculating the relationship between the number of people affected by unemployment with more than three month of public benefits, and employment. If an occupation has a very large amount of job openings it will always be categorised with good job opportunities regardless of the level of unemployment.

Table 3 below shows the fundamental principles for breakdown of occupations:

Table 3
Overview of breakdown between employment turnover and unemployment, respectively

	High unemployment	**Medium unemployment**	**Low unemployment**
High employment turnover	good job opportunities	good job opportunities	good job opportunities
Medium employment turnover	less good job opportunities.	good job opportunities	good job opportunities
Low employment turnover	less good job opportunities.	less good job opportunities.	good job opportunities

4. Grouping of related occupations
Many of the about 1,100 occupations are closely related. For example the occupational field electricians' work covers occupations such as electrician, construction electrician and installation electrician. These occupations all indicate a work function that promotes vocational training as an electrician. For instance, if registration of unemployed people is primarily by the occupation electrician, and the enterprises primarily state that recruiting construction electricians has failed, the labour market model will generate a shortage of construction electricians and less good job opportunities for electricians.

To avoid the situation described above, cross-sectoral analysis of the five lists is therefore carried out. The occupations are systematically analysed by reviewing the 47 overall occupational fields which the approximately 1,100 occupations fall under. This review looks at which occupations are related. After this the volume is compared - the extent of

unemployment, shortage and employment - for the related occupations, to assess which occupation represents the largest market. Based on this assessment, the related occupations are linked to the category for the occupations that represent the largest market.

5. Research outputs

The Danish labour market is very flexible. There are a lot of job-turnovers and waiting time between jobs is relatively short. This is reflected in the results of the Labour Market balance.

Even though the Labour Market Balance for the spring of 2011 shows a shift of occupations towards less good job opportunities compared to the balance from spring 2010, there are still many areas with good job opportunities or excellent job opportunities (around 55 pct. of all occupations), see table 4.

Table 4.
Distribution of Occupations in the different categories, spring 2011

						Change percentage point spring 2010- spring 2011		
			Excellent job opportunities					
Region	Less Good job opportunities	Good job opportunities	**Paradox- problems**	**Labour Shortages**	**Cross Sectoral and structural Labour Shortages**	Less Good job opportunities	Good job opportunities	Excellent job opportunities
Hovedstaden -Sjælland	44	49	3,5	2,6	0,9	6	-5	-1
Midtjylland	41	57	0,6	1,3	0,5	6	-4	-2
Nordjylland	53	45	0,6	1,2	0,3	5	-4	-1
Syddanmark	44	54	0,5	1,6	0,5	10	-7	-2
All	**45**	**51**	**1,3**	**1,7**	**0,5**	**7**	**-5**	**-2**

Source: The Labour Market Balance, spring 2011

Especially the sectors 'sales and marketing ' and 'construction' have a large demand for labour. The occupations with most unsuccessful recruitments are 'sales consultant', 'security officer', 'customer service assistant', 'IT-consultant' and 'chef'.

6. Use of the outputs

The Labour Market Balance helps to ensure case workers a good foundation for targeting their efforts in relation to the unemployed and for being able to show the unemployed the quickest way into employment.

By law it is used for:

- Targeting the CV's and the job seeking of the unemployed.
- Targeting the 'job plan' and the offers of up skilling, education, job training etc.

- Different Schemes: The Labour Market Balance is used to manage a number of schemes: The adult Apprentices scheme, moving aid, child care leave and help with relocating and upgrading of skills in the termination period.

7. Dissemination of the results

The current regional Labour Market Balances are shown on the websites of each Employment Region in a form targeted the different user needs. It is by far the most visited part of the employment regions websites. The websites follow the exact same structure and are only displayed in Danish:

- Employment Region Hovedstaden-Sjælland:
  http://www.brhovedstadensjaelland.dk/Arbejdsmarkedsbalancen.aspx
- Employment Region Syddanmark:
  http://www.brsyddanmark.dk/Arbejdsmarkedsbalancen.aspx
- Employment Region Midtjylland:
  http://www.brmidtjylland.dk/Arbejdsmarkedsbalancen.aspx
- Employment Region Nordjylland:
  http://www.brnordjylland.dk/Arbejdsmarkedsbalancen.aspx

New websites are under development and are expected to be implemented in the spring of 2011. A new feature will be the possibility of seeing the page in English.

An official group with representatives from the four regions is in charge of dissemination of the balance. They visit jobcentres and unemployment insurance funds in their own region on a regular basis to teach and inform about the use of the balance. For example is one of the regions currently involved in a project together with a jobcentre about how to incorporate the balance in the daily work.

The results are also used by a number of different career-guidance websites.

8. Further development

9. Website

The regional websites are mentioned above. The results of the Employer survey are also published separately in a pamphlet about a month prior to a new balance. It can be found on the webpage of the National Labour Market Authorities (only in Danish):
http://www.ams.dk/Publikationer/2010/06-02_rekruttering_foraar.aspx

10. Contact

For further contact about the Danish Labour Market Balance please contact
Marie-Louise Lindeløv, National Labour Market Authorities, mail: mll@ams.dk

Norway

1. Description of the anticipation system in Norway

In Norway we have a survey among the firms, which we call "The Enterprise Survey". This is done twice a year, in the spring and in the autumn. The spring survey has the largest sample (19 000 firms). In the autumn survey the sample consists of 3 000 firms. The survey has two parts; the first includes questions about employment expectations, while the second concentrates on recruitment problems and lack of labour. Based on the second part of the survey we estimate the shortage of labour within each industry and different occupations.

2. Costs and resources involved in the Skills Anticipation System

In the spring the county offices of the Norwegian Labour and Welfare Administration (NAV) collect the data. We would estimate that the 19 counties use a total of about 40 work man-months on this job. In the autumn we use a market research company to collect the data. This has a cost of about 350 000 NKR, or 45 000 Euros. In addition to this we use about 2 work man-months on each survey at the Directorate of Labour and Welfare. The results of the survey are published in our regular quarterly publication "Arbeid og velferd" ("Labour and welfare") and on our website (www.nav.no/Om+NAV/Tall+og+analyse). Since "Arbeid og velferd" are published every quarter, independent of The Enterprise Survey, the costs of publishing the results are very small.

3. Sources of data

We draw a sample based on data from The Central Coordinating Register for Legal Entities (CCR), where all firms in Norway are registered. The sample is stratified by county and industry, and the enterprises are randomly drawn for each stratum. All firms employing more than 400 persons are included in the sample, and in the public sector all firms with more than 100 employees are included. This is because there often are very few of these in each region. To be able to make good estimations for each region, it's important to include these. The methodology takes into account this overrepresentation in the sample.
The estimated shortage of labour is based on the answers from the survey. We don't use any other data sources in the estimation. When we use the results from the survey, we also take into account information from our extensive registers of vacancies and job seekers in Norway.

4. The Research Methodology

The questionnaire consists of five questions:

1. How many people are currently employed in your firm?
2. How many employees do you expect to have in a year from now?
3. Do you experience problems recruiting relevant labour?

4. If you have such problems, has this resulted in fewer employees?
5. If so, how many and in which occupations? (The firms can list up to six different occupations and the number of employees in each occupation).

The shortage of labour is estimated based on the answers to question 5. To calculate the skills in demand we use log linear Poisson regression. The independent variables in the model are county, industry (Standard Industrial Classification 2007) and number of employees for each enterprise.
We have some challenges with the estimation of excess demand on the occupational level. The model is a bit too simple, as its only independent variables are 1) the number of employees in the firms and 2) in which region the firms are located. Since the estimations are based only on these two variables, we get inaccurate estimations for some occupations. We are now trying to improve the model, by including industry in the regression.
We estimate confidence intervals for each result. The results from 2001 and onwards are comparable.

5. Research outputs

The answers from the first part of the survey are used to make an indicator for employment expectations. This indicator has historically correlated quite strongly with the actual employment growth the next year. This indicator is shown as net growth in table 1.

Table 1: Share of firms expecting increased, stable and decreased employment over the next year.

	Increased employment	Stable employment	Decreased employment	Net growth
1996	30	56	14	16
1997	34	55	11	23
1998	36	55	9	27
1999	26	64	10	16
2000	31	59	10	21
2001	28	62	9	19
2002	26	64	10	17
2003	21	65	13	8
2004	24	64	12	12
2005	24	65	10	14
2006	31	61	8	22
2007	36	57	7	29
2008	36	56	7	29
2009	23	64	13	10
2010	25	63	12	14

From the second part of the survey we get two sets of results describing bottlenecks in the labour market. The first present the share of enterprises with recruitment problems. These results are estimated for each industry on a regional level. The second set of results present excess demand for labour, measured in number of persons. Excess demand is estimated on a national level for occupations (ISCO 4-digit) and for each industry on regional level. The results make no distinction between temporary/permanent work and contractors/subcontractors.

If we compare the labour shortage to the number of persons employed in each occupation, this tells us more about how severe the labour shortage is. This is presented as "the tightness indicator", as you can see in table 2.

Table 2: Labour shortage and tightness by occupation. Some results from 2008.

Occupation	Lack of labour	Tightness indicator
Tinsmiths, etc.	1100	34 %
Landscape gardeners	1100	31 %
Sheet-metal workers	1500	27 %
Welders	2550	25 %
Car, taxi and van drivers	5000	23 %
Plumbers	3150	20 %
Oil, mining and metallurgical technicians	1350	14 %
Heavy truck and lorry drivers	3450	13 %
Mechanical engineering technicians	1000	12 %
Cooks	1900	7 %
Computer systems designers and computer programmers	2000	7 %
Police officers	400	6 %
Nurses	1900	3 %
Nursing assistants and care assistants	2500	3 %

6. Use of the outputs

The estimates of labour shortage are the only of this kind in Norway and constitute important information for employers, politicians, the public administration and the public in general. The results of this survey are also used by the local NAV-offices to guide job seekers, and contact firms to inform them about relevant job seekers.

7. Dissemination of the results

The results of the survey are published in our regular quarterly publication "Arbeid og velferd" ("Labour and welfare") and on our website (www.nav.no/Om+NAV/Tall+og+analyse). The results create a lot of interest from the media.

8. Further development

As mentioned earlier, we have some challenges with the estimation of excess demand on the occupational level. The model is a bit too simple, as its only independent variables are 1) the number of employees in the firms and 2) in which region the firms are located. Since the estimations are based only on these two variables, we get inaccurate estimations for some occupations. We are now trying to improve the model, by including industry in the regression.

9. Website

The results of our survey are available on http://www.nav.no/200473.cms. Unfortunately the website is only in Norwegian.

