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**i2010: Fostering European *e*Learning Content  
to Make Lisbon a Reality**

**Recommendations by the European *e*Learning Industry Group to foster the  
production and widespread deployment of quality learning resources in  
digital format as part of EC actions to stimulate growth and to create more  
and better jobs in Europe.**

## Contents

<b>I. Introduction.....</b>	<b>3</b>
<b>II. Our Vision for the future: eLearning as a key component of all EU actions to achieve the Lisbon goals, sustain growth, create more and better Jobs .....</b>	<b>4</b>
√ eLearning is key to increase competitiveness in knowledge -based economies .....	5
√ eLearning can help create more and better jobs .....	5
√ eLearning for a more effective learning process and education system.....	5
√ eLearning for social cohesion in the Learning Society.....	6
<b>III. Content issues and recommendations to foster the European Content Industry .</b>	<b>7</b>
1. Better balancing of public investment .....	7
2. Supporting Europe’s cultural and linguistic diversity.....	8
3. Managing Intellectual Property Rights and Licensing Conditions.....	10
4. Maintaining fair competition conditions while exploring new business models based on Public, Private Partnerships (PPPs).....	11
5. eContent for all: take-up by SMEs and inclusion issues .....	12
6. EU level harmonization: towards a Common Core of content-rich applications and tools .....	13
7. The importance of interoperability and open standards for content repository, exchange, re-usability and re-localisation: more R&D is needed on these topics .....	15
8. The issue of Granularity: impact on personalization features.....	16
9. How to measure and improve quality of learning materials .....	17
10. The need for advanced broadband for the development of rich content .....	18
<b>ANNEX: Case Study: UK public policy on ICT in Education.....</b>	<b>20</b>
<b>Members of the European eLearning industry Group.....</b>	<b>22</b>



## **i2010: Fostering European eLearning Content to Make Lisbon a Reality**

*Recommendations by the European eLearning Industry Group to foster the production and widespread deployment of quality learning resources in digital format as part of EC actions to stimulate growth and to create more and better jobs in Europe.*

### **I. Introduction**

Adding an *e* to learning has introduced other factors to the equation for maximising the effectiveness of education (such as the relevance of technology and infrastructure) but it has also confirmed or even increased the importance of **Content as a founding pillar of Education**: the more technology spreads itself into classrooms and our lives, the more the need for high quality and media rich content that can be effectively repurposed and reversioned for different devices, platforms and infrastructures.

The European eLearning Industry Group (eLIG), a consortium of 40 leading ICT companies and organisations, including European publishers of quality educational resources, in partnership with members from the education sector, welcomes the mid-term review of the Lisbon Strategy and fully supports the European Commission's priority to make the Lisbon goal a reality and for the EU to become the world's most competitive knowledge-based economy by 2010.

The eLIG, as a partnership of public and private organisations active in all arenas of the education sector (technology partners, content providers, universities, public and private research labs) is committed to helping the EU and its Member States achieve the Lisbon targets through its expertise as a consultation forum and its capability to follow through on its suggested courses of action, across the whole EU. Its contribution to the mid-term review of the Lisbon Agenda addresses the importance of knowledge and skills relevant to the EU's competitiveness, specifically acquired through eLearning, to make Lisbon become a reality, and advocates key recommendations to focus the European Commission's and Member States Action Plans on stimulating the market, addressing the challenges faced by the content industry, committing to open standards, training educators and catalysing innovation. This paper focuses on issues and recommendations regarding the digital content industry.

## **II. Our Vision for the future: eLearning as a key component of all EU actions to achieve the Lisbon goals, sustain growth, create more and better Jobs**

eLearning is not an objective in itself, but rather a way to make education and learning more effective, efficient and pervasive. It has the power to transform education but it should also be the **engine in all major initiatives** where new skills and behaviours are required. It stretches far beyond course based learning and leverages new technologies such as collaborative and community software, Instant Messaging and Blogs and social Network Analysis to give a few examples. It encompasses concepts like Content Management, Knowledge Management, Performance Support, Workflow Learning and Virtual Cooperation. Thus eLearning can be a powerful engine for the knowledge-based society affecting us in many aspects of our lives.

In a fast changing environment traditional ways of education and training provision are no longer adequate to equip citizens with the skills and competencies they need to stay competitive in the labour market. Lifelong learning becomes the imperative and needs new approaches for learning. eLearning emerges as one of the key drivers for the upcoming “Learning Society”. The parallel development and continuous enhancement of robust ICT infrastructures and high performance networks on the other, will be key success factors for the knowledge society and hence for European competitiveness.

Technology is an enabler to transform the way we work, entertain ourselves and learn. Access to learning will be pervasive, learning will become personalised and rich media content will make it an engaging experience. It will be just in time when we need it and available in any place where we need it thanks to the new mobile technology-based work and learning environments. It impacts all groups in the economy and society - large corporations and SMEs, students, teachers and parents.

The European content industries are facing the challenge of convergence of media related technologies in a situation of fragmentation and localisation - on the other hand the cultural diversity, and the multi-lingual situation represent the core strengths of Europe. The transformation of the content industries has only begun - the challenges are huge and range from the protection of investments, to establishing standards for truly interoperable content. eLIG considers this as a key subject for advancing the Lisbon process.

