



INFORMATION-TECHNOLOGY PROMOTION AGENCY, JAPAN

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Study on EU Efforts on IT / Security Human Resource Development

Initiatives, Strategies, Programs
IT/Security Education and Training
Moral Improvement Measures of Individuals
IT/Security Consciousness Improvement
IT/Security Related Certification

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INFORMATION-TECHNOLOGY PROMOTION AGENCY, JAPAN



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Management Summary

This document presents the results of the “Study on EU Efforts on IT / Security Human Resource Development”. It provides an overview of the current status of human resource development in the EU region focusing on the area of information technology and security. Major items that have been investigated include the following aspects:

- general issues and aspects of IT security human resource development,
- legislation framework,
- educational programs and initiatives,
- education, contents, acquisition rate, certification and examination,
- consciousness and moral improvement measures, and
- examples of national efforts on IT security human resource development.

The IT sector is one of the most important growth sectors in Europe with an increasing demand for the quality assurance of IT professionals. Human resource development can be considered as the required set of means for education, training, higher and advanced vocational education and training in order to have the right people with the required skills and competences at the right place for doing their work in their working environments. This general principle holds true for all sectors of the society including the following areas:

- governmental and public organizations and administrations,
- educational and research institutions, e.g. schools, professional colleges, universities and research organizations,
- businesses, developers, manufacturers, vendors, companies, banks, and the
- private area.

In the context of IT/security human resource development it is important to know the specific requirements of IT security that need to be fulfilled in order to perform IT security tasks and roles for specific areas. Examples of these activities and professions are managers, analysts, developers, coordinators, advisors, administrators, or technicians.

Education, training, and advanced vocational training can be achieved by many sources and actors of human resource development as for example: education at schools, colleges, polytechnics, academies, and universities, training of staff within companies or by external training services, advanced vocational training within companies, by chambers of commerce or by governmental services, participation of individuals in special seminars or courses on IT/security, and by private activities of individuals that make use of educational information about IT/security provided

in the media, the Internet, in special commercial training courses, and in special literature.

The European initiative i2010 provides the framework for main activities and developments in the European information society and media sectors for the period 2005 until 2010 including political instruments related to human resource development. The initiative i2010 has been started under the renewed Lisbon strategy in order to improve the efficiency of the whole economy through the wider use of Information and Communication Technologies (ICT). In this context the role of the EU regarding human resource development is to contribute to the development of quality education by stimulating the cooperation between its member states by means of a broad range of actions, including the promotion of the mobility of citizens, the launching of joint educational programs, the establishment of educational networks, and the exchange of information. All these activities fall under the headline of life-long learning for all citizens of the EU. Specific actions related to human resource development and ICT that are performed under the i2010 initiative include the following issue areas:

- combination of regulatory and technical instruments for the creation of a modern and market-oriented regulatory framework for the digital economy,
- development of trust, privacy and security for a secure European information society including cyber crime, spam and malware (= malicious software),
- review of e-business policies and trends, and of the consumer protection regulatory framework, taking into account new technical developments,
- definition of necessary ICT policy measures and their adoption by enterprises, and the
- development of new patterns of work that enhance innovation and the adaptation to new skill needs.

The development of a European Qualifications Framework (EQF) has been another main goal of the EU. The main objective of EQF is to promote the transfer and recognition of qualifications of individual citizens, by linking qualifications systems at the national and sectoral levels. EQF shall act as a translation device as one of the prime EU mechanisms intended to facilitate the mobility of citizens for work and study. EQF is used for example in the Socrates-Erasmus program, the European Credit Transfer System, and in Europass. EQF can be considered as the new means to understand qualifications across the European region.

An example of national efforts in the area of IT/security human resource development is the initial German concept for the reorganization of advanced vocational training in the IT sector. This advanced IT training system focuses on main activities and objectives such as recognition of vocational and professional training, implementation of workflow embedded training, acquisition of social and behavioral skills, qualification at working places, creation of transparency of qualifications, creation of efficient training structures, definition of career profiles of

the advanced IT training system, or certification of specialists, and the examination of professionals.

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Abbreviations and Acronyms

AEGEE	Association des E tats G énéraux des E tudiants de l' E urope, European Students' Forum, EU
B-IT	Bonn-Aachen International Center for Information Technology, GER
BIBB	Bundes I nstitut für B erufsbildung, Federal Institute for Vocational Education and Training, GER
BITKOM	Bundesverband I nformationswirtschaft, T ele k ommunikation und neue Medien, GER
BMBF	Bundes m inisterium für B ildung und F orschung, Federal Ministry of Education and Research, GER
BMWA	Bundes m inisterium für W irtschaft und A rbeit, Federal Ministry for Economics and Labor, GER
BVDW	Bundesverband D igitale W irtschaft, Federal Association Digital Economy, GER
CAST	Competence Center for A ppplied S ecurity T echnology, GER
CEDEFOP	Centre E uropéen pour le D éveloppement de la F ormation P rofessionnelle, European Centre for the Development of Vocational Training, EU
CISM	Certified I nformation S ecurity M anager
CISSI	Commission I nterministérielle pour la S écurité des S ystèmes d' I nformatique, joint ministerial commission for information systems security, FRA
CISSP	Certified I nformation S ystems S ecurity P rofessional, USA
CQAF	Common Q uality A ssurance F ramework, EU
CV	Curriculum V itae
DFES	Department for E ducation and S kills, UK
DTI	Department of T rade and I ndustry, UK
DZI	Darmstädter Z entrum für I T S ecurity, Darmstadt Center for IT Security, GER
EC	European C ommission
ECTS	European C redit T ransfer S ystem
EENEE	European E xpert N etwork on E conomics of E ducation
EFTA	European F ree T rade A ssociation
EIT	European I nstitute of T echnology
ENISA	European N etwork I nformation S ecurity A gency
ENQA	European N etwork for Q uality A ssurance in H igher E ducation
EQF	European Q ualifications F ramework, EU
ESF	European S cience F oundation
ESIB	European S tudent I nformation B ureau
ESN	Erasmus S tudent N etwork, EU
ETF	European T raining F oundation
ETV	European T raining V illage
EU	European U nion
EUA	European U niversity A ssociation
EuroISPA	European I nternet S ervice P roviders A ssociation

Eurostat	Eurostat , the Statistical Office of the European Communities
GPF	Good Practice Framework , EU
I ³ L ³	International Institute in Long Life Learning , GER
ICT	Information and Communication Technologies
IDABC	Interoperable Delivery of European e-Government services to public Administrations, Businesses and Citizens
IPA	Information-Technology Promotion Agency , JAP
ISACA	Information Systems Audit and Control Association
(ISC) ²	International Information Systems Security Certification Consortium Inc.
ISO	International Standardization Organization
IST	Information Society Technologies , EU
ITC	International Trade Center
ITO	Information Technology Transfer Office , GER
KA-IT-Si	IT Security Initiative of the Karlsruhe Region , GER
NARIC	National Academic Recognition Information Centers , EU
NQF	National Qualifications Framework
OECD	Organization for Economic Cooperation and Development
OJEU	Official Journal of the European Union
SIT	Fraunhofer Institute for Secure Information Technology
SME	Small Medium Enterprises
SSCP	Systems Security Certified Practitioner
SWS	Semester-Wochen-Stunden , credit hours, GER
TEMPUS	Trans-European Mobility Programme for University Studies
TISP	TeleTrust Information Security Professionals , GER
TUD	Technical University Darmstadt , GER
UN	United Nations
VET	Vocational Education and Training , EU
WTO	World Trade Organization

1 Introduction

This document presents the results of the “Study on EU Efforts on IT / Security Human Resource Development”. It provides an overview of the current status of human resource development focusing on the area of IT security in the EU region. The style of this document is a high level description of the efforts done at the EU level and at the national level of member states. Major items that have been investigated include the following aspects:

- current status of security education,
- moral improvement measures of individual users,
- security consciousness improvement measures,
- categories of security related certification,
- typical contents of certification and/or examination, and
- acquisition rate of certification and examination.

The topics of this document are “Legal Framework for Education”, “Initiatives, Strategies and Programs for IT/Security Education and Training”, “Moral Improvement Measures of Individuals”, “IT/Security Consciousness Improvement Measures” and “IT/Security Related Certification”.

The document is structured into chapters on

- general issues and aspects of human resource development,
- EU initiatives, strategies and organizations,
- programs,
- educational measures,
- security measures, and on
- examples of national activities.

The chapter on “General Issues and Aspects of Human Resource Development” gives an introduction into the objectives, roles and importance of IT security human resource development.

The chapter on “EU Initiatives, Strategies and Organizations” provides information about the i2010 initiative, the EU strategies developed at the Lisbon and Bologna meetings, and about EU organizations such as the European Center for Vocational Education and Training, the European Training Foundation, the European Science Foundation, and the European Institute for Technology.

The chapter on “Programs” describes specific actions that have been undertaken in the area of human resource development by the launching of a set of programs as for example Socrates, Comenius, Erasmus, Erasmus-Mundus, Grundtvig, Leonardo da Vinci, Tempus or Jean Monnet.

The chapter on “Educational Measures” summarizes main goals and activities at the EU level related to concrete educational measures such as the European

Qualifications Framework, the European Credit Transfer System, Europass, Education and Training, Lifelong Learning, and eLearning.

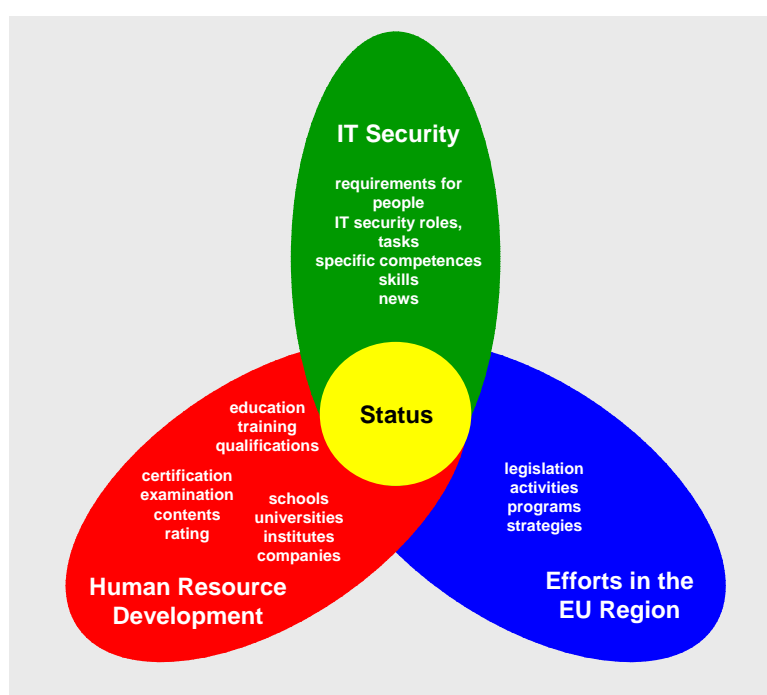
The chapter on "Security Measures" describes main goals and activities at the EU level related to specific security measures that have been developed at the EU level including "Increase of Trust and Confidence of Consumers", "Dialogue, Partnership and Empowerment", "Illegal Content", "Unwanted and Harmful Content", "Awareness Raising", and "Safer Internet".

The chapter on "Examples of National Efforts" presents some examples of national non-EU-funded German activities related to human resource development in the IT security area. The selected examples represent activities that have been undertaken in the governmental, industrial, national, educational, commercial and regional sectors.

2 General Issues and Aspects of Human Resource Development

Our approach to perform the “Study on Efforts on IT Security Human Resource Development” was based on aspects of the interrelationships between human resource development, IT security, and EU efforts. The intersection of these three topics provides the current status in the EU region as visualized in Figure 1.

Figure 1: Scope of Human Resource Development



Human resource development can be considered as the required set of means for education, training, and advanced vocational training in order to have the right people with the required skills and competences at the right place for doing their work in their working environments. This general principle holds true for all sectors of the society, such as:

- governmental and public organizations and administrations,
- educational and research institutions, e.g. schools, universities, and research organizations,
- businesses, developers, manufacturers, companies, vendors, banks, and the
- private area.

Education, training, and advanced vocational training can be achieved by many sources and actors of human resource development as for example:

- education at schools, colleges, polytechnics, academies, and universities,

- training of staff within companies or by external training services,
- advanced vocational training within companies, by chambers of commerce or by governmental services,
- participation of individuals in special seminars or courses on IT security, and
- private activities of individuals that make use of educational information about IT security provided in the media, the Internet, and in special literature.

The different types of education and training can be categorized by the following set of properties:

- duration of education and/or training,
- contents of education and/or training,
- contents and rating of examination or certification, and
- achieved qualifications.

The scope of this study is restricted to human resource development for the IT security area. In this context it is important to know the specific requirements of IT security that need to be fulfilled in order to perform IT security tasks and roles. Examples of IT security tasks and roles include the following items:

- IT systems analyst,
- IT systems developer,
- software developer,
- database developer,
- user interface developer,
- multi media developer,
- IT project coordinator,
- IT configuration,
- IT quality management coordinator,
- IT test coordinator,
- IT technical writer,
- business systems advisor,
- e-marketing developer,
- e-logistic developer,
- knowledge management,
- IT security coordinator,
- network developer,
- industrial IT systems technician,
- security technician,
- component technician,
- IT service advisor,
- IT product coordinator,
- IT sales advisor,
- network administrator,
- IT systems administrator,
- database administrator,
- web administrator,
- business systems administrator,
- certified IT systems manager,
- certified IT business manager,

- certified IT business consultant,
- certified IT marketing manager,
- certified IT technical engineer, and
- certified IT business engineer.

The situation of IT/security human resource development at the international level can be characterized by an increasing diversification of IT/security education and training products and services that lead to a loss of transparency of methods, contents, and quality contradicting the general demand for international comparability. In this context the independent control of education and certification methods, as well as the integration of examinations into international recognition systems is becoming of greater importance.

The international standard “General Requirements for Bodies operating Certification of Persons” [ISO/IEC 17024] that specifies general quality management requirements for authorities, that in turn certify persons, is an example of linking certification authorities to national and international accreditation systems. Quality assurance is achieved by the economical, organizational and personal independence of involved organizations and actors with a clear separation of the main tasks of qualification, assessment, certification, and accreditation.

Examples of IT/security education products complying with the requirements of ISO/IEC 17024 are the Certified Information Systems Security Professional (CISSP), the Certified Information Security Manager (CISM), the Systems Security Certified Practitioner (SSCP), or the IT security coordinator specialist. Main international organizations that are responsible for IT security human resource development are the Information Systems Audit and Control Association (ISACA) which is a professional organization for IT security specialists, or the International Information Systems Security Certification Consortium Inc. (ISC)².

3 EU Initiatives, Strategies and Organizations

The definition of legal and organizational framework conditions for human resource development is a major task of politics that is required to achieve its acceptance by the industry and the society. EU efforts in this area include legislation, initiatives, programs and strategies for human resource development.

3.1 European Initiative i2010

The European initiative i2010, entitled "A European Information Society for Growth and Employment" has been launched by the European Commission in June 2005. It provides the framework for main activities and developments in the European information society and media sectors for the period 2005 until 2010 including political instruments related to human resource development. The initiative i2010 has been started under the renewed Lisbon strategy (details see section 3.3.2) in order to improve the efficiency of the whole economy through the wider use of Information and Communication Technologies (ICTs).

In this context higher education plays a major role in the development of both human beings and modern society as it enhances social, cultural and economic development, active citizenship and ethical values. However, it should be noted that at the European level, education in general and higher education in particular are not subjects of a common European policy. Instead, the competences for the content and the organization of studies remain at the national level of the member states.

The role of the European community regarding human resource development is regulated in article 149 of the treaty of Nice that has defined the tasks of the community in this area. The European community shall contribute to the development of quality education by stimulating the cooperation between its member states by means of a broad range of actions, including the promotion of the mobility of citizens, the launching of joint educational programs, the establishment of educational networks, the exchange of information, and the teaching of languages of the EU. The treaty also includes a commitment to promote life-long learning for all citizens of the EU.

The different strategies and programs that have been developed and implemented by the EU are described in the following chapters.

3.2 European Organizations

Several European organizations have been established in the EU region that are operating in the area of human resource development.

Concerning students associations, the European Commission (EC) has supported the creation of a European Liaison Group in order to improve information, consultation and cooperation between them and the commission. Members of this group are the organizations European Student Information Bureau (ESIB), Association des Etats Généraux des Etudiants de l'Europe, (AEGEE, European Students' Forum), and the Erasmus Student Network (ESN).

The EC is directly involved in the academic community by the organizations European University Association (EUA) which represents the university sector, and by EURASHE which represents the sector of non-university higher education institutions. The European Expert Network on Economics of Education (EENEE) has provided an "Analytical Report" [EENEE AR] regarding political aspects for the EC.

3.2.1 European Center for Vocational Education and Training

The Centre Européen pour le Développement de la Formation Professionnelle, (CEDEFOP, European Centre for the Development of Vocational Training) is a European agency with the task to promote the development of Vocational Education and Training (VET) in the EU. VET is a key element for employment, social inclusion and the competitiveness of the EU. CEDEFOP is organizing seminars in the area of VET, and it provides up-to-date information on vocational education and training in Europe on its website called European Training Village (ETV).

3.2.2 European Training Foundation

The European Training Foundation (ETF) is an agency of the EC, established in 1990 by a council regulation to contribute to the development of the education and training systems of the EU partner countries (see [CR 1360]). ETF became already operational since 1995. The tasks of ETF include the following set of activities:

- assistance of partner countries in developing quality education and training systems, and in putting them into practice,
- support for countries regarding the development of people's skills and knowledge, and
- cooperation with partner organizations to promote knowledge sharing and expertise development.

Currently the EC is preparing a communication on the ETF work to the European parliament, the council and to the economic and social committee, taking into account main recommendations of external evaluators of the ETF work. The Italian Ministry of Foreign Affairs has recently signed a new framework agreement for cooperation with the ETF for the period 2006-2008 to support the ETF project on learning processes.

The activities of ETF are described in their annual work programs that include a series of projects (see [ETF PRO]) performed in the partner countries to facilitate the development of vocational education and training, and employment systems.

ETF is funded by operational budgets for the EU's external relations programs. ETF is a resource for each of these programs. ETF supports the EC to make its investment in education and training activities in partner countries effective and complying with EU external relations policies. ETF provides advice and project cycle support to various directorates general of the EC.

ETF supports partner countries by providing opportunities for policy learning on reform strategies to policy makers and key stakeholders in the countries. ETF provides advice on vocational education and training policy and innovative approaches in EU and relevant good practice from other partner countries. ETF tries to enable policy makers to integrate their reform efforts within the overall support framework provided by the EU. ETF also supports its partner countries to develop participatory policy development to ensure ownership and sustainability for the reform process. In particular, ETF carries out targeted seminars, facilitates study visits and focus groups to encourage reflection and debate among policy makers, and it supports the development of reliable information and analysis on the reform process.

ETF also works in close cooperation with the EU member states to contribute to the coordination of assistance provided by the EU, its member states and partner countries. ETF seeks to engage the EU member states in its work to help ensure a common and constant focus to enhance the overall impact of EU assistance to partner countries.

