



Types of Networks in Europe

for the reduction of the shortage of skilled workers in the manufacturing sector

Overview

Generally, networks are structured and organised systems or unions of organisations with the same interests, which can meet under local, regional or national level. Networks can be characterised as: *‘an amalgamation of individuals or companies in purposeful and intended cooperation to a goal-oriented objective’*. With this integration combining as a network specific expectations and competitiveness are attached as well as common goals and interests.

Networks are helpful and practical instruments for SMEs enabling them to be able to share best practice and even resources allowing them to remain competitive.

The following figure shows different types of networks apparent in European countries involved in the project.

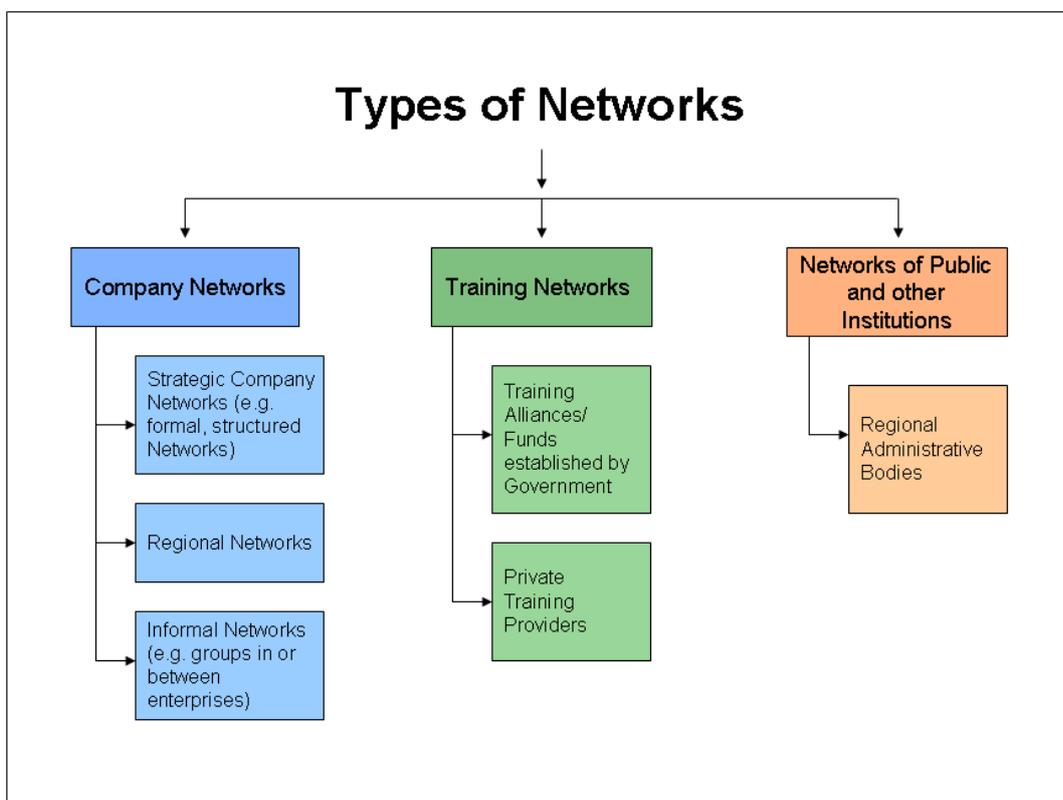


Figure 1: Types of Networks

Types of Networks

Generally the description below concentrates more on interorganisational than on intraorganisational networks.

“For a first work thesis, interorganisational networks (ION) here are to be understood as a polycentric form of organisation, which is characterised by cooperative and relatively solid relations between autonomous organisations” (Morath 1996, p. 2). Mitchell understands a network “as a specific set of linkages among a defined set of persons” (Mitchell 1969, p.2). Beyond within interorganisational networks it will be

differentiated between several types of cooperation like horizontal, vertical and diagonal co-operations.