### **eLearning is key to increase competitiveness in knowledge-based economies**

eLearning is creating new **business development opportunities and improving competitiveness**. The use of eLearning as a marketing and sales tool has been successfully piloted by several large, small and medium-sized businesses. It can have a direct effect on the bottom-line: e.g. faster time to market, sale of higher-margin products and services, decreased support costs. Further awareness raising and investment in the development of this application domain for eLearning will positively affect the adoption rate, especially by SMEs. Moreover, eLearning can lead to cost savings through better utilization of users' time, efficiencies in personnel resources in institutions providing the eLearning services as well as reductions in physical requirements (such as the need for fewer classrooms).

### **eLearning can help create more and better jobs**

The importance of dealing with the **transformation of work and continuing adult education** is recognised by all. The vast majority of knowledge acquisition for adults happens outside formal settings and planned courses. Research indicates that this is true for 80 % of what people actually learn. New communication and collaboration technologies can enhance the learning process “on the job” or as part of our lives. It is essential that businesses have a full understanding of the need to train their employees and the implications of failing to do so. **Employee development** is essential for day-to-day business. Learning must be the focus not only for large corporations but also, and in particular, for European SMEs. eLearning is an efficient and cost effective tool for fostering workforce development.

**Skills strategies** of member state Governments and associated development action plans are vital to ensure the mobility of workers and to close the ICT user skills gap. Such strategies including eLearning will enable Governments to keep the labour force up to date with economic requirements through training tailored to each employee's requirements. New learning methods and especially lifelong learning can help to integrate the workforce in a quickly changing working environment and also enhance their prospects for employment. This applies also to people who are unemployed and/or digitally excluded; for their job prospects to be enhanced, they need access to job-relevant eContent, most obviously involving ICT skills. Development action plans should include provision for physical centres, open to the public, where people can gain e-skills. Also, to reduce barriers to job mobility, eContent relating to qualifications that are recognised throughout the EU should be available in each of the official languages of the EU. European content programmes should make provision for public-private partnerships, with publishers and other providers, to ensure that key curricula and qualifications are indeed available in localised form in each official language. Through such measures, eLearning can facilitate major organisational changes in all sectors.

### **eLearning for a more effective learning process and education system**

eLearning provides a basis for **personalised professional development** necessary for innovation, economic development and wealth creation in society. The application of new learning methods can result in a better understanding and retention of content by students, thus reducing failure rates. It also enables educational institutions at all levels to be more effective (both on a pedagogical and cost basis) in coping with the ever-increasing numbers of students, within the continuing constraints of an existing infrastructure.

Technology-enhanced learning can improve the quality of education systems as measured in PISA comparative studies: Finland came out first among OECD countries in 2002 and 2003 and leading countries strongly rely on the pro-active involvement of teachers and the use of ICT to improve performances in reading literacy, mathematics and science. These changes have generated new types of learners, new processes of learning and new approaches to the evaluation of learning, which in turn have contributed to a change in teaching methods and in the role of teachers.

Teachers/tutors are no longer only dispensers of knowledge but rather proactive facilitators who promote collaborative knowledge-building and guide students to learn in a variety of environments, to navigate within and process a multitude of information resources, and to use these resources in solving problems and making decisions on their own. Change is also required in how schools are designed, both architecturally and in the processes by which they are run. The reform of teacher training needs to be extended to include school management, leadership and the management of change.

The transformation of Europe's educational systems with new opportunities to teach and learn both within and outside the normal classroom setting is a global challenge to support achievement of the Knowledge Society for Europe as a whole including new joining countries.

#### **eLearning for social cohesion in the Learning Society**

Social integration increasingly depends on the participation of all citizens in education and training. At the same time it is accepted as a means to overcome social inequality and to prevent social exclusion. Evidence demonstrates that the use of ICTs in continuing education can overcome barriers and enhance the participation of marginalised groups. Online learning communities and the use of eLearning tools have been proven to enhance social cohesion and social capital links between European citizens by forming virtual, learner-centric learning communities.

The creative content sector has become a major source of next-generation jobs across the world. This sector provides true added value to the information society, and Europe must foster innovation, growth and prosperity for this industry as part of the Lisbon process.

The European Commission's i2010 initiative, as well as the European Commission's report on the consultation on the new Information Society Strategy beyond 2005 and the European Commission report on the eLearning Workshop on Access Rights and Learning Content all recognize that remaining content issues need to be solved. The eLIG warmly welcomes the i2010 initiative, which among other objectives intends to create the conditions to facilitate the production and distribution of online European content. Hereafter are summarized the content issues which in our view need to be solved to stimulate the European Content Industry.

### **III. Content issues and recommendations to foster the European Content Industry**

#### **1. Better balancing of public investment**

A major reason for the slow take-up of eLearning in Europe is that public investments generally have neglected the necessity to focus on the kinds of knowledge needed for the EU Content Industry to compete at the world level. The result has been a lack of public investment in stimulating high quality content for eLearning, usable in a wide range of member states. Instead, the limited available public funds have been primarily directed at connectivity and hardware tools to access the Internet. Software, underlying back-office IT infrastructure and services, including teacher training has in most cases been neglected.