3.2.3 European Science Foundation

The **European Science Foundation (ESF)**, established in 1974, is an association of 78 member state organizations devoted to scientific research in 30 European countries in order to promote high quality science at the European level including the following set of activities:

- acting as a catalyst for the development of science by bringing together leading scientists and research funding agencies for the discussion, planning, and implementation of pan-European initiatives,
- promotion of European cooperation in basic research,
- examination and advisory on research and science policy issues of strategic importance,
- promotion of the mobility of researchers and the free flow of information and ideas,
- promotion of cooperation in the use of existing facilities and in the planning and provision of new facilities, and
- planning and management of collaborative research activities.

More details about ESF are provided in the documents "Introduction to the Research Councils, Academies and Funding Agencies" [ESF MEM], and "Overview of the ESF Structure, its Roles and Functions" [ESF SRF].

3.2.4 European Institute of Technology

A first proposal for the establishment of a “European Institute of Technology” (EIT) has been forwarded in 2005 as part of the mid-term review of the Lisbon strategy in a communication to the European council entitled “Implementing the renewed partnership for growth and jobs” (see [ECP EIT]) in order to close the existing gap between higher education, research and innovation. Further steps in order to create the EIT have been specified by the EC in a second communication to the European council on June 2006 entitled “The European Institute of Technology: Further Steps Towards its Creation” [ECC IRPGJ].

The new communication has taken into account the responses from the European council meeting in spring 2006 and the feedback received from the involved parties, the member states and stakeholders. During the consultation process a general agreement for the need of a coordinated effort to increase the capacity in the knowledge area of education, research and innovation for improving the competitiveness in the EU region has been achieved.

The implementation of an integrated strategy to mobilize education, research and innovation towards the Lisbon goals has already been started. Support for research and innovation at the highest levels of excellence is provided by the funding mechanisms of the seventh framework research program and the competitiveness and innovation framework program. The EIT is considered as an integral and complementary part of this strategy with the following tasks and main goals:

- development of a high-profile center of global excellence for high level students and researchers,
- promotion of innovation and research in trans- and inter-disciplinary fields of potential economic interest,
- operation as an autonomous institution with an innovative structural and operational model,
- realization of knowledge communities organized by a bottom up approach under the strategic direction of the governing board, and
- acting as a new operator covering the knowledge triangle education, research and innovation at the European level.

So far the latest EC communication on the roles of EIT does not provide final solutions. Instead it aims to support a more concerted consultation with the member states and stakeholders in the near future in order to finalize the vision and rationale for the EIT.

3.3 Strategies

The goals of the i2010 strategy are defined in the EC communication document “Challenges for the European Information Society beyond 2005” [EC CFEISB]. The strategic topics include the following areas:

- creation of a single European information space,
- promotion of standardization and interoperability, and the
- investment and innovation in research.

Main topics of the i2010 strategy that are related to human resource development are "Education and Training Systems", and "Lifelong Learning".

Recently the EC has expressed a strong need for efficient and fair European education and training systems in its September 2006 communication that stimulates the member states to increase their efforts in order to improve both the efficiency and the equity of their education and training systems. The investment into human resource development is the focus of the Lisbon strategy (details see section 3.3.2) with the aim to create more jobs and growth, and to improve the knowledge, skills and competences of individuals.

In this context a statistical infrastructure capable of collecting appropriate data and mechanisms to assess progress and measure success of the education and training systems of the member states is required. The EC is promoting the improvement of the design and implementation of education and training policies of member states by facilitating the exchange of information, data and best practices through mutual learning and peer reviews. Particular emphasis is put on the development of a culture of evaluation and on exchanges of best practice on the issues raised in the communication.

Recently, the European parliament and the council have established an action program in the field of "Lifelong Learning" [EPCD LLL].

The commission has established a high level group of member states representatives to advise the Commission on the implementation and development of the i2010 strategy. Main tasks of the Group are to discuss strategic ICT policy issues in the context of i2010 and in the wider context of the Lisbon agenda. A current status of the actions under the i2010 initiative is provided in the Annual Report [EC AR06]. This report, based on a review paper of the high level group [EC SWP06], provides an analysis of the first year of implementation of the i2010 initiative and defines further updated actions for the period 2006-2007. It is based on the associated Commission staff working paper, which reviews the i2010 key actions against the background of information and communication technology developments in the EU.

3.3.1 Bologna Strategy

The Bologna declaration [ECM BD99], signed by the ministries for education in June 1999, has established an inter-governmental process with the aim to develop a common European higher education (university) area by facilitating the mobility of people, the transparency and recognition of qualification, the quality and European dimension in higher education, as well as attractiveness of European institutions for third country students. The Bologna declaration includes the following areas and actions:

- harmonized system of academic grades (Bachelor, Master and Doctorate), including the introduction of the diploma supplement, designed to improve international transparency and to facilitate academic and professional recognition of qualifications,

- system regarding the employment market,
- system of accumulation and transfer of credits,
- mobility of students, teachers and researchers,
- cooperation with regard to quality assurance, and the
- European dimension of higher education.

Detailed information on the Bologna strategy can be found on the commission web pages (see Table 5). As far as the EU is concerned, the Bologna process fits into the broader framework of the objectives of the Lisbon strategy [EC LSO06]. So far, the commission has funded trans-national pilot projects related to the priorities that have been fixed at ministerial conferences. The EC cooperates with the national authorities, academic and student networks and associations, with the **E**uropean **N**etwork for **Q**uality **A**ssurance in higher education (ENQA, established in 1999), and the network of **N**ational **A**cademic **R**ecognition **I**nformation **C**entres (NARIC), created by the European commission in 1984. These centers provide authoritative advice and information on the academic recognition of diplomas and periods of study undertaken abroad. A new recommendation on further European cooperation in quality assurance in higher education has been recently adopted (details see [ECR QSA]).

The commission also has supported the creation of European masters qualifications. More information about the Bologna process can be found on the official web pages of the commission that are provided by the UK **D**epartment **F**or **E**ducation and **S**kills (DFES, see Table 5) that offers its services on behalf of the commission.

3.3.2 Lisbon Strategy

The Lisbon strategy, created in March 2000 by the European council, was focused on the development of education and research for economic and social innovation in order to achieve the establishment of a common European education and research space.

The Lisbon strategy has been revised by the European council in March 2005 with new governance architecture for the European economic reform process clarifying the division of responsibility for implementing individual actions of the revised strategy between the member states and the community level. The new strategy and program have been adopted in July 2005 including policy actions such as four regulatory acts, fifteen financing action documents, and fifty three strategic policy documents at the community level (see [EC CLP]).

The new objectives and the strategic goal of the EU can be characterized as follows:

- become the most competitive and dynamic knowledge-based economy in the world, and to be
- capable of sustainable economic growth with more and better jobs, and greater social cohesion.

Further steps of the commission related to human resource development have been the adoption of the communication "Education & Training: the Success of

the Lisbon strategy hinges on urgent reforms" [EC LS03] in November 2003, and the "Approval of Modernizing Europe's Universities" [EC MAU] in May 2006. One aim in this context is the removal of various rigidities and hindrances that Europe's 4000 universities have to cope with. The member states are requested to make better use of the EU's substantial resources of knowledge, talent and energy with immediate actions by means of in-depth and coordinated reform changes.

The new communication from the commission on the modernization agenda for universities [EC MAU] covers all the activities of Europe's universities, from their delivery of education, their research activities, through to their potential as drivers of innovation. The renewed Lisbon strategy contributes to the initiative i2010 that provides a package of proactive policies of the EU for human resource development.

A key priority for the EC was the development of the **E**uropean **Q**ualifications **F**ramework (EQF, see section 5.1), whose objectives are to facilitate the transfer and recognition of qualifications held by individual citizens, by linking qualifications systems at the national and regional levels and enabling them to relate to each other. The EQF is one of the principal European mechanisms intended to facilitate citizen mobility for work and study, e.g. Erasmus (see section 4.1.2), the European Credit Transfer System (see section 5.2) and Europass (see section 5.3).

An overview of the current status of the Lisbon strategy is given in the technical implementation report 2006 that provides a first assessment of the progress made in the implementation of the Lisbon strategy. Further details on the Lisbon strategy are provided by the documents listed in Table 4.

4 Programs

The current series of European education programs will be finished at the end of 2006. New education programs have been launched under the i2010 initiative in the area of "Longlife Learning". The higher education sector and institutions are fully involved in the European initiatives presently on-going in the field of e-learning and in the area of Lifelong Learning (details see [EC ELP] and [EC LLP]). All programs for the areas of general and vocational education that formerly have been undertaken separately shall now be collectively organized. The new program for the period from 2007 to 2013 includes the following educational-related subprograms: COMENIUS (school education), ERASMUS (university education), LEONARDO DA VINCI (vocational education), and GRUNDTVIG (adult's education).

The two aspects "efficiency" and "equity" in European education and training systems are considered by the EC as joint objectives that have to be realized by appropriate policies at all levels of lifelong learning (details see [EC EEETS]). Further actions related to human resource development and to ICT that are performed under the i2010 initiative include the following issue areas:

- combination of regulatory and technical instruments for the creation of a modern, and market-oriented regulatory framework for the digital economy (see [EC RTI]),
- development of trust, privacy and security for a secure European information society including cyber crime and on spam and malware (see [EC TPS], and [EC TPSS]),
- review of the consumer protection regulatory framework, taking into account new technical developments,
- strategic ICT research within the Seventh Research Framework Program (see [EC SRFP]),
- promotion of European technology platforms and joint technologies (see [EC ETP]),
- ICT policy support program in the competitiveness and innovation program (see [EC ITCSP]),
- review of e-business policies and trends, including the definition of necessary ICT policy measures, and their adoption by enterprises, especially SMEs (see [EC EBP]),
- development of new patterns of work that enhance innovation and their adaptation to new skill needs (see [EC NPW]), and
- communication on ICT for education and training to support lifelong learning and innovation.

4.1 SOCRATES

The general aim of the Socrates program, established in 1995 by the EU, is the promotion of cooperation in the area of general education in the EU region. Its main objectives are to create a Europe of knowledge, to promote lifelong learning, to encourage access to education for everybody, and to enable recognized qualifications and skills. Socrates seeks to promote and to encourage mobility and

innovation. The new Information and Communication Technologies (ICT) program of the i2010 initiative is an essential part, since ICT has a high demand for active teaching methods and contributions to innovation.

Currently the second phase of Socrates is running for the period 2000 until 2006 (see EC decision [ECD SPII]). Within the scope of Socrates the following actions have been initiated:

- COMENIUS: education at schools,
- ERASMUS: education at universities, and
- GRUNDTVIG: adult's education.

Main goals of Socrates include the following activities:

- strengthening of the European dimension of education at all levels,
- promotion of cooperation and mobility throughout education,
- encouraging innovation in education,
- promotion of equal opportunities in all sectors of education,
- promotion of trans-national mobility of people,
- realization of pilot projects in the framework of multi-lateral partnerships in order to develop innovative education concepts for the purpose of increasing the efficiency and quality of education systems,
- realization of trans-national cooperation networks to ease the exchange of experiences and best practices,
- execution of comparing analyses of education systems and policies, and the
- provision of appropriate countermeasures for the deployment of innovative approaches.

The target groups of Socrates are scholars, students, adults, and teachers. Within the Socrates program the EC is supporting the following wide range of initiatives and operations:

- comparative, quantitative and qualitative analysis of the situation at various countries,
- comparison of education systems and policies in member states,
- use of a network of national centers for the academic recognition of qualifications, and
- execution of pilot projects on the evaluation of quality in education, or on the citizenship dimension.

Socrates promotes European cooperation in all areas of education by means of organizing joint projects, setting up European networks, disseminating ideas and good practice, and conducting studies and comparative analyses. The action "Observation and Innovation" under the Socrates program had the aim to initiate a dialogue on all key issues and objectives related to human resource development within the whole education community and with the different members of civil society.

The dissemination of information on education and innovation shall be widely used. An Internet site has been built under Socrates that provides an information

service on education in Europe for all European citizens, e.g. researcher, teacher, decision maker, students, and apprentices. Support is also provided to increase flexibility by trans-national projects and studies. The Socrates program is based on an integrated approach, and it works closely with other community programs and actions for training, education and policy. The Socrates program is mainly managed by the national agencies of the participating member states. Further details about the Socrates program can be found in the documents listed in Table 4.

4.1.1 COMENIUS

The main objective of the COMENIUS program is to increase the quality and to reinforce the European dimension of school education. This shall be achieved by the following set of activities:

- improvement of professional development of staff,
- promotion of trans-national cooperation and exchanges between schools and teacher training establishments,
- encouraging innovation in educational methods and materials,
- promotion of the trans-national dissemination of good practice and innovation in the management of schools, and the
- promotion of the use of information and communication technology in school education and in the training of staff working in this sector.

A specific action within COMENIUS has been the establishment of the COMENIUS network that connects educational cooperation projects with the aim to get synergy effects between achievements and innovatory practices. More information about COMENIUS can be found in the documents listed in Table 4.

4.1.2 ERASMUS

ERASMUS is the European Community program within the scope of "SOCRATES II" in the field of higher education with the main goal to increase the efficiency and quality of higher education institutions, their students and staff in the member states of the EU. The higher education section of SOCRATES II, now called ERASMUS continues and extends the EC action scheme for the mobility of university students of the initial ERASMUS program that was established in 1987. The aims of ERASMUS shall be achieved by promoting trans-national cooperation between universities, increasing European mobility and improving the transparency and full academic recognition of studies and qualifications throughout the EU. Within ERASMUS the following set of activities and measures are performed and implemented:

- support for the European activities of higher education institutions: ERASMUS is open to all types of higher education institutions (universities, non-university institutions, post-university institutions), academic disciplines, and all levels of higher education,
- promotion of the mobility and exchange of teaching staff and students: ERASMUS tries to integrate the mobility aspect into a broader framework of cooperation activities for the development of a European dimension within the whole range of university academic programs,

- joint development of study programs,
- realization of international intensive programs,
- realization of thematic networks between departments and faculties: university departments or faculties, research centers or professional associations can construct a European network around a subject area or a specific topic as a platform for analysis and discussion, and the
- realization of the **European Credit Transfer System** (ECTS, see section 5.2) aiming at the transparency of qualifications.

Higher education plays a major role in high quality human resource development in order to cope with emerging needs for new competences, qualifications, and skills. The higher education sector is required to adopt new methods and to commit itself to the provision of measures for lifelong learning.

4.1.3 ERASMUS-MUNDUS

The general aim of the ERASMUS-MUNDUS program (details see [EC EMP]), established in 2003 by the EU, is to increase the attractiveness of European universities for graduates and students of the whole world. ERASMUS-MUNDUS is running for the period from 2004 until 2008. It includes the following actions:

- support for about 100 master study courses complying with highest quality standards, a list of current masters courses related to information and communication technologies is given at the end of this section,
- scholarship scheme (linked to the master courses) for third-country graduate students and scholars from the whole world,
- establishing partnerships with third-country higher education institutions for the mobility of graduate EU students and scholars, and
- support for projects in order to
 - enhance the attractiveness of European higher education,
 - improve the profile, the visibility and the accessibility of European higher education, and to
 - enable the mutual recognition of qualifications with third countries.

The EC annually publishes actual calls for proposals related to higher education. The results of the first call in March 2005 can be found at [EC RFCHE].

Master courses related to ICT include advanced topics in selected areas of specialization, such as:

- communications systems design,
- computational intelligence,
- computer architectures,
- e-business,
- embedded systems informatics,
- human-computer interaction,
- internet software environments,
- life-science informatics,
- mathematical foundations of cryptography,
- net-centric informatics,
- network computing,
- networks and technologies,
- security in telematics,
- software security, and
- technical information security and network services.

Examples of such master courses are:

- European Master in Informatics (EuMI), duration 2 years, details see [EMP EuMI],
- European Master of Research on Information and Communication Technologies (MERIT), duration 2 years, details see [EMP MERIT],
- European Masters Course in Software Engineering (EMSE), duration 2 years, details see [EMP EMSE],
- European Masters Program in Language and Communication Technologies (LCT), duration 18 months, details see [EMP LCT],
- International Master in Management of Information Technology (IMMIT), duration 2 years, details see [EMP IMMIT],
- Masters program in Security and Mobile Computing (NordSecMob), duration 2 years, details see [EMP NSM]

4.1.4 GRUNDTVIG

The main goal of the GRUNDTVIG program (= name of the Danish clergyman and writer Grundtvig who is regarded as the founder of the Nordic tradition of "learning for life") is to improve the quality and to strengthen the European dimension of adult education of a non-vocational nature. From 2007 on, GRUNDTVIG will be one of the four sectoral programs in the lifelong learning Program in the EU. The EC is supporting the following types of activities in the context of lifelong learning:

- cooperation projects related to adult education institutions and organizations,
- development of systems for accrediting or validating skills acquired via the informal system of education,
- development of new training modules and new teaching methods, and the
- realization of thematic and project Grundtvig networks for adult education.

GRUNDTVIG complements and interacts with other actions within Socrates and other programs, e.g. Leonardo da Vinci (see next section), to cover the whole spectrum of lifelong learning. Further information about the GRUNDTVIG program can be found in the documents listed in Table 4.

4.2 Other Programs

Other EU programs that represent EU efforts on human resource development are “Leonardo da Vinci”, “TEMPUS”, and “Jean Monnet Action”.

4.2.1 Leonardo Da Vinci

The general aim of the Leonardo da Vinci program, established in 2000 by the EU, is the promotion of cooperation in the area of vocational education in the EU region. Leonardo da Vinci is running for the period from 2000 until 2006. Within the scope of Leonardo da Vinci the following actions have been initiated:

- improvement of the capabilities and competences – especially of young people – regarding the first vocational education at all levels,
- improvement of the quality of further vocational education with the focus on increasing and developing adaptability, particularly in order to consolidate technological and organizational changes in the society,
- improvement of measures for lifelong learning to achieve skills and competences,
- promotion and reinforcement of innovative processes, with a view to improving competitiveness and entrepreneurship, and the
- improvement of new employment possibilities with the focus on fostering cooperation between vocational training institutions, including universities and undertakings, and particularly **S**mall **M**edium **E**nterprises (SMEs).

Main goals of Leonardo da Vinci include the following activities and measures:

- mobility of apprentices during first vocational education for the target groups of students, graduates, and teachers,
- realization of trans-national pilot projects related to the development, testing, and deployment of innovative instruments,
- realization of trans-national networks for the exchange of European knowledge and expertise, and the
- applied educational research.

In this context the Leonardo da Vinci provides funding for the following six types of projects:

- mobility - work placement and trainer exchanges [LDV MOB],
- pilot projects - production of vocationally-specific learning materials [LDV PP],
- trans-national networks - facilitating the transfer and exchange of experience and good practice [LDV TNN], and
- language competences - production of training materials to develop innovation & quality in training - incl. thematic actions [LDV LC].

The EC is publishing calls for proposals with specific priorities in order to promote and support the realization of the objectives of the program.

Within European **V**ocational **E**ducation and **T**raining (VET) projects (see [CD VET]) quality assurance has been an important policy aspect that has been achieved in the common criteria and principles for enhancing quality by cooperations in

quality assurance established among member states, candidate countries, European Free Trade Association (EFTA) countries, European social partners, and the commission. In this context a Common Quality Assurance Framework (COAF) has been developed. COAF is used to support the development and reforms of quality of the VET at the systems and providers levels with the goal to achieve strong cooperation in quality assurance among the member states at the national, regional, sectoral and the local levels.