Generally interorganisational networks are external networks that do not exist inside of enterprises but with enterprises. Within interorganisational networks different other types of networks are identified that are described in detail below, first in general and with specific characteristics and further with country specific examples.

Company Networks

Strategic Networks

General description

Strategic Networks are vertical co-operations of enterprises along the value added chain of knowledge. Central participant is the enterprise that determines the structure and the function of the network. Relations with other members are maintained with characteristics of market oriented and hierarchical coordination.

The goals are the protection and/ or development of the competitive situation by continuously innovation of the 'products'. „The increase of the own reputation by co-operation with competent partners from science and economics is here in the focus of attention“ (Howaldt, Kopp 2007, p. 173).

Specific characteristics

- consulting (e.g. legal advice), instrument/ strategy for a long-term avoidance of a skilled workers shortage
- companies profit from new knowledge
- concentration on sector/ branch specific requirements, support of employer needs and industry requirements
- exchange of experience, increase of competitiveness for smaller companies
- possibilities of marketing and/ or advertisement of the sector, branch and the occupation
- strengthening the image of the branch, the region, the profession

Regional Networks

General description

Regional networks are agglomerations of enterprises bedded into marketing areas, which are affected by a high degree, both vertical and horizontal company networks. Examples of such regional networks are silicone Valley and "route 128" in the USA (region named after the motorway route 128 around Boston, where high-tech businesses of microelectronics settled during the last 60 years, initiated by the

Massachusetts Institute of Technology) within the range microelectronics, Baden-Wuerttemberg in Germany within the range mechanical engineering and the region Emilia Romagna in the textile industry (Benetton) (cf. Morath, F. 1996, p. 11 et seqq.).

Specific characteristics

- e.g. regional marketing (set up by regional authorities or regional branch organisations) for the improvement for the location of enterprises
- safe guarding the company's competitiveness

Example from Germany

General description

The network OWL Mechanical Engineering unifies both the regional and the strategic type of networks. It has as its goal to strengthen the economic and technological performance of the mechanical engineering region East Westphalia Lip in the national and international competition. The medium-size structured industry meets the challenges of increasing globalisation and accelerated technological change with new forms of co-operation. This shall help to reduce the shortage of skilled workers rather to develop strategies and activities early, so that the shortage of skilled workers does not become a threat at all.

Type of network/ classification

This type of network ranks among the strategic company networks, which exhibits a very strong regional identity.

The most important goals of their work are:

- consolidation of economic and technological performance of regional medium-size mechanical engineering companies
- development of location advantages for the enterprises in the national and global competition
- safeguarding of the continued existence of the enterprises for long-term recruitment from the labour market

Specific characteristics to reduce the shortage of skilled workers

Human resources and organisation

- enhance the technological skills of personnel
- achievement of high training standards and continuous further training

Exchange of experience

- securing the future of the enterprises and the employment of skilled workers

- periodic exchange of new results for the increase of the effectiveness, efficiency and flexibility of operational processes
- contact with universities, research institutes for the support of product and process innovations in the enterprises

Promotion of co-operation

- lasting protection of the employment and stabilisation of the competitiveness, particularly for SMEs
- use of cooperative potential
- development of new export markets by collaboration and exchange of network contacts

Locational, regional marketing

- increase the image of the enterprise in the region
- contact with schools and kindergartens raising awareness of the various skills and technologies within manufacturing

Example from Italy

General description

The NANOFABER project is promoted by the Research Institute for Nanostructured Materials (ISMN) within the National Research Council (CNR). It allows for the networking and synergetic collaboration of different research centres in Emilia Romagna, thus promoting innovation and technology transfer towards regional productive bodies. NANOFABER mainly aims at improving the possibility to modify materials as to respond to different applications and at creating devices with new characteristics and possible uses. The main project lines are:

- Nanostructuring of multifunctional and conventional materials
- Integration of materials in conventional materials
- Sustainable production of electro-active devices based on multifunctional materials
- Integration of functional systems for identifying and stocking of polymeric materials
- Training, dissemination and valorisation of achievements