The rollout and availability of access tools such as PCs, workstations and true broadband facilities is a prerequisite to being able to share knowledge and use rich education content. Broadband penetration is higher in those countries with competitive infrastructure but remains very low in many countries, with entire areas and populations with no access to broadband. International developments in parts of Asia show that next generation broadband facilities are being deployed and these developments are triggering new and richer content education products and services. Achieving a world-class broadband infrastructure should be a corner stone of the Lisbon Strategy.

However, the real added value in terms of capacity building is only achieved by ensuring that high-value knowledge is available to all who need it, in forms that they can make use of. This means applying good quality pedagogical content and appropriate teacher training in an interoperable IT architecture environment.

Europe has to stimulate new eContent publishing and distribution models for education which are economically viable, technologically advanced and pedagogically sound in an international, pan European eLearning content publishing market, preserving cultural differences, yet underpinning efficient localisation & distribution processes.

#### **Recommendations to Governments**

Public investment should be based on a **coherent strategy** and should better balance the four key elements of an eLearning public policy (infrastructure, open standards, quality content and services, and teacher training) in order to maximise the benefits to the end users.

Public authorities can also help to accelerate the deployment of eLearning by using their purchasing power to **aggregate demand** and provide a crucial pull for new networks. In addition, public authorities should **take the lead by implementing eLearning policies for their own employees**.

A case study in annex provides key statistics on the UK's public policy to achieve a massive deployment of ICT in Education in a few years, providing clear evidence that strategic public investment in digital educational content and teacher training is the key driver for the widespread adoption of eLearning, once equipment has been deployed.

Next, EU Policies should:

- stimulate the European Educational Content Publishing Industry to produce multilingual and multi curricular eLearning contents for “traditional” (e.g. CD/DVD and web based) and new eLearning devices (e.g. Palm PCs, e-Books, 3g Cell Phones),
- promote the pioneering of new business and distribution models for eLearning content publishing including, DRM (Digital Rights Management) and Learning Objects trading,
- promote fast-porting of Europe’s content heritage onto new publishing devices and models (e.g. location based and mobile content access),
- ensure that European content heritage is safely captured for future generations by investing in digital libraries across the EU.

## **2. Supporting Europe’s cultural and linguistic diversity**

A particular challenge is the provision of quality pedagogical cross-media, cross- platform content in digital multilingual format covering all member states. It is highly desirable, for social and cultural reasons, to cover all member states, but doing this is very expensive, given the many languages and cultures in the EU. Members of eLIG feel a social obligation to meet the needs of all of those groups, but this results in extremely high fixed costs, which must be recouped in order for the industry to develop. While Europe’s linguistic and cultural diversity must be cherished, it should be recognised that it is also a challenge to the development of a European educational content industry that meets the needs of all Europeans.

The fragmentation of the European publishing industry, in particular in education, demands specific types of interventions: leading US educational publishers do not face the commercial obstacles we face in the EU, if we are to meet the cultural obligations that citizens expect us to meet. US publishers operate primarily in English. They can take advantage of a truly harmonised internal market plus the global market for international content in English such as scientific publishing, law and now more and more basic educational content. In Europe, we have hardly begun to harmonize higher education curricula and encourage student mobility through Erasmus programmes. As for primary and secondary education, curricula remain and will continue to remain in the foreseeable future, highly national, if not regional (Spain has gone recently from 1 national curriculum to 22 regional applications of this curriculum). Pedagogy is still also highly culturally based. The fragmentation of the EU’s content industry mirrors that of the market. This context implies that the consolidation of the industry is slow and its competitiveness is clearly at risk.

Significant EU funding has already been allocated to the development of educational content large-scale pilot projects through the e-Learning Programme, eContent and now eContent+, as well as support for R&D activities through targeted IST call for proposals. Publishers of educational materials have taken advantage of some funding opportunities. However, large-scale and R&D-driven projects are not really adapted to the fragmentation of the publishing industry. EU-based publishers wanting to serve non-English markets tend to be far smaller than the big US publishers, so they have some difficulties in coping with all requirements (and the complexity) involved in the 6<sup>th</sup> Framework Programme.

Even internally, publishers are not used to allocating large resources to R&D activities in technologies that in most cases are far from their core business.

Without interim public support, especially to SMEs and smaller content providers, there will be inexorable pressure to serve only the most profitable language markets, which is not in the long-term interest of Europe.

New cross national and cross sector technology migration plans must be promoted fostering the **virtual mobility** of students, teachers and managers across international successful eLearning experiences.

More emphasis should consequently be placed on the establishment of staff exchange plans for coaching/tutoring work forces, transnational curriculum development and pan-European thematic networks based on international eLearning and eUniversity models providing proof of concepts and best practice guidelines. Content and curricula localisation efforts should also be fostered together with the international migration and certification of online learning credits (eCredits).

#### **Recommendations to Governments**

If the EU is to promote the European dimension of education in a multilingual and multicultural context, greater and significant resources must be allocated to the development of pedagogical content and tools to generate, maintain, use and access that content. The next generation of IST programmes should include significant action lines for the production of quality multilingual eLearning materials.

