

The **EUROPEAN**

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Engineers Publication



FEANI

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FEANI National Members



-  **AT** ÖIAV - Österreichischer Ingenieur-und Architekten-Verein
-  **BE** CIBIC - Comité des Ingénieurs Belges / Belgisch Ingenieurscomité
-  **BG** FNTS - Federation of Scientific Technical Unions in Bulgaria
-  **CH** SIA - Swiss Society of Engineers and Architects STV/UTS - Swiss Engineering STV
-  **CY** CPEA - Cyprus Professional Engineers Association
-  **CZ** CSVTS - Czech Association of Scientific and Technical Societies
CKAIT - Czech Chamber of Chartered Engineers and Technicians
-  **DE** DVT - Deutscher Verband Technisch-Wissenschaftlicher Vereine
-  **DK** IDA - Ingeniørforeningen I Danmark
-  **EE** EAE - Estonian Association of Engineers
-  **ES** IIE - Instituto de la Ingeniería de España
INITE - Instituto de Ingenieros Técnicos de España
-  **FI** UIL - The Union of Professional Engineers in Finland
TEK - The Finnish Association of Graduate Engineers
-  **FR** CNISF - Conseil National des Ingénieurs et des Scientifiques de France
-  **UK** EC - The Engineering Council
-  **GR** TCG - Technical Chamber of Greece
-  **HR** HIS - Croatian Engineers Association
-  **HU** Budapest University of Technology and Economics
-  **IE** Engineers Ireland

-  **IS** VFI - Association of Chartered Engineers in Iceland
TFI - The Icelandic Society of Engineers
-  **IT** CNI - Consiglio Nazionale Ingegneri
-  **LU** A.L.I. - Association Luxembourgeoise des Ingénieurs
-  **MK** IMI - Engineering Institution of Macedonia
-  **MT** COE - Chamber of Engineers
-  **NL** KIVI NIRIA - Koninklijk Instituut Van Ingenieurs
-  **NO** NITO - The Norwegian Society of Engineers and Technologists
TEKNA - The Norwegian Society of Chartered Scientific and Academic Professionals
-  **PL** NOT - Polish Federation of Engineering Associations
-  **PT** Ordem Dos Engenheiros
-  **RO** AGIR - The General Association of Engineers in Romania
-  **RU** RUSEA - Russian Union of Scientific and Engineering Associations
-  **SE** SVERIGES INGENJÖRER - The Swedish Association of Graduate Engineers
-  **RS** SITS - Union of Engineers and Technicians of Serbia
-  **SI** ZDIT - Association of Societies of Engineers and Technicians
-  **SK** ZSVTS - Association of Slovak Scientific and Technological Societies



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FEANI in the strategy "Europe 2020"



Rafaël Fernandez ALLER,
President of FEANI

Certainly, Europe, and especially the Southern countries, is affected by an economic crisis that is also reflected in virtually all activities of society and therefore also affects professionals and, to a large extent, the engineers in many of their activities badly affected by the crisis, such as industry, infrastructures, raw materials, consulting, and R & D.

The main task of engineers is to provide a better quality of life to society by solving technical and economic problems that this implies.

FEANI represents national professional associations of engineers i.e. it represents a "driving force" of about 4 million engineers in all technical and economic fields to cover all the needs of society. FEANI, as an important specialized stakeholder of the Commission and European institutions, supports the growth strategy of the EU for this decade "Europe 2020", which aims not only to overcome the crisis but also to remove defects of the model growth and to create conditions for a different kind of growth, smart, sustainable and inclusive.

"The European Union is working hard to overcome the crisis and create conditions for a more competitive economy that generates more jobs."

This European strategy has set **several key objectives** that the EU should achieve by the end of the decade in the areas of employment, education, research and innovation, social inclusion and poverty reduction, climate change and energy efficiency, the digital economy, youth, industrial policy and the efficient use of resources.

The achievement of these goals is based on **three priorities**: **smart growth**, through effective investments in education, research and innovation; **sustainable growth**, with a strong impulse to the low carbon economy and for a competitive industry, and **inclusive growth**.

The EC will promote these priorities through **seven flagship initiatives** providing a framework of specific actions, being most of them closely associated with many of the professional activities carried out by engineers.

The participation of FEANI in the strategy "Europe 2020" has not a purely technical character in relation with the many activities concerning to engineering that are listed in the mentioned priorities, but a professional view of the development of the strategy and the promotion of actions to facilitate the achievement of objectives of that program, such as, among others, the promotion of mobility of professionals, academic training and continuing professional development. Therefore, it is necessary to highlight that FEANI must make the appropriate follow up of the progress of the strategy in different DGs as well as to support and participate as professional specialized institution.

Based on the official documentation of the EC as the "Communication from the Commission. Europe 2020 A strategy for smart, sustainable and inclusive growth" we can establish which are the outlines of this strategy.

How the EU will promote smart growth? Through three flagship initiatives:

1. Digital Agenda for Europe: Creating a single digital market based on fast/ultrafast internet and interoperable applications.

2. Innovation Union: refocusing R&D and innovation policy on major challenges for our society like climate change, energy and resource efficiency. *FEANI has clearly stated through the position paper "Innovation in Action" which is the crucial role that play engineers in the I & R & D both, in the field of academic training and, especially, in the professional one.*

3. Youth on the move: helping students and trainees studying abroad, improving the performance of European universities, as well as of all levels of education and training.

FEANI has certain tools to support this initiative. On the one hand, the INDEX that includes the universities and engineering schools that meet the legal requirements, serving as a criterion to obtain the title EURING, being very

useful information for the students and other people related with the academic education, and on the other hand, the active participation in promoting ENAEE Agencies for the accreditation of engineering educational programs with the EUR-ACE system, to improve the academic level of engineering studies in Europe

How will the EU promote sustainable growth? Through two flagship initiatives:

Resource-efficient Europe: to support the shift towards an exploitation and use of a resource-efficient and low-carbon economy, reducing CO2 emissions by promoting greater energy security and reducing the resource intensity of what we use and consume.

As an example of that, FEANI has clearly defended before the EC regarding the need to define a common energy policy in the EU through its position paper "The role of engineers in the future of energy in Europe", underlining the important role of engineers in the continuous improvement of the efficiency in the fields of exploitation and use of the energy and natural resources.

- **An industrial policy for the globalization:** this will support business to make them stronger and more competitive, especially, helping the SMEs to respond to globalization, the economic crisis and the transition to low carbon emissions, establishing for that, a close contact with companies, trade unions, professional organizations, universities, NGOs and consumer organizations.

FEANI as a relevant professional institution, cannot ignore the needs of re-industrialization in a global and sustainable framework that the European society needs and in which the engineers have a paramount task in all sectors of socio- economic life (industry, communications, infrastructure, exploitation, production and effective use of raw materials, etc.).

How can the EU promote inclusive growth? Through two flagship initiatives:

- **Agenda for new skills and jobs:** helping people to acquire new skills and adapt to a changing labor market.

- **European Platform against poverty** and ensuring economic, social and territorial cohesion.

From the beginning, FEANI has been actively promoting the mobility of engineers in Europe, through useful tools like the EUR ING title, and more recently, with the development of the Engineering card as a European professional card. Also with the recognition in the INDEX of the new degrees and titles generated by the introduction of the Bologna System.

"In relation with the inclusive growth, the FEANI involvement must be considered alone or with other professional associations in several projects and initiatives of the EC."

FEANI is the voice of its National Members (Engineers' Associations) and its primary mission is to promote education and professional development of engineers in order to improve the visibility of the value of engineers to society and therefore must necessarily have effective participation in the strategy "Europe 2020", as the first step in the way of "Roadmap 2050".

Rafaël Fernandez ALLER
President of FEANI

Engineers for Future Growth



Dirk G. BOCHAR,
FEANI Secretary General

Today, we are faced with global challenges which are not restricted to Europe alone, such as sustainable development, global security, poverty reduction, environmental degradation, disaster response and so on. We are not running out of challenges.

“Governments and professional engineering bodies around the world, such as FEANI, have identified and emphasized the actual and impending shortage of engineers as an international priority.”

Because of the «universal lack of adequate engineering capacity», it is important to attract the interest of parents, career advisors as well as young people, to raise the status of the engineering profession. Compared with other subjects, the interest for undertaking STEM studies (Science, Technology, Engineering and Mathematics) is falling in many EU member states. The share of graduates specialising in STEM subjects fell in relation to the total number of university graduates from 24,8% in 1999 to 22,7% in 2005. The lack of STEM-skilled labour will be one of the main obstacles to economic growth in the coming years. The good news is that there is not a lack of ideas and creativity on how to improve the alarming situation, especially not from business. Companies across the EU have taken actions in order to increase the supply of STEM-skilled workers to European labour markets. By involving in primary and secondary education and by providing a context for science subjects, the interest for such educations could increase. However, companies cannot do this alone. A stronger commitment and more joint efforts are needed from a broad range of stakeholders including governments and education providers at all levels. There is no reason to believe that the track record of STEM skills – as a factor for economic growth in the past – will be any less convincing in the future. The importance of technological development for economic growth is well known. Educational pathways will therefore need to be continuously adapted to labour market needs.

In a world that is almost completely transformed by total digitalisation and in which all industrial sectors have become global, both regarding customers as competitors, there is a

need for smarter and more sustainable products and processes. Those will be developed by holistic engineers who are no longer merely interested in the performance of their products, but also in the production costs and the sustainability of those products. Engineers will have to become globally efficient because of their direct impact and their strong responsibility in our society. Engineers make the future and must continue to challenge the nature of things. An engineering degree at graduation time will no longer be an end, but a new beginning. Engineers must stay hungry and curious, engage in continuous professional development (CPD), be aware of the broad competitive environment, travel abroad and learn foreign languages; they must stay in touch with each

other and learn from each other's expertise, no matter what discipline they have specialized in. They will have to multiply their knowledge and interact and disseminate their ideas. The demand is increasing, also from industry and elsewhere, for engineers who are able to work anywhere in the world and who can work on global engineering projects and problems. Therefore, engineers must not only be multi-skilled and multi-disciplined (have not purely scientific and technological skills), but also be multi-lingual and multi-cultural (sharing views with people from other cultures, interactions with various stakeholders, engage in «thought»-mobility and nurture mental flexibility).

“Mobility is more and more becoming a key professional development factor for any professional who wants to find interesting work and good conditions of employment.”

Mobility of manpower – of professional competences and resources – is furthermore crucial for any company or organization that has to compete in the global market.

FEANI General Assembly

ROME/BRUSSELS, 5 October 2012.

At the General Assembly of the European Federation of Engineering Associations (FEANI), nine (9) countries signed the cooperation agreement regarding issuing the Engineering Card, the professional card for engineers. Germany, the Netherlands, Poland, Portugal, Croatia, Ireland, Luxemburg, Slovenia and the Czech Republic will from next year onwards start issuing this mobility card for engineers who apply for it. The mobility of professionals across the EU is essential to respond to labor shortages in key sectors of the economy. In particular, long and complex recognition procedures do not allow professionals to react quickly to job opportunities in other Member States. To improve that situation and to amend the EU Directive 2005/36/EC, the EU Commission DG Internal Market and Services, Directorate E, set up a Steering Committee on the Professional Card in January 2011.

FEANI had the opportunity to participate in this Steering Committee on behalf of the European engineering profession. FEANI considered it a privilege to have contributed to the development of the legislative proposal which was published on 19 December 2011. The Engineering Card is a professional card which is applied for voluntarily and of which the

associated electronic record can be retrieved in the National Engineering Register. The decisions required to admit an applicant to the National Engineering Register and hence award a professional card shall be made by the FEANI National Member on the binding recommendation of its National Register Committee. Membership of the latter Committee consists of people representing industry, universities, the professional organization and the competent authorities.

The engineering card is further featured by its completeness (it provides a complete overview of the academic education, professional experience and further training of the card holder) and its independent testing and recognition: the information on the professional card is reliable. The qualifications are tested and recognized in the country of origin by the National Register Committee. The hard copy professional card will have the size of an identity- or bank card and include a reference to the website where the electronic record of the card-holder can be retrieved. FEANI hopes to issue 2500 of such cards in the course of 2013 and looks forward to see more of its 32 member countries joining the project in the course of next year.



From left to right : Prof. Dr. Jozef SUCHY (Poland), Prof. Dr. Daniel HANUS (Czech Republic), Prof. Dr. Karl GOTLIH (Slovenia), Prof. Dr. José VIEIRA (Portugal), Dirk BOCHAR and Lars BYTOFT (FEANI Secretary General and President), Prof. Dr. Vjera KRSTELJ (Croatia), Mr Damien OWENS (Ireland), Mr Bouke BOSGRAAF (Netherlands) and Dr. Willi FUCHS (Germany).

France

“Livre blanc”

Pour une France ambitieuse, pleinement confiante dans ses ressources et ses talents.



Julian ROITMAN,
Chairman of the National Council of
Engineers and Scientists of France

The White Paper is aimed at the French political class as well as the main decision-makers. It is the result of a wide consultation among engineers and scientists who want to have their voices heard in the national debate.

Motivated by its experience drawn from history and its desire to prepare for the future, this social corps of more than one million members wishes to draw the attention of our governments to seven areas selected as a priority because of their importance for continuance, and the legitimacy of engineers and scientists to express a point of view and specific recommendations from their perspective.

How do we reindustrialise France, rehabilitate enterprise and encourage innovation? How do we make higher education a true preparation for the professions? What energy strategy should be adopted in relation to responsible development and the control of safety? How do we restore the image of science and technology and make the work relating to them attractive?

Many questions that will not feature in the hit parade of political campaigns, but which engineers and scientists want to highlight, who want to participate in the determination of the major strategic options where they have expertise, and not just remain confined to simply implementing technological and scientific solutions that can help us through.

Seven major subjects accompanied by proposals

Despite our wish to deal with every desirable detail of all of the subjects on which engineers and scientists have spoken about, it would not be realistic to evoke them all. That is why seven major subjects have been selected according to their importance, and the legitimacy of engineers and scientists to develop a specific point of view and recommendations from their perspective:

1. Make our industries and services the tool to reconquer external markets
2. Recognise research, innovation and invention as keys to competitiveness.
3. Improve the training and preparations for the professions, not just for the community of engineers and scientists but

In fact the world has entered a period of great upheaval, which reflects the global rebalancing, with its trail of economic, social, demographic, political and even religious crises and conflicts. In such an environment there are only two possible positions: suffer or act.

Rather than resigning itself, France has the means to take its destiny in its own hands, i.e. to accurately evaluate the situation, to size up its material resources and especially its human resources, to identify the objectives to be achieved as a priority, to adopt ambitions compatible with its potential, and finally to have a desire to act to bring about real results that will generate new hopes. All this is possible under one condition: it must have confidence in itself, its resources and its talents.

The community of engineers and scientists is ready to mobilise itself to help French society to rediscover, like other developed countries, the roads to confidence in itself. It is this perspective that legitimises its action and its desire to be recognised, listened to and heard.

Julien Roitman,
Chairman of the National Council of Engineers and
Scientists of France

also for the other essential players in our action: technicians, advanced technicians.

4. Manage to the best, for now and over time, our energy challenges in the general interest.
5. Develop a culture of safety and risk prevention.
6. Prepare engineers and scientists to become players in “responsible” development.
7. Develop a firm and attractive image of science and technology, with a better status of the engineering and scientific professions.