10. Contacts

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Germany

1. Description of the anticipation system in Germany

The core element for analysis and dissemination of labour market trends is the Labour Market Monitor of the BA. Each year in spring and autumn, the Labour Market Monitor identifies the sectors which have the highest potential to generate employment and these which have the highest risk for employment. National forecasts based on qualitative and quantitative indicators will be verified on and adjusted to local level circumstances (Data on NUTS 3 level/ 429 local entities in Germany/ 175 local agency districts). There is a close interaction and communication with the local labour market stakeholders in this process (e.g. Chambers, Employers Associations, Trade Unions, units responsible for Regional Economic Development, etc.).

This process looks both at the demand side (vacancies) and the supply side (forecasted structure of job seekers) in both social insurance systems (unemployment and minimum income benefits).

2. Costs and resources involved in the Skills Anticipation System

- Staff costs: 2 million Euro per year
- 40 people involved full time or part time
- additionally: staff costs in local agencies, not possible to estimate
- Expenses (software, hardware, etc): 1 million Euro per year

3. Sources of data

- Federal Statistical Office
    - population
    - income
    - etc.
- Department of Statistics of the BA
    - employment statistics
    - activity statistics of BA
    - locally validated indicators for the development of branches/ sectors
- Quantitative and qualitative sectoral data and assessments
- Econometric prognosis of the GWS with the IAB/INFORGE-Model
- Institute for Labour Market Research
- Qualitative results from the front office

4. The Research Methodology

Twice a year, the Labour Market Monitor identifies the sectors which have the highest potential to generate employment and these which have the highest risk for employment. In a first step chances and risks for employment by sectors will be estimated on a national level. This estimation is based on seven external indicators (turnover, incoming orders, average timeframe for processing orders, share of export, ifo-business climate index, financial situation, special factors). Because not all of them are available for every sector, five labour market indicators will be used in addition (Inflow of job-seekers, inflow and stock of vacancies, benefits recipients, short-time work recipients, employment rate). On the top, an econometric prognosis of the GWS with the IAB/INFORGE-Model will be put to that equation. This estimation is not only based on quantitative data of these sectors, but sectoral experts and other sources will be asked and analyzed for a qualitative evaluation. In the end, each of the twelve indicators is scored between plus/minus 3.

The overall score rates the industries in so called "risk class" or "opportunity class" The term „employment risk" indicates the risk of losing jobs (risks for employment). According to that, the higher the risk is, the more people in a region are employed in branches that are affected by the crisis. Regions with a high employment risk have a higher probability to be affected by employment loss than regions with a smaller employment risk.

In a second step chances and risks for employment are differentiated by sectors and are converted at the level of local agencies. The analysis shows that local chances and risks for employment - due to a different allocation of employees at local level by sectors with different types of risks - can be looked at in a differentiated way.
In a next step the national estimation is reviewed by relevant actors at local level and as far as local particularities exist the estimation will be adjusted. This is carried out by representatives of the BA and the local Jobcentres as well as chambers, Employers Associations, Trade unions, etc.

5. Research outputs

As a result regional and sector specific estimations regarding chances and risks for employment are provided for every local agency district.

To be able to estimate options for actions at local level, local structures are important, which are determined by the current situation on the labour market, development trends during the last years as well as the demographic development, the social situation and dynamics in the education sector. These regional conditions determine on the one hand the short-term capability to compensate employment losses at local level and on the other hand they set the frame for setting strategic priorities. In addition to the estimation of chances and risks for employment, significant Indicators are being provided by the Labour Market Monitor, which characterize opportunities and challenges of the region.

More detail about the presentation of the data is included in Annex 2.

6. Use of the outputs

The results of the regional Labour Market Monitor are presented to actors at the Administration Council of the local Employment Agencies, to the management level of the Jobcentres as well as to other relevant partners. On this basis discussions about options for actions shall be initiated. That new instrument is supposed to support the interpretation of existing data, in this way it is contributing to the development of efficient strategic approaches and development processes.

7. Dissemination of the results

This validated data is shown on the platform of the BA. The platform offers the possibility, to draw comparisons across regions. Other data about the conditions of the regions and counties are also available.

8. Further development

In 2011 the data model will be expanded and deliver information about the situation in occupation groups on NUTS 1 level.

9. Website

The access to the platform is restricted. Only certified users can enter.

10. Contact

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Poland

1. Description of the anticipation system in Poland

Monitoring of deficit and surplus professions and occupations (MZDIN) has been carried out on the national, regional and local level since 2005. Monitoring reports are drawn up in interim and annual cycles. Next to monitoring the deficit and surplus professions and occupations, labour offices carry out a number of independent measures in the scope of projections of skills requirements. The *Barometr Zawodów* [Barometer of Professions] project of the Voivodeship Labour Office in Gdansk is an example of such measures . In order to assist the labour offices in this regard, expert's model of projecting the skills requirements was developed on the initiative of the Ministry of Labour and Social Policy. Research methodology and specific research tools were recommended to regional and local labour offices. Labour Market Observatories, involved in this area, were also established in certain voivodeships, as part of projects financed by the European Union funds.

2. Costs and resources involved in the Skills Anticipation System

MZDiN is a statutory task, implemented as part of official duties. Therefore, costs of outsourcing tasks to external contractors should not be borne. Monitoring is implemented by 1 person from each of 16 Voivodeship Labour Offices (on regional level), 1 person from each of 350 Poviat Labour Offices (on local level) and 1 person at the Department of Labour Market, Ministry of Labour and Social Policy, for the period of circa 2 weeks when the report for the 1st half-year is prepared and for circa 3 weeks when the annual report is prepared.

3. Sources of data

Interim (diagnostic) reports are based solely on one's own statistical data collected as part of public statistics on the unemployed registered in labour offices and work offers submitted to the centres, i.e.:

- data of Annex 2 to MPiPS-01 (the unemployed by the type of activity of the last place of work, those seeking for employment and vacancies and places of unemployment prevention);
- data of Annex 3 to MPiPS-01 (the unemployed and vacancies as well as places of unemployment prevention by occupations and specialisations);

It should be indicated that basing solely on statistical data effects a number of limitations. Information about vacancies, submitted to the job centres, definitely not cover all work offers on the market. A considerable part of the offers is not submitted to the job centres, yet there are no estimations as to what part of work offers this covers. Certainly, a lot of information about vacancies for high-class specialists is not submitted to job centres, mainly because of a belief that the unemployed registered in job centres do not have sufficient professional qualifications or their skills became outdated as a result of long unemployment. Moreover, the Internet has played an increasingly important role in

seeking employees. Numerous work offers are published there. For the above mentioned reasons, work offers submitted to job centres are merely a part of offers on the market.
The annual reports are supplemented by data of the Education Information System (SIO) of the Ministry of National Education regarding pupils and graduates of post-secondary schools and data of the Central Statistical Office regarding pupils and graduates of institutions of higher education of Z-05 research about the number of: the employed, vacancies, newly-established and liquidated jobs.

4. The Research Methodology

Monitoring is based on methodological recommendations drawn up at the Department of Labour Market, MPiPS. The basic monitoring index is the index of surplus/deficit of professions and occupations, forming a quotient of inflow of vacancies in a given reporting period to the inflow of the unemployed in the same period.

It was assumed for each occupation and section of PKD (Polish Classification of Activities) that deficit professions (occupations) are those for which the above mentioned index is < 0.9. Professions (occupations), for which the index falls within the range of $0.9 \leq W \leq 1.1$, are those professions (occupations) which keep balance on the labour market.

It should be noted that monitoring is merely a diagnosis of the current situation and fails to have any hallmarks of projections.

5. Research outputs

The results of monitoring, already mentioned under 4, provide information about the most deficit and surplus professions and occupations on the local and national level. Apart from demonstrating the most deficit and surplus professions on the national level, the national report also contains tables presenting the most deficit and surplus professions in each voivodeship.

6. Use of the outputs

The results of monitoring are above all used to outline the subjects of trainings for the unemployed.

7. Dissemination of the results

Reports of monitoring on the national level are published on the www.psz.praca.gov.pl website, under ***publikacje***. Moreover, monitoring reports are provided on the local level to headmasters of post-secondary schools, training institutions, local and regional authorities.

8. Further development

The current methodology generates numerous remarks on the part of the job centres, mainly as regards the correctness of indices and their interpretation. In addition, data forming bases of monitoring, originate from already processed statistical reports in the case of information obtained by the labour offices, which considerably limits the scope of possible analyses. What is more, next to the profession, other features are important too, e.g.: education, qualifications, additional skills, which often affect employment.

Therefore, the Department of Labour Market initiated a project co-financed by the ESF funds, aimed at the development of a new methodology, to allow for better identification of the labour market situation in the scope of deficit and surplus professions and occupations as well as qualifications and skills. Thorough evaluation of the current methodology by experts and representatives of the labour offices, Ministry of National Education and Central Statistical Office, identification of available data resources and demonstration of new sources and ways to limit the deficit or surplus of the labour force by occupations, qualifications and skills forms a key task of the process of adjusting qualifications to the labour market needs.

Involving the personnel of the labour offices in evaluation and methodology development will allow for engagement of persons directly connected with the unemployed, persons analysing the labour market situation and having the greatest experience in monitoring. Once the new methodology is developed, the IT system, facilitating the monitoring carried out by personnel of the labour offices*, inter alia*, using the appropriate data collections and the reporting system, will be established or modernised. Trainings for personnel of the labour offices, involved in analysing the situation on the labour market, is also scheduled in the scope of the new methodology of monitoring deficit and surplus professions and occupations and of using the IT system.

Development of new methodological tools in the scope of studying deficit and surplus professions and occupations as well as identifying the necessary qualifications will facilitate improvement of the level of knowledge, fuller diagnosis of the directions of changes and improvement of cohesion between the changes on the labour market and subjects of training and retraining.

9. Website

The results of monitoring are available on the psz.praca.gov.pl website, under ***publikacje*** in Polish.

10. Contact

Izabela Kaczmarska, Department of Labour Market, Ministry of Labour and Social Policy
izabela.kaczmarska@mpips.gov.pl

Michał Bruski, Voivodeship Labour Office in Gdansk
m_bruski@wup.gdansk.pl

Austria

1. Description of the anticipation system in Austria

The AMS Skills Barometer is an online information system on skills demand and labour market developments in Austria. Mainly based on employer surveys and current and short-term forecasts on labour market trends and skills needs, the barometer is a continuous monitoring system for job skills demand at national and regional level which provides various target groups with easy access to data on skills demand.

2. Costs and resources involved in the Skills Anticipation System

Updating costs: € 100.000 per year

3. Sources of data

Relevant to status quo data:

- Quantitative analyses of job ads (print media, online job platforms)
- Region –specific information
- Studies on skills demand

Relevant to forecast :

- Forecasts & skills research
- Surveys among experts (by industries)
- AMS survey among Austrian enterprises on occupations and skills in demand
- Expert focus groups ("Standing Committees")

4. The Research Methodology

Provided data relevant to forecast are analysed and processed to a single result (indication of trends). Contradictions are solved methodically respectively - if necessary and promising - by surveys among experts.
On the other hand there is no demand on synthesizing by hook or by crook but – as mentioned – on a process of clarification.