Specific characteristics to reduce the shortage of skilled workers

NANOFABER aims at creating and consolidating a networked laboratory dedicated to nanotechnologies and nanofabrication. It is expected to become a centre of excellence within the Region and a reference centre at international level. The planned activities can be synthesised as follows:

- development of interdisciplinary integrated research leading to significant achievements with an impact in terms of scientific and technological advancement;
- set up strong relationships with regional productive centres by jointly developing high-risk projects with short-term outcomes (focus on feasibility) as well as long-term outcomes (featuring knowledge-based outcomes)
- acquisition of human resources and equipment so as to create an interdisciplinary research centre with advanced and updated competencies and skills;
- systematic dissemination of research outcomes towards different target audiences (ranging from the whole of society to youth, to productive and economic actors)

Informal Networks

General description

An informal network may be described as a coming together of like minded people to help develop and/or provide solutions to particular problems encountered by a number of different people or organisations. These networks may become more formal if that is the desire of the people/organisations to derive benefit from working together and sharing best practice.

Specific characteristics

Advantages of informal networks:

- The exchanged knowledge always is on the most current status
- Within companies the ability to communicate is strengthened
- Possibility to develop a good relationship between established and new co-workers
- Knowledge is passed on purposefully as know-how in the context, in which it is needed

Example from UK

Welsh Mechatronics Network

The Welsh Mechatronics Network (WMN) encourages Welsh industry to take advantage of the advanced research and other support facilities made available by academia, professional institutions and Government organisations, for those companies involved in Mechatronics, specifically in the Small to Medium Enterprise sector (SMEs). The 'Network' is a body established in the first instance by external

funding to encourage Welsh industry to take advantage of the expertise that exists in Wales.

The SME sector is a significant part of Welsh industry and has the potential to respond quickly to challenges and in an innovative way than some of the larger organisations. However they are often unable to realise this potential through lack of funding or investment advice in new machinery or technology, and a lack of awareness as to what technology can help them achieve in terms of growth, profit or retention of market share.

It is estimated that between 60% and 80% of Welsh SMEs in electronics, manufacturing and related industries are involved in Mechatronics in one form or another. Each has the potential to benefit from the support available to any company involved in the design and development of new or existing products, and those that use Mechatronics systems in their manufacturing or production processes.

Type of network

Membership of the network is open to any company that includes any combination of electronics, mechanical or Information technology used in their processes or products.

The structure of the WMN by necessity one of great breadth and flexibility and it is unique in that it is horizontally integrated across many other sectorial or vertically integrated organisations, e.g. organisations in the Electronics, Automotive and Manufacturing sectors.

However, Mechatronics is applicable to all of these sectors (and many others), be it an automated process, the use of Mechatronic machines in manufacturing, or a finished product that can be anything ranging from a small micro heart implant to a 250 seat aeroplane. Given the wide range of activities and differing disciplines involved the network must be flexible enough to meet the needs of SMEs from an equally wide spectrum of industries.

Case study

A manufacturing company recently approached the MEC for assistance with the machining of an ejector pin for use in an injection-moulding tool they were quoting for. The interesting nature of the project is to do with the dimensions of the ejector pin. The task set by the company was to manufacture a pin; with a maximum diameter of 1.00mm reducing down to a diameter of 0.15 mm was machineable.

Taking advantage of its membership Network the MEC offered to machine a sample of the pin free of charge to show to its prospective customer. The positive outcome enabled the company to demonstrate to their prospective customer that their requirements could be met illustrating that micro- feature sizes, which in the past were dismissed at the design stage, are now both achievable and repeatable.

Specific characteristics to reduce the shortage of skilled workers

The Welsh Mechatronics Network in providing technical support ensures that innovative technology is passed on and into SMEs. Therefore, SMEs are able to invest in further training and knowledge transfer, hence reducing any skills gaps within the organisation.

Example from Austria

General description

Under certain conditions the AUTOMOTIVE-CLUSTERS (in Styria and Upper Austria) could be seen as informal (but also partly formal) network. The Automotive Cluster (AC) is an inter-branch network for the support of the innovative strengths and international competitiveness of companies in the automotive sector.