Next, EU Policies should foster:

- Technology Transfer plans for migrating successful eLearning solutions and models,
- Virtual migration of students and teachers across different online educational offerings,
- the setting-up of International Thematic networks with cross border online curricula accreditations,
- Planning of eLearning initiatives aiming to provide equal access to eLearning and enhance cooperation amongst all actors interested in local development (schools, digital libraries, families, local communities, small and medium enterprises, Non Governmental Organisations),
- Government funding for Digital Libraries across the EU.

### 3. Managing Intellectual Property Rights and Licensing Conditions

EU programmes dedicated to the development of public-interest content through PPPs such as the eLearning Programme, eContent and now eContent+ are to some extent adapted to the needs of the publishing industry, but a major issue here is still to be resolved: sustainable business models for educational content creators should be developed where licensing and rights management issues are solved. This would permit the continued viability and co-existence of for-profit and at-cost models of content creation. It would also help to determine whether there are models of Open Content that are compatible with for-profit and at-cost models of content creation (safeguarding EU jobs in the new media industries).

Unfortunately, there is a possible imbalance in the allocation of EU funds, towards business-incompatible and hidden-cost models of Open Content production, called “free” but often made possible only through the institutionally-untracked use of public funds (e.g., to pay the salary of teachers or professors who author “free” content, sometimes including previously-published material in their “new” content but not always bothering to secure permission of copyright holders to re-use that material). The content industry is concerned about expectations of some education groups to rely only on free forms of “open content” and considering non-commercial approaches as the only solution to linguistically and culturally diverse European education content market.

The ability to offer sustainable development of quality learning resources, respecting intellectual property rights, is a key skill for the EU, capable of generating many, many jobs, but capacity-building here has a cost, just as does the development of specific learning resources. Editorial content production costs a lot of time and effort and requires resources and technologies that are available for established companies. The question is raised as to how the EU, as well as its Member States, plan to tackle a mixed model based on the free content developed for mass distribution on the one hand, and a model based on sound public-private partnerships, balanced licensing schemes and Digital Rights Management solutions, on the other, if we are to achieve the highest education standards needed to meet the Lisbon targets.

#### **Recommendations to Governments**

ICT deployment public policies should combine funding and appropriate balanced licensing conditions regarding the purchase of Educational resources. Funding should not be viewed as a substitute for licensing. Different content development types may give rise to different models of funding and development. These types might include: information assets, information assets plus creativity/productivity tools for manipulation, full interactive courses, reference materials – aggregated learning objects and subscription websites.

Taking the opportunity of the upcoming eContent+ call for proposals, the eLIG strongly recommends taking better account of the Content Industry’s needs by carefully selecting proposals based on fair and secure licensing terms creating the conditions for a sustainable development of the Content Industry. It is critical that the EU and the Member States take into account that there is no “one-size-fits-all” solution in content creation. The objective of the content development should determine the means -and not the other way around. While “free” forms of open content may better serve user needs in some cases, public investment and appropriate licensing conditions are essential to the sustainable development of the content industry in a commercial environment. A better focus on content industry constraints is urgently needed if the EU wants to achieve the Lisbon goals in terms of growth and job creation in the educational content sector.

In its report on the public consultation on the new information society strategy the European Commission points out that urgent action is needed to give publishers further incentives to invest in digital materials. The eLIG strongly supports this view. Proper, interoperable Digital Management of Intellectual Property Rights (DRMs) should include identification of rights, description of content packaged in an interoperable format and technological protection measures preventing unauthorized use. DRMs based on these specifications are market-enabling solutions.

However, we do not support the view that eLearning would need a sector-specific IPR framework in order to define new business models based on PPPs. There is no evidence that specific IPR legislation is needed in the education environment. Exceptions to copyright or Fair Use conditions must remain exceptions that do not compete with the normal exploitation of protected works. Instead, we recommend public authorities to further develop awareness programmes. The role of educators and their behaviour is essential to make users understand that IPR, high quality content creation sector based on various business models and cultural diversity are complementary to each other.

#### **4. Maintaining fair competition conditions while exploring new business models based on Public, Private Partnerships (PPPs).**

Public sector publishers producing or distributing content (either on a free or a paid-for basis) may also raise fair competition issues. In particular, public sector broadcasters in Europe often hold a unique position in the eLearning market, having been granted permission (and in some cases, strongly encouraged) to produce quality editorial materials distributed on a commercial basis.

In the case of the schools sector, ICT is increasingly managed through service PPP procurement. Historically this partnership has focussed on the provision of infrastructure and connectivity. However, with the increasing focus on eLearning this provision is extending to include content management systems, assessment engines, VLEs and MLES. A sustainable model for content development here might be a widening of the PPP to include content developers working in partnership with content management system/VLE developers so that content becomes an integral part of overall provision.

#### **Recommendation to Governments**

Public-private partnerships including public and private sector publishers should be encouraged and their respective contributions should be assessed in line with the applicable legal competition framework for publishing public-sector information, which may vary from one Member State to another.