The below cited working instructions may give you a more concrete impression:

The following **sources** can be used in drawing up the texts:

- Relevant studies on skills demand, employment situation, unemployment, economic developments, etc.
- (Secondary) statistical data: e.g. employment data, apprentice figures

- Interviews with experts (HR managers, managing directors, people working in the respective sector, members of professional associations, teaching staff of relevant training institutions and other educators, representatives of trade associations and trade unions, etc.)
- Results of ad analyses (by market researchers GfK and Informationscouts / Mair)
- Research in online and other mass media, trade journals, etc.: articles in magazines, trade journals, daily newspapers (online and print editions)
- Minutes of cluster meetings
- AMS survey among Austrian companies with 20+ employees (Großbetriebsmonitoring – GBM)

Special status of information obtained in the GBM survey:

The results of the GBM are accorded special status in that they are given a higher weight than data from other information sources. Occupations with positive dynamics (2 points or more) are assigned (at least) rising tendency in the evaluation table.
The number of observations in the GBM has to be considered as well, though: When the total number of observations is below a certain threshold, the rule of a higher weight does not apply. The GBM results may still be used as a reference point for identifying tendencies, but these tendencies should be substantiated with information from other sources.

Note: In some instances, it will be impossible to take the GBM results at face value. Here are two pertinent examples from the fall 2010 survey in the sector "transportation and courier services":

- Couriers: According to the AMS experts, the demand for delivery staff was on a slight downtrend, whereas the GBM results indicated that demand was stagnant. The difference between the two was that the AMS experts expected the imminent closure of 300 post offices to have a negative effect not only on the staff numbers of the Austrian Post but also on those of other courier service providers.

- Warehouse logistics staff: Expert interviews suggested demand was rising somewhat, whereas the GBM indicated stagnant demand. The experts' assessment was considered to be more accurate in light of plans to establish logistics centres in the vicinity of Vienna's airport, which was expected to lead to increased demand for logistics staff. The GBM respondents obviously did not take this into account in their assessment.

Suggestion: It must be permissible to disregard the GBM results under certain circumstances.

In addition to an analysis of the literature and of statistical data, the following should be considered before drawing up texts:

- Specific skills assigned to the selected skills categories; specific skills can be mentioned in the texts, as this makes them more meaningful.
- Specialisations assigned to the key occupations in the respective job sector, as listed in the AMS's information system on occupations and skills; this helps to gain a better understanding of the job sector described."

Concerning data evaluation we use the following scheme:

Evaluation rules for data on job fields (job sector level) and occupations (job field level) in the tables

	●○○	●●○	●●●
↑↑	- Trend conclusively verified - Beginning of a boom - Occupations: new occupation - Must be mentioned in the text - Current share in the workforce: small (> 33%)	- Trend conclusively verified - Continuing boom - Occupations: trend job - Must be mentioned in the text - Current share in the workforce: medium (< 33%, >66%)	- Trend conclusively verified - Continuing boom - Occupations: trend job - Must be mentioned in the text - Current share in the workforce: large (66 > 100%)
	Example of ↑↑ ●○○*:* The liberalisation of the telecom market (= verified labour market trend) caused an upsurge in the demand for network planners and network engineers (= trend jobs). In the early stages of the liberalisation process, only few network planners and engineers were available (= 1 point out of 3) but demand was rising sharply (= 2 upward arrows).		
↑	- Trend conclusively verified - Gradual, but not substantial increase - Current share in the workforce: small (> 33%)	- Trend conclusively verified - Gradual, but not substantial increase - Current share in the workforce: medium (< 33%, >66%)	- Trend conclusively verified - Gradual, but not substantial increase - Current share in the workforce: large (66 > 100%)
	Example of ↑ ●○○: The demand for fitness trainers continues to rise somewhat in light of the ongoing fitness boom.		

It is of importance not to see our Skills Barometer as an analytical instrument on its own – We just use several information resources in our results we are dependent on their quality.

5. Research outputs

- Employment trends observed in the individual job sectors and fields
- Resulting impact on the labour market
- How in demand are the individual job fields, occupations and skills today
- Developments over the next four years
- Regional differences in the labour market
- Development in job vacancies
- Trends for specific occupations, job fields, sectors and skills

See the internet platform in annex 3

6. Use of the outputs

The AMS Skills barometer provides information to the following targeted groups:

- Employees and jobseekers
- Youth and career guidance professionals
- Further education institutions
- AMS-staff (experts responsible for planning qualification schemes)
- Businesses
- Journalists, media
- Social partners
- Experts and scientists
- Politicians and decision-makers in public institutions

7. Dissemination of the results

Skills Barometer is an information-system provided by the internet.
There is no systematically or formal process which leads to an obligatory use of data derived from AMS-Skills-Barometer. The use of Skills Barometer depends on promotion.
Only AMS-staff uses the results of the AMS-Skills-Barometer by recommendation.

8. Further development

Guided Tour to give information to different target groups.

9. Website

www.ams.at (in German)

10. Contact

Reinhold.gaubitsch@ams.at

Annex 1: Employer Survey used by the Swedish PES

Market developments

1. Give an assessment of demand for your goods/services/production
(Put a cross).

	Decreased	Unchanged	Increased
In the past 6 months	☐	☐	☐
In the next 6 months	☐	☐	☐
6-12 months ahead	☐	☐	☐

Capacity utilisation

2. By how much can your workplace increase production (industry etc.) alternatively sales of products and services (private services etc.)?
(Put a cross).

	Percentage					
	0	1-5	6-10	11-20	21-30	more
Before you need to increase the workforce by hiring new staff						

Employment and recruitment

3a. Number of employees at your workplace
All employees (conditional tenure and temporary staff, but excluding hourly paid workers and hired-in personnel). Hired-in personnel are covered specifically in question 3b. State the number of persons and make an estimate about the future.
One year ago: ..... Current: ..... In one year: ..... In two years: .....
(Estimate the approximate number based on your knowledge of your enterprise and your industry).

3b. Hired-in personnel at the workplace
Personnel hired in from staff agencies or similar.
State the number of persons and make an estimate about the future.

One year ago: ..... Current: ..... In one year: .....
(Estimate the approximate number based on your knowledge of your enterprise and your industry).

4a. Number of persons you expect to recruit and staff turnover at your workplace
(including conditional tenure and temporary staff, but excluding hourly paid workers and hired-in personnel).
State the number of persons and make an estimate about the future.

a) Number who have left in the last six months: ..... retirement and other departures

b) Number who have been recruited in the last six months: ..... replacements and new recruits

c) Number who will leave in the next six months: ..... retirement and other departures

d) Number who will be recruited in the next six months: ..... replacements and new recruits

4b. Number of seasonal and holiday workers at your workplace (e.g. in tourism and holiday work for young persons)
State the number of persons and make an estimate about the future.

Total last six months **Total next six months**

Number of recruitments: ..... Number of recruitments: .....

5. Within which occupations do you expect to recruit in the next six months?

ISCO code (filled in by Af)	Occupation	Number of persons	Trained in occup.	Experienced in occup.	Qualification requirements
.....	.....	.....	☐	☐	.....
.....	.....	.....	☐	☐	.....
.....	.....	.....	☐	☐	.....
.....	.....	.....	☐	☐	.....

Shortage of labour

6a. Shortage of labour when recruiting

1) Have you encountered any shortage of labour when recruiting in the last 6 months? (Mark one option with a cross).

- ☐ Yes
- ☐ No
- ☐ Have not needed to recruit

2) If yes

state the number of vacancies where you have encountered a shortage.....

of which, number of vacancies that you have not succeeded in filling.....

of which, vacancies reported to Af.....

6b. Shortage of labour that has led to you not even trying to recruit (hidden shortage)

1) Have you during the last 6 months refrained from trying to recruit because of a shortage of qualified labour? (Mark one option with a cross).

- ☐ Yes
- ☐ No

If no to both question 6a and 6b, go to question 8.

2) If yes,

State the number of vacancies for which you have not even tried to recruit owing to a shortage of qualified labour

.....

6c. Shortage of labour in particular occupations

State all shortages and the number of vacancies involved in the last six months.

Occupation	Total (state number) (state number)	of which lacking desired training (state number)	lacking desired experience	ISCO (filled in by Af)
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....

7a. How was recruitment affected by the labour shortage?
(More than one option can be crossed).

- ☐ We were unable to recruit staff
- ☐ It took longer than normal to recruit
- ☐ We lowered our requirements for training
- ☐ We lowered our requirements for experience
- ☐ We lowered our requirements for social qualifications and skills
- ☐ We recruited abroad
- ☐ We offered higher pay
- ☐ We offered other benefits
- ☐ Other measures

7b. What consequences did the labour shortage have for your workplace?
(More than one option can be crossed).

- ☐ We hired in staff from an agency
- ☐ Existing staff had to work more
- ☐ Internal training to existing staff
- ☐ We bought services (including outsourcing production)
- ☐ We had to turn down orders
- ☐ Production/service decreased
- ☐ Planned expansion was postponed
- ☐ We considered moving some or all of our production abroad
- ☐ The labour shortage had no consequences

8. Can you quantify by how much the average pay (per employee) has increased in the past Year?
(Put a cross in the percentage option that most closely matches each group).

	Percentage							
	Less than 1	1 - <2	2 - <3	3 - <4	4 - <5	5 - <6	6 - <7	7 or more
In total at workplace								
LO area or similar								
TCO and SACO areas or similar								

Interested in the Public Employment Service's services relating to recruitment and/or trainee or other placements covered by the labour market programme?

☐ Recruitment (One or more of the Public Employment Service's services relating to recruitment)

☐ Placements, e.g. work experience or other placement

Space for your own notes: .....

.....

.....

.....

.....

.....

.....

.....

.....

Thank you for your participation!