Type of network/ classification

The Automotive Cluster offers its partners access to an extensive information and contact platform. The focus is on targeted, need-oriented data. The current performance spectrum of a complete branch is presented on a website, in printed media and at events, and thus rendered transparent.

The AC co-operation programme offers concrete support during partner searches, project initiation and completion. Projects receive additional impulses through the provision of funding by the Upper Austrian government, co-operation leading to innovations, flexibility and significant image enhancement.

Marketing services increase the recognition levels of both the Cluster partners and the region. Technology presentations provide direct contacts with decision-makers at manufacturers and system suppliers. Partners can use the AC media, events, symposia and joint trade fair exhibits for advertising offensives aimed at specific target groups.

Going international is a special challenge facing automotive industry sub-suppliers. In this situation, a diversity of activities furnishes AC partners with perfect preparation for the entry into new markets. Information transfer and communication are among the benefits, along with the chance to create a perfect platform for all internationalisation plans.

The Automotive Cluster Upper Austria – for example – is administered by Clusterland Oberösterreich GmbH, which is owned by Technologie- und Marketinggesellschaft mbH (mainly in the property of the province Upper Austria), the Upper Austrian Chamber of Commerce and the Confederation of Upper Austria Industry.

Specific characteristics to reduce the shortage of skilled workers

AC partners have access to an extensive range of training, specially tailored to the needs of the automobile industry. Topics such as quality management and

production technologies are prepared in a manner that makes them comprehensible for all employees. Specialist events and learning platforms promote know-how transfers and offer an ideal opportunity for establishing new contacts.

Training Networks

General description

A Training network can be a cooperation of schools and the economic system that ensure that school leavers get an optimal apprenticeship training position and enterprises get suitable junior staff. Such type of networks forms the interface between school, vocational training school and enterprises for the improvement of the training situation.

An essential goal is to be able to encounter in a permanent, long-term and lasting way the various current and (above all) future requirements in vocational training with a common and coordinated course of action of the important participants of the economic system, politics and educational institutions. The work of this type of networks is aimed at a permanent improvement of the co-operation of schools and enterprises as well as at co-operation of vocational training schools and enterprises.

Specific characteristics

- high-quality vocational training, further/special training possibilities in apprenticeship training
- new apprenticeship positions in active training companies
- exchange of trainees and trainers, co-operation in apprenticeship training, decrease of training costs
- improvement of flexibility of training delivery

Example from Austria

General description

In three Austrian provinces (Upper Austria, Tyrol, Vorarlberg) institutionalised forms of regional training alliances have already been set up, the third one (Vorarlberg) was just launched in 2008. These training alliances at provincial level are mainly financed by the respective competent regional governments. For implementation the existing organisational structure of the regional Economic Chambers has been used and extended.

Specific characteristics to reduce the shortage of skilled workers

The training alliances particularly aim to promote additional qualifications for apprentices and to support enterprises that cannot provide all components of training by themselves. These companies are supported by other companies or training

institutions in teaching apprentices the contents of skills they lack. For promoting additional qualifications at a higher level for apprentices also further training of apprentices and the transfer of knowledge, which exceeds the standardized job profiles, are explicit goals of these training alliances. The assistance of the network for companies is both financial and organisational as well as in terms of counselling (e.g. contacts with partner enterprises, information about existing training provisions, etc.).

Example from Italy

General description

The main aim of the network in the footwear sector was to sustain development processes in the local footwear district through integrated actions involving enterprises, social parts and local institutions (local administrations, schools, local employment offices, etc.). The project addressed the problem of the scarcity of qualified workforce and the need to preserve the historical know-how of the regional manufacturing districts: both are considered essential factors for the development of the sector.