40 Proposals of the engineers and scientists of France

1. In line with the principles of a new economic voluntarism, define a long-term industrial strategy identifying the areas of technological opportunity. Set up corresponding professional training, the resources, logistics and dedicated financing.
2. Initiate a national programme to identify the needs linked to ageing and develop industries and services that meet them. This is where there is an emerging market within our society itself, with companies well placed to adopt a leading position and then to export.
3. Start an interdepartmental project combining Education, Higher Education, Labour, Industry and other productive sectors, in order to identify and utilise our capital of scientific and technological expertise and know-how.
4. Divide up the national plans on a territorial level so that specifically regional initiatives develop in a selective way: government orders remain a driving force, and local authorities must be able to take on this task.
5. The success stories of our (industrial) SME's show that it is often in the niches where success is achieved, despite global competition. Give them preferential access to the spinoffs from the patents of large groups and suitable financing, as they depend too much on the requirements of traditional banks. Foster the emergence of a public savings scheme committed over a long time, aimed at supporting investments of a productive type thanks to tax measures, investment agencies and regional development funds.
6. For the next ten years set up a policy of information, motivation and assistance for the transfer of businesses, granting as many facilities to an entrepreneur ready to take over an existing business as to the creator of a start-up: this is essential to preserve know-how and jobs, often locally in the territories.
7. Encourage upstream entrepreneurial vocations for engineers and scientists, by opening up the training courses to the requirements of technical management, while supporting the different stages of growth with suitable assistance, and by developing real respect in society for individual successes.
8. Develop a culture of intellectual property in companies and among the public players with which they have links (higher education, research). In companies and public organisations introduce motivating practices for inventors and their environment, and take them into account in the social reports and social assessment.
9. Develop innovation, the capacity to continually propose new, more effective and more reliable products, and completely innovative products, a national priority project. Clearly set the support and development of industrial activities in France (and in Europe) as an objective for the public financing of the exploitation of academic research, in line with the SBIR programme in the United States. Return to greater financing through the Defence of dual purpose research (civil and military) and give companies a drawing right on public research. Open up the collection of patents of large groups to (industrial) SME's and promote cooperatives that manage intellectual property (SATT, companies to accelerate technology transfers).
10. Encourage the creation of a representative body for SME's to strengthen their involvement in programmes that exploit public research, in which they are absent today due to the lack of a representative defending their expectations. Mobilise SME's to derive the best profit from collaborative innovation, jointly between customers, suppliers, and even competitors. Create a collaborative innovation research institute (it could be driven by IESF), which would encourage experiments and regularly measure the results: we would in fact witness an explosion of intellectually attractive initiatives, but whose relevance could only be verified after an experimental phase.
11. Increase the exchanges between universities and engineering schools that lead to doctorates. Encourage the greatest number to devote a proportion of training and professional work to research, while exploiting it and integrating it into diversified professional careers. Ensure the conditions for regular dialogue between researchers and practitioners, encourage the development of joint research and the mobility needed between specialist fields. Establish a link between fundamental development and the organisation of a viable “business”. Right from the studies, place the emphasis on understanding the market and respecting its realities, which is where quality listening counts and where the only truth that really matters in the last instance is that of the customer.
12. Make essential infrastructure investments for ICT (very high speed, etc). Finance programmes linked to their public usage (transport, health, environment, civil defence, justice, etc). Create the economic and legal conditions for real solidarity between the national players of this industry: major customers, consumers, telecom operators, computer service companies, software producers, producers of high added-value equipment.
13. Give a specific identity to the engineering subjects (engineering sciences and techniques). Vitalise them with a balance between science and engineering, greater flexibility of courses (customisation, dual paths, etc), and increased overlaps with business (apprenticeships, contract work, etc). Create a “skills book” on a national level validating the experience acquired during the career, and defining recognised levels of expertise on a national and international level. Defend the European model of integrated engineering training over five years.
14. Enrich the professionalism of graduates by developing, beyond the sole acquisition of skills, their ability to judge situations, to make decisions, to adapt to completely new

situations, to work in a team, to train them, in a word to demonstrate their leadership. The majority of innovations are developed at the interface between several technical fields. For the purpose of interdisciplinary agility, encourage dual training and an aptitude of graduates to strike up dialogue beyond their specific fields.

15. Recruit teachers with experience from industry and encourage teachers to spend long periods in business, in order to have high-level professors familiar with industry and the economic world.
16. Restore the action of the social ladder by freeing ourselves from too exclusively referring to a traditional vision of academic success. Encourage the development of new subjects that are more suitable for leading young people from underprivileged backgrounds to higher education, thanks to apprenticeships and reorientation classes between the different types of training.
17. Even if it means developing it, guarantee the assets that make up the French model of preparatory classes and the top engineering schools. While preserving their specific nature, orient the top schools towards unreserved cooperation with universities from which they can appropriate experience: link with research, flexibility of courses, etc. In return, adoption of the experiences of these schools by the scientific universities with a professional orientation: evaluation and selection, management of courses, business practice with interns and projects, introductory courses, etc. Strengthen the capacities to guide change and the management of large sets of higher education (PRES), if necessary with the support of experienced managers from associations of graduates.
18. Implement a national programme to define, optimise and implement the best possible utilisation of engineers and senior researchers.
19. Every two years conduct a comparative study of the supply-demand situation for engineers and scientists in major industrial countries, to bring an end to the controversies on the desirable level of training flows, and adjust them insofar necessary. Encourage continual training among graduates throughout their careers.
20. At regular intervals collect from scientific and technical executives their views on new fields of qualifications to be developed, monitoring and observation work beyond occasional reports in this respect.
21. Ensure a pragmatic continuity of the supply of energy, without which we risk a catastrophic interruption of supply, with unbearable economic, political and social consequences. This maintenance of nuclear energy does not prevent, on the contrary, initiating voluntarist actions that form part of a long term vision of major investments in the favour of renewable energy, of which it is necessary to accept the secondary effects (in particular financial effects) that are not always negligible.

22. Take the initiative in international action to deal with nuclear safety on a world level: high level of safety of the installations, from design to operation, and including the quality of construction, standards, effective deployment, cross-checks by peers.
23. Take the initiative in European measures, divided up on a national and local level, in the favour of investments on energy effectiveness and limitation (urbanisation, building sector, telecommuting, etc) and associated services. Educate the population on a more economical, more united lifestyle (home, transport, etc) that makes better use of the energy that we consume.
24. Do not be afraid of starting a public debate, provided account is taken, without excessive passion, of all the data on costs, environmental impact and integration in transport and distribution systems, and that account is taken of the time horizons. The engineers and scientists will make their contributions to this exchange between citizens, whether in the analysis of problems, the development of innovative technical solutions, or the point of view of experts impartially explaining the aspects of reality, orders of magnitude and the hopes for progress.
25. Set up the development of training and application research on renewable energy, while fostering the emergence of graduates able to lead responsible development.
26. Rehabilitate safety at work: the level of accidents has been reduced by a factor of three in 50 years. While in the past the work environment (factory, building sites) was a cause of many serious accidents, this situation has been completely rectified over the years with innovative material provisions that resulted from an effective analysis, and also through an intensive education effort. A voluntary effort over time can thus radically change the risk equation. Consequently it is necessary to continue working on safety without respite, while rejecting any idea of inevitability.
27. Take account of the man, the key factor at the current time, in the management of safety. Beyond respect for the standards and regulations that must be continually adapted, give the population the most accurate perception of the risk factors, and get them to participate in safety exercises as often as can be done. Set up a factual and participative education in which engineers and scientists can be the decisive players, with the emergence of a new type of expert, open to dialogue or even critical debate with the community that he is supposed to serve, and helping to present, without excessive passion, all aspects of each problem, in particular the human ones.
28. As of the introduction of an innovation on the market, surround it with safety guarantees: elementary guarantees when the cycle of acquiring experience on the ground is respected, largely redundant guarantees in the event of

short deadlines due to the pressure of commercial requirements. In all cases the population must be well informed, thanks to the application of legislation drawn up to this end: the development of a safety culture is everybody's business.

29. Restore the principle of precaution to the strict framework defined by the legislative texts, while combating the abusive application of this umbrella to all cases in order to paralyse action. Every development presents risk factors, but to kill the risk is to kill change.
30. Educate the general public and professions with a critical role to be aware of their social responsibilities, with their place and role being to rethink in the City and within the company. Encourage the birth and development of new collaborations, as can already be seen in the attitude of certain territorial authorities, while rethinking our lifestyle and learning to satisfy restrictive requirements (urban heating for example).
31. Thoroughly reform the practice of the engineering professions and their positioning in the decision-making processes. Beyond the usual measurement of the reality of the facts, the design and implementation of practical solutions and monitoring techniques, it becomes essential to take the first steps with a systemic approach: the new problems encountered by the society of tomorrow will be less and less reducible to simple technical questions, and their solutions will unfurl on multiple levels. Encourage engineers and scientists to open themselves up to new disciplines in order to confront the problems of responsible development facing the technical realities or the environments created by man, with the entities of life sciences.
32. Introduce a significant overview of the major challenges raised by the implementation of responsible development in all training courses of higher scientific education. Make students aware of the importance of an overall approach in the long term, which excludes separating science, technology, society, and life. Consequently expand the training courses with life sciences: human biology, ecosystems, history, geography, social or political sciences. Adapt initial and continued training to the resolution of problems with responsible development taken into account, and introduce studies of actual cases dealing with problems of energy resources, water supplies, urban equilibrium, etc.
33. Create a national interdepartmental body bringing together all the players who work on improving the image of progress, science and technology, with the purpose of creating synergy among these players, identifying the best practices, and sharing them.
34. Win back the attention of young people by restoring their ability to be filled with wonder. Create situations where they themselves can develop an active curiosity towards objects in their environment, and to get the measure of the richness and complexity of the technical objects in

their daily lives. Create a "Secondary school scientific Nobel prize" that the pupils award to an engineer and a researcher, against criteria that they have defined themselves according to their own values and centres of interest.

35. Release human and financial resources to increase the "PMIS" programme (Promotion of Engineering and Scientific Professions: 29,000 pupils seen in 2009/2010), which brings to young secondary school pupils as of the fifth year, at an age where their aspirations and vocations are crystallising, detailed information and real-life accounts on engineering and scientific professions and careers, and on the personal satisfaction that they provide. Prolonged interventions if need be for those who so wish, advice and monitoring over time (mentoring).
36. Ask national education to start a long term programme for teachers in collaboration with companies and IESF. Inspired by PMIS, it would bring engineers and scientists into secondary schools and colleges, this time to share their experiences and talk about their profession to teachers adult to adult. They will then be taken out from their school or college for a while to open up the doors of industry, services and the productive world to them.
37. Encourage career-long active training. Strengthen the budget allocated to training for engineering and scientific professions in companies. Make an inventory of the supply of existing training in all higher education establishments, in engineering and in management, and construct suitable courses that can be offered on the basis of pre-existing "menus".
38. Start a project aimed at enhancing the engineering and scientific professions within ten years through improved remuneration, career advancement opportunities, including at the decision-making level of public services and companies, and better recognition of these professions that strengthens their social prestige. Establish and maintain performance indicators comparing the professional situation of engineers and scientists in Europe. Start a national consultation and legislative process ending up in the creation of an official structure by the public authorities for the community of engineers and scientists.
39. Conduct an effective assessment of the abolition of the tax deductibility of subscriptions, in particular for state-approved non-profit associations. Measure its actual impact in terms of effective budgetary savings and reduction of association activities. Consequently revalue and amend the decreed measures.
40. Encourage engineers and scientists to participate in the determination of national strategic options by engaging in political life on a parliamentary, territorial and governmental level. Study measures to facilitate the involvement of employees in public life, in particular through tax incentives.

Germany Ungeheuer new VDI President

CEO of Schott AG replaces Prof. Bruno O. Braun



Prof. Dr.-Ing. Udo UNGEHEUER,
President of VDI

(Düsseldorf, 22 November 2012) Prof. Dr.-Ing. Udo Ungeheuer is the new president of the association of German engineers, VDI. Ungeheuer was unanimously voted in as president on 21 November 2012 by the VDI Board of Directors. The 62-year-old president of the Mainz-based Schott AG takes on his new role on 1 January 2013.

Ungeheuer graduated from his engineering course at RWTH Aachen in 1979. He has been a member of the VDI since as far back as 1977. In 1985 he obtained his doctorate of engineering (Dr.-Ing.), and in 2006 was made honorary professor of the Mainz University of Applied Sciences. Initially serving as managing engineer at the RTWH Aachen, Ungeheuer transferred to the car manufacturer BMW in 1986 before joining the Schott AG Group as an executive in 1994.

One year later he was admitted to the Management Board. Since 2004, Ungeheuer has been Chairman of the Management Board of this international manufacturer of specialised glass.

Apart from his chairmanship and/or membership of the Supervisory Board of several Schott subsidiaries, he serves as President of the Bundesverbandes Glasindustrie e.V. (Association of the German Glass Industry - BV Glas), Chairman of the Central Advisory Board of the Deutsche Bank, Member of the Advisory Board of the Rhineland- Palatinate Bank, Member of the Advisory Board of Coface Germany and Member of the State Board of Trustees Rhineland-Palatinate/Saarland of the Stifterverband für die Deutsche Wissenschaft (Donors' Association for the Promotion of Sciences and Humanities in Germany).

After six years in the position, Prof. Dr.-Ing. Bruno O. Braun will statutorily step down as VDI President on 31 December 2012. The Board of Directors thanks Prof. Braun for his many years of successful work.



From left to right : Prof. Dr. José VIEIRA (FEANI Executive Board), Prof.Dr. Marques DOS SANTOS (rector of the University of Porto) and Mr José Manuel Durao BARROSO, President of the European Commission

Portugal Portuguese Engineer National Day 2012

Portuguese Engineering recognized throughout the World

The President of the European Commission, José Manuel Durão Barroso, was awarded the insignia of honorary member of the Portuguese Association of Engineers (Ordem dos Engenheiros – OE) during the celebration of the Portuguese Engineer National Day 2012 for his lead role in the European Commission and his contribution for the development of important projects in a vast range of Engineering fields. This celebration occurred on the 24th of November at the city of Vila Nova de Gaia, Portugal.

During the meeting, Durão Barroso emphasized that “the excellence of the Portuguese Engineering is recognized in Europe and throughout the world” and that “Portugal has the knowledge and the talent to overcome its current economic difficulties”, underlining that “to overcome this situation depends, to a large extent, on Engineering solutions”.

The President of the European Commission took the opportunity to reveal the points he has in common with the engineering professionals: “we share the same concerns; every day engineers strive to transform problems into solutions, just as the European Union tries to turn the crisis into opportunities”.

Carlos Matias Ramos, the President of the OE, considered the presence of Durão Barroso in the Ceremony as evidence of great esteem for the Portuguese Engineering and claimed to

be convinced that “a country’s development is the exact size of its Engineering, and a country without high quality engineers is synonym, in a global world, as a country without future”.

José Vieira, the Vice-president of the OE and member of FEANI Executive Board, underlined in his presentation the contribution of the OE to assure the highest standards of engineering education in Portugal, and emphasized the need for a European transparent educational qualifications system to enter the Engineering profession, and a good perception of its relevance by academia, industry and society.