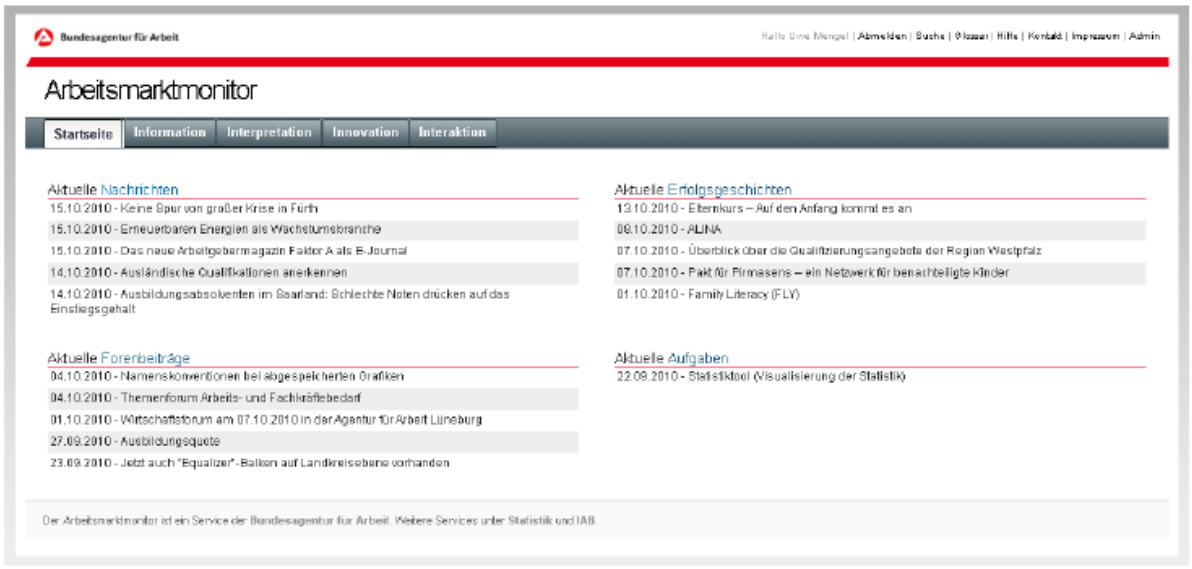
Annex 2: Presentation of "Arbeitsmarktmonitor"

Introduction

Only a few people are able to look at a spreadsheet and know exactly, what they have to do. We think, the real problem of regional monitoring is not the availability of data, but to see what the data means.

The goal of our project is to initiate and support local collaboration. So the labour market monitor offers a wide range of regional data for the labour market policy in Germany. This short presentation provides an impression of how our system looks like, how it works and how it tries to support the regional and local decision makers.

Welcome page



This is the welcome page of the Arbeitsmarktmonitor.

The access is regulated. You need an authentication code.
At the moment about 2.500 users are using this tool.
At the welcome page you see:

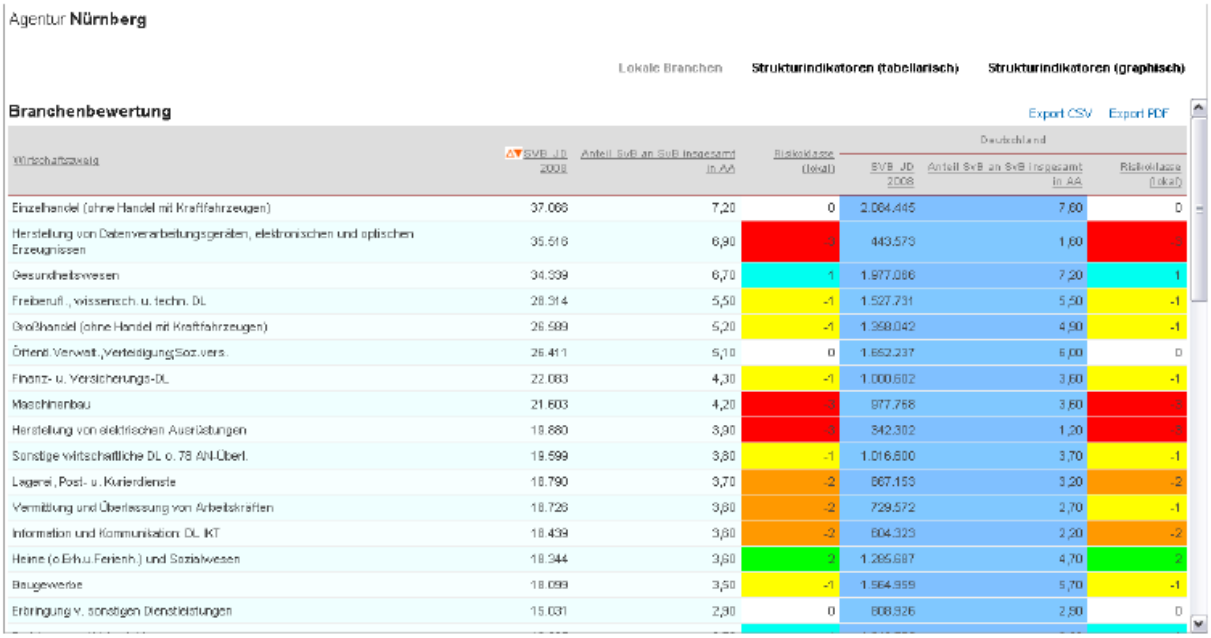
- Up-to-date news,
- the last best practices and
- the recent activities at the bulletin boards.
- You may also see the tasks of your group of users.

Information

The tab "Information" is presenting two main pools of data.

Presentation of current expected development of the Industries

These are different according to the local expectations. Twice a year, our Department of Statistics creates a spreadsheet with up to 12 indicators for each industry. Each indicator is scored between plus/minus 3. The overall score rates and the industries in what we call “risk class” or “opportunity class”.



Agentur **Nürnberg**

Lokale Branchen | Strukturindikatoren (tabellarisch) | Strukturindikatoren (graphisch)

Branchenbewertung

Export CSV | Export PDF

Wirtschaftszweig	SVB JD 2008	Anteil SvB an SvB insgesamt in AA	Risikoklasse (lokal)	Deutschland: SVB JD 2008	Deutschland: Anteil SvB an SvB insgesamt in AA	Deutschland: Risikoklasse (lokal)
Einzelhandel (ohne Handel mit Kraftfahrzeugen)	37.068	7,20	0	2.084.445	7,60	0
Herstellung von Datenverarbeitungsgeräten, elektronischen und optischen Erzeugnissen	35.518	6,90	-3	443.573	1,60	-3
Gesundheitswesen	34.939	6,70	1	1.977.086	7,20	1
Freiberufl., wissensch. u. techn. DL	28.314	5,50	-1	1.527.731	5,50	-1
Großhandel (ohne Handel mit Kraftfahrzeugen)	26.989	5,20	-1	1.368.042	4,90	-1
Öffentl.Verwalt.,Verteidigung;Soz.vers.	26.411	5,10	0	1.652.237	6,00	0
Finanz- u. Versicherungs-DL	22.083	4,30	-1	1.000.602	3,60	-1
Maschinenbau	21.603	4,20	-3	977.768	3,60	-3
Herstellung von elektrischen Ausrüstungen	19.880	3,90	-3	342.302	1,20	-3
Sonstige wirtschaftliche DL o. 78 AN-Überl.	19.599	3,80	-1	1.016.600	3,70	-1
Lagerei, Post- u. Kurierdienste	18.790	3,70	-2	867.153	3,20	-2
Vermittlung und Überlassung von Arbeitskräften	18.728	3,60	-2	729.572	2,70	-1
Information und Kommunikation: DL IKT	18.439	3,60	-2	604.329	2,20	-2
Heime (o.Erh.u.Ferienh.) und Sozialwesen	18.344	3,60	2	1.285.687	4,70	2
Baugewerbe	18.099	3,50	-1	1.564.959	5,70	-1
Erbringung v. sonstigen Dienstleistungen	15.031	2,90	0	808.926	2,90	0

Every agency is called to make a local validation for its biggest 20 industries and send it back to us. This validated data is shown on our platform.
The platform offers the possibility, to draw comparisons across regions.

Presentation of surrounding conditions

But it is not sufficient to know the industries. One needs supplementing knowledge of the surrounding conditions. In addition we have data about the conditions of the regions and counties. They are put together and arranged in four clusters:

- Labour Market
- Demographics
- social condition
- learning

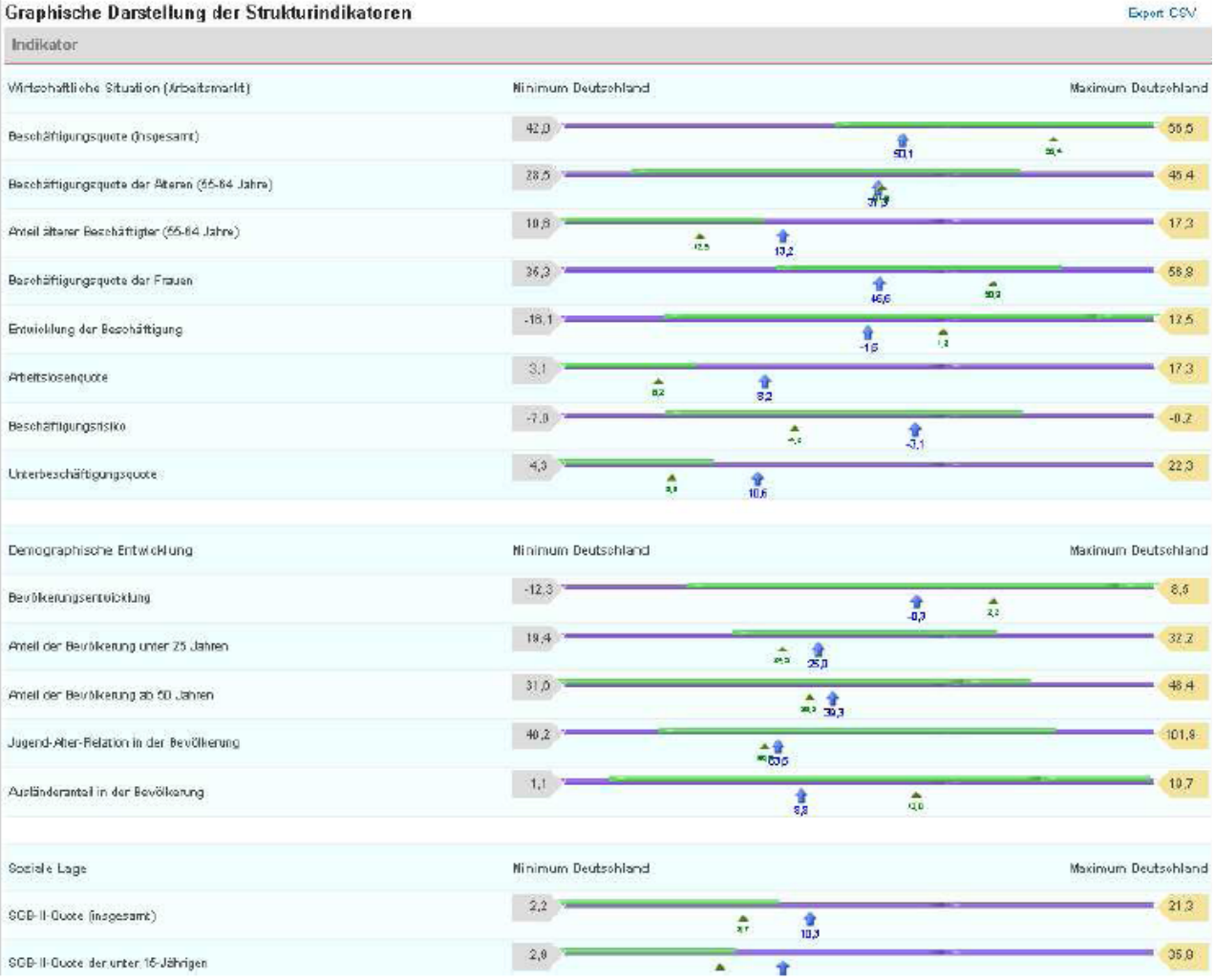
We are presenting them in what we call "equalizer charts". They are enabling to locate a region in the range of data in Germany and their country