Specific characteristics to reduce the shortage of skilled workers

The initiative aimed at improving local job market dynamics and the attractiveness of the footwear sector for younger generations, with the ultimate goal of improving and consolidating the regional high quality footwear productive system and impacting on the quality of the products and the level of local employment. The main activities of the project were the following:

- 1) Analysis and data collection concerning issues like:
 - The characteristics of the productive district of San Mauro Pascoli, of enterprises and employees;
 - Develop existing networks of local institutions, with particular reference to those operating in fields related job market and employment issues;
 - actions that the district and the single enterprises can take in order to contribute to the development of the partnership's networks;
 - Promote existing communication and information exchange channels between enterprises, local administrations, social partners, employment and training services;
- 2) Evaluation of the network model for the footwear sector;
- 3) Implementation and piloting of a network including enterprises, education institutions, local administrations, social partners and adaptation of the model to the local specificities in the territory of San Mauro Pascoli;
- 4) Dissemination of results.

Example from Slovenia

General description

The companies in Slovenia on their own initiative do not connect into networks at the state level but mostly at the regional level. Generally, skilled workers in Slovenia prefer working in the home town or its surroundings. They would only commute to work in some of the larger directions, mostly into larger cities. Moving to another town due to work is a rare choice. Therefore, the companies are more interested in local or regional networks, wherefrom they expect the majority of the skilled work force. They find the effects of the local network figurations more beneficial than those at the state level.

It is interesting that the initiatives for network figuration do not arise from the companies but from the vocational schools in cooperation with the local social partners; and they are supported and funded by government (Ministry of Education). Vocational schools were the first to have become aware of the trend of decrease of enrolment into educational programmes of vocational education. Therefore, much effort has been put into promotion of the vocational education. The change in the school system and legislation, which has directed a part of education into companies, also encourages the schools to search for partners in companies.

An example of such cooperation in Slovenia are the so called »Inter-company education centres«. An »Inter-company education centre« is established by Ministry of Education and Sport and larger companies in the region and supported by the Chamber of Commerce and Industry of the Republic of Slovenia and Chamber of Craft of Slovenia. The main objective an »Inter-company education centre« is to encourage and improve cooperation of companies and education, which results in the raise of the quality of education.

Specific characteristics to reduce the shortage of skilled workers

An “inter-company education centre” is an external education centre within a vocational school. An »Inter-company education centre« is established by Ministry of Education and Sport and supported (partly financed) by larger companies in the region, the Chamber of Commerce and Industry of the Republic of Slovenia and Chamber of Craft of Slovenia. The »Inter-company education centre« is managed from the vocational school. The basic functions of an »Inter-company education centre« are:

- to implement vocational training of apprentices and students;
- to provide internship of adults (qualifications and change of qualifications, specialisation and certificates of knowledge and skills– of the employees and the unemployed);
- to contribute to quality professional cadre at the international level for the needs of the economy and craft in an innovative and optimum way.

- to achieve integration of modern technology of education and training in lower vocational and secondary vocational schools, as well as at institutions of higher professional education.
- to boost economic events.
- to motivate pupils of primary schools for vocational education.
- to encourage and develop learning technologies.

Example from UK

The Alliance of Sector Skills Councils

The Alliance of Sector Skills Councils is a new organisation comprising all 25 licensed UK Sector Skills Councils (SSCs), the employer-driven organisations that together articulate the voice of the employers of 85% of the UK's workforce on skills issues. Its core purpose is to:

- act as the collective voice of the Sector Skills Councils
- promote understanding of the role of SSCs within the skills system across England, Scotland, Wales and Northern Ireland
- co-ordinate policy positions and strategic work on skills with stakeholders across the four home nations
- help build the performance capability of the Sector Skills Councils, to ensure they continue to work effectively on the employer-driven skills agenda

Sector Skills Councils (SSCs) are state-sponsored, employer-led organisations that cover specific economic sectors in the United Kingdom. They have four key goals:

- to reduce skills gaps and shortages
- to improve productivity and business performance
- to increase opportunities to boost the skills and productivity of everyone in the sector's workforce
- to improve learning supply including apprenticeships, higher education and National Occupational Standards (NOS)

SSCs provide employers with a unique forum to express the skills and productivity needs that are pertinent to their sector. By coming together as SSCs, employers have:

- greater dialogue with government and devolved administration departments across the UK
- greater impact on policies affecting skills and productivity
- increased influence with education and training partners

- substantial public investment

SSCs achieve these aims by contributing to the development of National Occupational Standards, the design and approval of Apprenticeship frameworks, brokering Sector Skills Agreements and creating Sector Qualification Strategies.