Nordic Dinner Debate by the Nordic Engineers Association on Innovation

Brussels, European Parliament, 22 January 2013

The debate was hosted by Mrs Britta THOMSEN, MEP (S&D) and co-hosted by Mrs. Maria da Graca CARVALHO, MEP (EPP). Other MEPs participating were Mrs. Teresa RIERA MADURELL (S&D) and Mr Kent JOHANSSON (ALDE). Other participants were representatives from the European Commission, European Federations of Employers and Trade Unions and national delegations from Engineering Societies in Sweden, Denmark, Norway and Finland. A leading Spanish technical university was also represented.

Britta THOMSEN, welcomed participants and gave the floor to the first speaker Mr Jan EDLING, researcher from Flexicurity, Sweden. Mr Jan EDLING unfolded his views on innovation and the role of engineers. Innovation should be structured in three strategic levels: the global firm environment, the main-stream SMEs and the role of universities.

The global firms have expanded their markets and are growing much faster abroad than in their home countries. In 1995, 50% of the staff in Ericsson was located in Sweden. Today it is only 17%. Only 25% of the staff in Volvo and 4% of Electrolux are today located in Sweden. The global companies tend to find new partners such as universities, consultants and subcontractors in the countries where they operate. Consequently the number of jobs including the size of departments for search and development are diminishing in the home countries. In 2009, 37 global companies of Swedish origin were responsible for more than half (51%) of all R&D in Sweden. But the figures are rapidly changing. Swedish business has cut its expenditure from 3.2% of GDP in 2001 to 2.3% in 2011. If you separate R from D, most of the outsourcing is about D. When it comes to R a great deal is still concentrated in the home country. This calls for a future strategy based on regions and their capacities. Stockholm as a center for mobile technology, Gothenburg for car safety and Copenhagen as a competitive node for life science. The regions have to provide a broad range of facilities such as infrastructure and skilled workers to attract the global companies. The environment must be transformed into excellent skills in mathematics and science. The strategy to attract global companies must be supplemented by a strategy which includes SMEs in the value chains. Policies

must focus on making SMEs grow. A key factor is a cluster policy. SMEs must particularly be better at recruiting engineers, other academics and experts on international trade. SMEs must enhance their ability to cooperate with universities and research institutes to get access to innovative knowledge. The Association of Nordic Engineers (ANE) has published such a strategy under the title *Progress in Demand*, which should be implemented in the Nordic and Baltic countries. The universities and the SMEs must become better at exchanging innovative knowledge. Not only knowledge about technology but about other markets, exports and skills. Too few SMEs are seeking knowledge from universities.

Ulf BENGTTSSON, President of the Swedish Association of Graduate Engineers added that a successful innovation policy is needed. There is a difference between creativity and innovation. The global companies are not always innovative and SME are often more creative. In Sweden global companies employ more than 90% of engineers. A higher exchange of knowledge between universities and the industry must be developed. The key is to make SMEs grow and to connect them with universities and the education system. The quality of primary schools in Sweden today is at average and should be much better. Policies must focus on investing in the future.

The second speaker, Mr. Mogens LAU, R&D Manager at Danfoss Power Stacks – Renewables & Environment, Denmark, asked, what is innovation? In his definition it is bringing good ideas to the market, which start generating cash-flow. Customers' needs are essential. How do we sell what we have got? What kind of business model do we need? The management must develop skills to: tell about the vision, set the frame, demand cooperation, give room, challenge the status quo and embrace changes. A networking organization is necessary all the way through the value chain. Nobody can be innovative alone. Therefore, engineers must challenge all stakeholders, think about the "system" and ask for customers insight. There are nonetheless many pitfalls on the way such as lack of clear value propositions and the absence of a clear value focus. Operational excellence must not be confused with innovation. Innovation is not an R&D task.



From left to right: Presidents of the Nordic countries: Mr Trond MARKUSSEN (Norway), MEP Mrs Britta THOMSEN, Mrs Frida FROST (Denmark) and Mr Ulf BENGTTSSON (Sweden)

Mrs. Frida FROST, President of the Danish Society of Engineers (IDA), stated that she had more questions than answers. The key question, however, is how do we speed up our use of technology? Horizon 2020 must be implemented in a way putting innovation on top the European agenda.

The third speaker was Mr. Eirik CHAMBE, entrepreneur with long experience in software research, development and management from Norway. He talked about his experiences from founding a software company that became global and was sold to Nokia in June 2008. The first investment is the most difficult. It is particularly difficult if you have missed to learn about entrepreneurship during your education. We have to teach students about entrepreneurship based on a strong and open culture. Software patents are another important but complicated problem.

Mr. Trond MARKUSSEN, President of the Norwegian Society of Engineers and Technologists (NITO) stated that innovation is a key factor for economic growth. Norway is not ranked amongst the most innovative countries. There is a lack of

venture capital in Norway. SMEs are faced with too much bureaucracy and reporting obligations. The social rights of entrepreneurs could be much better.

Mrs. Maria da Graca CARVALHO, who had been President of the Portuguese engineering society (Ordem) said that innovation is complex: many aspects are involved. Portugal has many researchers, but the private sector is very weak. An outstanding advantage is our engineering schools. Engineers, universities and SMEs should improve their cooperation to promote growth. We need more engineers, including female engineers. Portugal starts recruiting female engineers already in the kinder gardens. 67% of our students are women. Among engineering students 40% are women. However it is difficult to find women in the top-managements of companies, even though Portugal has passed a law, securing 40% of women in the company executive boards.

Host Britta THOMSEN closed the debate by thanking everybody for their excellent contribution. Her final message was to continue the contacts established by this dinner debate.

United Kingdom Accrediting Engineering Doctorates

The most commonly offered UK first cycle engineering degrees are three year full-time (four years in Scotland) programmes leading to a Bachelors award with honours (BSc or BEng). Second cycle programmes include the MSc and MEng degrees (other degree titles are also available). The UK MEng, generally termed an 'integrated masters', combines both first and second cycle learning outcomes. Both the MEng and the MSc are recognised as second cycle qualifications.

In the UK, the standards of professional competence and commitment are set out in the UK Standard for Professional Engineering Competence (UK-SPEC). When UK-SPEC was introduced in 2003, the exemplifying academic qualifications mentioned for professional registration were first and second cycle engineering degrees. Engineering Doctorates (EngD), sometimes referred to as 'work-based PhDs', were not included. UK EngD 'students', known as Research Associates are usually high-flying individuals, likely to be future leaders and innovators, and it was felt that their pathway to professional registration as Chartered Engineers (CEng) should be made clear.

Over the past eighteen months, the Engineering Council has undertaken detailed work to map the EngD against both the criteria for academic accreditation and the UK-SPEC standards for CEng. This work involved the profession and EngD providers to establish whether the EngD could be accredited as an academic award. The mapping exercise gave the necessary close match and confidence that the EngD could be accredited as an academic award, and led to the Engineering Council approving a change to its Regulations for Registration. In future an accredited EngD when combined with an accredited Bachelors degree with honours in engineering or technology, will provide the full

exemplifying academic qualification for CEng. A briefing note about the EngD and guidance for institutions wishing to accredit EngDs have been developed, and the first successful accreditation exercises have been completed.

Further work is looking at the EngD as initial professional development, equivalent to that undertaken by an employee on an approved company scheme. In the longer term, it may also be possible to accredit the EngD as an integrated learning and development programme, and work is beginning to look at this option.

Further details are available in a paper presented by Deborah Seddon, Head of Policy and Standards at the Engineering Council, to the first Annual ENAEE conference in Porto November 2012. <http://www.enaee.eu/1st-enaee-annual-conference>

The Association of Engineering Doctorates website has useful information about the EngD <http://www.aengd.org.uk/>



United Kingdom The Big Bang Fair UK Young Scientists & Engineers Fair Putting science and engineering careers events for young people on the map.



Paul Jackson,
EngineeringUK Chief Executive

This year we held our fifth Big Bang UK Young Scientists & Engineers Fair at London ExCeL on 14 – 17 March. Since its pilot year in 2009 it has grown to become the UK's largest youth event – not bad for a science and engineering careers fair!

The Fair drew over 65,000 people to its four day science and engineering extravaganza. Visitors took part in over 100 activities and live performances - , from welding with chocolate with the Welding Institute to a journey through a human body with the NHS. - designed to excite young people about the varied opportunities out there for them in science and engineering careers.

Over 400 young people showcased their science and engineering projects at the Fair at the finals of the National Science + Engineering Competition, run by the British Science Association. From having their projects judged by experts to sharing the show-floor with leading UK companies, the whole experience is one that we know they get a lot out of. Fred Turner, 17, from Halifax was named UK Young Engineer of the Year and Emily O'Regan, 18, from Newcastle-Upon-Tyne named UK Young Scientist of the Year. Fred impressed judges with his project Genetics at Home, a fully working Polymerase Chain Reaction (PCR) machine which allows people to carry out basic genetic tests at home, while Emily secured her title with her project studying breeding habits of the endangered Chilean flamingos in captivity at the Washington Wetland Centre. They, along with their fellow finalists, are great ambassadors and a huge inspiration to their peers.

Led by EngineeringUK, in partnership with the British Science Association, the Royal Academy of Engineering, the Science Council and Young Engineers, The Big Bang Fair is an unparalleled collaboration between government,

businesses, education and the wider science, technology, engineering and mathematics (STEM) community. It's very different to other careers fairs because at The Big Bang Fair all organisations share one central message: the science and maths young people study at school can lead to exciting futures. Everyone involved wants students to go away inspired to study science and maths and to pursue a career in a science or engineering field.

Behind the fun day out is a serious message: the UK needs more scientists and engineers. Findings from EngineeringUK's annual report, *Engineering UK 2013: The state of engineering*, show that our engineering companies alone are projected to have 2.74 million job openings up to 2020, 1.86m of them needing engineering skills so we must act now to inspire the future scientists and engineers who will meet this demand.

The Big Bang Fair brings together around 200 organisations and is a best case example of what can be achieved when the wider STEM community pulls together to achieve mutual aims. Our evaluation shows that visitors enjoyed the Fair, but, more importantly, 9 out of ten of our 11-19 year-old visitors said they learnt a lot, over half spoke to exhibitors about careers and nearly three quarters said they now know how to access further information on careers in science and engineering as a result of their visit. What's more, 80% of the teachers taking part said they would use material from the Fair in their classes, increasing the reach to pupils who didn't attend.



If you share our commitment to engineering and to inspiring home-grown talent then we'd be delighted to speak to you. Our next UK Fair will take place at The NEC in Birmingham from 13 – 16 March 2014. Get in contact with EngineeringUK's Director of Business & Industry, John Halton, on 020 3206 0436 or at jhalton@engineeringuk.com and get involved!

To find out more about The Big Bang Fair visit www.thebigbangfair.co.uk

About The Big Bang UK Young Scientists & Engineers Fair

The Big Bang UK Young Scientists & Engineers Fair is led by EngineeringUK and exists to inspire the UK's next generation of scientists and engineers. The Big Bang Fair 2013 took place from 14-17 March at ExCeL London. The Fair celebrates and raises the profile of young people's achievements in science and engineering and encourages more young people to take part in science, technology, engineering and maths initiatives with support from their parents and teachers.

The Big Bang Fair hosts the finals of the National Science + Engineering Competition and is also the flagship event of National Science & Engineering Week.

Next year the Fair takes place at the NEC, Birmingham from 13-16 March.

www.thebigbangfair.co.uk



It's clear that this joined-up approach to action is working, evidenced further by the support of Government. Prime Minister David Cameron, Business Secretary Vince Cable MP, and Equalities Minister Jo Swinson MP were among those who visited The Fair in support of its success in encouraging young people to pursue science and engineering.

Taken as a whole, the Big Bang, comprising the UK Fair and a growing programme of fairs that take place across the country, is now reaching upwards of 80,000 young people directly and many more via our media and social media activity. Its success is testament to a growing public appetite for science and engineering, which the Fair both feeds and fuels.

Recognition of Qualifications of Citizens of another EU Member State

Background paper for the Conference: *"Europe on the move – Participation and Integration of EU-citizens"*, 7-8 May 2013, Vienna by Prof.Dr. Gudrun Biffl and Dr Thomas Pfeffer, Donau-Uni, Krems

Freedom of movement of EU-citizens within the European Union (EU) is one of the pillars upon which the EU is built; it constitutes one of the most important rights of EU citizens, laid down in Article 45 of the Treaty on the functioning of the European Union (EU 2008). Free mobility of labour has been on the agenda of European integration from 1958 onwards. Since 1968, free mobility of labour was in principle possible within the European Community in the private and public sector, but many obstacles remained. It was the Single Market in 1992, which removed many remaining barriers to labour mobility (banking, insurance, transport, some free professions) and still, mobility across the EU remains modest.

1. Moderate mobility of EU citizens across the EU

In spite of various reforms, labour mobility of EU citizens within the EU is on average not significant. The share of EU citizens living and working in another EU country has remained fairly stable at a very low level during the 1990s on average 2 per cent of the population/work force. With Eastern enlargement of the EU East-west migration took a steep rise, in the first instance towards member states of the European Union (EU-MS) which did not impose restrictions on mobility, in particular Ireland and the UK, and/or which have a certain language affinity, e.g. Spain relative to Romanians, and, to a lesser extent and more recently, Germany and Austria. Still, EU-migration today does not surpass 3% of the resident population in most EU-MS. Exceptions are Luxembourg with 40% of its population carrying the citizenship of another EU country, followed by Cyprus (13%), Ireland (8.5%), Belgium (7%) and Austria

(4.5%). The high percentages of the latter countries are the result of substantial cross - border mobility, i.e. between regions of a common cultural and language heritage.

The limited mobility of EU citizens within the EU is a matter of concern to some policy makers as it is seen as a potential threat to economic and productivity growth and one reason for sustained large pockets of unemployment. This is why the EU has promoted the development of a common EU labour market through engaging in a complex process of policy harmonisation and coordination in areas as diverse as employment, education and migration. More recently the issue of recognition of foreign qualifications and the validation of competencies obtained in other EU-MS has moved centre stage as this issue has been identified as a real barrier for mobility and for adequate employment in another EU-MS.



Prof.Dr. Gudrun BIFFL, resp. Head of the Department of Migration and Globalisation at the Danube University Krems, Austria (www.donau-uni.ac.at/mig)



Dr Thomas PFEFFER, resp. Researcher of the Department of Migration and Globalisation at the Danube University Krems, Austria (www.donau-uni.ac.at/mig)

Quite in contrast to the rather moderate labour mobility across the EU, trade relations became increasingly dynamic with the creation of the Single Market, flowing from more inter and intraindustry trade within the EU (Biffi 2004). Increased mobility of capital, technology and managerial skills boosted inter and intraindustry trade, constituting the main driving force behind productivity increases and economic growth in the EU (Landesmann & Stehrer 2000).

Empirical evidence suggests that economic integration of the EU has been accompanied by a gradual process of industrial specialization, which is responsive to factor endowments, in particular to the relative supply of highly skilled workers (for R&D intensive industry clusters) and skilled tradesmen (for labour intensive industries) (Fidrmuc, Mundschenk, Traistaru, & Hagen, 2002; Midelfart-Knarvik, Overman, Redding, & Venables 2000). Also technological innovations, for example, computer sciences and software development, have tended to promote mobility of services rather than labour, while relatively small transport costs due to the geographical proximity of the trading partners, promote trade in goods rather than labour mobility. This is not difficult to understand as the costs of migration to individuals remain fairly high because of language and cultural barriers, problems of skill recognition across countries as well as housing costs (Decressin & Fatás 1995; Biffi 1997).