Agentur **Nürnberg**

Lokale Branchen | Strukturindikatoren (tabellarisch) | Strukturindikatoren (graphisch)

Graphische Darstellung der Strukturindikatoren

Export CSV



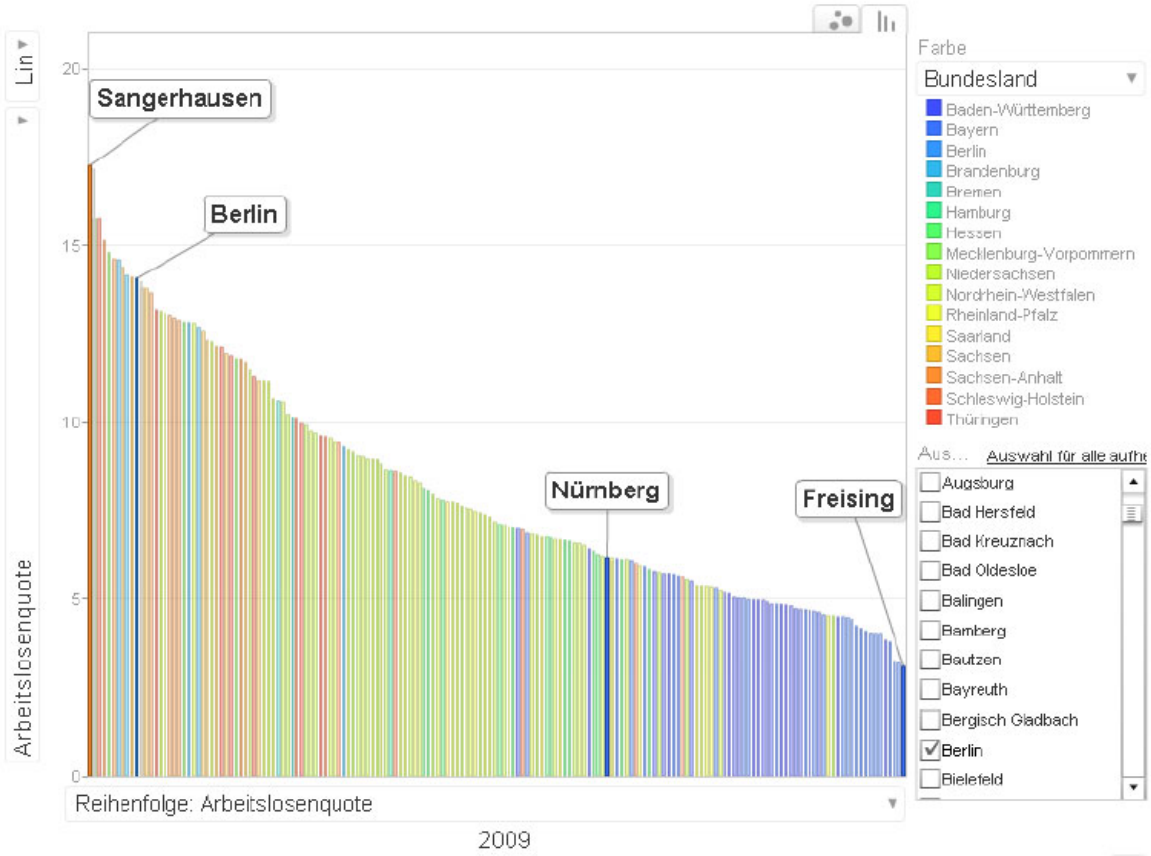
Interpretation

The next step leads to a deeper analysis of the situation.

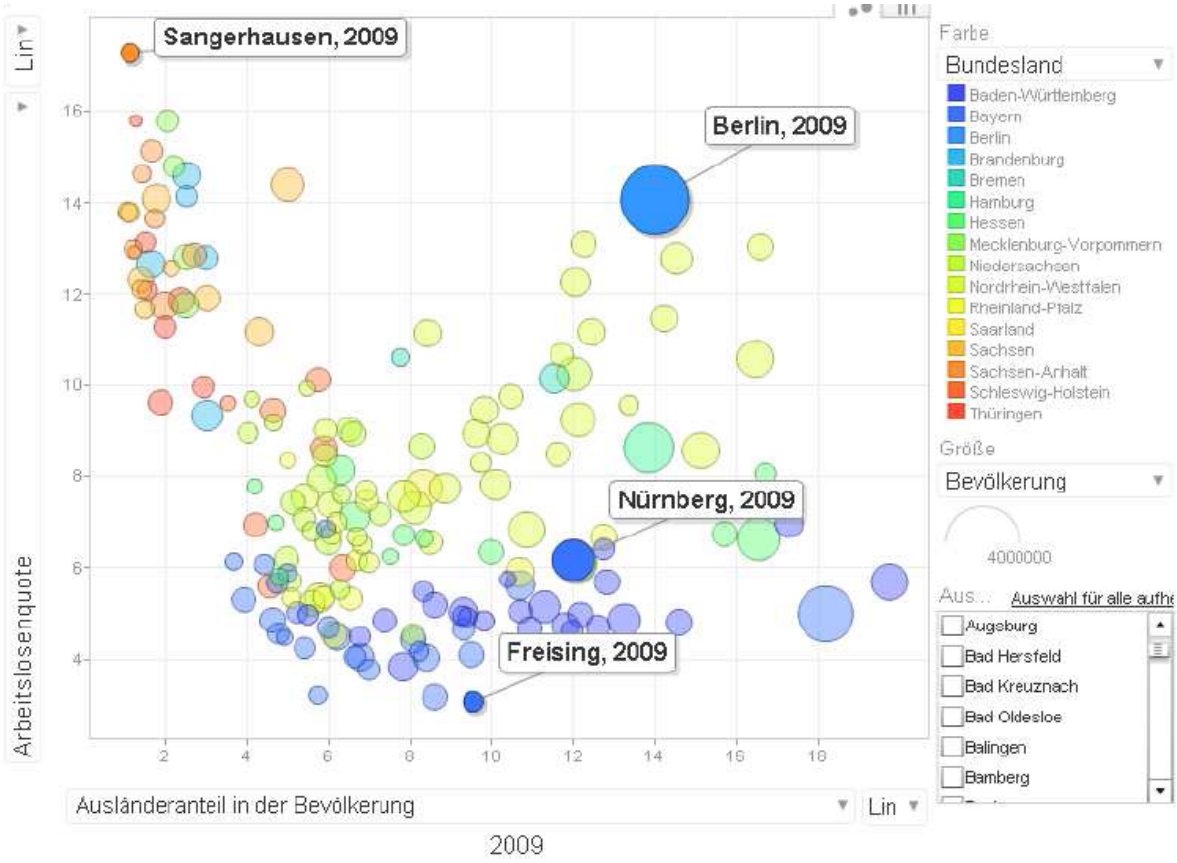
Motion Tool

The motion chart tool we use, enables an interactive analysis.

Example:
This is the unemployment rate of the regions in Germany.



With “mouseover”-function you can highlight the countries. With a click, you can highlight one or several regions.
The users can change indicators and doing that the diagram changes depending on their interests.



Now every region is represented by a bubble. The colours name the state and the size shows the population. Y-Axis is unemployment rate and x-Axis is Percentage of foreigners in population. In the upper, left corner you see most of the regions of the so called “new countries” (former German democratic republic)

Example: The states Baden-Württemberg and Bavaria have a low unemployment rate and a wide range of the percentage of foreigners.

Every user can change the indicators and “play” with the tool to figure out the specific situation of his region.

The users can save their graphics for further use f.e. in work groups.

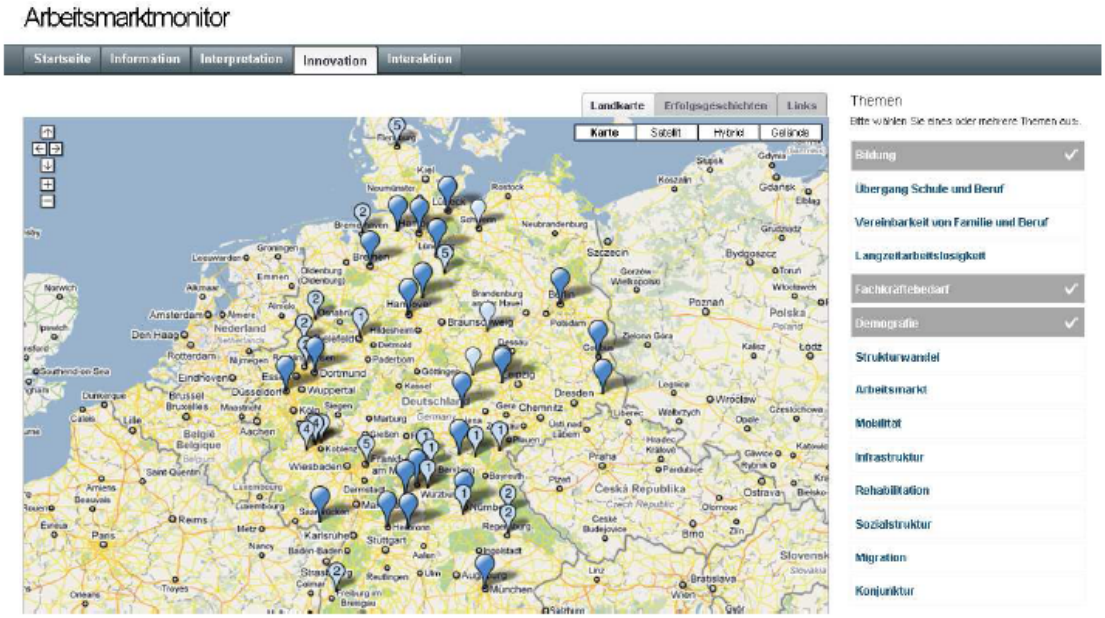
They can look up the graphics of other users, which concern their themes or regions as well.

At the moment we have more than 1.700 graphs saved in our database.