The results of the Leonardo da Vinci program are disseminated and actively exploited within training systems and practices, and published at the EU's web page. At this site a range of information concerning the recent calls for proposals, events and thematic monitoring activities, an updated list of documents and publications, access to the European Leonardo da Vinci databases, and to a series of multimedia publications is provided. Further details on the Leonardo da Vinci program are given in the documents listed in Table 4.

4.2.2 TEMPUS

The general aim of the Trans-European Mobility Program for University Studies (TEMPUS) program, established in 1990 by the EU, is the promotion of cooperation between institutions of the member states and partner countries outside the EU in the area of general education in the EU region.

Currently the third phase of TEMPUS is running for the period from 2000 until 2006. An interim evaluation report on the Tempus III program is given in [EC TIR].

4.2.3 Jean Monnet Action

The general aim of the Jean Monnet action, launched in 1990, is the creation of innovative courses at European higher education institutions. Up to now this action has funded about 2650 projects in the field of European integration studies, including 105 Jean Monnet European centers of excellence, 674 Jean Monnet chairs, and 1861 permanent courses and European modules.

The legal basis of the current Jean Monnet action is defined by the EC decision [ECD JMA] to promote institutions that are active at the European level, and to support specific activities in the field of education and training. The Jean Monnet Action now covers 60 countries throughout the world with about 800 universities, a network of about 1800 professors for an audience of 250.000 students per year. The Jean Monnet action covers the following main areas:

- organization of Jean Monnet conferences in Brussels on current policy priorities in the field of European integration (see [EC JMAC]),
- support for teaching activities at universities through the creation of Jean Monnet chairs,
- development of Jean Monnet teaching modules and Jean Monnet centers of excellence (see [EC JMAST]),
- support for research activities in the form of trans-national Jean Monnet research groups and academic reflection activities organized by universities and research centers (see [EC JMASR]),

- grants for young researchers (see [EC JMASG]),
- support for the national associations and networks of lecturers in the field of European integration (see [EC JMASN]), and the
- support for major institutions that are active in the study of European integration, such as the College of Europe, the European University Institute, the European Institute of Public Administration, the Academy of European Law, and the Centre International de Formation Européenne (see [EC JMASI]).

5 Educational Measures

This chapter summarizes main goals and activities at the EU level related to concrete educational measures such as the European Qualifications Framework, the European Credit Transfer System, Europass, Education and Training, Lifelong Learning, and eLearning.

5.1 European Qualifications Framework

The development of a European Qualifications Framework (EQF) has been a main goal with key priority for the EC. EQF has been published by the EC as a staff working document on 8 July 2005 (see [EC WDEQF]). The main objective of the EQF (see [EC PEQF]) has been to promote the transfer and recognition of qualifications of individual citizens, by linking qualifications systems at the national and sectoral levels and by enabling them to relate to each other. The EQF shall act as a translation device and shall be one of the prime European mechanisms intended to facilitate citizen mobility for work and study. EQF will be used for example in Erasmus, the European Credit Transfer System, and in Europass. EQF can be considered as the new means to understand qualifications across the European region.

The EC has recently adopted a proposal for a recommendation of the European parliament and of the council on the establishment of the European Qualifications Framework for lifelong learning (see [EC PREQF]). The proposal has been developed within the i2010 education and training work program of the Lisbon strategy.

EQF shall provide a common basis for the description of qualifications. It also shall help the member states, employees, and individuals to compare qualifications of the different education and training systems in the EU. The EQF shall help to increase the mobility for learning or working of citizens, and it shall promote the access to education and training services in the EU region. EQF shall be a key initiative in creating more jobs and growth, helping people in Europe to cope with the challenges of a globalizing, knowledge-based world economy.

EQF contains a set of eight so-called reference levels (details see [EPC EQF]) that specify the knowledge, understanding, skills and competences of learners related to the learning outcomes, regardless of the system where a particular qualification was acquired. The EQF reference levels represent a shift of the educational focus from learning inputs (such as length of a learning experience, type of institution, etc.) towards learning outcomes, and thus achieving a better match between the requirements for knowledge, skills and competences of the market, and the support for education and training.

The EQF reference levels are defined by a set of descriptors that classify the learning outcomes relevant to qualifications in terms of knowledge, skills and competence as summarized in Table 1.

Table 1: Definition of Levels in EQF

LEVEL	LEARNING OUTCOMES	DESCRIPTIONS
Level 1	knowledge	basic general knowledge
	skills	basic skills required to carry out simple tasks
	competence	work or study under direct supervision in a structured context
Level 2	knowledge	basic factual knowledge of a field of work or study
	skills	basic cognitive and practical skills required to use relevant information in order to carry out tasks and to solve routine problems using simple rules and tools
	competence	work or study under supervision with some autonomy
Level 3	knowledge	knowledge of facts, principles, processes and general concepts, in a field of work or study
	skills	a range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information
	competence	take responsibility for completion of tasks in work or study adapt own behavior to circumstances in solving problems
Level 4	knowledge	factual and theoretical knowledge in broad contexts within a field of work or study
	skills	a range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study
	competence	exercise self-management within the guidelines of work or study contexts that are usually predictable, but are subject to change supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities
Level 5	knowledge	comprehensive, specialized, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge
	skills	a comprehensive range of cognitive and practical skills required to develop creative solutions to abstract problems
	competence	exercise management and supervision in contexts of work or study activities where there is unpredictable change review and develop performance of self and others

LEVEL	LEARNING OUTCOMES	DESCRIPTIONS
Level 6	knowledge	advanced knowledge of a field of work or study, involving a critical understanding of theories and principles
	skills	advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialized field of work or study
	competence	manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts take responsibility for managing professional development of individuals and groups
Level 7	knowledge	highly specialized knowledge, some of which is at the forefront of knowledge in a field of work or study, as the basis for original thinking critical awareness of knowledge issues in a field and at the interface between different fields
	skills	special problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields
	competence	manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams
Level 8	knowledge	knowledge at the most advanced frontier of a field of work or study and at the interface between fields
	skills	the most advanced and specialized skills and techniques, including synthesis and evaluation, required to solve critical problems in research and/or innovation and to extend and redefine existing knowledge or professional practice
	competence	demonstrate substantial authority, innovation, autonomy, scholarly and professional integrity and sustained commitment to the development of new ideas or processes at the forefront of work or study contexts including research

EQF represents an instrument for the promotion of general and adult education, vocational education and training, as well as for higher education in the context of lifelong learning. The levels of EQF cover all kinds of qualifications from those achieved during basic education to those awarded at the highest level of academic and professional or vocational education and training. The draft recommendation on EQF requires that member states adopt their national qualifications systems to the EQF until 2009. EQF enables individuals and employees to use EQF as a reference tool to compare the qualifications levels of different countries and different education and training systems including vocational training and higher education. EQF will operate as a type of translation instrument to clarify the inter-relationships between qualifications and different systems. EQF will increase the transparency and accessibility of European education and training systems with the EU region. At the political level the EQF proposal is currently under examination by the council and the European parliament. The full adoption of EQF is expected in 2007.

5.2 European Credit Transfer System

The European Credit Transfer System (ECTS) has already been introduced in 1989 within the ERASMUS-program. ECTS has the following objectives:

- comparable study programs for local and foreign students,

- facilitating the mobility and academic recognition,
- support for universities to organize and revise their study programs, and to
- increase the attractiveness of higher education for foreign students.

ECTS has been tested during a pilot phase focusing on five disciplines in 145 European universities in order to simplify the transfer, i.e. the mutual recognition of examinations at European universities. Meanwhile the credit transfer system has changed its character and has developed into an ECTS and Accumulation System to be implemented at the institutional, regional, national and European levels. The definition of credits in higher education systems may be based on different parameters, such as student workload, learning outcomes and contact hours. The main features of ECTS (see [EU ECTS]) are characterized by the following regulations:

- 60 credits are assigned to the workload of a full-time student during one academic year,
- workload of about 1500-1800 hours per year for a full-time study with one credit for about 25 to 30 working hours,
- acknowledgement of credits in ECTS only after successful completion of the work required and after appropriate assessment of the learning outcomes, i.e. sets of competences achieved,
- student workload consists of all the times required to complete all planned learning activities including attending lectures, seminars, independent and private studies, preparation of projects, and examinations,
- credits are allocated to all educational components of a study program such as modules, courses, placements, or dissertation work,
- credits reflect the quantity of work each component requires to achieve its specific objectives in relation to the total quantity of work necessary to complete a full year of study successfully,
- documentation of the performance of students by local or national grades,
- ECTS grading scale ranking the students on a statistical basis,
- pass grades are assigned to students accordingly to the rule:
 - A best 10%,
 - B next 25%,
 - C next 30%,
 - D next 25%, and
 - E next 10%,
- fail grades FX with the meaning "fail- some more work required to pass" and F with the meaning "fail – considerable further work required" that are used to denote unsuccessful performance, and the
- optional inclusion of failure rates in the transcript of records.

ECTS does not replace national grading schemes, but it allows determining the grade for an individual educational module. ECTS credits are a measure to describe the workload that has been invested for a successful examination of modules. However, credits do not evaluate the quality of the achieved results. Therefore, any examination of an educational module will be graded. These national grading schemes may vary between different universities across Europe, and must be transformed into the ECTS grading scheme. The diploma supplement will contain the ECTS grade and the national total grade.

The German grading scheme for example provides the five-value grading scale: $1 \leq 1.5$ (very good), $1.5 \leq 2.5$ (good), $2.5 \leq 3.5$ (satisfactory), $3.5 \leq 4.0$ (sufficient), and > 4.0 (failed). A total grade G can be calculated after successful examinations by taking into account the achieved credits c_i and the assigned grades d_i for all evaluated modules 1 to m using the following formula on the right hand-side.

$$G = \frac{\sum_{i=1}^m c_i * g_i}{\sum_{i=1}^m c_i}$$

ECTS documents comprise the "Information Package/Course Catalogue", the "Learning Agreement", and the "Transcript of Records" that provide the following information:

- Information Package/Course Catalogue:
 - items of the checklist including information for host students from abroad,
- Learning Agreement:
 - list of courses to be taken with the ECTS credits which will be awarded for each course, and which must be agreed by the student and the responsible academic body of the institution,
 - acceptance of the learning agreement by the student and the institutions concerned before the student's departure and updated immediately when changes occur,
- Transcript of Records:
 - list of courses taken,
 - the ECTS credits gained,
 - local or national credits, if any,
 - local grades and possibly ECTS grades awarded, and the
 - issuance of the transcript of records by the home institution for outgoing students before departure and by the host institution for incoming students at the end of their period of study.

5.3 Europass

Education and training is becoming increasingly important for the exchange of knowledge and information across borders. The Europass provides possibilities to learning and working in Europe related to human resource development. The Europass with its different parts provides a tool for documenting and presenting relevant experiences achieved in home and foreign countries. It represents a comprehensive view of the qualifications and skills of holders that enables an easier comparison between European countries. The Europass presents personal capabilities, skills and qualifications in a form that is clear and easy to understand. The Europass is a common framework of instruments that has been developed by the EU in order to enable the acknowledgement and transparency or qualifications of apprentices, students, and employees. The Europass includes the following five elements:

- Europass Curriculum Vitae (CV),
- Europass Language Passport,
- Europass Mobility,
- Europass Diploma Supplement, and the
- Europass Certificate Supplement.

Europass Curriculum Vitae

The “Europass Curriculum Vitae” is a document that is used to present individual qualifications and skills (see [EC EPCV]). Every European citizen can use the Europass CV to systematically present the qualifications and skills he has acquired, providing potential employers with a comprehensive profile of their abilities. The presentation is structured in a chronological and adaptable form. The holder of a Europass CV is responsible for the creation and the updates of the contents of the Europass CV.

The contents of the Europass CV may include personal information, language skills and work experience as well as the various educational levels and degrees attained. It also provides space for technical, organizational, or social skills as well as aspects of informal learning. It is up to the holder to complete the fields of the template via online access [EC EPOLCV]. The Europass CV can be directly linked with the other Europass documents and with any other personal documents required for applications.

Europass Language Passport

The “Europass Language Passport” is a document that may contain information about linguistic and cultural experiences (see [EC EPLP]). The Europass Language Passport gives a comprehensive, transparent, and reliable overview of the holder's language skills. It is completed and regularly updated by the holders themselves. A so-called skills matrix is provided with the Language Passport tool for ease of online updating [EC EPLPO].

Europass Mobility

The “Europass Mobility” is a document that contains information about educational phases in foreign countries and the obtained knowledges (see [EC EPM]). The Europass Mobility provides information on the content, purpose and duration of any kind of learning experience achieved abroad. The Europass Mobility is embedded in a set of transparency tools whose components have been developed within the context of the lifelong learning program.

Europass Diploma Supplement

The “Europass Diploma Supplement” is a document that is attached to university degrees. It describes the contents and the level of the performed study courses (see [EC EPDS]). It is designed to make degrees in higher education comparable in the EU region by ensuring that the type, level, context, content and status of the courses of study in question are conveyed reliably. It describes the courses of studies that the holders have completed and for which the degree was awarded. The Europass Diploma Supplement is a personal document that refers only to the holder. However, it is not a replacement for the original diploma or degree certificate. The Europass Diploma Supplement is issued in every member state by the college or university that has issued the original diploma.

Europass Certificate Supplement

The “Europass Certificate Supplement” is a document that is attached to the vocational examination certificate containing information about achieved competences, skills, and fields of activity (see [EC EPCS]) The Europass Certificate Supplement describes the country-specific standards that apply for each occupation requiring training. It gives a short description of the knowledge, skills and capabilities achieved through the vocational training, including supplementary information on the duration, type and level of training, as well as the exact course of training through which the skills have been attained.

The Certificate Supplement also indicates the typical industries and fields of activity for which the training qualifies the candidate, as well as the scale used in assigning grades. The Europass Certificate Supplement applies to anyone who has achieved the corresponding vocational training certificate. It helps to make the attained qualifications and competencies more transparent to prospective employers. This mainly applies for those who wish to apply for a job abroad.

The Europass Certificate Supplement is not a substitute for the original certificate. The Europass Certificate Supplement is prepared by the vocational training authorities in each EU member state. In addition to the German version, the Europass Certificate Supplement is also available in English and French.

Currently there are plans to incorporate further tools into EQF, as for example, sector education initiatives and certificates recognizing informal learning experiences.

5.4 Education and Training

The activities of the EU in the area of education and training are performed under the Lisbon strategy and program. This process is carried out in each member state and it is improved by cooperation between the member states at the European level through the sharing of experiences, harmonization of common goals and the exchange of best practices. The European council has achieved an agreement to constitute the new and coherent community strategic frame work of cooperation in the fields of education and training in 2002 [EC CWP] with the following three major goals:

- improvement of the quality and effectiveness of EU education and training systems,
- accessibility of education and training systems to all citizens, and the
- provision of education and training to the wider world.

The ministers of education of the European member states have agreed on specific objectives that cover the various types and levels of education and training. The education and training systems shall be improved in a broad scope including teacher training, basic skills, integration of information and communication technologies, efficiency of investments, language learning, lifelong guidance; and

flexibility of the systems to make learning accessible to all, mobility, and citizenship education.

The EC has established special working groups whose role is to support the implementation of the objectives for education and training systems at the national level through the exchanges of good practices, study visits, and peer reviews. A special group on indicators and benchmarks has been established by the commission in 2002 that shall develop indicators and benchmarks to monitor the progress of education and training systems.

Further EU activities in this area have been the adoption of the interim evaluation report [EC IER] and the joint report [EC JR] of the implementation of the i2010 education and training program, and the publication of the latest report on progress towards the Lisbon objectives in education and training [EC PRLO] in May 2006. Further details on education and training systems can be found in the documents listed in Table 4.

The development of **V**ocational **E**ducation and **T**raining (VET) is an integral part of the Lisbon strategy of the EU. This important role has been reaffirmed at the Barcelona European council in March 2002 to develop closer cooperation in vocational training (in parallel to the Bologna process in higher education) in the EU region. The education ministers have adopted the Copenhagen declaration [CD VET] on enhanced European cooperation in vocational education and training in November 2002 in order to develop concrete actions in the fields of transparency, recognition and quality in VET.

In this context one aim of the Leonardo program has been to contribute to the implementation of an EU vocational training policy. The council of the EU approved a resolution on the promotion of enhanced European cooperation in vocational education and training, giving a formal mandate to pursue the objectives developed under this process. Leonardo da Vinci has been designed to support and supplement actions taken by the member states, using trans-national cooperation to improve quality, to promote innovation and to strengthen the European dimension of training systems and practices.

The program has been progressively opened to participation by 30 countries. CEDEFOP supports the development of vocational training in the EU region by academic and technical activities, focusing on trends, studies, analyses and information exchanges. Leonardo da Vinci, on the other hand, is open to a very wide range of public and private sector organizations and companies active in training issues, and grouped in an international partnership. In this context one of the tasks of the Leonardo da Vinci program is to build a quantitative information system that will provide timely and coherent support for policy-making. Further information about education and training is provided by the documents listed in Table 4.

The principles for quality assurance in education and training have been defined in the recommendation of the European parliament and of the council on the establishment of the European Qualifications Framework for lifelong learning (see [EPC EQF]). In this context the EU has recommended that the member states designate national centers that have the tasks to support and coordinate the

relationship between the national qualification systems and the European Qualifications Framework. The following set of requirements for quality assurance in education and training has been defined:

- development of quality assurance policies and procedures that cover all levels of education and training systems,
- realization of quality assurance as an integral part of the internal management of education and training institutions,
- regular evaluation of institutions and programs by external independent monitoring bodies or agencies,
- regular review of monitoring bodies or agencies,
- focus on learning outcomes including the dimensions of context, input, process, and output,
- use of unique and measurable objectives and standards,
- provision of implementation guidelines,
- provision of adequate resources,
- use of consistent evaluation methods,
- performing of self-assessment and external reviews,
- provision of feed-back mechanisms and procedures for improvement,
- support for widely accessible evaluation results,
- coordination of quality assurance initiatives at regional, national, and international levels,
- realization of quality assurance as a cooperative process covering all levels of education and training and systems, and the
- involvement of relevant stakeholders with member states.

5.5 Lifelong learning

Activities in the context of lifelong learning are performed under the Lisbon strategy in order to support competitiveness, employability, and social inclusion, active citizenship and personal development. Lifelong learning has become the major principle for the development of education and training policy in the EU (see [EC CLL]). The education council has adopted a resolution on lifelong learning [ECC RLL] supporting the implementation of the commission communication in June 2002.

Lifelong learning includes learning for personal, civic and social purposes as well as for employment-related purposes. It has to be realized in a variety of environments. Lifelong learning requires investment in people and knowledge, the promotion of the acquisition of basic skills including digital literacy, and the provision of opportunities for innovative and more flexible forms of learning. The aim of lifelong learning is to provide equal and open access to high-quality learning opportunities to all citizens within the EU region. In this context the EC requires the member states to transform formal education and training systems in order to reduce or remove barriers between different forms of learning.

Recently, the European parliament and the council have adopted a decision that establishes a new lifelong learning program from 2007 until 2013 as a replacement of the existing Socrates and Leonardo da Vinci programs after their

expiration at the end of 2006. The new lifelong learning program comprises the following four sectoral programs:

- school education (Comenius),
- higher education (Erasmus),
- vocational training (Leonardo da Vinci) and
- adult education (Grundtvig).