2. EU Regulations dealing with the Transfer of Qualifications

2.1 Communication of knowledge, skills, and competencies : legal recognition vs. social recognition of qualifications

Paraphrasing Joachim Kade (2005 : 505), one may argue that the main function of qualifications (certificates, diplomas) is to make individual knowledge, skills and competences visible and transparent, to communicate their social and professional relevance and their potential fields of application. Comparable to money in the economic system, standardised qualification is a common medium of communication across the education and qualification system. Categorising qualifications makes it easier to communicate individual knowledge, skills and competences and to transfer this understanding beyond the context of personal interaction. Sometimes, but by far not always, qualifications can come with certain entitlements, e.g. being the prerequisite for accessing certain domains of activity, such as further education or regulated professions.

However, in discussing the recognition of foreign qualifications (or of informally acquired knowledge, skills and competencies) it is essential to distinguish between formal (or: legally binding) vs. social recognition. Formal recognition is performed by institutions of the education and qualification system (e.g. education institutions, professional authorities), while social recognition is performed by other actors (e.g.

employers in the labour market). Frequently the formal recognition by authorities is just a means to the end of social recognition, but it is no guaranty for success.

2.2 Forms of validation and recognition

Focusing just on formal recognition by education institutions or authorities, it is crucial to distinguish between different forms of validation and recognition (Pfeffer & Skrivaneck 2013).

Validation can be understood as a *“confirmation by a competent body that learning outcomes (knowledge, skills and/or competences) acquired by an individual in a formal, nonformal or informal setting have been assessed against predefined criteria and are compliant with the requirements of a validation standard”* (Cedefop 2008 : 199). Even if the term validation can be in principle used for all three learning settings, we will only use it for forms of validation, which confirm learning outcomes that have predominantly been acquired in nonformal or informal settings.

As a result, we can distinguish three forms of dealing with informally acquired knowledge, skills and competences (see also Table 1). The first form is formal validation that leads to qualifications, which are equivalent to those of the formal education system, e.g. formal school leaving certificates, which can be acquired via ‘second chance’ education programs. Summative validation leads to certificates outside the formal education system, e.g. the European Computer Driving Licence, or ISO-certificates for professional skills like welding. The third form of dealing with informally acquired learning outcomes is formative documentation of knowledge, skills and competences (e.g. via portfolios and individual descriptions) without measuring them against thresholds.

In contrast, the formal recognition of (foreign) qualifications can be understood as the *“recognition by one or more countries or organisations of qualifications (certificates, diplomas or titles) awarded in (or by) one or more other countries or other organisations”* (Cedefop 2008 : 130).

Again, we can distinguish three forms of dealing with foreign qualifications. The most traditional form is the recognition of equivalence, granting the foreign certificate the same entitlements as a domestic qualification. The recognition of equivalence can be done either via detailed comparisons of curricula or merely as administrative acts that are based on intergovernmental agreements. The recognition for further education or training does not lead to independent qualifications. Rather, foreign certificates are recognised to gain access to further education or training programs and/or to substitute for parts of these programs. Contrary to these two types, the assessment of an individual’s foreign qualification by a public authority is an expert judgement or recommendation, which does not necessarily have a domestic qualification as a counterpart.

Table 1: Forms of validation and recognition

	Legally binding	Legally nonbinding
Recognition of Qualifications formally acquired certificates, degrees, titles	<ul style="list-style-type: none"> • Recognition of equivalence • Recognition for further education or training 	<ul style="list-style-type: none"> • Assessment of individual qualification
Validation of Knowledge, Skills, Competencies non-formally, informally acquired	<ul style="list-style-type: none"> • Formal validation (qualification within NQF) • Summative validation (certificate outside NQF) 	<ul style="list-style-type: none"> • Formative documentation (individual documentation, description)

Source : Pfeffer & Skrivaneck (2013)

Comparing these six forms of validation and recognition, one has to bear in mind that they can be distinguished by their different consequences. The majority carry the status of legally binding or administrative decisions, which tend to go hand in hand with certain entitlements (e.g. the right to hold a specific degree, or the right to access a regulated occupation). However, there also exist forms of validation and recognition, which are nonbinding legally, but can still be helpful in communicating the personal knowledge, skills and competences.

2.3 European Regulations and Initiatives to support the Mobility of Qualifications and Competencies

The distinction between ‘legally binding’ and ‘legally nonbinding’ does not only apply to forms of validation and recognition at the national level, but also to international or European initiatives to promote the geographic mobility of qualifications and competencies. Regulations on recognition, like the Lisbon Recognition Convention concerning higher education qualifications or the Professional Qualifications Directive 2005/36/EG, are legally binding documents, which

carry clear obligations for nation states to establish ‘exchange rates’, thereby extending the reach of many qualifications beyond national borders to all countries covered by these regulations. In contrast, other political initiatives may either have the character of voluntary cooperations between countries, which may be based on political agreements on broadly defined goals, guidelines and benchmarks, but without legal sanctions, e.g. harmonisation of national qualification systems in the Bologna Process or the Copenhagen Process, or nonbinding recommendations, e.g. for the development of National Qualification Frameworks, based on the QF-EHEA or the EQF, or the introduction of transparency instruments, e.g. Europass or the European Professional Card. When comparing these different types of initiatives, Beyer Paulsen (2008 : 26f) observes a change of paradigm in European education and qualification policies, a tendency to shift emphasis from legally binding topdown regulations on the basis of static comparisons of equivalency towards more flexible, but nonbinding instruments and processes, which focus on the exchange of information and the increase in transparency.

Table 2: European regulations, initiatives and infrastructures to support recognition of qualifications

	Legally binding	Legally nonbinding
Regulations on recognition	<ul style="list-style-type: none"> • Lisbon Recognition Convention • Professional Qualifications Directive (2005/36/EG) 	
Harmonisation of qualification systems		<ul style="list-style-type: none"> • Bologna Process • Copenhagen Process
Qualification frameworks		<ul style="list-style-type: none"> • QF-EHEA (Qualification Framework of the European Higher Education Area) • EQF (European Qualification Framework)
Transparency instruments		<ul style="list-style-type: none"> • Europass • European Professional Card
Institutional infrastructures	<ul style="list-style-type: none"> • ENIC-NARIC network • National contact points for the Professional Qualifications Directive • EQF national coordination points • EURES network 	

2.4 Regulations on Recognition

1. Lisbon Recognition Convention

The Convention on the Recognition of Qualifications concerning Higher Education in the European Region, better known as the *Lisbon Recognition Convention*, was signed during a diplomatic conference jointly organized by the Council of Europe and by Unesco in 1997 (Council of Europe & UNESCO 1997). The convention replaces a range of older intergovernmental agreements on the equivalence of qualifications giving access to higher education, of higher education qualifications and of periods of study, which date back to the 1950s and 1960s. It was ratified by 45 (of 47) member states of the Council of Europe as well as by 8 nonmember states.

With respect to higher education qualifications, each country has to recognize the qualifications conferred to in another country, unless substantial differences can be identified suggesting nonequivalence, thereby putting the burden of proof on the relevant body rather than the applicant. In some countries (e.g. Austria) this principle is

regarded as recognition by default, which in most cases does not require any further administrative activity. In addition, the convention distinguishes between the recognition of qualifications (which sometimes can be denied) and the general right to a written assessment of the individual qualifications.

2. Professional Qualifications Directive (2005/36/EG)

In 2005, the European Parliament and the Council decided on the Professional Qualifications Directive (2005/36/EG). This directive replaces 15 subject specific directives, which date back to the 1960s, and unites their content in one common body of legislation. The directive deals with regulated professions and defines four types of recognition:

- Declaration of temporary provision of professional services: Citizens of EU or EEA countries, which are entitled to practice a regulated profession in their country of origin, and which plan to pursue this in another country on a temporary and occasional basis, may do so if they inform the competent authority in the host Member State in a written declaration.

- General system for the recognition of evidence of training: This form of recognition is based on the case-to-case comparison of the evidence of foreign training with domestic requirements for the respective regulated profession. If differences in level, content and scope for the respective qualifications are essential, compensation measures can become necessary to achieve recognition.

- Recognition of professional experience: For some regulated professions, the documented professional experience can be sufficient proof to achieve professional qualification.

- Recognition on the basis of coordination of minimum training conditions: This form of recognition applies to seven professions only (medical doctor, dentist, veterinarian, midwife, qualified nurse, pharmacist and architect). Based on a comprehensive list of qualifications from different EU-MS, which are seen to have harmonized minimum training conditions, equivalence can automatically be recognized.

It is crucial for our understanding that the Professional Qualifications Directive only deals with the transfer of professional qualifications within the EU/EEA area. It applies solely to regulated professions (not to all occupational activities), and only to qualifications from EU/EEA Member States (not to qualifications from Non-EU/EEA countries). All professions, which are regulated in the individual Member States, have to be listed in the Regulated Professions Database of the EU. A regulated profession is an occupational activity, for which a specific qualification is a legal or regulatory requirement (Cedefop 2008: 154). However, most professions/occupations are not regulated and do not ask for legal entitlements. Therefore regulated professions seem to be the minority in most countries, both with respect to the share of professions/occupations, but also with respect to their share in the national labour market. For all the other professions/occupations, qualification categories are useful tools to communicate knowledge, skills and competencies, but they are no legal prerequisite for a job.

2.5 Harmonisation of Education and Qualification Systems

1. Bologna Process

Having been triggered by the Sorbonne Declaration in 1998 and officially launched by the Bologna Declaration in 1999, the Bologna Process is based on the agreement of ministers of education from (currently) 47 European countries. An important part of the Bologna Process is the sequence of biannual meetings of the ministers, which are accompanied by experts and representatives from higher education. These meetings do not only reflect on past achievements, but also on the further development of the agenda of the Bologna Process. The overall mission is the foundation of the European Area of Higher Education (EAHE) which promotes mobility, employability and competitiveness across Europe. The most important instruments are the harmonisation of the degree structure (Bachelor/Master/PhD), joint principles for quality assurance and measurements to facilitate the recognition of qualifications and/or of periods of study. The European Credit Transfer System (ECTS) has

been introduced to measure the workload of study units, the diploma supplement as an obligatory document to describe the content of individual study and learning outcomes.

2. Copenhagen Process

Following the example of the Bologna Process, the European Ministers of Vocational Education and Training together with the European Commission initiated the Copenhagen Process by signing the respective Declaration in 2002. Currently all 27 EU-MS as well as 6 nonmember states participate in the Copenhagen Process which is also characterised by biannual conferences. Major topics of this initiative are the strengthening of the European dimension in vocational education and training, cooperation in quality assurance, increasing transparency and information, as well as recognition of competencies and qualifications. Results of the Copenhagen Process are: EUROPASS as a single framework for integrating various information tools; the European Qualification Framework EQF, joint principles for the identification of learning outcomes, which have been acquired in nonformal or informal settings; a joint reference framework for European Quality Assurance in Vocational Education and Training (EQAVET); and the European Credit system for Vocational Education and Training (ECVET), which aims at facilitating the validation, recognition and accumulation of workrelated skills, knowledge and competences.

2.6 Qualification Frameworks

1. QF-EHEA (Qualification Framework of the European Higher Education Area)

As part of the Bologna Process, the concept for the Qualification Framework of the European Higher Education Area (QF-EHEA) was adopted during the Bergen Conference of European Ministers Responsible for Higher Education (2005). The QF-EHEA only deals with tertiary education and distinguishes three levels (or cycles) of qualifications: Bachelor, Master and PhD. To distinguish these different levels of qualifications, the QF-EHEA does not rely on traditional forms of inputdriven descriptions (e.g. content, curricula), but it proposes a shift to outputdriven forms of descriptions, focusing on learning outcomes. For this purpose, the QF-EHEA distinguishes learning outcomes, including competences, according to five descriptors: demonstrated knowledge and understanding, the ability to apply knowledge and understanding, the ability of informed judgements, communication and learning skills.

2. EQF (European Qualification Framework)

In 2008, three years after the introduction of the QF-EHEA, the European Parliament and the Council published their recommendation on the establishment of the European Qualifications Framework (EQF) for lifelong learning. In contrast to the QF-EHEA, the EQF comprises all levels of the formal education system, from primary education up to higher education, and distinguishes eight different levels of reference. Similar to the QF-EHEA, the EQF introduces a strong focus on learning outcomes, but uses only three descriptors, namely knowledge (theoretical and factual knowledge), skills (cognitive and practical abilities, like the application of methods, materials and tools), and competences (responsibility and autonomy).

3. NQF (National Qualification Frameworks)

Both the QF-EHEA and the EQF are concepts, which need to be recognised and implemented by integrating them in the National Qualification Frameworks (NQFs). So far, only a few countries have implemented NQFs (e.g. Ireland, Malta, UK and France). It has to be mentioned as well that the EQF is intended to be a mere classification system for existing qualifications, while the QF-EHEA is closely linked to the Bologna Process with the intention to harmonize the architecture of higher education degrees.

2.7 Other Transparency Instruments

1. Europass

Decision 2241/2004/EC of the European Parliament and the Council introduced *Europass* as the single Community framework for the transparency of qualifications and competences. *Europass* is constructed as a portfolio of different documents and existing instruments, including:

- the *Curriculum Vitae* that helps individuals to present their skills and qualifications
- the *Language Passport*, a self-assessment tool for language skills and qualifications
- the *Europass Mobility*, which records skills acquired in other European countries
- the *Certificate Supplement*, which describes the national standards of specific vocational education and training certificates
- the *Diploma Supplement*, which explains what knowledge and skills have been acquired by the holder of a specific higher education degree.

While the first two documents are completed by the individual, the later three are issued by education and training authorities.

2. European Professional Card

Based on an evaluation of the Professional Qualifications Directive, the European Commission published a Green Paper with the aim of modernising the Professional Qualifications Directive (2011) that proposed the introduction of a European professional card as an instrument of faster recognition of qualifications in regulated professions. This card is to make use of the Internal Market Information system (IMI), an electronic tool designed to improve the cooperation between administrators of Member States. While currently the receiving Member State is responsible for the verification of the migrant's professional qualification and documents, the introduction of a European professional card would shift this responsibility to the competent authority in the Member State of departure, which could issue the card on request. The receiving Member State would only have to verify the validity of the card itself. The European Commission launched a steering group on the professional card, which

led to case studies being undertaken in seven different professions. The final provisions and their technical implementation depend on the outcome of the legislative procedure, but the EC, DG Internal Market and Services seem to be committed to promote the convergence in regulated professions by fostering the direct interaction between professional authorities across national borders.

2.8 Institutional Infrastructures

1. ENIC-NARIC network

The ENIC and the NARIC network have similar functions, but different roots. The ENIC network (European Network of National Information Centres on academic recognition and mobility) was founded by the Council of Europe and UNESCO to implement the Lisbon Recognition Convention. National information centres are set up by national authorities of states which are members of the European Cultural Convention or of the Unesco Europe Region. The network of National Academic Recognition Information Centres (NARIC) was created on initiative of the European Commission in 1984. All member countries of the European Union, the European Economic Area and Turkey have designated national centres.

In most countries a NARIC is at the same time an ENIC, however in some countries there only exist ENICs. The two networks collaborate closely and adopted a Joint ENIC-NARIC Charta in 2004. The national centres are the responsibility of their nation states. This means that the size and specific competence of national centres can vary. Generally speaking, ENIC-NARIC centres will provide authoritative advice and information concerning academic recognition of diplomas and periods of study undertaken in other countries and will provide guidance for the routes to take and the national institutions responsible for academic recognition (mainly higher education institutions). Differences can be observed in other areas of recognition (e.g. relative to advice on the recognition of school certificates, on vocational education and training, on professional qualifications) and to advice given to other sectors of the public administration (e.g. Public Employment Services), apart from informing the individual applicant.