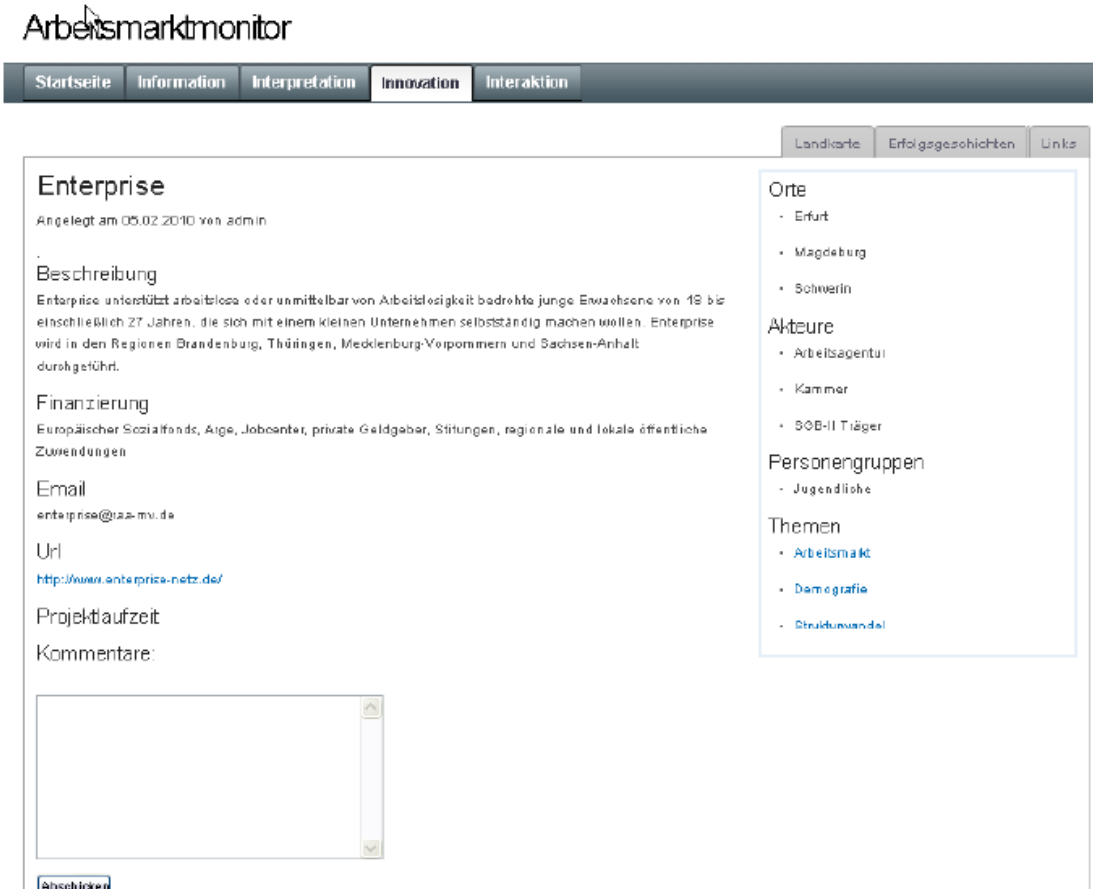
Innovation

Best practices

If you take as quick look at the section "best practices", you can find solutions and new ideas worked out by the platform users.



This is one of the main features, which makes the labour market monitor unique:



We are not only presenting data. Our users are invited to express themselves. They can provide comments and votes. In this way they can enrich the content of the platform with their own expert opinions and knowledge.

Interaction

Supporting project management

Work groups are supported by tools to generate tasks

bulletin boards

Another possibility to interact with other people is the bulletin boards

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Zentrale, SWA1
Uwe Mengel
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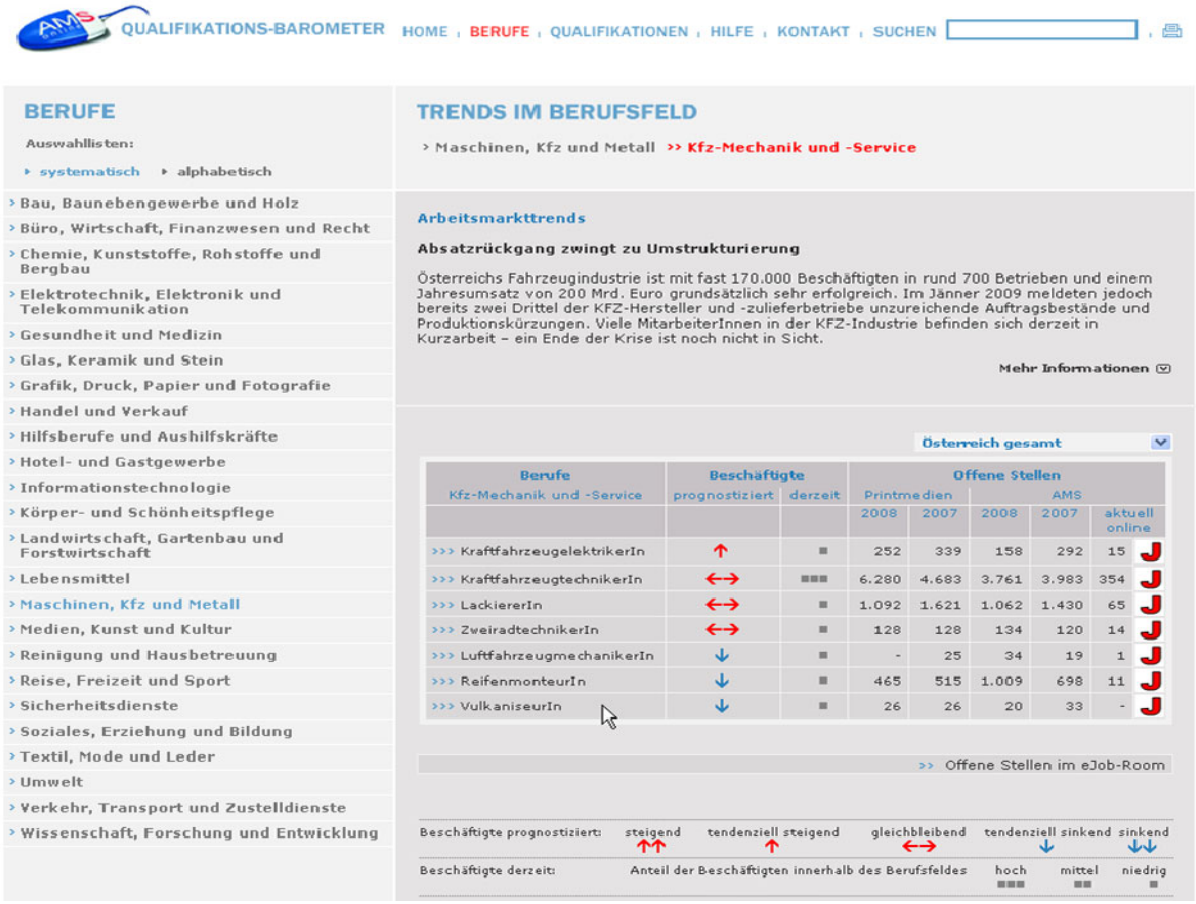
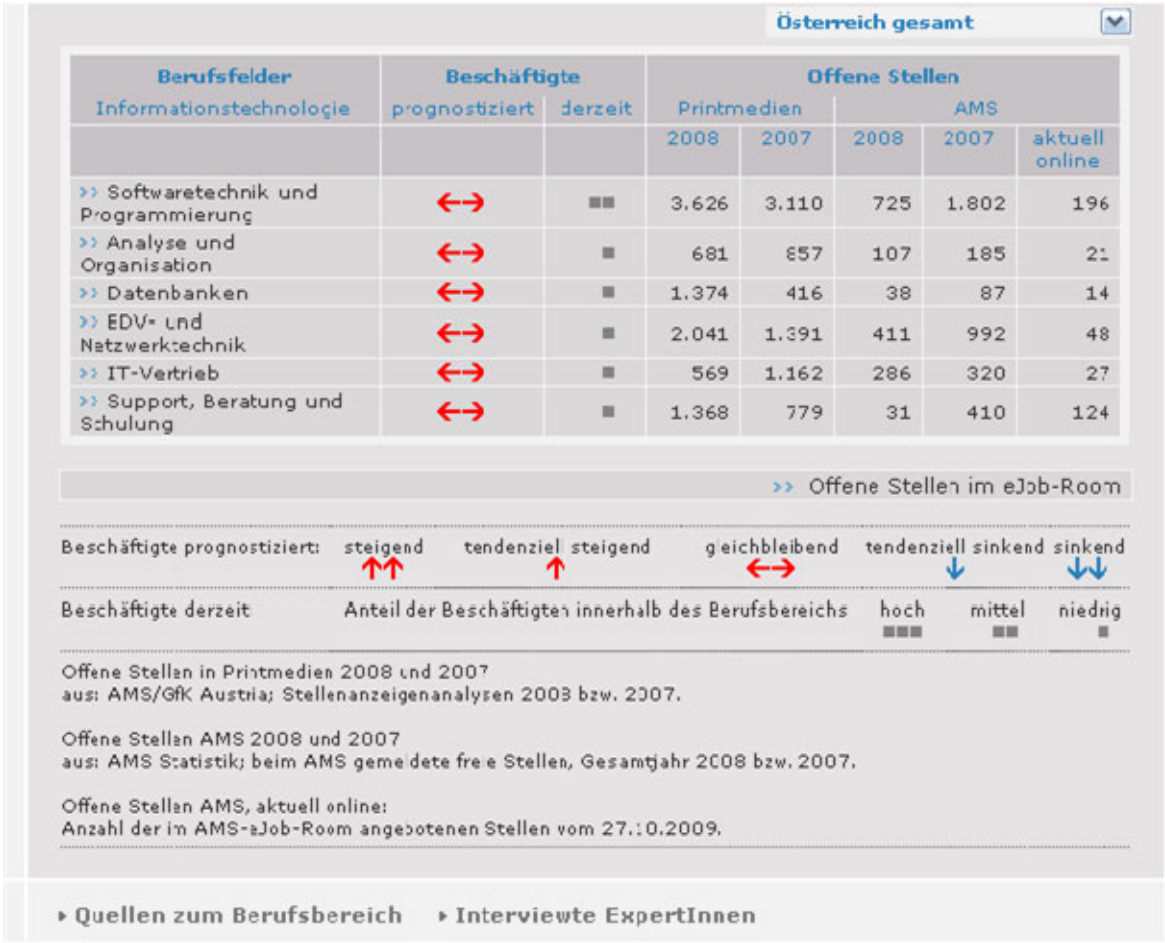
+49 911 179 5501