It is complemented by a transversal program on policy cooperation, languages, information and communication technology, dissemination and exploitation of results.

The aim of the new program is to contribute through lifelong learning to the development of the EU as an advanced knowledge society, with increasing economic development, more and better jobs and greater social cohesion. It aims to foster the interaction, cooperation and mobility between education and training systems within the EU.

5.6 eLearning

Within the eEurope action plan the commission has initiated an action called "eLearning: Designing Tomorrow's Education" [EC AELDTE] that has been adopted by the commission in March 2001. The main aims of the eLearning action was to accelerate the deployment of a high-quality infrastructure at a reasonable cost, to improve training and overall digital literacy; and to strengthen cooperation and links at local, regional, national and European levels between all sectors from schools, training colleges to equipment, content and service providers. Specific objectives of the eLearning initiative include the following actions:

- provision of access to the Internet and multimedia resources for schools,
- connecting schools to research networks,
- availability of support services and educational resources on the Internet,
- provision of online learning platforms for teachers, pupils and parents,
- support for the integrating of new learning methods, based on information and communication technologies,
- provision of appropriate training of teachers,
- adoption of teacher training programs, and the
- introduction of measures for encouraging teachers to use digital technology in their lessons.

Further EU activities include the launching of an eLearning portal in February 2003 (see [EC ELA]), and the performing of a study on eLearning policy indicators [ST ELPI] in 2005. The objective of this study was to obtain estimates for the indicators on eLearning, and to get information about the use of information and communication technologies in schools.

6 Security Measures

This chapter describes the EU efforts related to general security measures, and special security measures, including security consciousness and awareness raising measures in the EU region. The EU has established a community program for the period from 2005 until 2008 to promote safer use of the Internet and new online technologies, and to protect end-users from illegal unwanted content (details see [EPCD SUINOT]). The following main security measures have been foreseen within the program:

- fighting against illegal content,
- tackling of unwanted and harmful content,
- promoting a safer environment, and
- awareness raising.

The program will be realized by means of the following actions and activities:

- pilot projects, best practice actions, and relevant ad hoc projects demonstrating best practice or involving innovative use of existing technologies,
- incorporation of networks with a variety of stakeholders to ensure joint actions throughout the EU, and to facilitate coordination activities and the transfer of knowledge,
- applied EU-wide research on a comparable basis related to the way people, and especially children use new online technologies.
- benchmarking and opinion surveys to produce reliable data on safer use of the Internet and new online technologies for all member states collected through a comparable methodology,
- technical assessment of technologies to promote safer use of the Internet and new online technologies,
- studies on self-regulation or the preparation of future activities,
- exchange of information, conferences, seminars, workshops or other meetings and the management of clustered activities, and the
- dissemination, information and communication activities.

6.1 Increase of Trust and Confidence of Consumers

Recently the EC has issued a call for performing a study on "Increase of Trust and Confidence of Consumers" [ST ITCC] whose objective is to support the i2010 initiative by analyzing the origins as well as the impacts of the current lack of confidence in the information society products and services, and to make proposals to the commission on how to engage all stakeholders in developing a consumer perspective.

6.2 Dialogue, Partnership and Empowerment

The commission adopted a communication on a strategy for a secure information society entitled "Dialogue, Partnership and Empowerment" (see [EC CSSIS]) in May 2006. In this context the EC calls for a structured process of consultation and the dialogue on network and information security to be established with relevant stakeholders, including public administrations, the private sector and individual users, and ENISA. The proposed strategy focuses on the positive virtue of technological diversity as an integral component of security, as well as the importance of openness and interoperability highlighting the strategic importance for the European industry as competitive suppliers of network and information security products and services.

Main issues of users' expectations include the provision of reliable and functioning networks, a high level of protection of private personal data, and high-quality software and applications protecting them against malicious attacks, including denial-of-service, viruses and other forms of malware. There is an alarming trend since threats to confidential information result in identity theft and significant financial losses, especially if credit card information or banking details are disclosed. In this context a major challenge for European policy makers is to provide the following measures:

- awareness raising on security risks,
- establishment of a culture of security that considers security as a business value and an opportunity, and the
- creation of appropriate framework conditions for interoperable, open and diverse solutions provided by a competitive, innovative European industry.

The EU has developed a three-pronged approach with the aim of a coordinated strategy including the following measures:

- specific network and information security measures related to telecommunication policy,
- protection of privacy and data, and the
- fight against cyber crime.

6.3 Illegal Content

The definition of "illegal content" is subject to different laws in different countries. This fact complicates law enforcement for situations where illegal content is generated in one country, transferred to another country, and finally used in a third country. Principally the observance of illegal content may be directly reported

to the police. However, since many people are reluctant to contact police hotlines, the provision of civilian hotlines that deal with illegal content is an alternative that is also accepted by the majority of people. In this context the creation of cross-border networks of hotlines is important, since web pages or service providers can be located in different countries.

The role of civilian hotlines is distinct from that of the law enforcement authorities. The existing EU hotline network is based on a unique structure that has been set up within the safer Internet action plan (see section 6.6) and funded by the EU. Meanwhile the EU hotline network has become very successful in expanding its size of member states and has also achieved international recognition.

Further activities that are required to enable the full potential of the hotlines network are supported by the EU for the following areas:

- EU-wide coverage and cooperation,
- increasing the effectiveness through exchange of information, best practice and experiences,
- raising public awareness of the hotlines,
- increasing the operational effectiveness by taken into account several indicators,
- establishment of further hotlines to act as network nodes and to cooperate with the other nodes within the EU hotlines network,
- support of telephone help lines for children to report about illegal and harmful content on the Internet,
- collection of qualitative and quantitative data including the
 - establishment and operation of hotlines,
 - number of national nodes,
 - geographical coverage in the member states,
 - number of reports received,
 - number and level of experience of hotline staff,
 - reports forwarded for action to the public authorities and ISPs, and
 - number and kind of web pages withdrawn by ISPs as a result of information provided by the hotlines.
- publication of collected and analyzed data, and forwarding to the competent authorities,
- promotion of links between the network and hotlines in third countries where illegal content is hosted and produced,
- development of common approaches, and transfer of know-how and best practices,
- improvement of mechanisms for cooperation between civilian hotlines and law enforcement authorities,
- development of codes of conduct for civilian hotlines,
- legal and technical training of hotline staff,
- mandatory participation by hotlines in networking and cross-border activities,
- linking of hotlines to member state initiatives to ensure continued operation beyond the duration of the EU funded program, and the
- establishment of coordinating nodes with the following tasks:
 - development of EU guidelines, working methods and practices complying with the limits of the national laws of individual hotlines,

- promotion of the whole network to generate European-level visibility and raise public awareness thereof throughout the EU,
- provision of single identities and entry points with direct access to the appropriate national contact,
- contacting appropriate bodies to complete the coverage of the hotlines network in the member states,
- organization of regular exchange of information and experience between the hotlines,
- participation in the Safer Internet Forum and other relevant events,
- coordination of input and feedback collected from hotlines, and the
- monitoring of the effectiveness of hotlines, and collection of comprehensive and comparable statistics on their operation

6.4 Unwanted and Harmful Content

The definition of “unwanted” and “harmful” content” is subject to different cultures and individuals. There is a strong user need for tools and technologies that limit the amount of unwanted and harmful content, and to enable users to take own decisions on how to cope with unwanted and harmful content.

Further EU activities in this area include the following activities and measures:

- increasing the information available on the performance and effectiveness of filtering software and services,
- use of relevant information from user organizations and scientific research institutes,
- development of rating systems, quality labels, and filtering technologies,
- adoption of rating systems and quality labels taking into account the convergence of telecommunications, audio-visual media and information technology,
- self-regulatory initiatives to improve the reliability of self-labeling and services for assessing the accuracy of self-rating labels,
- encouragement of content providers to make use of rating systems and quality labels,
- taking into account of safe use by children when developing new technologies,
- promoting the exchange of views between child welfare specialists and technical experts,
- evaluation of the effectiveness of available filtering technology and its publication, and
- facilitating and coordinating exchanges of information and best practices on effective ways of handling unwanted and harmful content.

6.5 Awareness Raising

There is a strong need for awareness raising activities for all sectors of the society that cover a wide range of categories of illegal, unwanted and harmful content. Further related issues include consumer protection, data protection and information and network security. They deal with content distributed over the Internet and mobile telephony. EU efforts in this area include the following activities and measures:

- encouragement of cost-effective means of distribution of information to large numbers of users by using multiplier organizations and electronic dissemination channels,
- use of mass media and distribution of information material to schools and Internet cafés,
- provision of support for appropriate bodies that act as awareness-raising nodes in each member state in close cooperation with all relevant actors at local, regional, and national levels,
- support for coordinating nodes with close liaison with other nodes to ensure the exchange of best practices, and the
- realization of awareness-raising nodes with a strong support by national authorities, and clear mandates to educate the public in safer use of the Internet and new online technologies, or in media and information literacy.

The established European network of awareness-raising nodes can be characterized by the following tasks and activities:

- design of a comprehensive awareness-raising campaign using the most appropriate media, and taking into account best practice and experiences in other countries,
- establishment and organization of formal or informal partnerships with governmental agencies, press and media groups, ISP associations, user organizations, and education stakeholders,
- promotion of the dialogue and information exchange between stakeholders from the education and technological fields,
- cooperation in the areas of media, information literacy, or consumer protection,
- provision of information for users about European filtering software, services, hotlines, and self-regulation schemes,
- cooperation with other national nodes in the European network by exchanging information,
- creation of awareness-raising nodes, and the
- creation of coordinating nodes that provide logistical and infrastructural support for nodes in the member states.

Specific requirements for the coordinating node include the following tasks and activities:

- provision of effective communication and exchange of information and best practices within the awareness-raising network,
- provision of staff training in safer use of the Internet and new online technologies,

- provision of technical assistance for the creation of new awareness-raising nodes,
- proposal of indicators and management of statistical information about awareness-raising activities,
- provision of an infrastructure for a comprehensive trans-national web portal of relevant information and awareness-raising and research resources with localized content
- publication of news snippets, articles and monthly newsletters in several languages,
- expansion of links with awareness-raising activities outside Europe,
- participation in the Safer Internet Forum and other relevant events, and the
- coordination of input and feedback from the awareness-raising nodes.

6.6 Safer Internet

Prior to the start of the Safer Internet program the following preparatory actions have been undertaken by the EU:

- preparatory work for setting up hotlines,
- feasibility study for a European system of content self-rating (see report [FS ESCSR]),
- review of European third-party filtering and rating software and services (see reports [RP1 ETPFRSS], and [RP2 ETPFRSS]), and the
- preparation of awareness actions (see document [FR PAA]).

The Safer Internet plus program, started in 1999 by a decision of the European parliament and of the council (see [EPC DMCAP]), has the main objectives to promote the safer use of the Internet and new online technologies, particularly for children, and to fight against illegal content and content unwanted by the end-user, as part of a coherent approach by the EU.

During the first phase from 1999 until 2002 of the Safer Internet program the following actions have been performed:

- selection of twelve projects for the creation of a European network of hotlines,
- selection of thirteen projects for the development of rating and filtering systems for Internet content,
- selection of twelve projects responsible for awareness raising for safer use of the Internet,
- establishment of the two service contracts IAPCODE for self-regulation, and IAPEXCH for awareness exchange, and the
- funding of two program evaluations.

As a result of an EC call for proposals (see [EC-SIPCP03]) in September 2003, and a new call for proposals (see [EC-SIPCP04]) in August 2004, a set of the following 51 projects have been selected and performed during the second phase of the Safer Internet program:

- twenty two projects for the European network of hotlines including one co-ordination node and twenty one hotlines,
- twenty five projects responsible for awareness raising of the safer use of the Internet including two coordination nodes and twenty three awareness nodes,
- one project for applied research for media education,
- one project for the definition of a quality labeling scheme,
- one project for the development of a self-regulatory plan for tackling spam,
- one project for rating online games, and the
- establishment of a service contract for benchmarking of filtering software and services.

The European parliament and the council have established in their decision on a multi-annual community program on promoting safer use of the Internet and new online technologies [EPC DMCP] in May 2005 a four-year program for the third phase from 2005 until 2008 that will cover the following four main actions:

- fighting against illegal content,
- tackling unwanted and harmful content,
- promoting a safer environment, and
- awareness raising.

The coverage of the current Safer Internet plus program includes new online technologies, mobile and broadband content, online games, peer-to-peer file transfer, and all forms of real-time communications, and instant message exchanges with the main aim of improving the protection of children and minors. Measures will be also taken to ensure that a broader range of areas of illegal and harmful content and conduct of concern are covered, including aspects of racism and violence.

As a result of an EC call for proposals (see [EC CPSIP]) and their evaluation related to Safer Internet plus, a set of the following thirty seven proposals have been selected by the EC in December 2005:

- sixteen hotlines covering fifteen countries and one network coordinator,
- sixteen awareness nodes and ten including help lines covering sixteen countries and one network coordinator,
- one thematic network – user-empowerment,
- one thematic network – self-regulation, and
- one thematic network – media.

The plenary sessions of the Safer Internet forum have been focused on the topics "Children's Use of New Media", "Blocking Access to Illegal Content: Child Sexual Abuse Images", and "Child Safety and Mobile Phones". As a result of workshops and further discussions an agreement has been achieved with mobile networks operators on best practices and their implementation across Europe.

The EC has organized exploratory meetings with leading associations of ISPs and industrial organizations related to the scope for a European code of conduct for ISPs. The **European Internet Service Providers Association** (EuroISPA) agreed to consult its membership on the setting up of an industry working group coordinated by EuroISPA, and on the timetable for the development of a first draft of a code for the commission.

Recently the EC has launched a public consultation on the potential risks for children of using mobile phones [EC PCPRC]. Two networks with national presence are funded under the Safer Internet program in order to allow members of the public to report illegal content on the Internet, to carry-out awareness actions, and to inform parents, children and teachers on the safe use of Internet. These networks are the

- INHOPE network that allows members of the public to report illegal content on the Internet, and the
- awareness nodes network that carries out awareness actions in the form of events and trainings, and that run websites to inform parents, children and teachers on the safe use of Internet.

Furthermore the EC is offering a free telephone and e-mail service called "EUROPE DIRECT" that EU citizens can use to find answers to questions related to Internet safety. Meanwhile an awareness-raising network has been set up with network coordinators and nodes.

The "Eurobarometer Survey" (see [EC EBS]), conducted by the commission, presents the view of EU citizens towards illegal and harmful content on the Internet, and their knowledge of how to protect their children against it. A new survey covering 25 Member States was conducted in December 2005. Information about the Safer Internet is provided by the following sources:

- web pages of the safer internet program [EU SIP],
- EU program decisions [EU SIPP],
- EU work program with detailed objectives, priorities and an indicative timetable for the implementation [EU SIPWP], and the
- program evaluation [EU SIPPE].

The Insafe portal "saferinternet.org" provides actual and detailed information such as best practices and resources to enable citizens to use the Internet and other information and communication technologies in a safe and efficient way. A further service is the monthly Internet Safety newsletter that provides a comprehensive overview of Internet security issues.

The participation in the Safer Internet plus program is open to legal entities established in the EU member states, e.g. Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, The Netherlands, and the United Kingdom. It is also open to participation of legal entities established in the EFTA states.

Further information about the topics and activities of the Safer Internet plus program can be found in the following documents:

- hotlines (see [EC SIPHL]),
- self-regulation (see [EC SIPP]),
- filtering (see [EC SIPP]),
- awareness (see [EC SIPAR]),
- proposals (see [EC SIPCIE]),
- independent experts (see [EC SIPCIE]),
- projects funded between 1999 and 2002 (see [EC-SIPPF99]), and
- projects funded between 2003 and 2004 (see [EC-SIPPF03]).

Hotlines within the Safer Internet Program allow EU citizens to report about illegal content that has been observed in the Internet. The hotlines are responsible to take care of the reports, and to forward them to the relevant bodies, e.g. ISPs, police, and hotlines in other countries. The expected benefit from these measures is a reduction of the flood of illegal contents which contribute to the effective protection of Internet users.

The coordination of the European network of hotlines is provided by the INHOPE association. INHOPE is cooperating with the hotlines in the member states, and it

also has members in the USA, Australia, South Korea, Taiwan, Canada, and Brazil. INHOPE offers expert support on a variety of issues that are of vital importance for the realization of safer Internet environments. INHOPE has performed the following set of activities:

- organization of international conferences with selected stakeholders from different countries representing law enforcement, child welfare, Internet industry, and government,
- processing of reports: for example over 534000 reports have been sent to INHOPE hotlines in 2005,
- publication of a second report on the work of the hotline network [EC-SIPSR04],
- adoption of a code of practice [EC-SIPCOP04], and the
- provision of the Safer Internet Forum as a unique discussion forum with representatives from the industry, law enforcement authorities, child welfare organizations and policy makers with the aim to provide a platform for national co-regulatory or self-regulatory bodies for the exchange of experiences.

A list of projects and organizations involved in the Safer Internet program is provided in Table 2.

Table 2: Overview of Projects and Organizations of the Safer Internet Program

NAME	TASKS / SERVICES / LINKS
3W3S	Filtering project - World Wide Web Safe Surfing Service http://europa.eu.int/information_society/activities/sip/projects/filtering/3w3s/index_en.htm
AFA PdC	Online service dedicated to information and report of illegal contents Association des Fournisseurs d'Accès à Internet (AFA), http://www.fr.inhope.org
ANDK 2	Awareness Node Denmark
ANSWER 2	Awareness Node Sweden
Barnaheill Stoplevel	Hotline against child porn on the Internet - Co-operation with relevant national actors - Awareness raising - Co-operation with INHOPE Hotlines world wide and participating in their work Barnaheill (Save the Children Iceland) http://www.is.inhope.org
Childfocus Netalet	Belgian Civil Hotline, http://www.be.inhope.org
CyberEthics	SafeInternet Node: Campaign Group for island-wide awareness on safe internet
DYZURNET.PL	NIFC Hotline Polska - continuity of the work of the contact point, where users can anonymously report complaints about illegal and harmful Internet content
Easy tour	Awareness project- The Italian awareness raising node Easy has created an itinerant stand on Internet safety for minors. The "EASY tour" offers teaching materials, games and other fun activities to around a dozen cities http://www.saferinternet.org/ww/en/pub/insafe/focus/italy/easy.htm
Educaunet	Awareness project – Educaunet used to train children to transform actual dangers into risks that they can master as autonomous, responsible users http://europa.eu.int/information_society/activities/sip/projects/awareness/educaunet2/index_en.htm
EUFORBIA	Filtering project - Experiments about the Filtering of Internet Documents According to an Unbiased and Semantic-rich Approach http://europa.eu.int/information_society/activities/sip/projects/filtering/euforbia/index_en.htm

NAME	TASKS / SERVICES / LINKS
EUKidsOnline	European Research on Cultural, Contextual and Risk Issues in Children's Safe Use of the Internet and New Media
EUN CLE	Filtering project - European Schoolnet Collaborative Learning Environment http://europa.eu.int/information_society/activities/sjp/projects/filtering/euncle/index_en.htm
HOT 114	Telefono Azzurro, http://www.114.it
Hotline Lithuania	UAB BITE GSM, http://www.draugiskasinternetas.lt
Hotline Malta	Supportline 179
Hotline.hu	Magyar Tartalomipari Szövetség (Hungarian Association of Content Industry) http://www.hu.inhope.org
IAPCODE	Self-regulation project - Assistance to self-regulatory bodies in developing and implementing codes of conduct A report has been produced that proposes methods for implementing the distribution of quality labels.