Specific characteristics to reduce the shortage of skilled workers

SEMTA is the Sector Skills Council for Science, Engineering and Manufacturing Technologies

It works to raise workforce skills and qualification levels across the eight industry sectors it represents in a bid to boost the productivity and competitiveness of the two million employees and 75,000 businesses within its scope.

They cover every part of the skills agenda including technical skills, process improvement and leadership capability at all levels from operators, craftworkers, technicians and professional employees through to senior managers.

Their remit includes the education and training of young entrants and existing adult employees, whether it relates to part-time or full time learning at college, in a training centre or workplace.

Example from the Netherlands

OBM Zwolle

General description

A few years ago, employers' organization Metaalunie has introduced a new concept for the regional co-operation between individual companies and education and training institutions. This concept is called 'Training Company Metal' ('Opleidingsbedrijf Metaal' or OBM).

Companies can buy one or more shares in an OBM in order to get well qualified professionals. An OBM recruits students for affiliated companies, arranges the training and takes care of the required paper work. In the future they will amongst others arrange continued vocational training (CVT) and guidance of students during their practice period in the company. The overall short-term goal is to increase the entry of students and to upgrade the competences of current professionals.

Up till now, eleven OBM's have been established. Their locations are shown on the map below. Eventually the whole of the Netherlands will be covered by 20 to 25 OBM's.

Regional distribution of OBM's (January 2009)



Source: www.obm-metaal.nl

Not all OBM's have the same form and activities. OBM Zwolle (the most northern one on the map) is used as an example.

Specific characteristics to reduce the shortage of skilled workers

In OBM Zwolle the following organizations work together:

- National employers' organization Metaalunie (for SME's in metal working). This organization initiated the foundation of the OBM.
- National training fund OOM (for SME's in metal working). This organization arranges and supplies financial contributions.
- Regional training centre Deltion College, located in Zwolle. This school is responsible for vocational education and for the physical facilities.
- Centre of expertise on vocational education, training and labour market Kenteq. This organization delivers a special service to guide students and gives advice about the adjustment between education and labour market.
- Individual companies with share(s) in the OBM. They supply apprentice

Vocational education takes place in the form of apprenticeships (combination of work and school). The gap between school and company is reduced by giving companies more influence on the content of the education of their apprentices. Based on the competences needed by the company, each student follows his own personal

program. Education is more practice oriented compared to regular vocational education. This makes it more attractive for both students and companies.

At the moment about 70 students are enlisted and between 50 and 60 firms are participating. Recently also a 'training pool' was established. By joining this pool, students can work and learn at different firms during their education.

The OBM also functions as a desk where participating companies can make requests concerning their training needs (both initial and continued vocational education). The OBM then will look for suppliers able to fulfil those needs.

Networks of public and other institutions

General description

Networks of regional and administrative bodies are at first co-operations of communes and public administration of districts and regions. Therein further types of cooperation exist, e.g. chamber of commerce, chamber of crafts etc. Local authorities constantly are confronted with new topics and are involved in the implementation of various policies. Therefore the formation of thematic networks between communes to topics of common interest are been proved to be important for the suggestion of competent discussions and the exchange of proven practices.

Example from the UK

The Heads of the Valleys Programme is a 15 year regeneration strategy developed in full partnership with five local authorities, (Rhondda Cynon Taf, Merthyr Tydfil, Caerphilly, Blaenau-Gwent and Torfaen), and other local stakeholders to tackle the root causes of economic inactivity and other key issues in the area within the context of the Wales Spatial Plan. The aim is that the Heads of the Valleys will become a rich, dynamic network of communities helping to drive the success of south east Wales.