We welcome and support the Content strategy developed in the i2010 initiative, which aims at creating sustainable conditions for the European Content Industry to flourish. It is crucial that funding aimed at stimulating European Content markets is well established and secure so that the commercial sector can continue to invest and rely on PPPs. Public authorities should better understand the publishing industry's role in the future of eLearning. Developing pedagogically sound and flexible eLearning solutions suited to market needs and education policies has value – and a cost. The European Community's eLearning Strategy, cannot be achieved by governments or educational institutions in isolation, but instead should rely on PPPs in which the role of all stakeholders is clearly defined.

As an example of cross-sectoral PPPs in eLearning, pilot applications for location-based and mobile learning content delivery could be promoted within interdisciplinary projects joining telecom operators, broadcasters, content owners, publishers, digital libraries and educational and cultural site managers (e.g. Museums, Art exhibits, Archaeological sites, exhibits). Thus, demonstrating self-sustainability and the effectiveness of blended offerings backing up scholar learning with the seamless streaming of context based information to field, home and/or clinical site based learners.

## **5. eContent for all: take-up by SMEs and inclusion issues**

Together with lifelong learning and continuing education, the use of ICT to foster productivity requires massive adoption by SMEs (which create the vast majority of jobs) and more generally, the take-up of eLearning among citizen communities who need more ICT training or incentives than early adopters and ICT-skilled people.

### **Recommendation to Governments**

In order to boost eLearning practices among SMEs and less ICT-skilled citizens there is no need to reinvent the wheel: training people on using ICT in their learning or professional activities has long been proven as the best driver for eLearning usage.

This also applies to teacher training with some specificities: teachers generally belong to ICT-skilled categories and are regular users of ICT at home, for personal and basic professional purpose. Considering their personal equipment, Internet access and usage patterns, only a minority require basic ICT skills. However the vast majority of teachers need specific ICT-skills with a strong focus on pedagogical implications to be able to use ICT in teaching situations, which provides a good example of professional and tailored ICT training as a key driver of change in usage patterns.

We encourage the EU and its Member States to invest more in educating and training all citizens to use ICT (ICT literacy or basic skills for life plus specific/professional ICT-training). Training actions could be backed up by the Life Long Learning Programme and its implementation into Life Long Learning Strategies by the Member States. The eLIG therefore fully supports a similar recommendation contained in the i2010 document.

## 6. EU level harmonization: towards a Common Core of content-rich applications and tools

Such a concept may seem contradictory to the multi-lingual, multi-cultural and multi-curricula nature of the EU and the fact that education policy largely remains a matter for each Member State. However, a knowledge-based economy also requires skills and competencies that are not currently central to most national, subject-based curricula. The Eurydice Report on Key Competencies in compulsory education<sup>1</sup>, stresses the need for a transformation of the basic education system so that it can play a part in developing the skills, competencies, attitudes and values required by young people for personal and professional achievement in the Knowledge Society. And while it acknowledges that terminology with regard to these competencies differs across member states, the distinguishing feature of any competency which is 'core' is that it *'must be necessary and beneficial to any individual and to society as a whole. It must enable an individual to successfully integrate into a number of social networks while remaining independent and personally effective in familiar as well as new and unpredictable settings.'* The latest work of the Pisa programme on defining key competencies<sup>2</sup> echoes this view and offers a framework for categorising these competencies as follows: *Use tools interactively, Interact with heterogeneous groups, Act autonomously.*

Thus, as compulsory basic education begins to 're-imagine' itself in the 21<sup>st</sup> century<sup>3</sup>, a commonality in focus is emerging, which transcends linguistic and curriculum diversity. This common core of key competencies is emerging at a time when a widespread focus on subject-based teaching in the curriculum still exists. Thus, while there is still a demand for more 'traditional' subject-based content, there is also an opportunity for the development of innovative digital, educational content that, through the development of key competencies, will help achieve the aspirations of 2010. Games technology is an excellent example of how generic skills such as communication; problem solving, reasoning, creativity, motivation, teamwork and the ability to learn are being developed in informal learning situations. Digital games have a truly global spread and their penetration has transcended national boundaries. This approach needs to be harnessed by the educational technology industry and this is already beginning to happen in the U.S.<sup>4</sup> By incorporating the principles of games design, through partnerships with research bodies and educational institutions, and with the support of the EU, the e-content industry could now take a major role as change agent in the education sector and begin a break with more traditional forms of content creation. And given the impact of globalisation and therefore, the global need for citizens and workers everywhere to be 'competency-rich'<sup>5</sup> there is an opportunity here for European content developers to become highly competitive in a global market.

Higher education, adult training and lifelong professional development are more and more handled on an international basis in order to meet the market requirements of a highly skilled and mobile workforce. Education and training content in the areas of Mathematics, Science and Reading could be based on similar principles.

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<sup>1</sup> Key Competencies: a developing concept in general compulsory education, October 2002. This document is available on the Internet (<http://www.eurydice.org>).