NAME	TASKS / SERVICES / LINKS
IBSDE	Internet Beschwerdestelle für Deutschland, eco Electronic Commerce Forum - Verband der deutschen Internetwirtschaft e.V. Freiwillige Selbstkontrolle Multimedia (FSM), http://www.de.inhope.org
ICRASAFE	Filtering project - Internet Content Rating Association System for Europe http://europa.eu.int/information_society/activities/sip/projects/filtering/icrasafe/index_en.htm
INHOPE 3	INHOPE Hotline co-coordinator, http://www.inhope.org/
INHOPE IV	Internet Hotline Providers IV
INSAFE PLUS	INTERNET SAFETY AWARENESS FOR EUROPE PLUS
INTERNET HOTLINE CZ	Safer Internet Plus Hotline CZ
ISPAI	Internet Service Providers' Association of Ireland, www.ie.inhope.org
ISPNET	Network for the Development of European ISP Self-Regulation
IWF	Internet Watch Foundation - UK Hotline for receiving reports on illegal internet content, http://www.uk.inhope.org
jugendschutz.net	LPR - Trägergesellschaft für jugendschutz.net GmbH http://www.jugendschutz.net/ , http://www.de.inhope.org
KIDDANET	Filtering project - Demonstrating a Portal to promote and manage children's web access through a multilevel Intelligent Agent based tool http://europa.eu.int/information_society/activities/sip/projects/filtering/kiddanet/index_en.htm
klicksafe.de	awareness campaign klicksafe de, national awareness node for Germany http://klicksafe.de/
LUSI	Luxembourg Safer Internet
MED-CERTAIN	Filtering project - MedPICS Certification and Rating of Trustful and Assessed Health Information on the Net http://europa.eu.int/information_society/activities/sip/projects/filtering/med_certain/index_en.htm
MEDCIRCLE	Filtering project - Collaboration for Internet Rating, Certification, Labeling and Evaluation of Health Information http://europa.eu.int/information_society/activities/sip/projects/filtering/medcircle/index_en.htm
MELDPUNT KINDERPORNO	Hotline for combating child pornography on the Internet - The Netherlands http://www.nl.inhope.org
NANSOS2	National awareness Node Surf op Safe 2
NETPROTECT	Filtering project - A European Prototype of Internet Access Filtering http://europa.eu.int/information_society/activities/sip/projects/filtering/netprotect/index_en.htm
NETPROTECT II	Filtering project - A European tool for Internet access filtering http://europa.eu.int/information_society/activities/sip/projects/filtering/netprotect2/index_en.htm
Net-Safe	Know how to be safe in Internet
NIFC Hotline	Naukowa i Akademicka Sieć Komputerowa NASK (Research and Academic Computer Network), http://www.pl.inhope.org
NONOplus	Norwegian national awareness node
Northern Hotline	Northern Hotline – Nettivihje
Northern.Hotline - Nettivihje	Pelastakaa Lapset (Save the Children Finland), http://www.fi.inhope.org
PEGI	Self-regulation project - PEGI on-line
POESIA	Filtering project - Public Open-source Environment for a Safer Internet Access

NAME	TASKS / SERVICES / LINKS
	http://europa.eu.int/information_society/activities/sip/projects/filtering/poesia/index_en.htm
PRINCIP	Filtering project - Multilingual system for the analysis and detection of racist and revisionist content on the Internet http://europa.eu.int/information_society/activities/sip/projects/filtering/princip/index_en.htm
PROTEGELES 2	Asociación Protégeles, http://www.es.inhope.org
QUALAB	Self-regulation project - A system of visible "quality-site labels" for Internet Service Providers to assist users in identifying providers that adhere to widely recognized codes of conduct together with self-regulatory initiatives to back-up the reliability of self-labeling and services to audit the accuracy of self-rating labels
QUATRO	Self-regulation project - Quality Assurance and Content Description
Red Barnet	Red Barnet (Save the Children Denmark), http://www.dk.inhope.org
SAFE IT II	Action Plan on promoting safer use of the Internet and new online technologies in Poland
Safeline	Foundation for Research and Technology, Hellas (FORTH) Hellenic Telecommunications & Telematics Applications Company (FORTHnet), Elliniko Organo Aforithmisis gia to Periehomeno sto Internet (Safenet), Foundation of the Hellenic World, http://www.gr.inhope.org
SAFE-NET BG	Applied Research and Communications Fund (ARC Fund)
SAFENET II	SAFENET II - Spanish Awareness Node
SafeNetHomePlus	Awareness campaign to promote and encourage positive & critical thinking, educating how to protect ourselves and our privacy on the Internet and new online technologies, aiming at SafeNet-everywhere
Saferinternet.at	Saferinternet.at - Das Internet sicher nutzen!
SAFERINTERNETBELG2	Safer Internet Belgium 2
SaferNet	University of Cyprus & Foundation for Research and Technology - Hellas, FORTH, http://www.safeweb.org.cy
SAFT	Awareness project - The SAFT survey providing vital information on how children actually use the internet, and how they communicate with their parents about it http://europa.eu.int/information_society/activities/sip/projects/awareness/saft/index_en.htm
SAFT	Horline - SAMfélag, Fjölskylda og Taekni - Community, Family and Technology
SCOFI	Filtering project - Filtering the Internet by use of the smart card http://europa.eu.int/information_society/activities/sip/projects/filtering/scofi/index_en.htm
SIFT	Filtering project - Solution for Internet Combined Filtering http://europa.eu.int/information_society/activities/sip/projects/filtering/sift/index_en.htm development of a public application program interface public allowing software companies to develop new filtering solutions or adapt existing ones to work with their integration platform
SIP-BENCH	SIP-BENCH, Benchmarking of filtering software and services Study aiming at an independent assessment of the filtering software and services being carried out through an annual benchmarking exercise of 30 parental control and spam filtering products or services, which will be repeated over in 2006, 2007 and 2008. It aims at providing guidance to parents and educators, in particular at improving awareness of solutions and promoting best practices.
SPOTSPAM	Self-regulation project - Spot Spam
STOP-IT 2	Save the Children Italia, http://www.it.inhope.org
STOPLINE	Austrian Hotline against Child Pornography and National Socialistic Offences on

NAME	TASKS / SERVICES / LINKS
	the Internet nic.at Internet Verwaltungs- und Betriebsgesellschaft m.b.H., Austria, http://www.at.inhope.org
STOPLINE.SI	Hotline for dealing with reports of illegal and harmful content on the internet in Slovenia
WIISAN	Webwise Irish Inter Safety Awareness Node
YPRT	Youth Protection Roundtable

7 Examples of National Activities

This chapter describes some examples of national non-EU-funded activities related to human resource development in the IT security area. The selected examples represent activities that have been undertaken in the following sectors:

- governmental and industrial sector: concept for a reorganization process of advanced vocational training in the IT Sector,
- national sector: concept for a national qualification framework,
- educational sector: status of the national education system,
- university sector: education and training of IT professionals at the Darmstadt Centre for IT Security,
- commercial sector: training and certification of IT professionals at the TISP, and
- regional sector: education and training of IT professionals in the region of Karlsruhe.

7.1 Advanced IT Training System Initiative

Education, training and lifelong learning are the most important prerequisites for individuals in life and employment, as well as for social participation and social integration. In this context the German federal government has undertaken several actions in order to open up educational opportunities for everyone (see [BMBF BOE]), and for the support of training activities of companies with various measures.

Currently about 360 state-recognized training occupations (see [BMBF RTO]) exist in Germany that are regularly updated and adapted to economic and technological changes. The training period is usually two or three years, and 60% of the young people participate in dual vocational education and training which is finished by a state examination. State-recognized training occupations are regulated by training regulations that form the legal basis for the practical realization of company-based vocational training.

The Federal Ministry of Education and Research (BMBF, **B**undes**m**inisterium für **B**ildung und **F**orschung) is funding inter-company training centers (see [BMBF ICTCC]) to help **S**mall and **M**edium-sized **E**nterprises (SMEs) to provide training facilities or at inter-company level in competence centers.

Currently a reorganization process of advanced vocational training in the IT sector is being implemented in Germany that has been initiated by the German government in 1999 (for more details see [BMBF AITTS]). In a first step the industrial metalworkers' union, the unified service industries union, the central association of electric engineering and electric industries, and the German association for information technology, telecommunications and new media (BITKOM) have developed an initial concept for the reorganization of advanced vocational training in the IT sector that was integrated into the federal government initiative "Alliance for Jobs, Training, and Competitiveness". Key issues

of the advanced IT training system have been the following activities and objectives:

- recognition of vocational and professional training,
- implementation of working process, and workflow embedded training,
- acquisition of social and behavioral skills,
- systematic career development, and the provision of an adequate structure,
- lifelong learning,
- knowledge management and documentation,
- enabling of qualification at the working place,
- creation of transparency, certification of quality, and support for mobility,
- creation of efficient training structures,
- creation of training structures with long-term stability,
- development of a new training culture,
- definition of career profiles of the advanced IT training system,
- certification of specialists, and the
- examination of professionals.

The advanced IT training system shall enable transparency in order to provide mobility at the national and the European level by defining sector-specific standards as a replacement of the many incomparable advanced training courses, examinations, and certificates. Evaluations of implementations of the advanced IT training system in small and large companies have proven the positive results of the concept for employees and companies. A set of 35 career profiles associated with three levels of proficiency, and a methodology for workflow-embedded qualification have been defined by a cooperation with more than 60 representatives from the ICT industry, SMEs, and training providers.

The advanced IT training system provides measures for determining the equivalence of qualifications by means of a credit points system comparable to the ECTS in the higher education sector of the Bologna strategy. The possibility for a systematic career development from the vocational up to the academic level is supported by the newly introduced "specialist level" with the effect that individual qualification procedures and personnel development can be integrated into the development process of companies. The new system promotes individual responsibility and autonomous acquisition of knowledge and competencies as also foreseen in the context of lifelong learning.

The architecture of the advanced IT training system consists of the following three levels:

- IT specialist level with functional groups for software developers, coordinators, solution developers, technicians, product and client advisors, and administrators,
- operative professionals – bachelor level - with functional groups for certified IT systems managers, certified IT business managers, certified IT business consultants, and certified IT marketing managers, and the
- strategic professionals – master level- with functional groups for certified IT technical engineers, and certified IT business engineers.

A set of 35 professional profiles have been defined in close cooperation with more than 50 leading partners from the ICT industries and training institutions based on the following criteria:

- problem solving competency,
- communication,
- work planning,
- tailoring work processes and the decision making framework,
- customer relations, and
- influence on the competitive situation of the business.

An overview of the fields of activity, for which profiles have been defined, is given in the Table 3.

Table 3: Overview of Profiles of the Advanced IT Training System

LEVEL	GROUP	AREA OF COMPETENCY
Specialists	Software developer	IT systems analyst
		IT systems developer
		Software developer
		Database developer
		User interface developer
		Multi media developer
	Coordinator	IT project coordinator
		IT configuration
		IT quality management coordinator
		IT test coordinator
Specialists	Solutions developer	IT technical writer
		Business systems advisor
		E-marketing developer
		E-logistic developer
		Knowledge management
		Systems developer
		IT security coordinator
	Technician	Network developer
		Industrial IT systems technician
		Security technician
	Product and client advisor	Component technician
		IT service advisor
		IT product coordinator
	Administrator	IT sales advisor
		Network administrator
		IT systems administrator
		Database administrator
		Web administrator
		Business systems administrator

LEVEL	GROUP	AREA OF COMPETENCY
Operative professionals		Certified IT systems manager
		Certified IT business manager
		Certified IT business consultant
		Certified IT marketing manager
Strategic professionals		Certified IT technical engineer
		Certified IT business engineer

The definitions of the work-related tasks of IT professionals in the form of profiles allow to specify work-related processes that are relevant for advanced training. The structuring of the learning content is decided on the basis of the work process, and the competencies are operationalized in the context of their work process. A prerequisite of the work process oriented advanced training of employees must include the following steps:

- consideration and coordination of the objectives of the individuals and the company,
- documentation in a qualification agreement,
- identification of the appropriate occupation profile, and the
- examination and approval of the formal entry criteria of the participants.

The realization of work process-oriented training is based on the following issues:

- use of a reference project as the basis for a functional description of the work processes related to the job's roles,
- qualification project, which is a current and sufficiently complex real work assignment that corresponds in size and depth to the reference project,
- systematic support by learning advisors including a coach for the support and control of the learning process and technical experts, and the
- production of a structured documentation of the transfer project and the achieved learning steps.

Advanced IT training of operational and strategic professionals is regulated by national law. Advanced IT training of specialists in the commercial sector is subject to certification procedures complying with European norms. IT specialists are examined by companies and training providers, and are certified by accredited certification bodies after successful demonstration of the conformity of the competence of participants with the relevant IT specialist profile. Professionals are examined by the German chambers of commerce and industry in accordance with the regulation on advanced IT training in the field of ICT.

7.2 National Qualifications Framework

Currently in Germany the development of a **National Qualifications Framework (NQF)** is being prepared that refers to the **European Qualifications Framework (EQF)**. However concrete dates for the launching of this NQF have not been fixed so far. Within this framework all fields of education are covered. The planned NQF shall be strictly oriented towards competences and vocational proficiency (see [NQF G]). A main goal is that qualifications acquired in Germany are comparable and compatible with qualifications in other European countries. The NQF system is used to classify qualifications in terms of learning outcomes that can be matched to levels of work requirements and skill profiles.

The EQF is based on a voluntary commitment of the member states with the countries being responsible for their own qualifications systems and the classification of their qualifications. A prerequisite for the implementation of an EQF is that national education and training authorities be bindingly committed to take care of a number of objectives, principles and procedures. National procedures for classifying qualifications are to be made explicit and demonstrable. Those countries that have completed the classification of their qualifications will be entered in a Europe-wide list.

The potential users of NQF are all organizations involved in education, e.g. federal and regional governments, social partners, enterprises, chambers of commerce, certification bodies, training providers and individuals. NQF provides the instrumental means for a variety of potential uses. Employers and employees can identify or demonstrate the required or acquired qualifications as clusters of competences. The target areas or groups, and their related functions can be structured as follows:

- education system: adequate representation of German certificates, permeability, lifelong learning,
- employment system: mobility, flexibility,
- employers: identification of competences; pin-pointed personnel recruitment and development, and
- individuals: recognition and crediting of learning outcomes, easier access to qualifications, shorter duration of education and training.

The introduction of a NQF requires the following set of questions to be answered:

- Can qualifications that have been acquired in the VET or general / school system be classified on a competence-oriented basis using just one NQF?
- Are the learning outcomes approach and the recommended definitions used for this procedure sensible and appropriate?
- Which competence dimensions should be delineated?
- Which criteria should be taken into account when elaborating the individual levels?
- Is it possible to describe all learning outcomes with a single standard set of descriptors or can descriptors be formulated only for individual learning fields or domains?

- Does a uniform understanding of terminology exist, such as learning outcome, competence, qualification, level, descriptions, etc. that is constitutive for its development?
- How can competence dimensions be further subdivided or detailed?
- What are the criteria in order to clarify the extent to which the levels can be demarcated in relation to occupations, occupational fields and sectors?
- What number of levels should be determined by means of qualitative criteria for describing activities such as complexity, lack of transparency, interconnectedness and speed of change?
- How can credit points for segments of integrated vocational training programs be granted while giving full consideration to the vocational competence that is acquired through training that integrates theoretical with practical instruction?
- Which standards are decisive for designing qualifications on a competence-oriented basis and which standards should be used to ascertain competences?
- What rules should apply for a standards-based certification of learning outcomes that have been acquired non-formally or informally?
- What criteria and procedures should be used to determine equivalences as a prerequisite for procedures for recognizing or crediting acquired competences?
- What effects do competence-oriented qualifications have, and what impact do they probably have on examination methods and procedures?
- What are the implications for quality assurance?

The development of NQF requires the participation of all related stakeholders in order to ensure achieve an appropriate broad level of acceptance. Further information about NQF can be found in the "Report for the Board on a Review of an NQF" (see [FIVET RNOF]).

7.3 Status of National Education Systems

The Federal Statistical Office Germany has recently published information about the status of higher education in Germany that can be summarized by the following statements:

- number of bachelor examinations has been increased in 2005 by 66%,
- number of master examinations has been increased in 2005 by 64%,
- about 40% of the students has been awarded an university diploma, or an equivalent academic degree,
- about 32% has been awarded a diploma at technical colleges, and the
- number of new students has achieved a new peak rate.

The changes in the German higher education area can be characterized by the following facts:

- new interdisciplinary study courses,
- internationalization of studies,
- adoption of bachelor and master degrees, and a
- change of selection and admission procedures,

The following different kinds of organizations are responsible for higher education in Germany:

- universities,
- universities of cooperative education, and the
- advanced technical colleges,

Universities of Cooperative Education

Universities of cooperative education based on the German dual system provide practical-oriented education and training by taking turns in 12 weeks practical education at the work place and 12 weeks theoretical education at the university per semester.

Branches of study related to ICT include automization, information and communications technology, technical informatics, informatics, information technology management, and mobile communication. Possible degrees after successful examination are the following alternatives:

- Dipl.-Ing. (BA, **Berufsakademie**, university of cooperative education, Diplom-Ingenieur), optionally with an indication of the study brunch,
- Dipl.-Inf. (BA, Diplom-Informatiker), optionally with an indication of the study brunch, or
- **Bachelor of Science (B.Sc.)** in Informatics.

The study courses are structured into several periods or sections. During the first section practical and theoretical foundations of information and communication technologies are handled. The second section focuses on technical and methodical working in the vocational fields of activity. Main goals of the universities of cooperative education is to increase the capability of students to

make use of scientifically approved methods and general procedures for concrete practical problems and the technical improvement of standard solutions.

Universities

The study courses are structured into a basic study period, and a main study period. During the first period the content of practical and theoretical foundations of information and communication technologies are learned independent from specific application areas. The set of courses includes mathematical and physical foundation of informatics; basic concepts and methods of informatics including algorithms, computability, data structures, automata, architectures and organization of computer systems, formal languages, programming languages, and operating systems, complemented with exercises and practices.

The main study period focuses on a comprehensive study of the disciplines of theoretical informatics, practical informatics, technical informatics and applied informatics, and selected specific fields of application areas as for example automata and systems theory, formal languages and calculi, algorithms and complexity theory, theory of programming, system software, system architecture, design, implementation and evaluation of program systems, communication and communication structure, data storages, communication and information security, design and use of micro processors, design of circuits and networks, micro programming, formal systems, software technology, real-time systems, cognitive systems, database systems, pattern and images processing, and expert systems.

The main goal of the universities is to increase the capability of students to find general solutions, general methods, and to develop new procedures and applications. The standard period of study at universities for a diploma is nine semesters, and six semesters for the bachelor degree. Possible degrees after successful examination are the

- Dipl.-Ing.(Diplom-Ingenieur),
- Dipl.-Inf. (Diplom-Informatiker),
- Bachelor of Science, or the
- Master of Science

Advanced technical colleges

The study courses at advanced technical colleges are structured into a pre-study industrial practical, a basic study period, and a main study period, both being complemented with parallel practical periods. The period of the pre-study industrial practical depends on the preparatory scholar or vocational training, and lasts several weeks. The first period is focused on mathematical, physical and technical foundations, introduction into informatics, one or more programming languages, system programming, data organization, and computer architectures.