2. National contact points for the Professional Qualifications Directive

Following article 57 of the Professional Qualifications Directive (2005/36/EG) each Member State had to designate national contact points, which are responsible for providing citizens or contact points of other Member states with information concerning the recognition of professional qualifications as well as assistance to citizens in realizing their rights. National contact points are also responsible for supervising and editing the entries of regulated professions of their countries in the Regulated Professions Database of the EU. Similar to ENIC-NARIC, national contact points do not take decisions on the recognition themselves, but lead the way to the respective professional authorities.

3. EQF National Coordination Points

One element of the Recommendation on the establishment of the European Qualifications Framework was the advice to designate national coordination points, which are linked to the structures of the Member States. The tasks of the national coordination points (European Parliament & Council 2008: 3) should include:

- Referencing levels of qualifications within the national qualification system to the EQF;
- Ensuring transparency in referencing national qualifications levels to the EQF to facilitate comparisons;
- Providing guidance to stakeholders on how national qualifications relate to the EQF through the NQF;
- Promoting the participation of all relevant stakeholders.

Even if not all Member States have established their NQFs yet, national coordination points exist already and play a crucial role in developing NQFs.

4. EURES network

EURES is a cooperation network between the European Commission and the Public Employment Services of Member States of the European Economic Area. EURES provides information, advice and recruitment/placement services to workers and employers who wish to make use of the principle of free movement of persons. EURES maintains the European Job Mobility Portal and a human network of more than 850 EURES advisers, which are located in Public Employment Services across Europe. EURES plays a particularly important role in crossborder regions. Currently there exist 20 EURES crossborder partnerships. These are regions with significant levels of crossborder commuting, where EURES helps to overcome administrative, legal or fiscal obstacles to mobility.

3. Summary and Conclusions

Even though the principle of free mobility of EU-citizens within the EU is one of the fundamental rights of the EU, the actual amount of labour migration has remained rather modest, especially compared to the US. Increased labour migration and mobility within the EU is seen as a potential source of economic and productivity growth and potentially a way to overcome regional disparities.

To discuss the issue of 'recognition', it is crucial to distinguish between formal recognition (done by institutions of the national education and qualification system) and social recognition/acceptance (e.g. by employers at the labour market). Furthermore, a distinction can be drawn between legally binding and legally nonbinding forms of validation and recognition. The first type of recognition leads to clear entitlements (e.g. the right to access a regulated profession) while the second type aims at better information and trans-

parency. Both types of measures are no ultimate guarantee for increased social acceptance in the labour market.

Based on the distinction legally binding vs. legally nonbinding, the paper gives an overview of European regulations, initiatives and institutional infrastructures. This rough (and probably incomplete) overview demonstrates how many initiatives exist and how much effort it takes on the part of European policy makers to increase information, mutual understanding and convergence of qualifications and competencies. The problem is tackled from a range of different angles and by different actors. Already on the European level, it is necessary to see the different policies and measurements in context and to find potential connections and synergies.

European policies and measures have to be interpreted and implemented nationally, where they are confronted with different traditions of historically developed education and qualification systems, but also with different attitudes and variations in dealing with specific European initiatives. In Austria, for example, the responsibility for recognition of educational certificates and professional degrees is highly fragmented and the dominant attitude towards recognition is to protect the vested interests of educational or professional authorities, which are not necessarily compatible with transparency and the free mobility of labour. Other countries seem to be more comprehensive, integrated and/or centralised in their responsibilities relative to recognition, and seem to link their recognition policies more effectively with proactive labour market policies towards migrants.

Similarly, national actions based on European policies do not necessarily result in even standards and in convergence across all member states, since they tend to be interpreted and implemented in different ways by the respective Member States. Another possibly more promising way to foster mutual understanding may be to increase the direct interaction between professional authorities of a kind across different countries (as intended by the Professional Card) and/or to strengthen the interaction within specialised networks like the ENIC-NARIC network, or the EURES network. To what extent their collaborative experience can serve as an example for future work of national contact points for the Professional Qualifications Directive and the EQF national coordination points is yet to be seen.

To be successful in raising labour migration within Europe largely depends on the political attitude and commitment at the national level. If national policies are committed to achieve improvements, they are well advised to make use of European measures and instruments, and to seek the advice of the institutional infrastructure built around them.

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A New industrial Revolution?

Europe needs its real economy now more than ever to underpin our ongoing economic recovery. As such, EU actions will be designed to reverse the current downward trend and to promote the reindustrialisation of Europe. Industry currently accounts for about 16% of EU GDP. Therefore, the European Commission has set its goal that industry's share of GDP should be around 20% by 2020.

The phrase 'Industrial Revolution' may be hundreds of years old, but it will be reborn in the 21st century. Europe is investing in – and relying on – reindustrialisation to foster economic recovery, ease environmental strain and solidify Europe's standing as a global industrial leader.

And while the last Industrial Revolution gave birth to modern technology, the next Industrial Revolution will help create future technology.

Europe needs its real economy now more than ever to underpin our ongoing economic recovery. As such, actions should be designed to reverse the current downward trend and to promote the reindustrialisation of Europe. Industry currently accounts for about 16% of EU GDP. Therefore, the European Commission has set its goal that industry's share of GDP should be around 20% by 2020. This will be achieved through a series of measures designed to stimulate key markets, particularly clean, green sectors.

Europe's industry is well placed to assume this role: Europe is a world-leader in many strategic sectors such as automotive, aeronautics, engineering, space, chemicals and pharmaceuticals. Industry still accounts for 80 percent of Europe's exports, while 80 percent of private sector R&D investment comes from manufacturing. If confidence comes back, and with it new investments, Europe's industry can perform better and start growing again.

'We cannot continue to let our industry leave Europe' said European Commission Vice-President Antonio Tajani, Commissioner for Industry and Entrepreneurship underlined. 'Our figures are crystal clear: European industry can deliver growth and can create employment. Therefore, we tabled the conditions for the sustainable reindustrialisation of Europe, to develop the investments needed in new technologies and to rebuild a climate of confidence and entrepreneurship. By working together and restoring confidence, we can bring back industry to Europe'.

Revolution required

By encouraging and enabling Member States to implement the changes required to improve sustainability and resource efficiency, Europe will be tapping into a booming sector. After all, the global market for clean production technologies, currently €380 billion, is expected to more than double, to €765 billion, by 2020. Certain markets, such as automatic waste separation, will grow at an even greater rate.

Of course, as important as **international markets** will be, the next Industrial Revolution requires a solid foundation here in Europe. And the Commission is ready to help European industries nurture this stability. Ideally, the **Internal Market** could account for as much as 25% of GDP, but right now it is only 21%, meaning there is ample room for growth.





The EC will improve the Internal Market by standardising regulations, which are currently dominated by national regulations – or no regulations at all. In addition, the Commission will address the need for improved access to finance, which has been lagging since the financial crisis struck in 2008. In 2007, gross fixed capital formation of GDP was 21.3% of GDP; in 2011, it was just 18.6%. The EC will help reach pre-crisis levels within the next three years and average more than 23% through 2020. And in an effort to improve productivity and introduce new technologies, policy actions should contribute to **growing investment in equipment** from its current level of 6 to 7% of GDP to 9% of GDP until 2020.

From digital agenda to nanotechnology

Recognising the need for technological evolution, the Commission has created a Digital Agenda designed to increase the number of small firms engaging in e-commerce. With the digital Single Market expected to grow by 10% each year through 2016, the EC plans to strengthen protection of intellectual property rights, including IPR helpdesks designed to support SMEs. These measures will ensure that intellectual and financial investments are duly rewarded, thus encouraging both investors and entrepreneurs to lead the reindustrialisation effort.

In addition, the Commission will help reshape EU industry with the formation of new goods, services and business models that would have seemed like science fiction during the first Industrial Revolution. **3D printing technologies**, for example, are used to make plastic and metal production parts for the automotive industry, aerospace firms and consumer-product companies. The printers used to exploit this

technology utilise ultra-thin layers of powdered materials that are then fused by lasers or electron beams. The process conserves raw materials, saves energy and creates products that are perfectly 21st century.

Key enabling technologies, or KETs, will be another cornerstone of the new Industrial Revolution. Used in a variety of applications – from corrosion-resistant nanomaterials for bridges to heat-resistant materials for aircrafts – KETs will once again make Europe a hotbed for production processes that have been outsourced to third-world countries.

Repeating by leading

Europe's next Industrial Revolution is an enormous opportunity created by a pair of equally enormous challenges – the necessity of more environmentally friendly production, and reversing the ongoing slowdown caused by the global financial crisis.

The reindustrialisation of Europe will ease the strain caused by each of these burdens, enabling more efficient, less material-intensive manufacturing techniques. These same technologies will help drive down production costs, which will have a multitude of knock-on effects: making Europe a cheaper place to invest in industry; easing the burden on European consumers; bolstering European exports to countries outside the Single Market.

The new Industrial Revolution will no doubt be different from the first one. But one thing will be the same: Europe is leading the way.

Single Market Act II: twelve priority actions for new growth.

This year marks the 20th anniversary of the Single Market. A lot has been achieved. For European consumers the Single Market means more choice at lower prices. For citizens, the Single Market has given them the capacity to travel freely, to settle and work where they wish. For young people it has opened up the opportunity to study abroad – more than 2.5 million students have seized this opportunity in the last 25 years. For the 23 million companies in the EU the Single Market has opened up access to 500 million consumers and generated foreign investment. The message is clear, the evidence is there: a strong, deep and integrated Single Market creates growth, generates jobs and offers opportunities for European citizens which were not there 20 years ago.

The completion of the Single Market is a continuous exercise and is a central element of the European growth agenda to address the current economic crisis. This is why the European Commission has today adopted Single Market Act II, putting forward twelve key actions for rapid adoption by the EU institutions. These actions are concentrated on four main drivers for growth, employment and confidence: a) integrated networks, b) cross border mobility of citizens and businesses, c) the digital economy, and d) actions that reinforce cohesion and consumer benefits.

“The single market can do more for European citizens and businesses” said Michel Barnier, European Commissioner for Internal Market and Services. He added: “The Single Market Act II is a call to us, policy-makers, to get down to business, focus minds and deliver. I am convinced that the twelve key actions that we are presenting today will receive the degree of political ownership that they deserve. This is our chance to use our golden asset, the single market, to see our social market economy be competitive and thrive again”.

Single Market Act II follows in the footsteps of a first set of measures presented by the Commission - the “Single Market Act I (IP/11/469) - and represents a new chapter in a process towards a deeper and better integrated single market.

It marks the 20th anniversary of the EU's single market and raises the curtain on the **Single Market Week** (15-20 October 2012). Under the theme “**Together for new growth**”, a week-long series of events across the EU will give an opportunity to policy-makers and citizens to discuss the achievements and challenges of the single market and come up with new ideas.



Background

The Single Market Act II includes the following actions:

Transport and energy networks: efficient and fully integrated transport and energy networks are the backbone of the single market. The opportunities offered by cohesion and structural funds must be accompanied by a firm commitment towards competition, choice and good quality services across the EU. To realise this vision, the Single Market Act II includes:

1. an action to open the provision of domestic rail passenger services to further intra-EU competition
2. the improvement of a single market for maritime transport
3. measures to accelerate the Single European Sky
4. actions to make the application of existing EU energy legislation effective.

Citizen and business mobility: free movement across borders is at the very basis of a single market and one of the foundations of the European Union. Practical and legal barriers to the mobility of citizens, business activities and investment funding still persist however. With the Single Market Act II, the Commission is therefore proposing to:

5. develop the EURES portal into a fully-fledged cross-border job placement and recruitment tool
6. introduce provisions to mobilise long-term investment funds for private companies and long-term projects
7. modernise insolvency proceedings, starting with cross-border cases, and contribute to an environment that offers second chances to failing entrepreneurs.

The digital economy: with its economic weight and important spill-over effects, for example in terms of productivity and resolving societal challenges, the digital economy revolution remains an opportunity that cannot be missed. Working towards the completion of the digital single market by 2015, the Commission proposes to:

8. facilitate e-commerce in the EU by making payment services easier to use, more trustworthy and competitive
9. address a key underlying cause of lack of investment in high speed broadband connection, i.e. its civil engineering costs
10. make electronic invoicing standard in public procurement procedures – a proven money-saver.

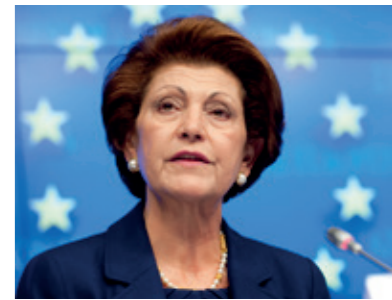
Social entrepreneurship, cohesion and consumer confidence: the success of the single market is also a result of the economic and social participation it can generate. Consumers need to be confident and all citizens, everywhere in the EU, must have the chance to tap into the opportunities the single market offers. The Commission intends to pursue this objective by using concrete internal market tools, including:

11. improvement of product safety rules and their actual enforcement
12. measures to ensure widespread access to bank accounts, as well as transparent and comparable account fees and easier bank account switching.

What are the next steps?

- Single Market Month, 23 September - 23 October 2013
- The Commission will put forward all key legislative proposals of the Single Market Act II by spring 2013 and the non-legislative ones by end 2013.
- The European Parliament and Council are called upon to adopt legislative proposals as a matter of priority by spring 2014.

EU stepping up support for education and skills



Androulla VASSILIOU,
European Commissioner
for Education, Culture,
Multilingualism and Youth

Statement by Androulla Vassiliou, European Commissioner for Education, Culture, Multilingualism and Youth, during the policy debate on 'Education and Skills for Jobs, Stability and Growth', at the Education Council (15 February 2013).

"We have to offer more direct and immediate support to the people who need help now.

We have to work harder to improve people's skills and competences so that they have a better chance to find a good job – this is exactly the policy message that we are giving in our 'Rethinking Education' Communication.

How can the EU-level support you in your policy efforts?

A first element is of course the EU Strategy for Growth and Jobs, Europe 2020. I would now like to stress that in particular the Country-specific Recommendations are there to support you in your reform efforts. And, in addition, they serve as a vehicle for us, in this Council formation, to ensure that the education and training policy concerns that we value can also be given the attention they merit in the deliberations of the Heads of State and Government in the European Council.

Secondly, this year is decisive when it comes to the Member States' plans for how to spend the next generation of Structural Funds. In the current programming period Member States are spending € 35 billion from the Structural Funds on education, training and lifelong learning. As you know, the bulk of the funding comes from the European Social Fund (€ 28 billion), but more than € 7 billion will be spent on education infrastructure through the European Regional Development Fund. These amounts can make a difference, if they are used effectively and for the right purposes.

The legislative framework for the period 2014 – 2020, which will soon be agreed among the EU Institutions, gives a prominent role to investment in education and training. It is now up to you, Ministers of Education, to ensure that your plans for the modernisation of education benefit from adequate funding.

Thirdly, the EU can help to organise mutual learning and provide the data, facts and figures that are needed to base our policies on a solid analysis.

I would like to highlight three examples of our strengthened cooperation with the OECD that are closely linked to today's discussion on skills.

The first one is PIAAC, the 'Programme for International Assessment of Adult Competences'.