Annex 3: the Austrian AMS portal

Occupations



Job fields



Österreich gesamt

Berufsfelder	Beschäftigte		Offene Stellen				
Informationstechnologie	prognostiziert	derzeit	Printmedien		AMS		
			2008	2007	2008	2007	aktuell online
>> Softwaretechnik und Programmierung	↔	■■	3.626	3.110	725	1.802	196
>> Analyse und Organisation	↔	■	681	857	107	185	21
>> Datenbanken	↔	■	1.374	416	38	87	14
>> EDV- und Netzwerktechnik	↔	■	2.041	1.391	411	992	48
>> IT-Vertrieb	↔	■	569	1.162	286	320	27
>> Support, Beratung und Schulung	↔	■	1.368	779	31	410	124

>> Offene Stellen im eJob-Room

Beschäftigte prognostiziert:	steigend ↑↑	tendenziell steigend ↑	gleichbleibend ↔	tendenziell sinkend ↓	sinkend ↓↓
Beschäftigte derzeit	Anteil der Beschäftigten innerhalb des Berufsbereichs			hoch ■■■	mittel ■■	niedrig ■

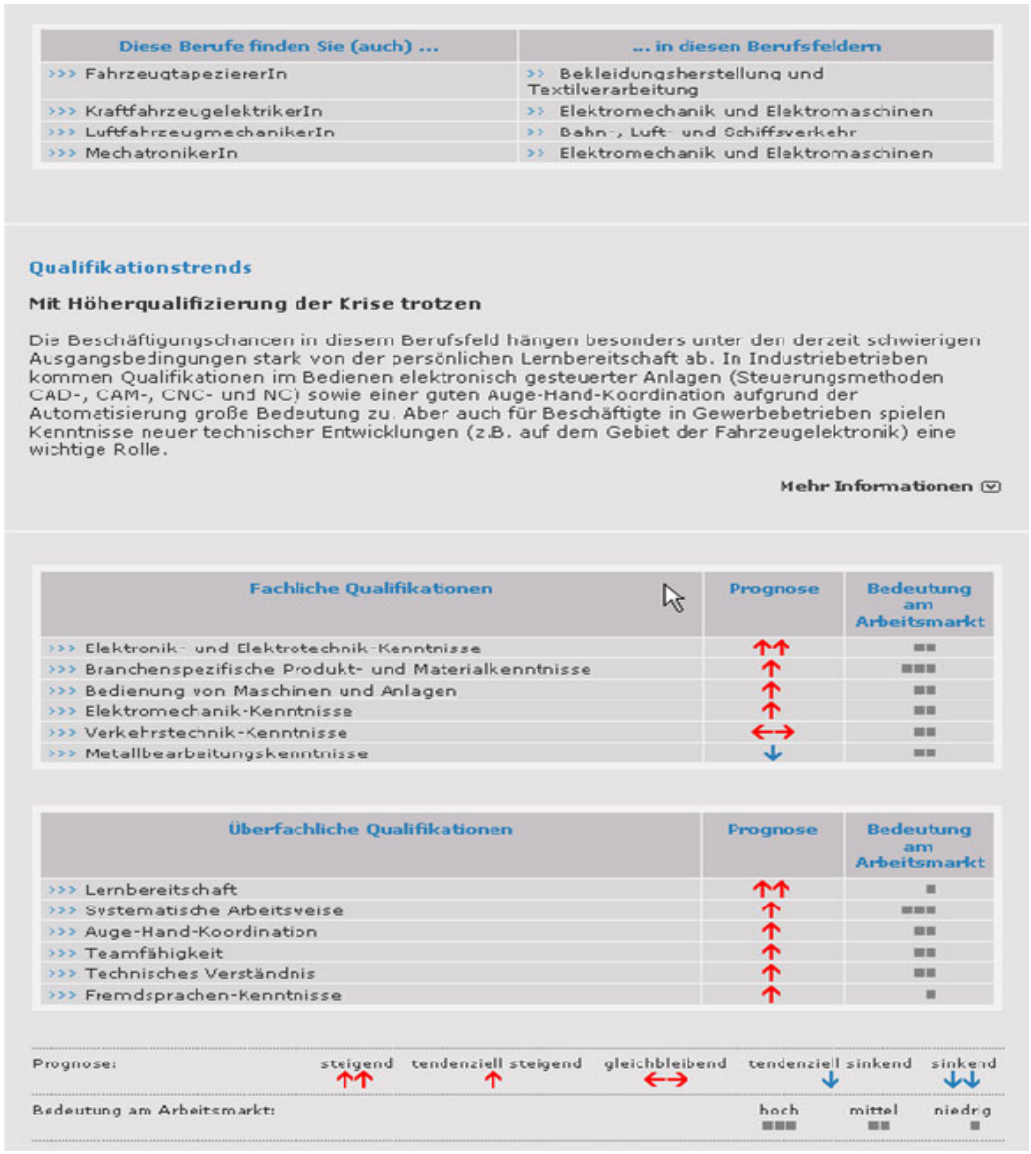
Offene Stellen in Printmedien 2008 und 2007
aus: AMS/GfK Austria; Stellenanzeigenanalysen 2008 bzw. 2007.

Offene Stellen AMS 2008 und 2007
aus: AMS Statistik; beim AMS gemeldete freie Stellen, Gesamtjahr 2008 bzw. 2007.

Offene Stellen AMS, aktuell online:
Anzahl der im AMS-eJob-Room angebotenen Stellen vom 27.10.2009.

▸ Quellen zum Berufsbereich ▸ Interviewte ExpertInnen

Skills:



Diese Berufe finden Sie (auch) ...	... in diesen Berufsfeldern
>>> FahrzeugtapeziererIn	>> Bekleidungsherstellung und Textilverarbeitung
>>> KraftfahrzeugelektrikerIn	>> Elektromechanik und Elektromaschinen
>>> LuftfahrzeugmechanikerIn	>> Bahn-, Luft- und Schiffsverkehr
>>> MechatronikerIn	>> Elektromechanik und Elektromaschinen

Qualifikationstrends

Mit Höherqualifizierung der Krise trotzen

Die Beschäftigungschancen in diesem Berufsfeld hängen besonders unter den derzeit schwierigen Ausgangsbedingungen stark von der persönlichen Lernbereitschaft ab. In Industriebetrieben kommen Qualifikationen im Bedienen elektronisch gesteuerter Anlagen (Steuerungsmethoden CAD-, CAM-, CNC- und NC) sowie einer guten Auge-Hand-Koordination aufgrund der Automatisierung große Bedeutung zu. Aber auch für Beschäftigte in Gewerbebetrieben spielen Kenntnisse neuer technischer Entwicklungen (z.B. auf dem Gebiet der Fahrzeugelektronik) eine wichtige Rolle.

Mehr Informationen

Fachliche Qualifikationen	Prognose	Bedeutung am Arbeitsmarkt
>>> Elektronik- und Elektrotechnik-Kenntnisse	↑↑	■■
>>> Branchenspezifische Produkt- und Materialkenntnisse	↑	■■■
>>> Bedienung von Maschinen und Anlagen	↑	■■
>>> Elektromechanik-Kenntnisse	↑	■■
>>> Verkehrstechnik-Kenntnisse	↔	■■
>>> Metallbearbeitungskenntnisse	↓	■■

Überfachliche Qualifikationen	Prognose	Bedeutung am Arbeitsmarkt
>>> Lernbereitschaft	↑↑	■
>>> Systematische Arbeitsweise	↑	■■■
>>> Auge-Hand-Koordination	↑	■■
>>> Teamfähigkeit	↑	■■
>>> Technisches Verständnis	↑	■■
>>> Fremdsprachen-Kenntnisse	↑	■

Prognose:	steigend	tendenziell steigend	gleichbleibend	tendenziell sinkend	sinkend
	↑↑	↑	↔	↓	↓↓
Bedeutung am Arbeitsmarkt:				hoch ■■■	mittel ■■	niedrig ■

Annex 4: ESCO - a European classification of Skills/Competences, qualifications and Occupations

I. What is ESCO?

Diagram 1: ESCO: the common language between the labour market and education/training

The European Commission is coordinating the management of ESCO – European Skills/Competences, qualifications and Occupations – a multilingual classification, in collaboration with stakeholders.

ESCO is based on an existing taxonomy of occupations and skills/competences which was developed by the Swedish Public Employment Service (Arbetsförmedlingen) and which is currently used on EURES – the European Job Mobility Portal. Just as this taxonomy, ESCO is building on ISCO, the International Standard Classification of Occupations, which is managed by the ILO (International Labour Organization).

ESCO will be linked to relevant international classifications and standards. It will also complement existing national, regional or sectoral occupational and educational classifications and enable exchange of information between them.

ESCO is the only European multilingual classification linking skills and competences to occupations which will be available free of charge to all labour market, education institutions and other stakeholders. All interested parties are encouraged to actively contribute throughout its development.

II. Why is ESCO being developed?

There is a tendency that employers focus less on formal qualifications but are increasingly concerned with what employees know, understand and are able to do in practice. Furthermore, there is a growing understanding of the importance of transversal skills, such as learning to learn and initiative-taking, complementing occupational skills.

At the same time, education and training systems are moving away from approaches defined around the time spent on learning and where the learning takes place (an input approach) towards a focus on the knowledge, skills and competences achieved through the learning (an outcomes approach). In line with the European Qualifications Framework (EQF), all Member States are in the process of developing National Qualification Frameworks (NQFs) which describe qualifications in terms of learning outcomes. To respond to these shifts and to improve matching between supply and demand, a number of Member States have felt the necessity to develop systems that classify skills and competences and enable these to be related to qualifications, occupations and job vacancies. At sectoral level, similar initiatives have been taken.

At European level, in the framework of the New Skills for New Jobs initiative, a group of independent experts recommended the development of '*a common language between education/training and the world of work*'. This commitment has recently been affirmed at the highest level through Europe 2020: 'A European strategy for smart, sustainable and inclusive

growth' and the conclusions adopted by the Education Council on 13 May 2010 which call for a common language and an operational tool.

DG Employment and DG Education and Culture have been entrusted with joint leadership of ESCO. The intention is to gradually develop a multilingual classification of **E**uropean **S**kills/**C**ompetences, qualifications and **O**ccupations (ESCO) which will be sufficient to broadly meet the needs of Member States who do not have their own classification system and to enable those with existing national and sectoral classifications to link with each other. With ESCO, DG Employment and DG Education and Culture thus develop a standard European terminology – a common language - which will help underpin Member States' employment, education and training policies and contribute to the development of a European labour market and a European lifelong learning area promoting geographic and occupational mobility. It will also help deepen understanding of labour market needs and better connect education/training outcomes with jobs and tasks and support the implementation of the EQF.

III. How will ESCO work and what is the current state of play?

In its current version (pre ESCO v0) the classification contains about 5 800 skill/competence terms and about 5 000 occupation titles. All these terms are translated into 22 official languages of the European Union.