Through working in partnership, the Welsh Assembly Government (WAG), local authorities, the UK Government and voluntary and private sectors can make a real difference to the Heads of the Valleys area.

The main aims of the Strategy are based around 5 priority themes:

- An attractive and well-used natural, historic and built environment
- A vibrant economic landscape offering new opportunities
- A well educated, skilled and healthier population
- An appealing and coherent tourism and leisure experience
- Public confidence in a shared bright future.

Using special funding from the Welsh Assembly Government of £140million, the programme will maximize the benefits arising from all forms of public sector expenditure, estimated at £1billion per year, and lever in at least £360million of private sector investment.

The goals for 2020:

- All children and young people within the Heads of the Valleys will have a flying start in life, whatever their background
- People will have access to a comprehensive range of academic and vocational education and learning opportunities and the opportunity to go to University within the area
- Schools will be well maintained, and will promote health, nutrition and fitness, offering out of hours learning and collaborating across the area to provide better services
- People will generally have the knowledge, skills and opportunities to maintain their best possible levels of physical and mental health.

In one of the local authorities, Rhondda Cynon Taf, a network of Learning Providers has been brought together to improve the knowledge development and hence, provide higher skilled workforces. This network is called Bro Dysg.

Bro Dysg (meaning 'Community of Learning') is the strategic partnership responsible for pre and post 16 learning in Rhondda Cynon Taf. Bro Dysg believe that only by working together to create opportunities for individuals, communities and businesses to plan and manage their own learning will we develop the strong commitment to continuous learning which is essential to our social, economic and personal well being.

Bro Dysg's mission is "to support the development of learning communities that are inclusive, sustainable and empowered through collaborative planning and joint action".

By working with local networks and action groups Bro Dysg will continue to develop and strengthen existing partnerships, encourage new, innovative ways of working, better plan and allocate resources for the benefit of all residents of Rhondda Cynon Taf. As part of their commitment to improving education and lifelong learning, Bro Dysg has recently produced a five year strategy which is intended to provide a strategic framework for all who plan and lead learning services within that area.

The strategic priorities are to;

- *increase support* for all learners to enable them to achieve their full potential
- *improve* the quality and accessibility of *information, advice* and *guidance* for all learners
- *provide* high quality *life* and *work skills*

The Strategy is based on the values of; learner focus, equality of opportunity, collaboration, accessibility and celebration of achievement.

In fashioning the work of Bro Dysg, attention is paid to the following cross cutting themes; improving basic skills, meeting the needs of individuals, families and communities, social inclusion, bilingualism, meeting the needs of employers and environmental sustainability

Specific characteristics to reduce the shortage of skilled workers

Bro Dysg brings together senior representatives of those agencies and businesses active in Rhondda Cynon Taf with responsibility for education, training and learning in order to develop effective solutions to meet the needs of all learners and the local economy. Through analysis of employment trends, market intelligence' and careful planning, Bro Dysg sets out to:

- form a strategic overview of all Education and Learning needs in Rhondda Cynon Taf in the wider context of Economic and Community Regeneration, based on comprehensive periodic audit and analysis of educational and learning reports, industry demand, economic inactivity and related information.
- devise effective mechanisms for joint planning and policy making between the partner organisations involved, based on the creation of a shared [Education and Lifelong Learning Strategy](#) for the area, and agreed [Action Plans](#) for its implementation, which is submitted for formal approval by each of the partners.
- establish appropriate Planning and Task Groups to co-ordinate the formulation and implementation of the specific tasks, targets for improvement, and timetables set out in the [Action Plans](#).
- establish appropriate mechanisms for the shared funding and resourcing of the Partnership's activities, including overseeing and co-ordinating joint bids for external funding, and the control of a 'virtual' partnership budget, based on an annual review of changing resource requirements, subject to approval by the [Better Life Consortium](#) or strategic planning executive of each partner agency.
- oversee and co-ordinate the arrangements for promoting joint working between all local agencies and groups with an interest in Education and Learning, and participation by local communities in joint action initiatives.
- monitor, evaluate and review the implementation and outcomes of the Education and Lifelong Learning Strategy, including preparing and disseminating [Annual Reports](#) on the work and progress of the Partnership in delivering on its agreed improvement targets.
- analyse the implications for the work of the Partnership of all new legislation, Government guidelines and regulations, and other learning or educational initiatives, commenting on these or referring matters for consideration by the Better Life Consortium, where appropriate, or by the strategic planning executive

of each partner agency. It is accepted that each participative organisation will wish to monitor and evaluate the partnerships work.