PIAAC will provide, for the very first time, a wealth of credible empirical evidence about the skills of adults in the EU Member States, how effectively these skills are deployed, and how they relate to economic and social outcomes. We will present, next Autumn, jointly with the OECD, the findings of PIAAC here in Brussels.

Just as PISA did for secondary education, PIAAC will bring a new wealth of information on the real situation on skills among adults. This will give you, Ministers, new information on which to plan your skills policies and it will give us in this Council plenty of material for our work under Europe 2020 and the 2014 European Semester.

My second example is about a new web-based tool: 'education and skills on-line'. This joint OECD and Commission tool will help citizens, enterprises and institutions to assess, for themselves, their skills, both in terms of their strengths and their weaknesses.

This will help them to identify the areas, where they would benefit from up-skilling and thus help them to improve their chances on the labour market.

The third example concerns entrepreneurial skills, which are crucial, in particular in the case of young people.



The European Commission, in collaboration with OECD, is developing a Guiding Framework for Entrepreneurial Universities and a self-assessment tool for Universities. We intend to expand this approach and tailor it to make it work at the levels of schools and Vocational Education and Training.

Finally, I would like to stress how pleased I am that the Presidency has invited Lord Puttnam, here in his role as Chancellor of the UK's Open University.

Making better use of modern technologies in education and training is – as you know – one of our key priorities for two reasons: because we need to educate our young and not-so-young people to live and thrive in an ICT dominated world; and because we need to harness the real power of ICTs as new means to meet traditional educational goals such as raising the quality of education and opening up access for all.

Later this year, I will follow up on the brief treatment of these issues in Rethinking Education, by presenting, jointly with Vice-President Neelie Kroes, a new initiative and a range of ideas on Opening up Education through ICTs.

Concluding remarks

“There is no doubt that the most pressing challenge is to support young people who bear the brunt of the crisis.

While Education Ministers cannot tackle directly the situation on the labour market, education and training must take the responsibility of ensuring that young people have the skills, competences and attitudes they will need in a labour market which is difficult and which will change rapidly and in unforeseen ways.

Our work is cut out for us. The European Commission has previously identified some key shortcomings of the education systems in the EU in the Communication on Rethinking Education of November last.

Short-comings concerning poor levels of basic and transversal skills and competences.

Shortcomings in equipping our young people with ICT and entrepreneurial skills and with good foreign language skills.

Shortcomings in responding to the high share of low achievers who leave our schools and the low up-take of lifelong learning among adults – in particular low-educated adults.

We have to improve and modernise the way we teach and learn and open-up education to new technologies.

There is a saying in English: ‘words are cheap’; it is easier to ask for improvements than to achieve them.

And, some may point out, good policies cost money. Yes they do, which is why I want us in this Council to explore together how we can channel new funding into education. The way to face the global challenge evoked by Mr [Andreas] Schleicher [OECD deputy director for education] is not to cut down on education.

The way to climb back to growth is, as Lord Puttnam so graphically illustrated, to offer our young people the skills they need today, not the disciplines of yesterday. And if we do our bit, they will do theirs and will put those skills to good use. This is the way for the EU to exit the crisis, and become all the stronger in the process.”

U-Multirank

“I cannot finish without mentioning in your presence, President, the work we are doing to bring to fruition the U-Multirank project, the multi-dimensional and global ranking initiative supported at EU level

This is actually our plan to complement the existing university rankings, which are almost exclusively based on universities’ research functions, with a tool which will provide a better, more rounded picture of the performance of our universities and colleges.

The launch conference in Dublin two weeks ago was a great success and I want to thank you, President, for your strong personal commitment. I want to invite all of you, dear ministers, to join Minister Quinn in becoming advocates for this project with your higher education institutions.

U-Multirank has the potential to increase transparency, and to highlight excellence in all the different missions of our universities, in teaching and learning, in knowledge transfer and regional development and in internationalisation, as well as in research. This will increase the visibility and attractiveness of all our universities, not just the big league universities. It will also be based on a strong input from the different national actors.

The challenge now is to ensure the participation of at least 500 institutions in the first round in view of the first publication early 2014. The next six months are going to be crucial in this respect, we need to progress fast. I make therefore an appeal to you so you can look at this initiative in more details and promote it towards your higher education institutions at home. We need to secure as early as possible the participation of universities in this initiative. I am very committed to this. I will therefore send to all of you, in the coming days, a letter explaining the rationale and the objectives of this initiative. It is also an issue to which I will be returning in this Council in the months ahead.”

New international university ranking launched in Dublin



A new university ranking, set up with funding from the European Union, was publicly launched under the Irish EU Presidency in Dublin on 30 January 2013. The new 'multi-dimensional' listing marks a departure from traditional approaches to ranking university performance, most of which focus disproportionately on research excellence. Instead, it will rate universities according to a broader range of factors, in five separate areas: reputation for research, quality of teaching and learning, international orientation, success in knowledge transfer (such as partnerships with business and start-ups), and contribution to regional growth. Some 500 universities from Europe and across the world are expected to sign up to take part in the ranking and the first results will be published in early 2014.

Speaking ahead of the launch, Androulla Vassiliou, European Commissioner for Education, Culture, Multilingualism and Youth said: "Universities are one of Europe's most successful inventions, but we cannot rest on our laurels. We need to think and act more strategically to realise the full potential of our universities. To do that, we need better information about what they offer and how well they perform. Existing rankings tend to highlight research achievements above all, but

U-Multirank will give students and institutions a clear picture of their performance across a range of important areas. This knowledge will help students to choose the university or college that is best for them. It will also contribute to the modernisation and quality of higher education by enabling universities to identify their strengths or weaknesses and learn from each other's experience; finally, it will give policy makers a more complete view of their higher education systems so that they can strengthen their country's performance as a whole."

The conference launching the ranking will be opened by the Irish Minister for Education and Skills, Ruairi Quinn. He said: "As higher education becomes ever more crucial to Europe's social, cultural and economic well-being, the need for quality and diversity in our higher education systems grows greater. The Irish Presidency is strongly committed to helping support the roll-out of this next phase of U-Multirank. I urge higher education institutions to seize this opportunity to participate in building a ranking system which will shine a light on the many positive aspects of higher education activity across Europe for the benefit of students, institutional leaders, policy makers and other stakeholders."

In addition to providing an authoritative ranking comparing institutions, U-Multirank will also rate universities in four specific subject areas: business studies, mechanical engineering, electrical engineering and physics. The list of specific disciplines will be gradually expanded in future years.

Background

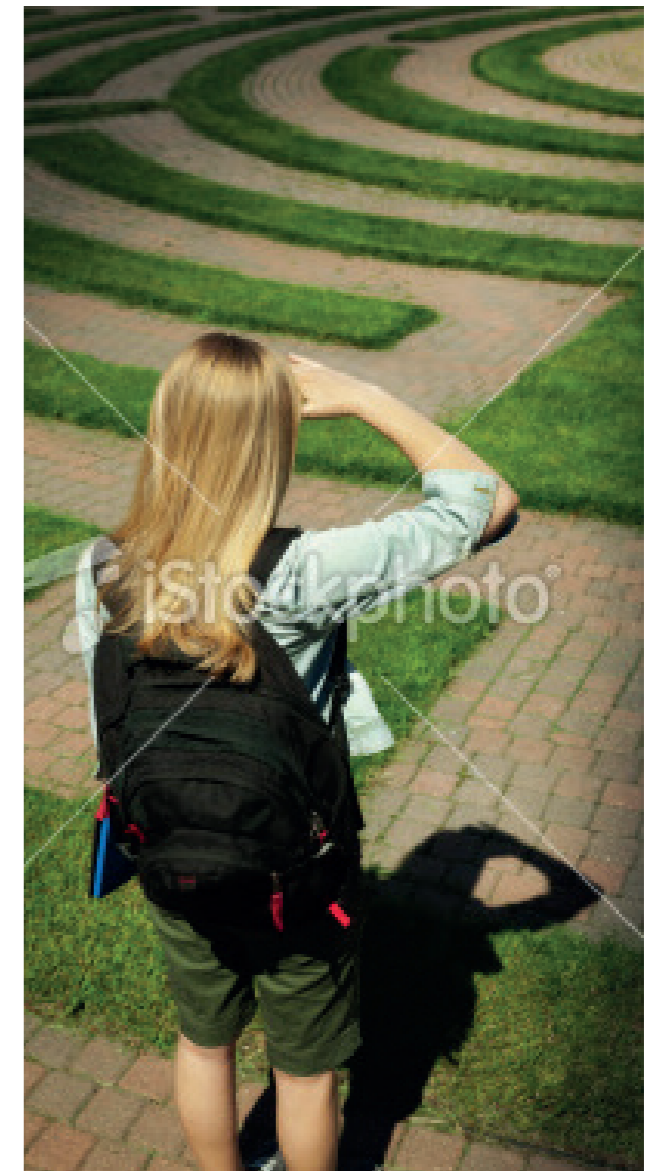
An independent consortium will compile the ranking, led by the Centre for Higher Education (CHE) in Germany and the Center for Higher Education Policy Studies (CHEPS) in the Netherlands. Partners include the Centre for Science and Technology Studies at Leiden University (CWTS), information professionals Elsevier, the Bertelsmann Foundation and software firm Folge 3. The consortium will also work with national ranking partners and stakeholder organisations representing students, universities and business to ensure completeness and accuracy.

The new ranking will be impartial, based on measurable criteria and data. Its multi-dimensional approach makes it suitable for any university or college seeking feedback on its performance. Individual users will also be able to obtain a 'personalised' ranking reflecting their particular needs; this will allow them to obtain information on the institutions or disciplines which most interest them and to weight the criteria according to their own preferences.

U-Multirank is the culmination of an initiative which originated at a conference organised under the 2008 French Presidency of the European Union, which called for a new university ranking based on a methodology reflecting a variety of dimensions of excellence in an international context.

The European Commission subsequently commissioned a feasibility study which was carried out by a consortium of higher education and research organisations known as CHERPA and finalised in 2011. The study, based on work with 150 higher education institutions from Europe and around the world, confirmed that both the concept and implementation of a multi-dimensional ranking was realistic. Online survey instruments have been developed to gather the data needed. The consortium will also work with existing national rankings to avoid having to ask the same questions to universities more than once.

U-Multirank will receive a total of €2 million in EU funding from the Lifelong Learning Programme in 2013-14, with the possibility of a further two years of seed-funding in 2015-2016. The goal is for an independent organisation to run the ranking thereafter.



European Voice EU Studies Fair/Brussels

9 February 2013

Good morning,

I'm delighted to be with you for the 2013 EU Studies Fair. I would like to thank European Voice for organising the event. It is now the fourteenth year that it has done so. Mr Taylor, Mr King and your team, congratulations for the excellent job.

I am sure everyone is eager to visit the stands, including our own European Commission stand where you can find out more about Erasmus, Erasmus Mundus and the Marie Curie Actions. But please allow me to say a few words about what the EU is doing for education and about the new programme we are launching next year.

Let me first of all address the students among us. I know that you are here today in order to make important decisions about your future studies. I welcome your interest in acquiring a postgraduate education. It is the best investment you can make in yourselves.

A specialised degree has never been as important as now. The crisis has proven this – the highly skilled have done much better on the job market.

That is no simple feat when one out of five under the age of 25 is unemployed in Europe – in some countries like Spain or Greece over half of young people cannot find work.

However, your decision as to the course of study you will follow is very important because, despite high unemployment across Europe, we still have two million unfilled vacancies where we cannot find people with the right skills.

Last November, I presented EU Education Ministers with a strategy on Rethinking Education and stressed the urgency of reforming and modernising our systems.

We have to ensure that, from primary to higher education, we deliver excellent quality across Europe and that our students learn skills that are relevant to the needs of the real world: that includes transversal skills, the capacity to think critically, take initiatives, be entrepreneurial, solve problems and work as a team. This is more important than ever today, knowing that many people will pursue different career paths during their working lives.



Androulla VASSILIOU,
European Commissioner for Education,
Culture, Multilingualism and Youth

That is why I have recently set up a High Level Group for the modernisation of higher education. Over the next three years, experts will be looking at how best to achieve quality and excellence in teaching and to adapt learning to the digital age, increasing the use of ICT and Open Educational Resources.

Also, this year, I am preparing a strategy on the internationalisation of higher education. And I will be proposing ways to open up education to take advantage of new technologies. We are also working with universities in Europe to develop a new ranking system, which will be published for the first time in 2014. It will enable students to compare universities, for example, on the quality of their teaching.

We will also continue to directly support the study of the EU, mainly through our Jean Monnet programme which reaches over 70 countries in the world. Thanks to this, there are teaching modules and research activities on the integration of Europe that bring together 1 500 professors and reach 500 000 students every year.

From 2014, we will extend the Jean Monnet programme to subjects where European issues do not traditionally form part of the curriculum. We could fund, for example, modules and courses dealing with European rules and policy for the energy market or EU public procurement rules for future engineers and architects.

For this, I have requested a significant increase in the budget for our new Erasmus for All programme. A big focus will be on increasing student mobility. We will also be introducing a new student loan guarantee facility for students doing a full Masters' course abroad.

Accessible, quality education is what Erasmus for All is about. Over the years, we have achieved a lot with our European education and training programmes. We want to build on this success to create new opportunities.

This morning is a wonderful opportunity to discover ways in which you can shape your future for the better. I wish you all an enjoyable day and a successful event.

Thank you.



R&D Scoreboard: Despite crisis, top EU firms continue to invest in innovation.

In the face of the continuing economic and financial crisis, major EU-based firms continue to rely on R&D for their competitive edge. They increased R&D investment by 8.9% in 2011, up from 6.1% in 2010. The increase nearly matches US firms (9%), beats the global average (7.6%) and is far ahead of Japanese companies (1.7%). R&D-intensive sectors tended to show above average employment growth. These are key findings of the European Commission's 2012 "EU Industrial R&D Investment Scoreboard" of the top 1500 global R&D investors. The global top 50 includes 15 EU companies, 18 US firms and 12 from Japan. Japanese car manufacturer Toyota tops the ranking, with Volkswagen the top EU company in third place (€7.2 billion invested). Recently released Eurostat data shows that combined EU public and private research spending increased to 2.03% of GDP in 2011, from 2.01% in 2010. This was mainly due to increased private sector spending.

Máire Geoghegan-Quinn, Commissioner for Research, Innovation and Science said: "Knowledge is the lifeblood of European competitiveness, so the increase in R&D investment by EU companies is a call to arms in our battle for growth and jobs. We now need to match private sector ambition with increased investment in R&D at national and

European levels. EU leaders should send a strong signal by approving an ambitious budget for Horizon 2020, our future programme for research and innovation."

Total investment by companies in the scoreboard shows that the US is still ahead of the EU, explained by the higher number of high-tech firms in the US (€178.4 billion versus €144.6 billion). Companies showing the largest R&D expenditure increases among the top 100 are in the ICT sector, such as Huawei (48.4%), Apple (36.3%) and STMicroelectronics (34.5%). Other companies in the top 100 with large jumps in their levels of R&D investment are from the automobile and parts sectors, some based in the EU such as BMW (21.6%) and Renault (19.4%).

In the EU, R&D growth figures in 2011 are to a large extent driven by the automobile sector (16.2% growth), which accounts for the biggest share of R&D investment in the EU (25%). Companies based in Germany, which account for around one third of the EU's total private R&D investment, increased R&D by 9.5%. Companies in the UK and France, which also account for a large proportion of private research, had growth of 13.1% and 7.6% respectively.