<sup>2</sup> The Definition and Selection of Key Competencies, June 2005, available at: [www.pisa.oecd.org/](http://www.pisa.oecd.org/)

<sup>3</sup> Caldwell, B.,J, Challenges Faced by School Leaders in the 21<sup>st</sup> Century, Birmingham, November, 2004. available at: <http://www.hawkesdalecol.vic.edu.au/Caldwelltrustleaders.doc>

<sup>4</sup> NASA Learning Technologies: Advanced Technology Applications for Education, Benchmark Study, Section 4.0, Educational Software, available at: <http://learn.arc.nasa.gov/benchmark/4.1.html>

<sup>5</sup> Key Competencies: a developing concept in general compulsory education, October 2002, page 13

A shift in focus from a subject-based to a skills-based curriculum does not remove the need for language or subject –specific knowledge, nor does it remove the fact that education depends on various pedagogical models - each have their strengths and weaknesses. Harmonisation efforts towards a common core of content should not be viewed as a means to reduce cultural or linguistic diversity. The industry will also need to continue to address specific needs at a subject, curriculum and indeed at national level.

In terms of provision of this core content to schools, the trend towards centrally funded managed service PPP's for ICT provision in this sector could be leveraged. Local/Regional and/or National centralised provision could include core content as part of schools' entitlement. At the same time, schools would be free to purchase other, subject/language-specific content from their own budgets.

### **Recommendation to Governments**

The European Commission should explore the possibility of a Public, Private Partnership-based approach to define a Common Core of Content (in terms of skills) needed to achieve the Lisbon goals. That is, creating partnerships between the content industry, national governments and research institutions (universities etc) aimed at providing this core content on a centralised basis. Centralisation here does not refer to a particular administrative decision level; it simply means that dedicated budgets are allocated to schools for the purchase of selected resources.

Public support and funding should remain focused on the traditional approach where pedagogy and skills depend on subject, language and curriculum-specific content. Public support for the Common Core approach could complement the traditional approach.

## **7. The importance of interoperability and open standards for content exchange, re-usability and re-localisation: more R&D is needed on these topics**

Today, emerging open standards enable eLearning content to interoperate seamlessly whilst granting higher degrees of investment protection and return by enabling easier integration of content into eLearning solutions.

Too often eLearning solutions “lock-in” users to single vendor solutions whilst Europe, through a strong commitment to interoperability and open standards, could seize the opportunity to lead in helping eLearning to reach the tipping point where new technologies change existing usage patterns, application and business models.

Increasingly governments are adopting such opportunities by developing national application profiles for their eLearning content challenges, addressing vertical interoperability at a local level; national publishers and content developers may greatly benefit from governmental guidelines helping to inspire sector compliant solutions and offerings. Many central government policy makers have started large structural and multi partner projects addressing national grids and infrastructures to collect, index, maintain and exchange e-content for learning, training and other forms of scholarship.

To compete in the Knowledge Society the European educational system should rapidly take-up a common and concerted approach to promote and define interoperability standards for eLearning technologies and content able to grant cross-border mapping to favour pan-European content localisation and distribution models and influence technology offerings.

The eLIG has been advocating for a long time the view that open technical standards for content storage, use, sharing, and distribution are the only way to achieve full interoperability. What we mean by full interoperability based on open standards includes the European Commission views stated in its report on the consultation workshop on e-learning content:

- a processing tool can be considered as interoperable if the process can be described in specifications terms that are independent from the tool;
- current content standards do not sufficiently address the semantics of learning. There is a lack of interoperability between learning object metadata at a semantic level, which could be resolved to some extent by using application profiles.

FP6 IST, eContent and eContent+ programmes have opened some opportunities to develop software tools facilitating re-usability. In line with the European Commission’s report on the consultation workshop on e-learning content, we see important unsolved R&D topics in technologies and standards for content to be reused for different purposes in different education settings, blends and business environments including semantic models and infrastructures for rich content description.

More projects should be carried out with better networking activities and knowledge transfers between technical experts and content producers responsible for didactical approaches. Funding programs that enhance closer coordinated productions between technology and content partners will improve the quality of products and facilitate localization requirements

### **Recommendation to Governments and Industry**

To achieve a sustainable economy of sharable, reusable content for eLearning, content should be based upon open industry standards. Deployment of an interoperable eLearning platform that supports international educational content standards needs to be on the eLearning strategy and reflected in the public procurement standards within the European Community.

We would recommend that publishers and eLearning technology providers be involved in that standardisation process. While education systems are country-specific, European standards bodies should work with international industry groups to evolve the standards and define Pan-European profiles (IEEE, CEN/ISSS...).

Systematic usage of new technologies (e.g. XML, Web services and Semantic Web technologies), architectural solutions (e.g. Learning Content Management Systems, LCMS), content design approaches (e.g. Learning Objects) and interoperability standards (e.g. interchangeable specifications for Content Indexing, Packaging and Sequencing), must be rapidly promoted amongst stakeholders of the European Educational Publishing Industry.

It is not enough to design content according to agreed standards, it is also important to make sure that the various content repositories are made available for search and retrieval in a standard fashion. This issue needs specific funding to make sure that all the hidden materials available in most education communities can publish themselves to a centralised or federated learning resources repository. Issues like multilingualism, shared metadata schemes and Digital Rights management must be included.