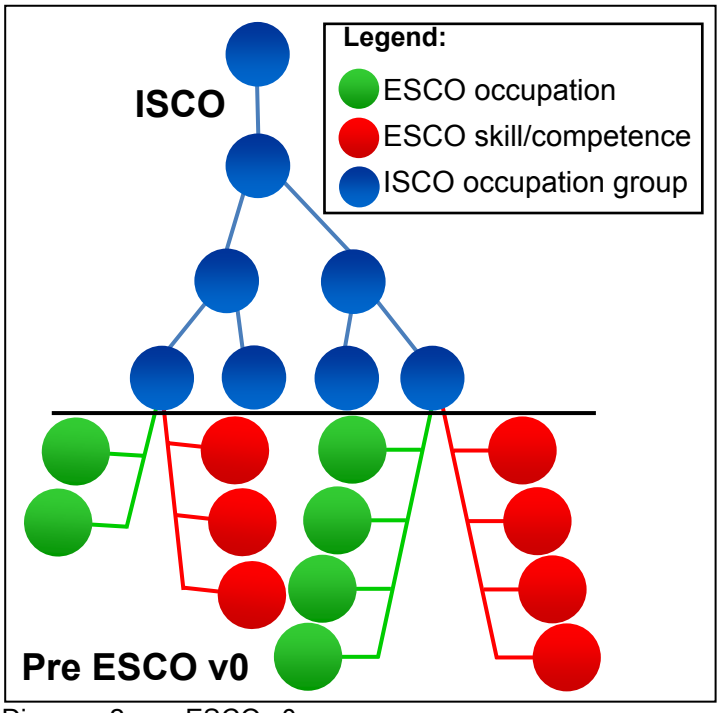


Diagram 2: pre ESCO v0

Pre ESCO v0 is building on ISCO-08, the newest version of ISCO. The ISCO classification consists of a hierarchical 4-level structure describing occupation groups.

An example for this ISCO-08 structure is:
ISCO Level 1 (Major group): Professionals (ISCO code: 2)
ISCO Level 2 (Sub-Major group): Legal, social and cultural professionals (ISCO code: 26)
ISCO Level 3 (Minor group): Social and religious professionals (ISCO code: 263)
ISCO Level 4 (Unit group): Philosophers, historians and political scientists (ISCO code: 2633)

In the pre ESCO v0, Occupations and Skills/Competences are both linked with ISCO Level 4 occupation groups (unit groups). Occupations and Skills/Competences are therefore only indirectly linked with each other via the parent Occupation Group.

Example pre ESCO v0:**Occupations** linked to ISCO level 4 occupation group (unit group) 5112 (Transport conductors):
Chief conductor; Conductor; On board service personnel; Person in charge on board; Person responsible on board; Train host; Train master.
Skills linked to ISCO level 4 occupation group (unit group) 5112 (Transport conductors):
Cashier experience; Head guard education (railway); Railway guard, professional experience; Service sector, experience.

At a first stage, ESCO v0 will be reviewed and enriched with additional descriptions of occupations, skills/competences and qualifications. A crucial input will come from the European Dictionary of Skills and Competences (DISCO) which contains around 10 000 skills and competences per language and exists in seven languages. The relation between Occupations and Skills/Competences will be created and specified.

It is envisaged that ESCO will be structured around three pillars: i) occupations, ii) skills/competences and iii) qualifications (building on the work done in the context of the NQF's related to the EQF) and will link these in a systematic way whilst enabling different entry points to serve a wide range of applications.

After the first round of reviewing and enriching ESCO will be named ESCO v1.

Diagram 3 displays how ESCO v1 will be structured.

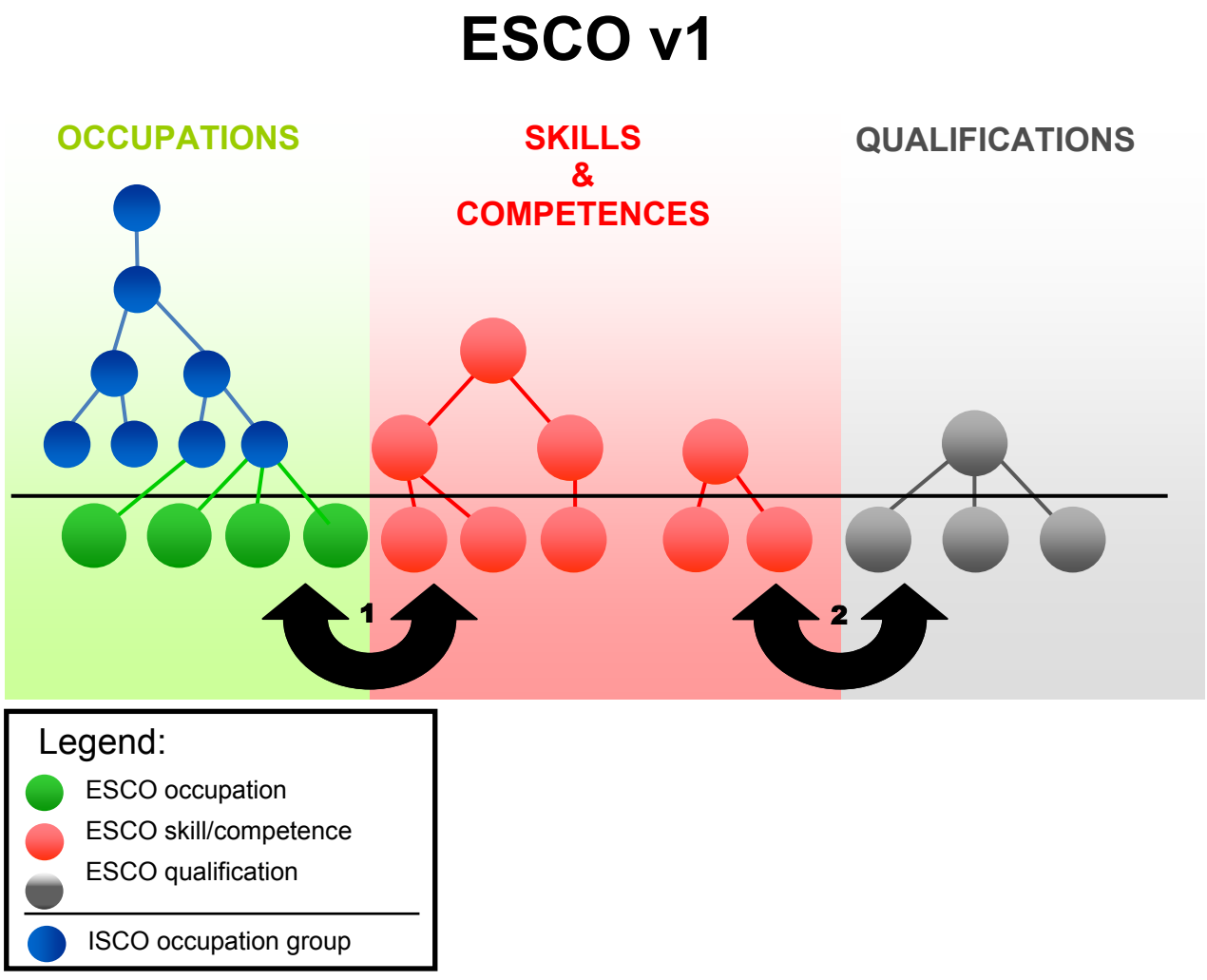


Diagram 3: ESCO v1

ESCO will improve information exchange and facilitate co-operation between education/training and employment service providers, between public and private employment services and between

public employment services of different countries. It will allow electronic interchange of vacancy information (e.g. with the EURES network) and CV's (e.g. between Europass and EURES) as it will be fully compatible with these systems and easily understood by major labour market and education actors.

Work on ESCO is still in the early developmental stages. Constructing an operationally useful European standard terminology of skills/competences, qualifications and occupations is a long-term project and can only be achieved gradually, step by step. It is essential to work in close partnership with the relevant stakeholders to ensure it is based on real needs. Actors from the worlds of work/labour market and education/training must be able not only to link their existing classifications to ESCO, but also to create enriched tools/applications that reflect the latest market developments and provide more and better options for matching, up-skilling and exchanging information and for co-operation around the ESCO standard. It is envisaged to update and enrich ESCO continuously in line with market developments and the corresponding demand for new skills. It is usable free of charge by all interested institutions and citizens.

IV. Who will be involved in the development of ESCO?

Stakeholders potentially concerned by ESCO include public, private and third sector employment services, the social partners, national education, training and qualification authorities and institutions, as well as sector skill councils, human resource management, recruitment and career guidance professionals, statistical and research organisations, promoters of other taxonomies and classification systems, developers of ICT HR applications (including other web-based job search tools) and international organisations such as the International Labour Organisation and the OECD. While ESCO is resourced by the Commission in the form of a secretariat, which is responsible for the technical management and dissemination systems and other support, it requires the active involvement of all relevant stakeholders to shape it into a tool which meets practical needs and is kept up-to-date. All stakeholders willing to participate and contribute will be able to influence the way ESCO evolves.

Different levels and forms of stakeholder involvement in ESCO are possible including:

- Participation in the ESCO Board (for the most senior representatives of the bodies concerned)
- Participation in the ESCO Maintenance Committee (for technical classification experts)
- Participation in the Reference Groups (for experts on labour market and skill needs and related terminology)
- Sending proposals via the web-based proposal tool on this website
- Mapping national, regional or sectoral classification systems to ESCO

V. How could ESCO be used?

There are many potential ways in which a multilingual classification and standardised European terminology covering skills/competences, qualifications and occupations could be used. At a general level, it will facilitate communication and foster more systematic links and comparability between sectors, institutions and countries. It will allow for a better matching of supply and demand on the labour market, enable more accurate and precise skills and occupational forecasting and improve the quality and reliability of guidance information. And it will make it easier for citizens, public employment services, guidance providers and employers to see the relevance of learning outcomes in national qualifications to tasks and occupations and to use the common language. Practical examples of uses that could be supported by ESCO include:

- Jobseekers can use it to describe their skill set when developing a CV that can then be easily used for various automatic matching purposes
- Employers can use it to define a set of skills and competences required when they are developing a job description to be advertised with public or other employment services

- Learners can use it to build personal skill profiles and to record their learning outcomes
- Bodies developing and/or awarding qualifications can use it to express learning outcomes in more operational terms
- Education and training institutions can use it to improve planning and curriculum development related to emerging skill needs & to facilitate the recognition of foreign qualifications
- HR managers & guidance providers can use it to enhance planning & enrich aptitude/ability tests, skills and interest inventories/tools
- At European level ESCO will provide for a closer matching of jobseekers to jobs through the EURES – the European Job Mobility Portal
- New initiatives with a European dimension such as a Europass Skills Passport and self-assessment, guidance tools could be supported

Diagram 4: ESCO applications