Background

The 2012 Scoreboard is based on a sample of 1500 companies, the world's top investors in R&D and equivalent to almost 90% of the total expenditure on R&D by businesses worldwide. It measures the total value of their global R&D investment financed with own funds, irrespective of the location where the relevant R&D takes place. Out of the 1500 companies, 405 are based in the EU, 503 in the US, 296 in Japan and 296 in the rest of the world including Switzerland, South Korea, China, India and 23 other countries. Each of the Scoreboard countries invested €35 million or more in R&D in 2011.

The Scoreboard data shows that employment growth is generally higher in R&D-intensive sectors. Overall employment figures of a sample of 815 Scoreboard companies increased by 22.3% during the period 2003-2011, led by increases in highly R&D-intensive sectors (36.1%). In the EU sample, employment growth was very strong in high-tech sectors (38%), with 20% growth in the medium-high and 19% in the low-intensity sectors.

A new study highlights that the European Union is an attractive R&D location for firms from outside the EU, and that foreign R&D investments are a big source of employment and competitiveness in Europe. US firms in particular increased their R&D expenditures in the EU from USD 12 billion in 2000 to USD 23 billion by 2008. US firms spend ten times more on R&D in the European Union than in China and India combined. A recent survey (IP/12/905) of top EU firms indicated the strong positive effects of public R&D investment on private R&D, including fiscal incentives, national grants, EU financial support and public-private partnerships both at national and EU level.

Horizon 2020 is the new EU programme for research and innovation, presented by the Commission as part of its EU budget proposal for 2014 to 2020. In order to give a boost

to research and innovation as a driver of growth and jobs, the Commission has proposed an €80 billion budget, up from the € 55 billion of the current Framework Programme FP7.

The European Union has set a target that combined public and private research spending should reach 3% of GDP by 2020. This Europe 2020 headline indicator should be quickly complemented by a headline indicator on innovation, currently under development.

For more information and the Top 50 companies in full, see the MEMO/12/948.

For further details see the 2012 "EU Industrial R&D Investment Scoreboard", the 2012 "EU Survey on R&D Investment Business Trends" and other IRMA (Industrial Research Investment Monitoring and Analysis) reports:
<http://iri.jrc.ec.europa.eu/reports.htm>

Study on Internationalisation of business investments in R&D and analysis of their economic impact:
http://ec.europa.eu/research/innovation-union/index_en.cfm?pg=other-studies

For more information on Horizon 2020:
<http://ec.europa.eu/research/horizon2020/>

For more information on Innovation Union:
http://ec.europa.eu/research/innovation-union/index_en.cfm

Letter from President of the European Council

Herman Van Rompuy to the members of the European Council.

In order to restore the stability of the European economy much work has been done in the Member States, in the euro area, and in the Union as a whole. Recent forecasts, however, suggest that economic recovery will be slow and fragile. Therefore, in 2013 we must continue to press on with structural reforms that will boost European competitiveness and will further reinforce confidence in the European economy.



More can and should be done. We need to tap new sources of growth and jobs, and the deepening of the single market by removing remaining barriers is key in this regard.

With this in mind, almost exactly two years ago, the European Council invited Council and Parliament to adopt all twelve priority measures under the Single Market Act I (SMA I) by the end of 2012. We all agreed that your Ministers should prioritise them in their works.

Thanks to considerable efforts of the past Presidencies of the Council, tangible results have been achieved. Nonetheless, regrettably, the deadline we set was missed for a number of levers of the SMA I – in fact, for most of them.

This delay is hard to justify, since it casts doubt on our resolve to urgently take all the concrete steps to bring back growth to the European economy.

On some files, work is rather advanced. A rapid agreement on the accounting directive will reduce the administrative burden on millions of European micro- and small enterprises and allow them to jointly reap billions of euros in savings per year.

A timely conclusion of negotiations on the recognition of professional qualifications will address two acute problems of the EU's economy: the unacceptably high unemployment rates as well as shortages of high-skilled labour.

Agreement is also within reach on public procurement. If we grasp it, European companies can benefit from procedures that are simpler and more supportive to innovation. Since public authorities spend 18% of GDP on goods, works and services, this measure can bring EU businesses significant savings.



Herman Van Rompuy

If we intensify our efforts, these three files can still be adopted before July 2013, under the Irish Presidency of the Council.

We also need to accelerate work on measures related to European network industries, in transport, energy and telecommunications. Their performance has a critical spill-over effect on the rest of the economy. In this respect, the negotiations on the Connecting Europe Facility should proceed swiftly. If we press ahead and your Ministers show adequate flexibility, all four files related to Trans-European Networks could also be closed in the first half of this year.

For some other SMA I files, we are, to my regret, faced with even longer delays. We are foregoing competitiveness gains from the non-adoption of e-signature, aimed at strengthening confidence in electronic transactions, and therefore a pre-condition for the development of the digital single market. Negotiations are particularly slow in SMA I measures related to taxation. Agreement could still not be found on energy taxation rules which will support energy savings, or on the common consolidated corporate tax base for businesses which aims to level the playing field among Member States. Similarly, we are significantly delayed with the initiative on posted workers.

We need more flexibility in the national positions and more willingness to compromise.

We need more robust progress on these files. Therefore, I appeal to you to muster sufficient political will to close these negotiations as early as possible this year, as a matter of urgency.

Another consideration adds to this. The delivery on measures under the SMA I must be accelerated to avoid a clash of workload with initiatives under the second single market act (SMA II), on which work has already started. Acceleration for the pending and upcoming SMA II proposals, which should all be delivered by June, is crucial, so that they can be examined and adopted before the end of the current legislature, as agreed in December by the European Council. We need to move quickly, as we cannot afford to miss yet another deadline we have set ourselves. If not, parliamentary elections and changes in other institutions would delay the adoption of these urgent files for a considerable time.

Whilst working on new proposals, we cannot lose sight of implementation of the Single Market legislation and of its governance.

Two years ago, the co-legislators decided to tackle delayed payments, a major obstacle for the flow of goods and services with particularly crippling effects on European SMEs. The deadline for the directive to be transposed into

national laws is 16 March 2013, but to date most Member States have not completed this process. I ask you to put all efforts in assuring transposition without delay.

We need to bring down the barriers if we want the single market to work for our citizens and businesses. I appeal to you to accelerate the pace of negotiations. We badly need these growth-enhancing measures. We cannot spare any efforts to rekindle growth and reinforce competitiveness.

With this objective in mind, in the European Councils which will follow our March meeting, I should like us to embark on a series of thematic discussions focused on different aspects of rebuilding competitiveness of the European economy and spurring recovery and jobs. I am looking forward to productive discussions on energy (in May), innovation and digital agenda (October), and industry (February 2014). These discussions would lead to a more general debate on the Europe 2020 strategy in March 2014.

Ahead of the European Council of June, I also intend to come back to you on the state of implementation of the Compact for Growth and Jobs. I am confident that looking at where we stand one year after the adoption of the Compact for Growth and Jobs will also contribute to the aim we all share: to set the Union on a path of sustainable growth path towards the end of the decade.

Making the EU more attractive for foreign students and researchers.

The EU needs to attract talented non-EU students and researchers who can contribute to our growth and competitiveness with their knowledge and skills. Moving to Europe temporarily is an opportunity embraced by over 200.000 students and researchers from outside the EU every year. However, far too many of them have to face unnecessary bureaucratic hurdles. Current rules for obtaining a student visa or a residence permit are often complex and unclear; procedures can be lengthy and vary considerably across Member States and moving from one Member State to another can be very difficult or even impossible. This hampers the possibility to provide EU countries with a greater pool of talent and reduces the appeal of the EU as a world centre for excellence.

Today the Commission proposed to make it easier and more attractive for non-EU national students, researchers and other groups to enter and stay in the EU for periods exceeding three months. New legislation will set clearer time limits for national authorities to decide on applications, provide for more opportunities to access the labour market during their stays and facilitate intra-EU movement.

“Coming to the EU for research or study is far more difficult than it should be. We have to remove these obstacles to



make the EU more open to talents. Such mobility benefits the EU and our economy through the circulation of knowledge and ideas.” said EU Commissioner for Home Affairs, Cecilia Malmström.

“Knowledge is power, as the saying goes: it is vital that we attract the brightest and best researchers and students because they contribute to a successful knowledge economy in the EU. Our aim through the Marie Curie Actions and new Erasmus for All programme is to make Europe the destination of choice for higher education, research and innovation,” said Androulla Vassiliou, Commissioner for Education, Culture, Multilingualism and Youth.

Experience with the implementation of current legislation has shown that Member States were not able to fully address the difficulties that applicants face when wanting to come to the EU to study or conduct research. The Commission is now proposing to set clearer, more consistent and transparent rules across the EU. The two current Directives on Students and Researchers will be modified and replaced by a single new Directive, which will improve:

- **Procedural guarantees**, in particular through a 60-day time limit for Member States' authorities to decide on an application for a visa or residence permit, which will make the application process more straightforward and transparent.
- **Intra-EU mobility and transfer of skills and knowledge**. Simpler and more flexible rules will increase the possibility for researchers, students and remunerated trainees to move within the EU, which is particularly important for students and researchers enrolled in joint programmes. Family members of researchers will also be granted certain mobility rights.
- **Access to the labour market**. During their studies, students will be allowed to work for a minimum of 20 hours per week so that they can support themselves adequately and contribute economically. Researchers and students will also be able to remain for a period of 12 months under certain conditions on the territory after finalisation of their studies/research to identify job opportunities or set up a business. This will not amount to an automatic right to work, as granting a work permit remains a national responsibility.
- **The overall protection of additional groups of non-EU nationals**, such as au pairs, school pupils and remunerated trainees, who are not covered by the existing EU legislation.



Next steps

The proposed Directive which is presented in the form of a recast now needs to be discussed and agreed upon by the European Parliament and the Council of the EU. The Commission hopes for the new rules to take effect as of 2016.

The overall picture at a glance

Despite the current economic downturn and the rising unemployment levels, many EU Member States still struggle to fill skilled labour positions. There is evidence that this struggle is going to persist during the decade ahead for both economic and demographic reasons.

One of the problems is that the EU is not able to attract the workforce it needs while other countries worldwide are doing much better when it comes to making it more appealing for these talents to join them at the earlier stage of universities studies and research projects. It is therefore in the EU's own interest to become more attractive for foreign students and researchers and to increase its appeal as a world centre for excellence. More exchange students and international scholars will lead to economic growth, spur innovation and lead to more jobs in the long run.

In 2011, around 220,000 non-EU nationals entered the EU for the purposes of studies, pupils exchange, unremunerated training or voluntary service¹. The highest number of non-EU nationals arrived for the purpose of education and studies. In 2011, the countries which received the highest number of students were France (64,794), Spain (35,037), Italy (30,260), Germany (27,568) and the Netherlands (10,701).

The same year around 7 000 non-EU nationals arrived for purposes of research in the 24 EU Member States covered by the data; mostly in France (2,075), the Netherlands (1,616), Sweden (817), Finland (510) and Spain (447)².

Today, the European Migration Network (EMN) run by the Commission also publishes a **Study on Immigration of International Students to the EU**. It provides a sound analytical overview and statistical information on the immigration and mobility policies of Member States and of their national strategies to promote Europe as an attractive destination for international students.



Useful Links

MEMO/13/281
National reports on immigration of International students to EU Member States
Cecilia Malmström's website
Follow Commissioner Malmström on Twitter
DG Home Affairs website
Follow DG Home Affairs on Twitter
The EU Immigration Portal

Vassiliou welcomes launch of first pan-European university MOOCs (massive open online courses).

Partners in 11 countries have joined forces to launch the first pan-European 'MOOCs' (Massive Open Online Courses) initiative, with the support of the European Commission. MOOCs are online university courses which enable people to access quality education without having to leave their homes.

Around 40 courses, covering a wide variety of subjects, will be available free of charge and in 12 different languages. The initiative is led by the European Association of Distance Teaching Universities (EADTU) and mostly involves open universities. The partners are based in the following countries: France, Italy, Lithuania, the Netherlands, Portugal, Slovakia, Spain, UK, Russia, Turkey and Israel. Detailed information about the initiative and the courses on offer is available on the portal www.OpenupEd.eu.

Androulla Vassiliou, European Commissioner for Education, Culture, Multilingualism and Youth, welcomes the new initiative: "This is an exciting development and I hope it will open up education to tens of thousands of students and trigger our schools and universities to adopt more innovative and flexible teaching methods. The MOOCs movement has already proved popular, especially in the US, but this pan-European launch takes the scheme to a new level. It reflects European values such as equity, quality and diversity and the partners involved are a guarantee for high-quality learning. We see this as a key part of the Opening up Education strategy which the Commission will launch this summer."

Professor Fred Mulder, chair of the EADTU task force on open education and UNESCO chair in Open Educational Resources, is leading the initiative. "We have much to offer in Europe by fully exploring the possibilities created by the MOOCs revolution, but with a broader perspective on opening up education. Our aim is to respond to the need for a more accessible system of higher education, which puts the learner at the centre. The European MOOCs will provide quality, self-study materials and a bridge between informal learning and formal education. Some of the courses attract formal credits which will count towards a degree, for example. And we cherish diversity both in language and in culture," adds Mulder, who was Rector of the Open Universiteit in the Netherlands from 2000 to 2010.

EADTU President Will Swann says: "For decades, the open universities of Europe and their partners have brought the highest quality of teaching and learning to all who seek it. The pan-European MOOCs initiative shows our collective

passion to further innovate. We look to expand with a growing range of courses from the launch partners, and we will welcome new partners from across the world who share our vision and practice of flexible, responsive higher education."



Background

Commissioner Vassiliou, together with Prof Mulder and EADTU President Swann, will launch the European MOOCs initiative in a webcasted international press event hosted by the Open Universiteit in the Netherlands on Thursday 25 April (11:00-12:00 CET). They will be joined by Xavier Prats Monné, Deputy Director-General of the Commission's Education and Culture directorate. You can view the event online: www.ou.nl/moocs. Media wishing to participate in the chat should register in advance on this site.

What about the courses?

Courses range from mathematics to economics, e-skills to e-commerce, climate change to cultural heritage, corporate social responsibility to the modern Middle East, and language learning to writing fiction. Each partner is offering courses via its own learning platform and at least in its home language. The current choice is from the 11 languages of the partners (see list below), plus Arabic.

Courses can be taken either in a scheduled period of time or anytime at the student's own pace. They typically involve from 20 to 200 hours of study. All courses may lead to recognition: a completion certificate, a so-called badge, or a credit certificate that may count towards a degree. In the latter case, students have to pay for the certificate, with the cost ranging from € 25 to € 400, depending on the course size (the hours of study involved) and institution.

Launch partners and contacts

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The informal partnership allows institutions to collaborate to offer access to MOOCs across Europe and beyond.

EADTU members who are planning to join the initiative include: Open University of Cyprus, DAOU/Aarhus University (DK), Tallinn University (EE), Universitat Oberta de Catalunya (ES), FIED Fédération Interuniversitaire de l'Enseignement à Distance (FR), Hellenic Open University (GR), AGH-University of Science and Technology Centre of eLearning (PL), Maria Curie Skłodowska University (PL), and University of Ljubljana (SI).

Other potential partners interested in joining should contact EADTU.

What is Opening up Education?

Commissioner Vassiliou, together with Vice-President Neelie Kroes, responsible for the digital agenda, will launch the Commission's new Opening up Education initiative this summer. It aims to promote the use of ICT and open educational resources at all levels of education in order to provide current and future generations of students with the skills they need.