Additional funding should be dedicated to research and rollout activities aimed at delivering workable solutions to improve content design and storage with a view to automating re-usability and facilitating relocalization based on licensing conditions. Such R&D activities are clearly the way forward to develop a European market for learning content. It would not create European content independent from national cultures but it would certainly offer the technical conditions needed to foster the circulation of learning materials.

## **8. The issue of Granularity: impact on personalization features**

One of the benefits of technology-based learning is the capacity to enable teachers to customise content to suit their own needs, to ‘find, access, create, use and adapt the resources they require’ and to use e-learning to enable ‘greater flexibility of use and re-use across all sectors’. However, there has been much confusion between this demand for flexibility and a misconception of granularity. Too often, granularity has been put forward as a requirement for poorly structured and low added-value learning objects in the form of basic interactive animations.

Unfortunately, this misconception of granularity has provoked detrimental effects on the quality of eLearning content. Users’ expectations for a tailored, yet rich, learning experience has not been met. Educators have long been presented by some as substitutes for publishers. Content created and exchanged by educators may sometimes fit the required quality standards but it should be obvious to everyone that a teacher’s job is different from that of a publisher.

EU-wide test beds such as Celebrate have provided clear evidence that even among a community of ICT-skilled and volunteer teachers, there is little incentive to develop enough quality reusable learning materials<sup>6</sup>.

The same conclusion is drawn by the UK Department for Education and Skills in its e-Learning Strategy Action Plan<sup>7</sup>. Against all evidence and facts, some public authorities are still firmly convinced that a few motivated and skilled teachers can provide a great deal of free educational material to many or that each teacher is best placed to design the editorial content he really needs. Experience in EU-wide PPP such as the Innovative Teachers' Network indicates that teachers attach particular value to being able to share experiences in the selection and use of existing high-quality content, linked to a curriculum as much commercial content is.

### **Recommendation to governments**

The aspiration for flexibility needs to be weighed against the reality – and the desirability – of the majority of teachers having limited time, will and skills to select and aggregate content. Interactive pedagogical tools must offer much greater value for money, provide a richer learning experience than basic flash animations or search engines crawling billions of web pages, often without editorial added value. It is important for any eLearning Strategy to acknowledge and work into its plans the fact that publishers already offer a range of tools to support customisation, as well as packaged solutions supporting a high level of flexibility. The concept of granularity should not be used to the detriment of creating quality content.

Publishers welcome the fact that many teachers are talented enough to create good quality learning material, which can be widely appreciated and, thus re-used and re-localized. Actually, these are the same teachers publishers work with to design pedagogical materials.

## **9. How to measure and improve quality of learning materials**

First and foremost, this last issue is closely linked to previous ones. To a certain extent and unfortunately for users, the quality of eLearning material has not always met users' expectations.

Some Member States have put in place quality assurance systems for digital pedagogical resources, either on a mandatory or optional basis. Independent systems also exist. The search for common criteria and evaluation methods is a hot academic topic but quality assurance systems cannot be isolated from pedagogy models on which content is based. Further research may be needed to determine how quality assurance schemes can be independent from cultural, political and linguistic bias.

Publishers firmly believe that quality assurance of content is at the core of their work, which is called the editorial process. Its very aim is to offer this guarantee. For instance, the most important characteristic of an editorial process in scientific publishing –peer review- is precisely aimed at ensuring that a scientific work deserves that name. Even open-access scientific publications rely on peer review, because that is the way scientific knowledge can

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<sup>6</sup> Source: CELEBRATE Evaluation Report V2, December 2004.

<sup>7</sup> Towards a unified e-learning strategy, 2003.

spread. As regards education resources such as textbooks, authoring teams are made of various competences (teachers, pedagogy experts,) needed to guarantee that pedagogic needs are satisfied. In the Reference sector, the large number of highly skilled contributors to the collective work is the source of quality. In the press, the quality of information and analysis is determined by Chief Editors.

The editorial process is a human-based one: automation possibilities are intrinsically limited and subject to failure.

#### **Recommendation to Governments**

We fully agree with the need for quality assurance for content so that teachers and learners can select the best resources. We are firmly convinced that the editorial process is best at guaranteeing this quality as a key element of the added value of a publishing content model. Consequently, we believe that the best way to encourage quality is to stimulate the content market so that commercial success can nurture a virtuous development cycle. Further research may also be needed to determine how the quality assurance of eLearning can be independent from cultural, political and linguistic bias.

#### **10. The need for advanced broadband for the development of rich content**

True broadband is needed for the development of rich and interactive education content. The broadband picture in Europe remains fragmented. Broadband penetration is higher in those countries with competitive infrastructure but remains very low in many countries, with entire areas with no access to broadband.

In recent years large ICT investments have been tackled by several European Governments, largely independently and in an unsynchronised mode, rapidly increasing the overall average European ICT penetration into schools and higher education institutions.

Because investment in ICT in education has been independent and unsynchronised, with major differences in different European countries and sectors, there is an increasing risk of a digital divide in eLearning uptake rates directly amongst different EU Countries and sectors. These differences ought to be monitored and rapidly recovered to minimise variation in the European eLearning uptake equation.