The main study period focuses on general informatics, numerical mathematics, software technology, database systems, computer systems, computer networks, technical informatics, electronic components and circuits, micro electronics, organization of computers and operating software, applications of IT systems,

communications technology, measurement and control engineering, and data processing.

The standard period of study at advanced technical colleges for a diploma is eight semesters including one practical semester, and six semesters for the bachelor degree. Possible degrees after successful examination are Diploma, Bachelor, or Master.

More information about higher education and training in Germany can be found in the documents referenced in Table 4.

7.4 Further Education of Professionals for IT Security at Universities

This section provides one example – the Darmstadt Centre for IT Security (DZI, Darmstädter Zentrum für IT Security) - of higher education of professionals at universities. The main goal of DZI, established at the Technical University Darmstadt (TUD), is to transfer aspects of IT security into the academic education and further higher education of professionals. Competencies of DZI are long-term security, information security, embedded security for smart environments, and security engineering. TUD/DZI currently offer the following set of special IT security lectures, seminars and practical trainings:

- lectures in basic studies for bachelor: introduction into trusted systems, three SWS (Semester-Wochen-Stunden, hours per week during a semester), one SWS equals 1.5 ECTS credit points (CP),
- lectures in advanced studies for master: IT security management, two SWS= 3 CP,
- special IT security lectures: introduction into cryptography,
- special IT security lectures: multi media security procedures,
- special IT security lectures: research-oriented cryptography,
- special IT security lectures: information and data protection law,
- special IT security lectures: quantum algorithms,
- seminars in advanced studies: topological addressing, two SWS =3 CP,
- seminars in advanced studies: IT security management, two SWS = 3 CP,
- seminars in advanced studies: wireless sensor networks, two SWS = 3CP,
- seminars in advanced studies: multimedia and security, two SWS = 3 CP, and
- practical trainings in advanced studies: multimedia and security, four SWS = 6 CP.

DZI offers special seminars on symmetrical cryptography, crypto-graphical protocols, secure/trusted systems, and information and data protection law. DZI is organizing practical studies for cryptography, and computer supported program verification. DIZ cooperates with several institutions, including the following ones:

- Competence Center for Applied Security Technology (CAST), for which DZI is preparing and holding workshops on current IT security topics,
- FlexSecure - Building Blocks for Public Key Infrastructures,
- Fraunhofer Institute for Secure Information Technology (SIT),
- IT SecCity - The Home of IT Security
- Faculty for Security of the Technical University of Darmstadt,
- Institute for Internet Security,
- Kompetenzzentrum für Sicherheit KoSiB, and
- Information Technology Transfer Office (ITO).

The DZI concentrates research efforts in the field of IT security for the following research competencies:

- pervasive security (TUD and FhI SIT),
- long-term security (TUD),
- security policy engineering including (TUD and SIT)
 - context-based access control incl. TPM-based solutions,

- pricing and payment systems for internet commerce incl. new customer loyalty and reputation systems,
- content and transaction security,
- secure processes and business continuity incl. e-government, e-health, and e-work,
- security modeling and verification incl. tool-supported attack analysis,
- security testing,
- mobile security, including ad-hoc and sensor networks and mobile devices (TUD, and SIT),
- digital rights management and watermarking (TUD and IGD),
- dependable, embedded systems and software (TUD, Microsoft Trustworthy Computing Advisory Board),
- secure middleware (TUD),
- side channel attacks and provable security (TUD),
- cryptographic hardware and embedded security (TUD),
- biometrics (TUD and IGD),
- cyber Law (TUD), and
- quantum information (TUD).

Since 2003 applicants have the opportunity to obtain a certificate in IT security that is awarded by DZI and the International Institute in Long Life Learning (I³L³), and offered in cooperation with CAST. Educational programs for students related to new aspects of IT security are offered since 2003 that can acquire a certificate in IT Security at the Technical University of Darmstadt (TUD). The IT security certificate allows students at TUD to prove their qualification in the field of IT security. The certificate is issued by DZI and the International Institute in Long Life Learning (I³L³) in cooperation with CAST.

Applicants, i.e. students, must be registered at the TUD while attending all required courses. The certificate is acquired in combination with a university degree in the form of a diploma, bachelor's degree, or master's degree at the TUD.

The study program for achieving the DZI certificate includes lectures, seminars, and practical courses. The offered lectures are focused on basics of IT security, and current issues of IT security including the following aspects:

- introduction to cryptography,
- trusted systems, and
- IT security.

The lectures on trusted systems and IT security, or prior IT security courses, can be counted for the Master certificate. The following requirements for achieving the certificate have been specified:

- examinations for lectures with sixteen SWS excluding accompanying exercise courses, and including at least two mandatory lectures,
- successful participation in one seminar during the advanced study period with a minimum of two SWS including the production of a paper on the studied topic, and the
- successful participation in one practical course with a minimum of three SWS.

Successful participations in mandatory lectures and seminars must be proven by a written statement. Students also must have passed either an oral or a written examination for the lectures. Seminars must have been attested by a written statement regarding the production of a produced paper and a presentation. All officially created statements must be collected and presented within the application for the certificate.

Two SWS of compulsory optional courses can alternatively be substituted by participation in three CAST workshops on different special topics. This participation must be proven by an examination performed and acknowledged by the managing director of the CAST workshop. More details on relevant courses for the IT security certificate is provided in a lecture catalogue. Professional studies at the DZI are offered in cooperation with the CAST forum for users and professionals who wish to further advance their qualifications in the area of IT security, and to achieve the awarding of an IT security certificate. The tutorials at the DZI both cover basics as well as current topics in the field of IT security placing special focus on didactically well-prepared training material and accompanying exercises intended to apply and deepen the new theoretical knowledge.

7.5 Further Education of Professionals for IT Security at Local and Regional Levels

This section describes two examples of organizations that provide further education of professionals for IT security at the local and regional levels. The examples that are presented are the "Competence Center for Applied Security Technology" in the Rhine-Main area, and the "IT Security Initiative of the Karlsruhe Region".

7.5.1 Competence Center for Applied Security Technology

The **Competence Center for Applied Security Technology (CAST)** provides a forum for the higher educational and industrial sectors the Rhine-Main area offering services in IT security including training, consulting, evaluation of security concepts and technologies, and the exchange of information. The CAST forum can be considered as an open network of competent partners with currently 139 members from the research, industry, and the public sectors. The main goals of the CAST-Forum are the implementation of the transfer of technology and know-how between research and practical applications. This target is achieved with the following services:

- training and further education in the area of IT security,
- exchange of information and experience by means of workshops, conferences and other events,
- public relations work,
- advisory services, and
- evaluation of security solutions.

The CAST-Forum is offering monthly workshops on specific and important topics of IT security with experts from the industry, research, and the public sectors. Some of the main topics related to IT security that have been presented at the latest CAST workshop events include the following aspects:

- brand piracy und product protection,
- cryptography,
- digital rights management,
- enterprise security,
- internal security and critical infrastructures,
- IT security engineering,
- law and IT security,
- mobile security,
- network security,
- secure e-government,
- secure software development,
- security of operating systems,
- security of web services,
- smartcards and access systems, and
- spam-protection.

7.5.2 IT Security Initiative of the Karlsruhe Region KA-IT-Si

The IT Security Initiative of the Karlsruhe region (KA-IT-Si), established in December 2000, has been initiated by the two companies Secorvo Security Consulting GmbH, and SecuRisk GmbH. KA-IT-Si is a public-private partnership sponsored by business development, the chamber of industry and commerce Karlsruhe, the Fair and congress GmbH Karlsruhe, and the research center Karlsruhe. Partners of KA-IT-Si are enterprises of different branches and of different sizes. KA-IT-Si has the following main goals:

- concrete and efficient increase of the IT security level in the region,
- sensitization of employees and managers in enterprises - especially in SMEs - in the area of IT security and administrations,
- education and training of knowledge required for protection measures, and the
- provision of a platform for the exchange of knowledges and experiences between IT security staff.

KA-IT-Si is realizing its initiative by organizing joint conferences and workshops with experts, people in charge of IT security, solution developers and decision makers. KA-IT-Si offers the following IT security services:

- IT security training,
- evaluation of customer networks via penetration testing,
- education of penetration testers,
- evaluation of customers log files and security entries, and the
- execution of IT security audits.

The scope of the education and training program includes the following security areas:

- attack training for system administrators,
- education of penetration testers,
- WLAN security training,
- Windows IT security training,
- execution of penetration tests,
- IT security audits and risks analysis,
- log file evaluation, and the
- education of operational data security officers.

7.6 TeleTrusT Information Security Professional Certificate

The TeleTrusT Information Security Professional Certificate (TISP) has been developed under the patronage of TeleTrusT. TeleTrusT Deutschland e.V. was established in 1989 as a non-profit, politically and economically independent organization for the promotion of trustworthiness of information and communication technology with currently about 90 members from research, development, politics, and essential fields of application. The TeleTrusT organization provides collaboration with the most important producers of security solutions in Germany. TeleTrusT is guaranteeing the objectivity and high quality of the contents of the education and training program.

The TISP expert certificate provides a unique documentation of the competencies of consultants and staff working in the area of IT security. This qualification measure is important for enterprises that have a strong need for qualified employees being able to cope with complex requirements in IT security in order to protect the business processes. The TISP expert certificate is the only effective evidence of this kind in Europe. Other standards as for example the Certified Information Systems Security Professional (CISSP) certificate are tailored to the situation in the USA without taking into account the European standards and legislation. The TISP certificate considers the needs and facts of the European market complying with requirements of data protection, or IT basic protection thus guaranteeing a maximum relevance for the real market.

The following two pre-requirements for the awarding of a TISP certificate must be fulfilled by participants:

- three years professional experience in the area of IT security,
- participation in an one-week preparation course, and
- optional participation in further advanced training courses for individual modules that are offered in cooperation with SIT and CAST.

The mandatory preparation course gives a repetition of the most important fundamentals and terms presuming the knowledge of the following eighteen subject modules:

- fundamentals and basic principles,
- network security – firewalls,
- network security – intrusion detection,
- network security – attack methods,
- network security – virtual private networks,
- network security – web and e-commerce security,
- network security – security in mobile networks,
- cryptograph – general aspects,
- cryptograph – public key infrastructures,
- security management – authentication and authorization management,
- security management – emergency response and business continuity,
- security management – awareness and end user security,
- security management – physical security,
- security management – operational aspects of IT security,
- security management – legal foundation,
- system security – computer viruses,
- system security – content security, and
- system security – security of operating systems.

The examination for the awarding of a TISP certificate is performed by means of two multiple choice tests, both with a period of two hours and 90 individual questions. A reference list of awarded TISP certificates can be found at the TeleTrust web page (see Table 5).

8 References

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	[EC EPDS]	Europass Diploma Supplement http://www.europass-info.de/EN/europass-diplomzusatz.asp
	[EC EPLP]	Europass Language Passport http://www.europass-info.de/EN/europass-sprachenpass.asp
	[EC EPLPO]	Online access to complete the Europass Language Passport http://europass.cedefop.eu.int/instruments/lp/step1.do
	[EC EPM]	Europass Mobility, http://www.europass-info.de/EN/europass-mobilitaet.asp
	[EC EPOLCV]	Online access to complete the Europass CV http://europass.cedefop.eu.int/instruments/cv/step0.do?locale_id=4
	[EC ETP]	European technology platforms and joint technologies http://cordis.europa.eu/ist/about/techn-platform.htm
	[EC IER]	Interim evaluation report of the implementation of the i2010 education and training program, November 2003 http://ec.europa.eu/education/policies/2010/doc/com_2003_685-a1_23013_en.pdf
	[EC ITCPSP]	ICT policy support program http://ec.europa.eu/enterprise/enterprise_policy/cip/index_en.htm#ict
	[EC JMAC]	Jean Monnet conferences on current policy priorities in the field of European integration http://ec.europa.eu/education/programmes/ajm/organisation/overview_en.html
	[EC JMASG]	Grants for young researchers http://ec.europa.eu/education/programmes/ajm/grants/grants_young_en.html
	[EC JMASI]	Institutions that are active in the study of European integration http://ec.europa.eu/education/programmes/ajm/supportinstit/support_institution_s_en.html
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<http://ec.europa.eu/education/programmes/mundus/projects/2007/111.pdf>
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- [EMP IMMIT] International Master in Management of Information Technology (IMMIT)
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http://ec.europa.eu/education/programmes/socrates/ects/doc/ectskey_en.pdf
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http://europa.eu.int/information_society/activities/sip/programme/decision/index_en.htm
- [EU SIPPE] Safer Internet Program Evaluation
http://europa.eu.int/information_society/activities/sip/programme/evaluations/index_en.htm
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http://europa.eu.int/information_society/activities/sip/programme/workprogramme/index_en.htm
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General Requirements for Bodies operating Certification of Persons

More details on initiatives, strategies, programs and organizations of the EU that are related to human resource development in the EU region can be found in the documents listed in the following table.

Table 4: Documents on Initiatives, Strategies, Programs, and Organizations

DATE	TYPE	TITLE / LINK / REFERENCE
2006-11	News	Need for efficient and fair European education and training systems, IP/06/1159, Brussels http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1159&format=HTML&aged=0&language=EN&guiLanguage=fr
2006-09	Communication	Communication Efficiency and equity in European education and training systems, http://ec.europa.eu/education/policies/2010/doc/comm481_en.pdf

DATE	TYPE	TITLE / LINK / REFERENCE
2006-09	Conference	i2010 - Towards a Ubiquitous European Information Society, http://www.i2010.fi/
2006-09	Conference	i2010 for European Regions and Cities - A Roadmap for EU Information Society Opportunities (2007-2013) http://olomouc-conference.ernact.net/2006/
2006-09	Proposal	European Qualifications Framework for lifelong learning - Implementing the Community Lisbon Programme, Proposal for a Recommendation of the European Parliament and of the Council http://ec.europa.eu/education/policies/educ/eqf/com_2006_0479_en.pdf
2006-08	News	G8 Summit Declaration & Press Release, http://www.dfes.gov.uk/bologna/index.cfm?fuseaction=news.view&NewsID=31&NewsCategoryID=1
2006-08	Study	The impact of ICT on employment, http://europa.eu.int/information_society/eeurope/i2010/studies/index_en.htm - top
2006-07	Conference	The 3rd European eLearning Conference http://www.elearning2006.fi/main.site?action=siteupdate/view&id=2
2006-06	Conference	ICT for an inclusive society http://europa.eu.int/information_society/events/ict_riga_2006/index_en.htm
2006-06	Information	European Institute of Technology: the Commission proposes a new flagship for excellence, http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/201&format=HTML&aged=0&language=EL&guiLanguage=en
2006-06	Organization	The Commission details its plan for a European Institute of Technology, http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/751&format=HTML&aged=0&language=EN&guiLanguage=fr

DATE	TYPE	TITLE / LINK / REFERENCE
2006-06	Report	e-Government Report http://europa.eu.int/information_society/eeurope/i2010/docs/benchmarking/online_availability_2006.pdf
2006-05	Communication	Delivering on the modernization agenda for universities: education, research and innovation, Communication from the Commission to the Council and the European Parliament http://ec.europa.eu/education/policies/2010/doc/comuniv2006_en.pdf
2006-05	Information	A period of rapid market developments http://europa.eu.int/information_society/eeurope/i2010/docs/info_sheets/7-1-i2010-infospace-en.pdf
2006-05	Information	Adoption of Information & Communication Technologies (ICT) by Business http://europa.eu.int/information_society/eeurope/i2010/docs/info_sheets/7-2b-i2010-innovation-en.pdf
2006-05	Information	Plans for 2006/2007 http://europa.eu.int/information_society/eeurope/i2010/docs/info_sheets/7-4-i2010-futures-en.pdf
2006-05	Information	Policies and technologies that improve public services http://europa.eu.int/information_society/eeurope/i2010/docs/info_sheets/7-3-i2010-inclusion-en.pdf
2006-05	Information	The world's economies depend on Information & Communication Technologies (ICT) http://europa.eu.int/information_society/eeurope/i2010/docs/info_sheets/7-2a-i2010-innovation-en.pdf
2006-05	Report	A summary of the first year's results http://europa.eu.int/information_society/eeurope/i2010/docs/info_sheets/7-5-i2010-results-en.pdf
2006-05	Report	European Training Foundation (ETF): Third Evaluation Report http://ec.europa.eu/education/programmes/evaluation/docs/etf3fullreport_en.pdf
2006-05	Report	Progress towards the Lisbon Objectives in Education and Training - Report based on indicators and benchmarks 2006 Report http://ec.europa.eu/education/policies/2010/doc/progressreport06.pdf
2006-05	Strategy	Bologna strategy http://ec.europa.eu/education/policies/educ/bologna/bologna_en.html
2006-05	Strategy	Lisbon Strategy - Europe needs modernized universities, says European Commission http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/592&format=HTML&aged=0&language=EN&guiLanguage=fr
2006-04	Report	Meeting report http://ec.europa.eu/education/policies/2010/doc/memo1159_en.pdf
2006-02	Communication	Implementing the renewed partnership for growth and jobs - Developing a knowledge flagship: the European Institute of Technology, Communication from the Commission to the European Council http://eur-lex.europa.eu/LexUriServ/site/en/com/2006/com2006_0077en01.pdf
2006-02	Event	Safer Internet Day 2006, http://blog.eun.org/insafe/2006/02/10/
2006-02	Proposal	European Institute of Technology: the Commission proposes a new flagship for excellence, http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/201&format=HTML&aged=0&language=EN&guiLanguage=fr
2006-02	Recommendation	Further European cooperation in quality assurance in higher education, Recommendation of the European Parliament and of the Council http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/L_064/L_06420060304en00600062.pdf