European Association of Distance Teaching Universities

EADTU is an institutional network of Europe's ten open and distance/online universities, 14 national associations of conventional universities organising distance/online education for off-campus students, and two 'dual mode' – campus-based and online – universities. EADTU's activities are supported through the Jean Monnet action, part of the EU's Lifelong Learning Programme.

For more information

European Commission: Education and training
EADTU: www.eadtu.eu
Androulla Vassiliou's website
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Celestino Flórido QUARESMA,
Member of the EMC

Being an Engineer

FEANI represents the interests of over 3,5 million professional engineers in Europe. However, on top of defending the interests of engineers, it is our duty to demand of the engineers the highest level of quality in the engineering work that they perform. We have to show society that, far beyond our own personal professional interests, we are concerned with the quality of life in the future, in Europe and around the world.

We are concerned with major national and global issues such as those relating to sustainability, environment and quality of life on the planet. It is, moreover, important to show society that engineers are the best strategic resource for promoting development in a country. Engineering has to give itself a much higher profile in society. This must be our path and our goal.

Engineering changes and adapts Nature in order to optimize the quality of life for humans. Engineering requires scientific training, ingenuity, creativity and innovation.

The training of an engineer should be founded on the basic sciences of Mathematics, Physics, Chemistry, Biology and Geology, and later on, the more specialised sciences, which should include such disciplines as Topography, Applied Statics, Mechanics of Deformable Solids, Dynamics, Thermodynamics, Electricity, Science of Materials, Strength of Materials, General Hydraulics, Hydrology, Soil and Rock Mechanics, Theory of Structures, Traffic Engineering, etc.. These should ideally be complemented by Computing, Economic Concepts, Management, Sociology, Psychology, some principles of Law, and humanities disciplines, dealing with Ethics and Moral Obligations! In addition, there are also subjects at the level of Design, Management, Planning and Production.

Teachers at university level are usually evaluated and graded more for their work in scientific research than for their teaching activity; more for the number of scientific articles they publish and the number of times these are cited by other articles than for the efficiency and quality with which they transmit knowledge to students through lectures, support students' work or even socialize with them. Naturally,

therefore, the university lecturer has a tendency not to develop contacts with students and, ultimately, he or she plays a very small role in their training. There are engineering lecturers who have never actually worked as an engineer either at the level of projects or in production. Accordingly, students find it very difficult to get a taste of the profession that they have chosen. Engineering students expect to see in their lecturers engineers of excellence. However, instead, they find scientists, some of a very high level, but often far from the kind of engineering which designs, manages, plans and produces!

Engineering lecturers need to have some experience, some feeling of what it is to "Be an Engineer".

On the other hand, we should not accept the common criticism that engineering training should be more practical, with more components related to work and projects! It happens, for example, that young civil engineers are, sometimes, criticized just because they do not know what a "gable" is or because they do not know some other items of construction-related jargon. We must not confuse the superficial information with the scientific training of «knowing how to think» and «knowing how to do»!

Universities should teach both the basic sciences and engineering sciences to a high level of quality. We need these sciences not only to understand what is in the engineering books but also to study new engineering problems. Techniques and ways of working can easily become outdated, but knowledge and scientific training need never become outdated. It is with this background that we innovate, that we develop new techniques, new solutions and new methods.

When a construction company hires an engineer, they are not looking for a foreman who only solves practical problems. What is required is someone capable of creating and managing information systems and, based on analysis, planning production. The point is that it is the engineer who knows how to interpret the information quantitatively and qualitatively, but with the intuition and the sensitivity that scientific knowledge provides in support of his or her decisions. The point is that it is the engineer who knows how to use the information to justify the decisions, processes and techniques that constitute the production and supply, while introducing appropriate innovations.

In an increasingly open economy in which competitiveness and wealth creation are grounded in knowledge and the capacity for innovation, the training of engineers is a key aspect for society to consider. This training is extremely valuable as its influence in the workplace is extremely effective and lasting. In the transition from university to professional life, an engineer needs to be equipped with a store of knowledge and skills as well as cultural and ethical values, adjusted to the demands of the situations in which today's engineers work. In view of scientific progress and constant technological innovation, when speaking of training we are also necessarily talking about life-long learning and continuous professional development. We have to teach our young engineers at an early stage to have a positive attitude

towards life-long learning and continuous development of their engineering skills and abilities. At university we learn how to learn and no one is trained in a single event. We must be students all our lives.

As we can see in our day-to-day lives, the changes that the world is undergoing today are dizzying and have no historical precedent. Therefore, today, innovation is crucial for any country. The maintaining of old procedures or forms of organization and the fear of trying out and evaluating new procedures will become very costly. Engineering means innovation and innovation means doing things better, in less time and at lower cost. In design or work processes, each case is unique and it is always necessary to create new solutions.

And we are also speaking about innovation in management and labour relations. In short, we are speaking about new ways of addressing issues and problems, whatever and wherever those issues and problems may be.

Engineers are, really, the best strategic resource for promoting development in any country.

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4th European Innovation Summit : A Great Success

Participants agreed that innovation is the best means to recover from the crisis

Brussels (15 October 2012) – Knowledge4Innovation (k4i) organised the 4th European Innovation Summit on 9 and 10 October. The summit brought together 500 stakeholders in a series of heated debates on how to improve the innovation eco-system in Europe. Participants largely agreed that, given their potential as a major driver of jobs and growth, the relevant EU policies and programmes in support of innovation ought to be revised. In order to better achieve this objective, it is crucial that all efforts, from the European to the local levels, are aligned. It is no surprise that, to a large extent, the discussions related to Horizon2020, the new Cohesion Policy Framework, the Programme for the Competitiveness of Enterprises and SMEs (COSME) and the Multiannual Financial Framework (MFF), which are currently under debate in the European Parliament.

Press Conference, 10 October (from left to right): **Richard Granger**, President of the European Office, Technology Partners Foundation, **Maria da Graça Carvalho**, MEP, K4I Governing Board Member, **Lambert van Nistelrooij**, MEP, Chair of the K4I Governing Board, **Jerzy Buzek**, MEP, K4I Governing Board Member, **Friedhelm Schmider**, Director General of the European Crop Protection Association, K4I President.

Members of the European Parliament, who are dealing with innovation-related Commission proposals, contributed to the debate, including **Lambert van Nistelrooij**, Chair of the K4I Forum of the European Parliament and key rapporteur for the Cohesion Policy 2014-2020 as well as co-negotiator for Horizon 2020, **Ioannis Tsoukalas**, shadow rapporteur for the regulation establishing the



European Institute for Innovation and Technology (EIT), **Maria Da Graça Carvalho**, rapporteur for the Specific Programme Implementing Horizon2020, **Christian Ehler**, rapporteur for Horizon2020 Rules for Participation, **Kent Johansson**, shadow rapporteur for Horizon2020, **Ivailo Kalfin**, co-rapporteur on the Multi-Annual Financial Framework (MFF) and **Jan Olbrycht**, rapporteur on the European Regional Development Fund (ERDF). In addition, members of the K4I Forum Governing Board such as **Judith Merkies**, rapporteur for the Innovation Union, Danuta Huebner, Chair of the REGI Committee, and **Edit Herczog**, Member of the Budget Committee, also participated.

Overall, more than 20 Members of the European Parliament, and more than 60 speakers engaged in discussions with some 400 participants during 12 single events.

Participants reemphasized that innovation is the backbone of Europe's economy and the key to recovering from the economic crisis. Europe should not only promote investment in research, but also ensure that the results are turned into innovative services and products and taken up on the market.

K4I and its partners are proud to ascertain that, since the first Summit, the discussions have shifted towards innovation related aspects of the 'research value chain'. In addition, there is a broad consensus that people, such as researchers, entrepreneurs, civil servants, and society at large play a significant role when it comes to innovation.

The integration of research, technology development and commercialisation is a major and very welcome shift in thinking in recent years. The intentions to connect Horizon2020, the Competitiveness and Innovation Programme (CIP) and structural funds in the next funding period, with a significant component of structural funds aimed at innovation, will greatly help Europe's innovation performance. It is important that current austerity thinking does not undo these good intentions.

MEP Jerzy Buzek, K4I Forum Governing Board Member, encouraged participants: *"In the EU we should build bridges and create synergies, as the 4th European*

Innovation Summit calls for. This will allow us to have a modern and competitive economy, which creates new jobs and offers stability and prosperity. Let us be innovative every single day, in every domain. Let us remind ourselves and let us remind others that innovation is not only a means of action, it is also a state of mind."

MEP Lambert van Nistelrooij, Chair of the K4I Forum Governing Board, emphasised: *"We need to improve the communication between the different actors and build bridges throughout all levels to make Europe more innovative and bring us out of the crisis."*

K4I thanks the partners and participants of the 4th European Innovation Summit and invites all stakeholders to join the debate on the future of innovation in Europe organised by K4I.



Website

http://www.knowledge4innovation.eu/EIS/SitePages/eis2012_Home.aspx

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First ENAEE Conference, November 2012, Porto, Portugal



On the 12th and 13th November 2012, ENAEE held its first International Conference, in the Faculty of Engineering of the University of Porto (Portugal). The conference hosted 90 participants from 20 countries. The participants were mainly engineering academics interested in accreditation standards and procedures (especially Portugal, Spain and Belgium), representatives of European

accreditation agencies, agencies from abroad (ASEAN, Washington Accord, International Engineering Alliance), and members of ENAEE.

The various sessions consisted of presentations by accreditation agencies on their accreditation practices, views on accreditation from the universities, international guests' contributions (especially the International Engineering Alliance and the Washington Accord).

A final session, chaired by Prof. G. Augusti, former president of ENAEE, consisted of a plenary debate on the future of ENAEE and the EUR-ACE label. Among the issues raised were: the involvement of ENAEE in the 3rd cycle (doctorate); the potential need to differentiate standards for the bachelor degree (professional and theoretical types); coordination in national contexts between evaluation agencies and engineering accreditation agencies; the development of EUR-ACE outside Europe; the relationship of ENAEE with the International Engineering Alliance and the Washington/Sydney Accords.

BEST comes under the roof of FEANI

Mário NZUALO, President of BEST 2012-2013

The leaders of the Board of European Students of Technology (BEST) gathered in Valladolid (Spain) for its 31st General Assembly during the period 18th - 26th April.

On the 19th of April, the opening ceremony started with keynote addresses from our esteemed guests - the President of FEANI, Mr. Rafael ALLER, along with the Mayor of the City of Valladolid as well as representatives of the University of Valladolid and the Government of Spain. During the same day, BEST welcomed 300 participants to the first edition of BEST Career Day, an international career fair open to any student from our member universities. BEST Career Day served as a platform for leading companies - such as Veolia, Whirlpool, P&G, Schlumberger - to find talented young engineers interested in their career opportunities.

This General Assembly marked the 24th anniversary of BEST and the start of our quarter of century celebrations. As with any mature organization, this landmark invited us to make plans for what lies ahead. Yet we are aware that to harness the future, we should first understand where do we come from.



BEST was founded in 1989 after a couple of students coming from multiple technical universities identified the need to facilitate European exchanges that would allow lowering cultural barriers. At that time the connections among the different European countries were just starting to be created and we wanted to play a relevant role in helping the young acquire an international mind-set. Our founders also realised that the information age would disrupt the Higher Education paradigm. As a result, they saw BEST as the proper vehicle to enable the personal and professional development of students through new and easy ways of practical learning.

24 years have passed and we are still faithful to our core beliefs though we did not allow them to keep us from innovating in the services we provide. For the past 22 years we have been organising short courses, which nowadays allow 2000 students to learn about technology in any of 95 European technical universities. For the past 17 years we have been shaping Engineering education by giving students the opportunity to share their opinion on topics concerning new teaching methods, curriculum accreditation as well as mobility of students and engineers. This year we will host the fifth edition of the biggest pan-European engineering competition that challenges over 6000 students to use their technical, social and creative competences. BEST Career Day, our online career tools, and the dozens of career events we organise at our universities, allow students to get in contact with leading companies and employers to meet talented graduates.

We have come a long way since 1989, but our work is not over yet and we still have an important role to play in the coming years. Providing opportunities for mutual understanding is still relevant since the world is becoming more globalised and frictions between some societies still exist in Europe. Offering possibilities of personal and professional development to students is still important since the world moves at a fast pace and they need to be prepared for professions that don't exist now, to be able to work in jobs distinct from their academic background or to create their own innovative ventures. Many challenges lie ahead but I am certain that we will succeed if we, like Victor Hugo, abide to the principle: "Change your opinions, keep to your principles; change your leaves, keep intact your roots".

Valladolid was the Forum where our leaders discussed important organisational topics and set the vision for what BEST should do in the future. During the General Assembly, the members of BEST approved the transfer of the BEST Headquarters from Grenoble to Brussels under the roof of FEANI. I am sure that the fruitful 7-year-long cooperation between FEANI and BEST will further strengthen the synergies between young future Engineers and the professional Engineers.

Second ENAEE Conference

EUR-ACE® - The European Quality Label for Engineering Degree Programmes *Impact and Perspectives*

to be held at
KU Leuven, Belgium
Mon and Tues, 16th/17th September 2013



European Network for Accreditation of Engineering Education (ENAEE)



Announcement and Call for Papers The second ENAEE Conference will take place in the KU Leuven on Mon/Tues 16th/17th September 2013. It is being held in conjunction with the SEFI Conference to mark the Fortieth anniversary of the establishment of SEFI. ENAEE has been established now for seven years and has so far authorised nine accreditation agencies to award the EUR-ACE® quality label to their accredited engineering programmes (currently about 1,200 labelled programmes); several other agencies are currently being evaluated for authorisation. This conference will focus on experience to date and on many issues to do with programme accreditation.

The topics to be covered will include:

- The value of the EUR-ACE label to graduates, engineering departments, employers and accreditation agencies
- Accreditation and professional mobility in Europe and worldwide
- The accreditation standards and procedures as viewed by the educational institutions

- Soft skills in engineering degree programmes: implementation of EUR-ACE standards, student learning outcome assessment

- New trends in engineering education and their impact on accreditation standards

Contributions, in English, are invited on these topics. Abstracts should be submitted to info@enaee.eu no later than **Friday 28th June 2013**. Guidelines on paper format are provided on the ENAEE website www.enaee.eu.

A conference dinner will take place on the evening of Monday 16th September.

Conference Fee (excl. conference dinner):
Early Bird Fee €200, until 20th June 2013.
€250, after 20th June 2013.

www.enaee.eu

Upcoming events

FEANI Central European Group

22-23 August 2013
Maribor, Slovenia

World Engineers Summit (WES) 2013 - Innovative and Sustainable Solutions to Climate Change

www.wes2013.org
9-15 September 2013
Marina Bay Sands, Singapore

ENAEE European Network for Accreditation of Engineering Education

- **Annual Conference** - www.enaee.eu/archives/5690
16-17 September 2013
Leuven University, Belgium

- **General Assembly Meeting**
4 December 2013
Brussels, Belgium

FEANI European Monitoring Committee (EMC)

- **Brussels, Belgium**
19-20 September 2013

- **5-6 December 2013**
London, UK

FEANI Executive Board and General Assembly Meetings

3-5 October 2013
Skopje, FYRO Macedonia

WFEO World Congress on Engineering Education Impact of Globalization on Engineering Education

24-25 October 2013
Beirut, Libanon



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