Examples from Italy

No. 1:

General description

The Laboratory for Acoustics and Vibrations (LAV) is one of the Networked Laboratories (Net-Lab) envisaged for the HI-MECH District for High Mechanical Technology, which makes the object of an agreement signed between research institutes and enterprises in the Emilia-Romagna region. The LAV proposal has been developed in the multidisciplinary acoustics and vibrations sector, which is very important for the District enterprises themselves. Noise and vibrations are relevant issues for the mechanical sector, which is one of the strongest sectors in the region: noise must be reduced to provide more comfort and to comply with increasingly stricter certification standards; vibrations must be reduced to provide more greater mechanical resistance and structural optimization of components subject to vibrations; furthermore, vibration-induced functional limits must be overcome to enhance performance.

Specific characteristics to reduce the shortage of skilled workers

This network has a multilevel structure defined by research themes but also by district dynamics. LAV, as a NetLab, belongs to the HI-MECH district of Emilia-Romagna, which is strategy developed by the region to strengthen the dynamics of the regional manufacturing system concerning applied research, precompetitive development and innovation activities aimed at the enhancement of the technological content of manufacturing and at the development of the knowledge economy.

The expected output is the setting up of a regional Research and Innovation Space that envisages the development of strategies and tools to support technological transfer and to enhance research; these tools are structured to be fully consistent with both national and European contents and procedures.

No. 2:

General description

The LARER network is being developed in the framework of the HIGH-MECH district; the district has been created on the basis of a memorandum of understanding signed by the national Ministry for Education, University and Research (MIUR) and by the Emilia Romagna Region.

The automation laboratory has been created with the aim of developing methodologies and applications for industrial automation, with specific reference to

the following domains typical of the automotive, robotics and automatic machines sectors:

- modelling and analysis techniques for complex dynamic systems,
- real-time monitoring and control techniques,
- hardware/software design for distributed control systems.

Specific characteristics to reduce the shortage of skilled workers

The competences of the partners involved represent the main strength, which allows the integration of information engineering (automatic control, electrics, real-time informatics) and mechanical engineering. In this way it is possible to provide customers with products and services for the design and management of highly automatised and complex systems, in the respect of operational and environmental requirements. LARER is one of the networked laboratories (Net-Lab) working in the HI-MECH District.

Example from Slovenia

General description

The chambers of craft (associations) in accordance with law and regulations coordinate and manage a register of vacant learning places in Slovenian companies. Institutions which offer vocational education are required to fulfil the general conditions of education system and provide appropriate workshops (learning places) for students' (apprentices') vocational training. The chambers encourage their members (companies) to verify the learning places and offer support and training of mentors. The process of verification of the workshop is obligatory for all companies which provide vocational training in the frame of secondary vocational education.

Specific characteristics to reduce the shortage of skilled workers

The Chamber of Craft of Slovenia publishes the call for vacant learning places before the beginning of each new school year. The data about the vacant learning places are conveyed to the Ministry of education and Sport, which on basis of the actual number of vacant learning places prepares the Call for enrolment into secondary schools. On the basis of the list of companies, which provide vacant learning places, the future student can look for the employer and signs a learning agreement. The Chamber of Commerce and Industry of Slovenia disposes with the register of more than 7000 learning places, although at the moment only 1000 employers with 1500 apprentices are active.

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Links:

<http://www.obm-metaal.nl/>
<http://www.metaalunie.nl/>
<http://www.oom.nl/>
<http://www.deltion.nl>
<http://www.kenteq.nl>