DATE	TYPE	TITLE / LINK / REFERENCE
2006-02	Recommendation	Recommendation on further European cooperation in quality assurance in higher education, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:064:0060:0062:FR:PDF
2006-02	Report	Analytical Report for the European Commission prepared by the European Expert Network on Economics of Education (EENEE), http://ec.europa.eu/education/policies/2010/doc/eenee.pdf
2006-02	Report	Joint Education Council/Commission Report on the implementation of the Education & Training 2010 work program, http://europa.eu/education/pdf_en.html
2006-02	Report	Modernizing education and training: a vital contribution to prosperity and social cohesion in Europe 2006 Joint Interim Report of the Council and the Commission on progress under the Education & Training 2010 work program, http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/c_079/c_07920060401en00010019.pdf
2006-02	Report	Opinion of the European Economic and Social Committee on i2010 http://europa.eu.int/information_society/eeurope/i2010/docs/interinstitutional/eesc_opinion_i2010.doc
2006-02	Report	Opinion of the European Parliament on i2010 http://europa.eu.int/information_society/eeurope/i2010/docs/interinstitutional/ep_i2010_report.doc
2006-01	Report	From Bergen to London – The EU Contribution, Commission Progress Report http://ec.europa.eu/education/policies/educ/bologna/report06.pdf
2006	Activity	Public consultation on the potential risks for children of using mobile phones http://europa.eu.int/information_society/activities/sip/public_consultation/index_en.htm
2006	Activity	Safer Internet Plus http://europa.eu.int/information_society/activities/sip/programme/index_en.htm
2006	Activity	Safer Internet http://europa.eu.int/information_society/activities/sip/index_en.htm
2006	Decision	Socrates – Legal Basis http://ec.europa.eu/education/programmes/socrates/legal_en.html
2006	Information	COMENIUS Web Page, http://ec.europa.eu/education/programmes/socrates/comenius/moreabout_en.html#objectives
2006	Information	Information on eLearning, http://www.elearningeuropa.info/
2006	Information	LEONARDO DA VINCI (vocational training) http://ec.europa.eu/education/programmes/leonardo/leonardo_en.html
2006	Information	Overview of current study opportunities and profiles in informatics, http://www.studienwahl.de/
2006	Initiative	R3L initiative (regional networks for life-long learning): the promotion of the regional dimension in life-long learning throughout Europe, http://ec.europa.eu/education/policies/III/life/region/index_en.html
2006	Legislation	Directory of Community legislation in force, http://eur-lex.europa.eu/en/lif/reg/en_register_1630.html
2006	Mobility	LEONARDO DA VINCI European Quality in Mobility Award 2006 , http://ec.europa.eu/education/programmes/leonardo/doc/grazprojects.pdf
2006	News	Network and Information Security : Commission seeks to improve network and information security in Europe Businesses http://europa.eu.int/information_society/newsroom/cf/itemlongdetail.cfm?item_id=2679
2006	Policy	Fact sheets on information society policies and activities, http://europa.eu.int/information_society/factsheets/month/index_en.htm

DATE	TYPE	TITLE / LINK / REFERENCE
2006	Policy	General overview of EU policy on education and training, http://europa.eu/scadplus/leg/en/s19000.htm
2006	Policy	Key Messages to the March 2006 European Council, http://ec.europa.eu/education/policies/2010/doc/jointkey06_en.pdf
2006	Program	Common Position No 15/2006, Establishing an action program in the field of lifelong learning, http://europa.eu/eur-lex/lex/LexUriServ/LexUriServ.do?uri=OJ:C:2006:251E:0037:0061:EN:PDF
2006	Program	Socrates – Web Page http://ec.europa.eu/education/programmes/socrates/socrates_en.html
2006	Report	Joint Council/Commission progress report on the implementation of the Education & Training 2010 work program: "Modernizing education and training: a vital contribution to prosperity and social cohesion in Europe", http://ec.europa.eu/education/policies/2010/doc/progressreport06_en.pdf
2006	Report	Joint Education Council/Commission Report on the implementation of the Education & Training 2010 work program, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2006:079:0001:0019:EN:PDF
2006	Report	Modernizing education and training: a vital contribution to prosperity and social cohesion in Europe http://ec.europa.eu/education/policies/2010/doc/progressreport06_en.pdf
2006	Report	Progress towards the Lisbon Objectives in Education and Training - 2006 Report, http://ec.europa.eu/education/policies/2010/doc/progressreport06.pdf
2006	Service	EUROPE DIRECT is a free telephone and e-mail service http://ec.europa.eu/europedirect/index_en.htm
2006	Strategy	A strategy for a Secure Information Society - dialogue, partnership and empowerment, COM/2006/251
2006	Strategy	Bologna strategy – latest news http://www.dfes.gov.uk/bologna/index.cfm?fuseaction=news.list
2006	Study	Studies and publications on Higher Education, http://ec.europa.eu/education/programmes/socrates/erasmus/public_en.html

DATE	TYPE	TITLE / LINK / REFERENCE
2005-12	Conference	Knowledge Economy - Challenges for Measurement http://forum.europa.eu.int/Public/irc/dsis/knowledgeeconomy/library
2005-12	Report	Indicators for monitoring active citizenship, http://ec.europa.eu/education/doc/reports/doc/citizenship.pdf
2005-12	Study	Indicators for monitoring active citizenship http://ec.europa.eu/education/doc/reports/doc/citizenship.pdf
2005-12	Study	Indicators for monitoring active citizenship, http://ec.europa.eu/education/doc/reports/doc/citizenship.pdf
2005-12	Study	Study on Access to Education and Training, http://ec.europa.eu/education/doc/reports/doc/access.pdf
2005-12	Study	Study on Access to Education and Training, http://ec.europa.eu/education/doc/reports/doc/access.pdf
2005-12	Study	Study on Access to Education and Training, http://ec.europa.eu/education/doc/reports/doc/access.pdf
2005-12	Study	Study on private household spending on education and training http://ec.europa.eu/education/doc/reports/doc/privatespending.pdf
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2005-12	Study	Study on private household spending on education and training, http://ec.europa.eu/education/doc/reports/doc/privatespending.pdf
2005-11	Communication	Commission Communication, "Modernizing education and training: a vital contribution to prosperity and social cohesion in Europe" (2006 draft Joint Council/Commission Report on the implementation of the Education & Training 2010 work program), http://ec.europa.eu/education/policies/2010/doc/progressreport06_en.pdf
2005-11	Conclusion	Council Conclusions on i2010 http://europa.eu.int/information_society/eeurope/i2010/docs/council_conclusions_on%20i2010.pdf
2005-11	Programme	Commission proposal for a Recommendation on Key Competences for Lifelong Learning http://ec.europa.eu/education/policies/2010/doc/keyrec_en.pdf
2005-11	Proposal	Commission proposal for a Recommendation on Key Competences for Lifelong Learning, http://ec.europa.eu/education/policies/2010/doc/keyrec_en.pdf
2005-11	Proposal	Key competences for lifelong learning, Commission Proposal for a Recommendation of the European Parliament and of the Council http://ec.europa.eu/education/policies/2010/doc/keyrec_en.pdf
2005-11	Proposal	Key competences for lifelong learning, Commission Proposal for a Recommendation of the European Parliament and of the Council http://ec.europa.eu/education/policies/2010/doc/keyrec_en.pdf
2005-11	Proposal	Transnational mobility within the Community for education and training purposes: European Quality Charter for Mobility, Commission Proposal for a Recommendation of the European Parliament and of the Council http://eur-lex.europa.eu/LexUriServ/site/en/com/2005/com2005_0450en01.pdf

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2005-11	Report	Annex to the Draft 2006 joint progress report of the Council and the Commission on the implementation of the "Education & Training 2010 work program, Commission Staff Working Paper http://ec.europa.eu/education/policies/2010/doc/report06staff.pdf
2005-11	Resolution	Mobilizing the brainpower of Europe: enabling higher education to make its full contribution to the Lisbon Strategy, Resolution of the Council and of the Representatives of the Governments of the Member States, http://eur-lex.europa.eu/LexUriServ/site/en/oj/2005/c_292/c_29220051124en00010002.pdf
2005-11	Study	Study on basic skills - Explaining student performance http://ec.europa.eu/education/doc/reports/doc/basicskill.pdf
2005-11	Study	Study on basic skills - Explaining student performance, http://ec.europa.eu/education/doc/reports/doc/basicskill.pdf
2005-11	Study	Study on basic skills - Explaining student performance, http://ec.europa.eu/education/doc/reports/doc/basicskill.pdf
2005-11	Study	Study on the returns to various types of investment in education and training, http://ec.europa.eu/education/policies/2010/studies/invest05_en.pdf
2005-09	Policy	Fundamentals of a Common Quality Assurance Framework (COAF) for VET IN Europe http://ec.europa.eu/education/policies/2010/qualitynet_en.html
2005-09	Study	Study on early school leavers http://ec.europa.eu/education/doc/reports/doc/earlyleave.pdf
2005-09	Study	Study on early school leavers, http://ec.europa.eu/education/doc/reports/doc/earlyleave.pdf
2005-07	Publication	Key data on education in Europe 2005, Joint publication Eurydice/Eurostat http://www.eurydice.org/Doc_intermediaires/indicators/en/frameset_key_data.html
2005-07	Working Document	Staff Working Document - European Qualifications Framework (EQF) http://ec.europa.eu/education/policies/2010/doc/consultation_eqf_en.pdf
2005-07	Working Paper	Towards a European Qualifications Framework for Lifelong Learning, Commission Staff Working Document http://ec.europa.eu/education/policies/2010/doc/consultation_eqf_en.pdf
2005-06	Initiative	Communication "i2010 – A European Information Society for growth and employment", http://europa.eu.int/information_society/eeurope/i2010/docs/communications/com_229_i2010_310505_fv_en.doc
2005-06	Report	European Credit Transfer in Vocational Education and Training (ECVET), http://ec.europa.eu/education/policies/2010/doc/ecvt2005_en.pdf
2005-06	Strategy	Commission launches five-year strategy to boost the digital economy http://europa.eu.int/information_society/eeurope/i2010/docs/launch/i2010_press_release_en.doc
2005-05	Conclusion	Conclusions on new indicators in education and training, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2005:141:0007:0008:EN:PDF

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2005-05	Strategy	Bergen Communiqué http://www.bologna-bergen2005.no/Docs/00-Main_doc/050520_Bergen_Communique.pdf
2005-05	Strategy	Bologna Bergen Ministerial Summit, http://www.bologna-bergen2005.no/
2005-05	Strategy	Bologna strategy – documents http://www.dfes.gov.uk/bologna/index.cfm?fuseaction=docs.list
2005-04	Communication	Commission Communication http://ec.europa.eu/education/policies/2010/doc/comuniv2005_en.pdf
2005-04	Communication	European Higher Education in a Worldwide Perspective, Annex to Commission communication Mobilizing the brainpower of Europe: enabling universities to make their full contribution to the Lisbon Strategy http://ec.europa.eu/education/policies/2010/doc/comuniv2005annex_en.pdf
2005-04	Strategy	Communication from the Commission - Mobilizing the brainpower of Europe: enabling universities to make their full contribution to the Lisbon Strategy http://ec.europa.eu/education/policies/2010/doc/comuniv2005_en.pdf
2005-04	Strategy	Progress Report - Bologna strategy http://ec.europa.eu/education/policies/educ/bologna/report05.pdf
2005-04	Strategy	Working together for growth and jobs - next steps in implementing the revised Lisbon strategy http://europa.eu.int/information_society/eeurope/i2010/docs/sec_growth_and_jobs_290405_622_en.pdf
2005-02	Conference	Enabling European education to make its full contribution to the knowledge economy and society http://ec.europa.eu/education/policies/2010/doc/conference_en.pdf
2005-02	Report	Erasmus Curriculum Development Projects, 2005 http://ec.europa.eu/dgs/education_culture/evalreports/education/2005/erasmus-cd/erasCDxprep_en.pdf
2005-02	Strategy	A new start for the Lisbon Strategy http://ec.europa.eu/education/policies/2010/doc/lisbon_final_en.pdf
2005-02	Strategy	Mid-term review of the Lisbon Strategy - Commission Communication http://ec.europa.eu/education/policies/2010/doc/review2005_en.pdf
2005	Conclusion	Council Conclusions on new indicators in education and training, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2005:141:0007:0008:EN:PDF
2005	Report	ECVET Technical specifications - 2005 Progress Report, http://ec.europa.eu/education/policies/2010/doc/ecvt2005_en.pdf
2005	Report	National Report – France, http://ec.europa.eu/education/policies/2010/natreport/france_en.pdf
2005	Report	National Report – Germany, http://ec.europa.eu/education/policies/2010/natreport/de_en.pdf

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2005	Report	National Report – United Kingdom, http://ec.europa.eu/education/policies/2010/natreport/uk_en.pdf
2005	Report	Report on the Results of the Public Consultation http://ec.europa.eu/education/policies/educ/eit/consult_en.pdf
2005	Review	The mid-term review of the Lisbon Process http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2005:0024:FIN:EN:PDF
2005	Strategy	Mid-Term Review of the Lisbon Strategy http://ec.europa.eu/education/policies/2010/doc/kok_en.pdf
2005	Strategy	Progress towards the Lisbon Objectives in Education and Training http://ec.europa.eu/education/policies/2010/doc/progressreport05.pdf
2005	Strategy	The Communication "Working together for growth and jobs – a new start for the Lisbon Strategy", http://europa.eu.int/information_society/eeurope/i2010/docs/launch/lisbon_com_2005_24_en.doc
2005	Study	Study on Enhancing Learning Opportunities at work, http://ec.europa.eu/education/policies/2010/studies/enhance05_en.pdf
2005	Study	Study on Informatics at Universities and Advanced Technical Colleges, http://www.his.de/Abt3/Grundlagen/grund30
2005	Study	Study on the returns to various types of investment in education and training, http://ec.europa.eu/education/policies/2010/studies/invest05_en.pdf
2005	Survey	EUROBAROMETER 2005, http://europa.eu.int/information_society/activities/sjp/eurobarometer/index_en.htm
2005	Working Paper	Commission staff working paper - European Higher Education in a Worldwide Perspective http://ec.europa.eu/education/policies/2010/doc/workuniversity2005_en.pdf
2004-12	Decision	Decision no 2241/2004/EC of the European Parliament and of the Council of 15 December 2004 on a single Community framework for the transparency of qualifications and competences (Europass), http://eurlex.europa.eu/lex/LexUriServ/LexUriServ.do?uri=OJ:L:2004:390:0006:0020:EN:PDF
2004-12	Decision	Establishment of a single framework for the transparency of qualifications and competences (Europass), Decision No 2241/2004/EC, OJ L 390
2004-12	Decision	Europass, Single Community framework for the transparency of qualifications and competences, Decision No 2241/2004/EC of the European Parliament and of the Council, http://eurlex.europa.eu/LexUriServ/site/en/oj/2004/l_390/l_39020041231en00060020.pdf
2004-12	Review	Maastricht Communiqué on the Future Priorities of Enhanced European Cooperation in Vocational Education and Training (VET), European Ministers of Vocational Education and Training, European Social Partners and European Commission review of the Copenhagen Declaration of 30 November 2002 http://ec.europa.eu/education/news/ip/docs/maastricht_com_en.pdf
2004-12	Study	Exploring sources on funding for lifelong learning http://ec.europa.eu/education/doc/reports/doc/llifunding.pdf
2004-11	Publication	Key Data on Information and Communication Technology in Schools in Europe, Publication by the Eurydice European Unit with the financial support of the European Commission, November 2004 http://www.eurydice.org/Documents/KDICT/en/FrameSet.htm
2004-11	Publication	Key Data on Teaching Languages at School in Europe, Publication by the Eurydice European Unit with the financial support of the European Commission http://www.eurydice.org/Documents/KDLANG/2005/EN/FrameSet.htm
2004-11	Report	Defining a Strategy for the Direct Assessment of Skills,

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		http://ec.europa.eu/education/doc/reports/doc/skills.pdf
2004-11	Report	External Evaluation of Erasmus Institutional and National Impact http://ec.europa.eu/education/programmes/evaluation/erasmusext_en.pdf
2004-11	Report	Facing the Challenge. The Lisbon strategy for growth and employment http://europa.eu.int/growthandjobs/pdf/kok_report_en.pdf
2004-11	Study	Defining a Strategy for the Direct Assessment of Skills http://ec.europa.eu/education/doc/reports/doc/skills.pdf
2004-11	Study	Defining a Strategy for the Direct Assessment of Skills, http://ec.europa.eu/education/doc/reports/doc/skills.pdf
2004-11	Work Program	Implementation of „Education and Training 2010“ http://ec.europa.eu/education/policies/2010/doc/basicframe.pdf
2004-11	Working Paper	Career Guidance - A handbook for policy-makers, Commission staff working paper and joint publication with the OECD http://www.oecd.org/dataoecd/53/53/34060761.pdf
2004-10	Conclusion	Council Conclusions on future priorities in the field of vocational education and training (follow-up to the Copenhagen process), http://ec.europa.eu/education/policies/2010/doc/council13832_en.pdf
2004-10	Report	Overview of national developments, UK, http://ec.europa.eu/education/policies/2010/doc/infovisit_uk.pdf
2004-09	Report	Overview of national developments, Germany, http://ec.europa.eu/education/policies/2010/doc/infovisit_bonn.pdf
2004-08	Report	Interim Evaluation of the Comenius 3 Action Under the Socrates II Programme http://ec.europa.eu/education/programmes/socrates/comenius/evaluation/soc2com3_en.pdf
2004-07	Proposal	Proposal for a Decision of the European Parliament and of the Council http://eur-lex.europa.eu/LexUriServ/site/en/com/2004/com2004_0474en01.pdf
2004-05	Conclusion	Quality Assurance in Vocational Education and Training, Education Council Conclusions http://ec.europa.eu/education/policies/2010/doc/vetquality_en.pdf
2004-05	Conclusion	Validation of non-formal and informal learning, Conclusions of the Council and of the representatives of the Governments of the Member States meeting within the Council on Common European Principles for the identification and validation of non-formal and informal learning http://ec.europa.eu/education/policies/2010/doc/validation2004_en.pdf

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2004-05	Resolution	Guidance throughout life in Europe, Resolution of the Council and of the representatives of the Member States meeting within the Council on Strengthening Policies, Systems and Practices in the field of Guidance throughout life in Europe http://ec.europa.eu/education/policies/2010/doc/resolution2004_en.pdf
2004-04	Action Program	The Community 'Action Bodies' Action Programme, http://ec.europa.eu/education/programmes/other_actions/action_bodies_en.html
2004-04	Program	Action program to promote bodies active at European level in the field of education and training, Decision No 791/2004/EC of the European Parliament and of the Council, http://europa.eu/eur-lex/pri/en/oj/dat/2004/L_138/L_13820040430en00310039.pdf
2004-03	Decision	Establishment of a Community action program to promote Bodies active at European level in the field of education and training to support specific activities in this field, Decision No 791/2004/EC, OJ L 138
2004-03	Report	Interim evaluation report on the Socrates program, March 2004, http://ec.europa.eu/dgs/education_culture/evalreports/education/2004/socii_interim/socllintCOM_en.pdf
2004-03	Report	Interim Evaluation Report on the Socrates Programme http://ec.europa.eu/education/pdf_en.html
2004-03	Report	Interim evaluation report on the Socrates program, March 2004, http://ec.europa.eu/dgs/education_culture/evalreports/education/2004/socii_interim/socllintCOM_en.pdf
2004-03	Report	Interim evaluation report on the Tempus III program, http://ec.europa.eu/education/programmes/evaluation/inttempus_en.pdf
2004-03	Report	Interim report on the implementation of the Leonardo da Vinci program, http://ec.europa.eu/education/programmes/evaluation/intleonardo_en.pdf
2004-03	Report	Interim report on the implementation of the Leonardo da Vinci program, March 2004, http://ec.europa.eu/education/programmes/evaluation/intleonardo_en.pdf
2004-03	Report	Joint Interim Report "Education & Training 2010: the success of the Lisbon Strategy hinges on urgent reforms", http://ec.europa.eu/education/policies/2010/doc/jir_council_final.pdf
2004-03	Report	The implementation of the Leonardo da Vinci program http://ec.europa.eu/education/programmes/evaluation/intleonardo_en.pdf
2004-03	Report	The Tempus III program http://ec.europa.eu/education/programmes/evaluation/inttempus_en.pdf
2004-03	Strategy	Conclusions of the Lisbon European Council, http://consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/ec/00100-r1.en0.htm
2004-02	Report	"Education & Training 2010" – The success of the Lisbon Strategy hinges on urgent reforms, Joint Interim Report of the Council and the Commission on the implementation of the detailed work program on the follow-up of the objectives of education and training systems in Europe http://ec.europa.eu/education/policies/2010/doc/jir_council_final.pdf