Also, the focus in Europe remains on “quantity” of broadband and not on “quality”. There is no focus on the need to deploy next generation broadband facilities providing high speeds, which will enable the creation of richer and more innovative education content and services. International developments in parts of Asia show that next generation broadband facilities are being deployed, and these developments are triggering new and richer education content products and services. Achieving a world-class broadband infrastructure that supports high quality and fast communications, which will enable rich education content development should be a cornerstone of i2010.

It is a common belief that we are now witnessing the next giant leap forward in Educational Technologies thanks to the advent of Mobile, Wireless and Broadband technologies which together with Grid and Ambient Technologies are likely to dramatically change the way and place we perceive Education and experience Learning in tomorrow’s Educational System.

These technologies have just appeared but are progressing at a very relevant sustained rate of pervasion in our everyday society habits, providing glances of how they might affect future scenarios including a wide range of educational impacts: location based and mobile learning, interactive educational TV programmes, wireless campus infrastructures, federated content brokerage systems, may stimulate rethinking of what an ambient learning experience might be in the Knowledge Society and how it could relate to traditional school based activities.

To compete in the Knowledge Society the European Educational System must rapidly make a leap forward towards emerging technologies such as mobile, wireless, broadband, grid computing and ambient technologies favouring blended pilots, focussed on new technologies yet optimising new pedagogical and content publishing models.

### **Recommendation to Governments**

Leveraging technological innovation when it's about to happen and anticipating the learning and knowledge capabilities of new technologies is essential in order to gain competitive advantages in the international community. Balancing technological and pedagogical innovation in new infrastructural setups is the key to success; new broadband, mobile and wireless settings should be experimented together with new learning services (e.g. location based learning, ambient learning) thus fostering new pedagogical and business models.

Next, EU Education Policies should foster:

- investments in new 3G Infrastructures for broadband, mobile and wireless set ups as well as grid computing "hubs",
- pioneering blended approaches to learning mixing school based teaching paths with location and ambient-based mobile access to information augmenting context based experiences,
- promotion of cross sector pilots (e.g. Education, Cultural Heritage, eGovernment, Health Management).

## ANNEX: Case Study: UK public policy on ICT in Education<sup>8</sup>

**The British Government has invested £1 billion in ICT in education from 1997 to 2004 – and met challenging targets.**

All colleges and universities now have broadband. Over 99 percent of schools are connected to the internet (60 percent at broadband speeds, with a target of 100 percent by 2006).

Computer to pupil ratios are 1:8 in primary and 1:5 in secondary education. 48% of primary and 82% of secondary schools in England have interactive whiteboards, with an average number of 1 unit per primary and 4.3 unit per secondary school.

Over 96% of eligible teachers in England have signed up for ICT Training and more than 80% of teachers are reported to be confident about using ICT.

Yet, broadband access deployment is not the end of the story. Public investment in quality learning resources is continuous and significant through the eLearning Credit system (eLCs). £100 million for each academic year 2003/2004, 2004/2005 and 2005/2006 has been allocated to Government-funded nurseries, primary and secondary schools. Each eligible school was allocated £1000 plus £10 per pupil for each academic year. By April 2006 eligible schools should have received an unprecedented total of £330 million of eLCs to purchase Learning Objects or subscribe to learning resources they can select on a vast catalogue<sup>9</sup> of multimedia contents available on a national portal: [www.curriculumonline.gov.uk](http://www.curriculumonline.gov.uk).

As reported by the British Department for Education and Skills in its 5-year action plan on ICT in Education, these major developments allow for the education experience to be tailored and personalised in a number of ways:

- Through new levels of learning support – online information, advice, and guidance including Direct.gov offering comprehensive support services, allowing prospective students, for example, to fill in UCAS forms and apply for loans online.
- Through change in the nature of learning itself. The best interactive materials already make it possible to engage students put off by traditional teaching; to learn at their own pace, in their own time, in their own style; to learn alone and to learn together.
- Through quicker and more productive working for teachers. ICT makes it easier to mark work and monitor pupils' progress. ICT allows both whole class teaching, using an interactive white board, and work with individuals or groups at their own screens.

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<sup>8</sup> Sources: BECTA, Department of Education and Skills, Curriculum Online, ICT in Schools survey, 2003.

<sup>9</sup> Some resources are effectively free but large amounts are available in exchange of eLCs.

- Through new forms of collaboration. Networks are an emerging feature of the landscape – networks of schools working together to solve shared problems, networks of schools and care agencies sharing information about vulnerable children, networks of schools, colleges and universities developing and sharing materials. Community learning, for families and adults wishing to upgrade their skills, offers another form of network, linked by ICT to education hubs such as schools and colleges.

The implementation will stretch over a number of years, as capability builds. But in the immediate future the British Department of Education and Skills expects:

- A broader choice of curriculum, for example through partnerships between schools and colleges using video conferencing and interactive materials to extend the number of languages a school can offer.
- Tailored learning activities, presented through interactive whiteboards, and made available in the home through the school or college extranet.
- Virtual networks between education and industry, facilitating greater collaboration and understanding.
- Online assessment with personalised feedback.

Local primary schools as community hubs, connecting online to neighbouring secondary schools to help students moving between the two and to allow teachers from the two schools to work together to support them.

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<sup>10</sup> Membership at October 2005