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2004-01	Report	Mobility within the Community of students, persons undergoing training, volunteers and teachers and trainers, Report from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions on the follow-up to the Recommendation of the European Parliament and the Council of 10 July 2001 http://europa.eu/eur-lex/en/com/rpt/2004/com2004_0021en01.pdf
2004	Benchmark	Indicators and benchmarks http://ec.europa.eu/education/policies/2010/doc/progress_towards_common_objectives_en.pdf
2004	Conclusion	Council Conclusions on quality assurance in VET, 2004, http://ec.europa.eu/education/policies/2010/doc/vetquality_en.pdf
2004	Conclusion	Council Conclusions on validation of non formal and informal learning, http://ec.europa.eu/education/policies/2010/doc/validation2004_en.pdf
2004	Information	Adult learning – on the road to Europe, Thematic trends in Socrates-Grundtvig European cooperation projects and networks, http://ec.europa.eu/dgs/education_culture/publ/pdf/socrates/grundtvig/brochure2004_en.pdf
2004	Proposal	Proposal for a Decision of the European Parliament and of the Council establishing an integrated action program in the field of lifelong learning (2007-2013), 2004, http://europa.eu/eur-lex/lex/LexUriServ/LexUriServ.do?uri=COM:2004:0474:FIN:EN:PDF
2004	Report	2004 progress report on quality assurance in VET, http://ec.europa.eu/education/policies/2010/doc/quality2004.pdf
2004	Report	Education and Training of Teachers and Trainers: Progress report, http://ec.europa.eu/education/policies/2010/doc/trainer2004.pdf
2004	Report	ICT progress report http://ec.europa.eu/education/policies/2010/doc/info2004.pdf
2004	Report	Indicators' development - Situation 2004 http://ec.europa.eu/education/policies/2010/doc/infoindic.pdf
2004	Report	Indicators' development - Situation 2004, http://ec.europa.eu/education/policies/2010/doc/infoindic.pdf
2004	Report	Lifelong guidance progress report, http://ec.europa.eu/education/policies/2010/doc/guidance2004.pdf
2004	Report	Mobility progress report, http://ec.europa.eu/education/policies/2010/doc/mob2004.pdf
2004	Report	Overview of national developments, Germany, http://ec.europa.eu/education/policies/2010/doc/infovisit_bonn.pdf
2004	Report	Overview of national developments, http://ec.europa.eu/education/policies/2010/doc/basicnational2004.pdf
2004	Report	Overview of national developments, http://ec.europa.eu/education/policies/2010/doc/infonational2004.pdf
2004	Report	Overview of national ICT developments, http://ec.europa.eu/education/policies/2010/doc/infonational2004.pdf
2004	Report	Progress report, http://ec.europa.eu/education/policies/2010/doc/basic2004.pdf
2004	Report	Progress report, http://ec.europa.eu/education/policies/2010/doc/info2004.pdf
2004	Resolution	Council Resolution on Lifelong Guidance, http://ec.europa.eu/education/policies/2010/doc/resolution2004_en.pdf
2004	Resolution	Council Resolution on Lifelong Guidance, http://ec.europa.eu/education/policies/2010/doc/resolution2004_en.pdf
2004	Resolution	On a European approach towards a culture of network and information security, Resolution 2003/C 48/01

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2004	Study	Study prepared for the European Commission in preparation for the conference "Strengthening European cooperation in VET: The way forward", Maastricht http://ec.europa.eu/education/policies/2010/studies/maastricht_en.pdf
2004	Working Paper	Working Paper on entrepreneurship education, http://ec.europa.eu/education/policies/2010/doc/basicpaper2004.pdf
2003-12	Decision	Decision No 2317/2003/EC of the European Parliament and of the Council of 5 December 2003 establishing a program for the enhancement of quality in higher education and the promotion of intercultural understanding through cooperation with third countries (Erasmus Mundus) (2004 to 2008), http://ec.europa.eu/education/programmes/mundus/decision_en.pdf
2003-12	Decision	E-Learning, Multi annual program (2004 to 2006) for the effective integration of information and communication technologies (ICT) in education and training systems in Europe (eLearning Programme), Decision No 2318/2003/EC of the European Parliament and of the Council http://europa.eu/eur-lex/pri/en/oj/dat/2003/l_345/l_34520031231en00090016.pdf
2003-12	Decision	Erasmus-Mundus Programme for the enhancement of quality in higher education and the promotion of intercultural understanding through cooperation with third countries, 2004 to 2008, Decision No 2317/2003/EC of the European Parliament and of the Council http://ec.europa.eu/education/programmes/mundus/decision_en.pdf
2003-12	Decision	Establishment of a multi-annual program for the effective integration of information and communication technologies (ICT) in education and training systems in Europe (eLearning program), Decision No 2318/2003/EC, OJ L 345
2003-12	Decision	Establishment of a program for the enhancement of quality in higher education and the promotion of intercultural understanding through cooperation with third countries (Erasmus Mundus), Decision No 2317/2003/EC, OJ L 345
2003-11	Strategy	Lisbon Strategy - Education & Training: the Success of the Lisbon strategy hinges on urgent reforms http://europa.eu/eur-lex/en/com/cnc/2003/com2003_0685en01.pdf
2003-09	Strategy	Outcome of the stakeholders' consultation based on the Communication http://ec.europa.eu/education/policies/2010/consultation_en.html
2003-07	Report	E-Learning: Designing Tomorrow's Education - A Mid-Term Report, Commission Staff Working Paper, http://ec.europa.eu/education/programmes/elearning/doc/mid_term_report_en.pdf
2003-05	Conclusion	Reference Levels of European Average Performance in Education and Training (Benchmarks), Council Conclusions http://ec.europa.eu/education/policies/2010/doc/after-council-meeting_en.pdf
2003-02	Communication	Communication on the role of universities in the knowledge society http://europa.eu/eur-lex/en/com/cnc/2003/com2003_0058en01.pdf
2003-02	Communication	The role of the universities in the Europe of knowledge http://europa.eu/eur-lex/en/com/cnc/2003/com2003_0058en01.pdf
2003-02	Communication	The role of the universities in the Europe of knowledge, Commission Communication http://europa.eu/eur-lex/en/com/cnc/2003/com2003_0058en01.pdf
2003-01	Communication	Investing efficiently in education and training: an imperative for Europe, Commission Communication http://europa.eu/eur-lex/en/com/cnc/2002/com2002_0779en01.pdf
2003-01	Communication	Investing efficiently in education and training: an imperative for Europe http://europa.eu/eur-lex/en/com/cnc/2002/com2002_0779en01.pdf
2003	Communication	Education and Training 2010 - Commission Communication contribution to the 2004 European Council,

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2003	Communication	Education and Training 2010 - Commission Communication Service Report: contribution to the 2004 European Council, http://europa.eu/education/policies/2010/doc/staff-work_en.pdf
2003	Report	Analysis of the implementation of lifelong learning strategies in EU Member States and EFTA/EEA countries, http://ec.europa.eu/education/policies/2010/doc/synthesis_efta_eea_en.pdf
2003	Report	Credit Transfer group - 2003 activity report, http://ec.europa.eu/education/policies/2010/doc/twg_on_credit_transfer_progress_en.pdf
2003	Report	ICT Working Group Report 2003, http://ec.europa.eu/education/policies/2010/doc/it-technologies_en.pdf
2003	Report	National Report - France, http://ec.europa.eu/education/policies/2010/lll_report/lll_fr_fr.pdf
2003	Report	National Report – Germany, http://ec.europa.eu/education/policies/2010/lll_report/lll_de_de.pdf
2003	Report	National Report - United Kingdom, http://ec.europa.eu/education/policies/2010/lll_report/lll_uk_en.pdf
2002-11	Communication	European benchmarks in education and training: follow-up to the Lisbon European Council, Communication from the Commission http://ec.europa.eu/education/policies/2010/doc/bench_ed_tra1_en.pdf
2002-11	Declaration	"Copenhagen Declaration" Enhanced European cooperation in vocational education and training, Declaration of the European Ministers of Vocational Education and Training, the European Social Partners and the European Commission http://ec.europa.eu/education/copenhagen/copenhagen_declaration_en.pdf
2002-11	Program	On the future development of community program in education, training and youth, http://ec.europa.eu/education/newprogconsult/consult_en.pdf
2002-11	Review	Maastricht Communiqué on the future priorities of enhanced European cooperation in VET - Review of the Copenhagen Declaration of November 2002, http://ec.europa.eu/education/news/ip/docs/maastricht_com_en.pdf
2002-11	Working Document	Implementation of the "Education & Training 2010" program, Commission Staff Working Document, Supporting document for the draft joint interim report on the implementation of the detailed work, program on the follow-up of the objectives of education and training systems in Europe http://ec.europa.eu/education/policies/2010/doc/staff-work_en.pdf
2002-07	Proposal	Proposal for a EUROPEAN PARLIAMENT AND COUNCIL DECISION Establishing a program for the enhancement of quality in higher education and the promotion of intercultural understanding through co-operation with third countries (Erasmus World) (2004-2008), http://ec.europa.eu/education/programmes/mundus/world_en.pdf
2002-06	Proposal	Proposal for a Council Decision amending Decision 1999/311/EC adopting the third phase of the trans-European cooperation scheme for higher education (Tempus III) (2000-2006), 2002/C 151 E/03, http://europa.eu/eur-lex/pri/en/oj/dat/2002/ce151/ce15120020625en01180120.pdf
2002-06	Report	Quality Indicators of Lifelong Learning – Fifteen Quality Indicators, Commission Report based on the work of the Working Group on Quality Indicators http://ec.europa.eu/education/policies/lll/life/report/quality/report_en.pdf
2002-06	Report	Using the Internet to develop twinning between European secondary schools, Report from the Commission to the Council http://ec.europa.eu/education/programmes/elearning/schooltwinning.pdf
2002-06	Resolution	Lifelong Learning, Council Resolution, http://europa.eu/eur-lex/pri/en/oj/dat/2002/c_163/c_16320020709en00010003.pdf

DATE	TYPE	TITLE / LINK / REFERENCE
2002-05	Communication	Common European format for Curricula Vitae (CVs), Communication concerning the Commission Recommendation on a common European format for curricula vitae (CVs), http://eur-lex.europa.eu/pri/en/oj/dat/2002/c_073/c_07320020322en00020002.pdf
2002-02	Program	Detailed work program on the follow-up of the objectives of Education and training systems in Europe, Work program of the Education Council in cooperation with the Commission, http://europa.eu/eur-lex/pri/en/oj/dat/2002/c_142/c_14220020614en00010022.pdf
2002-02	Report	E-Learning – Designing tomorrow's education, Commission Staff Working Paper – An Interim Report as requested by the Council Resolution of 13 July 2001 http://ec.europa.eu/education/programmes/elearning/sec_2002_236_en.pdf
2002-02	Work Program	Detailed Work Programme on the Follow-up of the Objectives of the Education and Training Systems in Europe, http://eur-lex.europa.eu/pri/en/oj/dat/2002/c_142/c_14220020614en00010022.pdf
2002	Action Plan	European action plan for mobility, http://eur-lex.europa.eu/en/com/cnc/2002/com2002_0072en01.pdf
2002	Resolution	On a common approach and specific actions in the area of network and information security, Resolution 2002/C 43/02
2001-11	Communication	Making a European Area of Lifelong Learning a Reality, Commission Communication http://ec.europa.eu/education/policies/lll/life/communication/com_en.pdf
2001-07	Communication	Strengthening cooperation with third countries in the field of higher education, Communication from the Commission to the European Parliament and the Council http://europa.eu/eur-lex/en/com/cnc/2001/com2001_0385en01.pdf
2001-07	Recommendation	Mobility within the Community for students, persons undergoing training, volunteers, teachers and trainers, Recommendation of the European Parliament and of the Council, http://europa.eu/eur-lex/pri/en/oj/dat/2001/l_215/l_21520010809en00300037.pdf
2001-07	Resolution	E-Learning, Council resolution http://ec.europa.eu/education/programmes/elearning/reso_en.pdf
2001-03	Communication	The eLearning Action Plan – Designing tomorrow's education, Communication from the Commission to the Council and the European Parliament http://europa.eu.int/eur-lex/en/com/cnc/2001/com2001_0172en01.pdf
2001-02	Recommendation	European cooperation in quality evaluation in school education Recommendation of the European Parliament and of the Council http://europa.eu/eur-lex/pri/en/oj/dat/2001/l_060/l_06020010301en00510053.pdf
2001-02	Report	First phase of the Socrates Programme, http://ec.europa.eu/education/programmes/evaluation/socrates_en.html
2001-02	Report	Future objectives of education and training systems, Education Council report http://ec.europa.eu/education/policies/2010/doc/rep_fut_obj_en.pdf
2001	Study	Study on Employment Market und universities for IT Professionals, http://www.initiated21.de/druck/news/publikationen2001/doc/7_1053500104.pdf
2000-12	Report	Final Report from the Commission on the Implementation of the First Phase of the Leonardo da Vinci Programme, http://ec.europa.eu/education/programmes/leonardo/old/report_en.html
2000-10	Working Paper	A Memorandum on Lifelong Learning, Commission Staff Working Paper http://ec.europa.eu/education/policies/lll/life/memoen.pdf
2000-09	Recommendation	The globalization of education and training: Recommendations for a coherent response of the European Union, http://ec.europa.eu/education/programmes/eu-usa/global.pdf








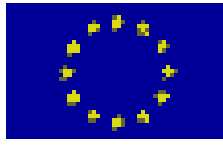


DATE	TYPE	TITLE / LINK / REFERENCE
2000-05	Communication	The eLearning initiative – Designing tomorrow's education, Communication from the Commission http://europa.eu/eur-lex/en/com/cnc/2000/com2000_0318en01.pdf
2000-05	Report	The Quality of School Education – Sixteen Quality Indicators, Commission Report based on the work of the Working Committee on Quality Indicators http://ec.europa.eu/education/policies/educ/indic/rapinen.pdf
2000-02	Decision	Establishment of the second phase of the Community action program in the field of education Socrates, Decision No 253/2000/EC, OJ L 28
2000-01	Decision	Comenius The second phase of the Community action program in the field of education 'Socrates', Decision No 253/2000/EC of the European Parliament and of the Council http://ec.europa.eu/education/programmes/socrates/comenius/index_en.html
2000-01	Decision	Grundtvig The second phase of the Community action program in the field of education 'Socrates', Decision No 253/2000/EC of the European Parliament and of the Council http://ec.europa.eu/education/programmes/socrates/grundtvig/home_en.html
1999-06	Decision	Establishment of the second phase of the Community vocational training action program Leonardo da Vinci, Decision 1999/382/EC, OJ L 146
1999-04	Decision	Leonardo da Vinci, The second phase of the Community vocational training action program 'Leonardo da Vinci', Council Decision http://ec.europa.eu/education/programmes/leonardo/new/leonardo2/decision/decision_en.pdf
1998	Directive	Laying down a procedure for the provision of information in the field of technical standards and regulations, Directive 98/34/EC, 1998

9 Links


This chapter contains a set of international and European links for distinct objectives and organizations related to human resource development.

Table 5: International and European Links

ORGANIZATION OR TOPIC	ACRONYM OR LOGO	LINK
AEGEE European Students' Forum Association des Etats Généraux des Etudiants de l'Europe		http://www.aegEE.org/
B-IT Bonn-Aachen International Center for Information Technology		http://www.b-it-center.de/
BIBB Federal Institute for Vocational Education and Training		http://www.bibb.de/en/25722.htm
BITKOM IT Industry Organization		http://www.bitkom.org/
BMBF Federal Ministry of Education and Research		http://www.bmbf.de
CAST Competence Center for Applied Security Technologies		http://www.cast-forum.de/
CEDEFOP European Centre for the Development of Vocational Training		http://www.cedefop.europa.eu/
DESTATIS Federal Statistical Office Germany		http://www.destatis.de/e_home.htm
DFES Department for Education and Skills Bologna Process		http://www.dfes.gov.uk/bologna/
EENEE European Expert Network on Economics of Education	EENEE	http://www.education-economics.org/
ENISA European Network Information Security Agency		http://www.enisa.eu.int/

ORGANIZATION OR TOPIC	ACRONYM OR LOGO	LINK
ENQA European Network for Quality Assurance in higher education		http://www.enqa.net/
ESF European Science Foundation		http://www.esf.org/
ESIB The National Unions of Students in Europe		http://www.esib.org/
ESN Erasmus Student Network		http://www.esn.org/
ETF European Training Foundation		http://www.etf.eu.int/
ETV European Training Village		http://www.trainingvillage.gr/
EUA European University Association		http://www.eua.be/eua/
EURASHE Non-university higher education institutions		http://www.eurashe.be/
EurLex Community Legislation		http://europa.eu.int/eur-lex/en/oj
European Union Directives, Decisions, Regulations Erasmus Mundus Programme European Program Good Practice Framework Public Private Partnership		http://www.europa.eu.int/ http://ec.europa.eu/education/programmes/mundus/index_en.html http://europa.eu.int/information_society/europe/2005/all_about/modinis/index_en.htm http://www.egov-goodpractice.org http://europa.eu.int/comm/internal_market/ppp
EURYICE Network of information on education in Europe		http://www.eurydice.org/
ICT Information Communication Technology Standardisation		http://www.ictstandardisation.eu
IDABC e-Government Program		http://www.europa.eu.int/idabc

ORGANIZATION OR TOPIC	ACRONYM OR LOGO	LINK
Information Society Technologies R&D IST		http://istresults.cordis.europa.eu/
inhope Safer Internet Network		http://www.inhope.org/
Initiative i2010		http://europa.eu.int/information_society/eeurope/2005/index_en.htm
Insafe Safer Internet Network		http://www.saferinternet.org/
ISACA Information Systems Audit and Control Association		http://www.isaca.org/
(ISC) ² International Information Systems Security Certification Consortium Inc.		https://www.isc2.org/
ISO International Standardization Organization IS		http://www.iso.org
ITU International Telecommunications Union		http://www.itu.int/home
KA-IT-Si IT Security Initiative of the Karlsruhe Region Secorvo Security Consulting GmbH SecuRisk GmbH		http://www.ka-it-si.de/ http://www.secorvo.de http://www.securisk.de/
KlickSafe National Awareness Node for Germany		http://klicksafe.de/common/english.php
NARIC/ENIC National Academic Recognition Information Centers		http://www.enic-naric.net/
OECD Organisation for Economic Co-operation and Development		http://www.oecd.org
PLOTEAUS Portal on Learning Opportunities		http://europa.eu/ploteus/portal/home.jsp

ORGANIZATION OR TOPIC	ACRONYM OR LOGO	LINK
<p>TeleTrusT</p> <p>TeleTrusT Information Security Professional TISP Certificate</p>	 	<p>http://www.teletrust.de/</p> <p>http://www.teletrust.de/index.php?id=202</p>
<p>TUD Technical University of Darmstadt</p> <p>International Institute in Lifelong Learning I³L³</p> <p>Darmstadt Centre for IT Security DZI</p>	  	<p>http://www.tu-darmstadt.de/index.html</p> <p>http://www.tu-darmstadt.de/weiterbildung</p> <p>http://www.dzi.tu-darmstadt.de/</p>
<p>UNESCO United Nations Educational, Scientific and Cultural Organization</p>		<p>http://portal.unesco.org</p>