Applications

A public, open and flexible catalogue for e-learning products: development of a «European search engine» for courseware and learning objects

Giovanni Bonaiuti[a], Gytis Cibulskis[b] and Karin Jansson[c]

[a]Università di Firenze[1]
[b]Kaunas University of Technology, Distance Education Centre
[c]Swedish Agency for Flexible Learning

g.bonaiuti@unifi.it; Gytis.Cibulskis@ktu.lt; karin.jansson@cfl.se

Abstract

The EMDEL Project, financed by the UE in the Leonardo Da Vinci Programme, promotes the constitution of a large public catalogue of e-learning products. The Catalogue constitutes an opportunity for European course-producers and providers to have a greater and better visibility on the global e-learning market. The catalog is a *«European show-case»* for e-learning courses and a way to facilitate users in their search for learning objects and courseware.

[1] This essay is a co-operative work, with part 2 written by Giovanni Bonaiuti, and parts 3-5 written by Gytis Cibulskis and Karin Jansson

1. Preface

The EMDEL project — European Model for Distance Education and Learning — is a «Valorisation Project» funded by the Leonardo da Vinci Programme. As such, EMDEL intends to give added-value to the results of other distance learning and e-learning projects carried out earlier within the framework of the European Community initiatives. Starting with these results and the «good practices» tested, the main goal of the EMDEL project is the creation of a European E-learning System through a process of cooperation between Partner Institutions, with an willingness to co-operate with new Organizations.

The Catalogue is one of the main results of the plan (www.emdel.org). The Catalogue is a «European show-case» for e-learning courses. EMDEL believes that the European Educational Systems need greater integration. Compared to other countries, the European Agencies involved in the development of multimedia on-line content seem to suffer because of a fragmented market characterized by linguistic problems and cultural specificities. The Catalogue purports to be a chance for providers to be visible at a European Level, by presenting what is on offer in the European market in distance learning and e-learning, with the aim of facilitating users in their search for on-line courses. It contains plenty of courses, and their number is ever increasing. They cover a wide range of topics, at various levels, and for a variety of target groups.

2. The idea of valorization within e-learning

Competition in the market of the age of globalization is largely determined by knowledge management. Productive organisations require their personnel to have the ability to actively and effectively face the continuous transformations dictated by innovation and international competition. Success lies in the prompt capacity for the selection, transformation and use of crucial information within the operational and social context. Human Capital education and vocational training are, accordingly, the main areas in which it is opportune to act so as to guarantee European economic and social development (European Commission, 1993, p. 17). Information and communication technologies (ICT) represent, on the other hand, the most flexible and effective tool if one is to accept this challenge. E-learning, which fully exploits ICT potentials by applying them to education, represents the solution which can guarantee people's full access to the knowledge-based economy. E-learning is one of the instruments which can be used to meet the requirements of society (flexibility, competitiveness) and of individuals (competences, but also valorisation, self-fulfilment, life quality), in an efficient and effective manner. Based on this perspective, the conditions necessary to promote the idea of valorisation, here illustrated, exist. Furthermore, telecom networks foster relations between people and systems, enable the visibility and diffusion of

products as well as services and, through e-learning, promote the development of Human Capital.

The EMDEL project, moving into line with the Lisbon European Council of March 2000, considers e-learning a strategic objective for the development of a knowledge-based economy and intends to exploit the benefits of ICT to favour greater integration among European Education and Training Systems.

European bodies and enterprises working in the training field seem to suffer from difficulties due to a market which is still uneven and characterized by language differences and cultural specificities. In this context, technologies can offer tools to valorise, disseminate and synergise the results achieved. EMDEL sets specific aims within e-learning. It moves from the need to share the experiences of partners for the development of training multimedia online modules, through the realization of actions of experience, diffusion, and exchange. For example, within the project actions, interesting ways have been found and tested for the development of an exchange policy. After having examined mutual experiences and end-products within the EMDEL project *internal partner festival,* each partner selected the most interesting products and then, in his own language, reached an agreement with regard to their post-production. Differences (including linguistic ones) among subjects have managed to become, even though in an experimental way, a strong-point for the development of synergies capable of disseminating *best practices.* The exchange of products among partners has permitted them to experience the difficulties inherent in the process, beginning with the selection, translation and technological adaptations, and culminating with the legal issues linked to intellectual property rights.

With a view to valorisation, EMDEL has tried to «disseminate» these outcomes even beyond the project by proposing a model which exploits some potentials of the present technologies. Within e-learning important answers to the problem of the integration of systems have been drawn up, and, in particular, important technological solutions for the inter-exchange of products have been developed. However, subjects engaged in network learning often do not have either the informative channels necessary to know about respective experiences, or instruments for the identification of available products and solutions at their disposal, so that they often have to re-device them even though they already exist. Obviously, this cannot continue to be accepted in the framework of the production of training contents for e-learning.

A consolidated praxis in e-learning is to analytically organize the knowledge to be proposed in training pathways. This practice allows the production of modules which are potentially arranged so as to be integrated, and used not only more than once, but also in different contexts. Such a procedure fosters and encourages cooperation among subjects operating in the field of content production with the aim of networking and exchanging *best practices.* In general, one of e-learning's

greater costs — moreover, repetitive costs — is that incurred due to the realization of original didactic material (multimedia, interactive, or only textual). The necessity to optimise the intervention costs is at the basis of the international initiatives devoted to the development of on-line training standards. The main objective of these initiatives is to provide a system for the analytical description of learning objects — through «metadata» — aimed at being able to find, re-use and exchange them. The aims of projects such as IMS, ADL and IEEE[2] are associated with the possibility of building a «market» for vocational training products (not exclusively on-line) which is able to guarantee their widest circulation and use. From the theoretical hypothesis of a market for learning objects (LOs) — interpreted as elementary learning components (autonomous, independent, reusable and aggregated),[3] we have typically moved to a courseware economy, wider content elements which, alternatively, enable their aggregation in complex training courses as well as their transferability in different contexts. A vocational training economy based on the circulation of those products ensures the optimisation of resources and the valorisation of best practices. The savings come mainly from the opportunity to reuse the same educational materials in different contexts and training courses, so as to permit the lowering of production and purchase costs. All these aspects are of great importance for e-learning. The exchange of vocational training products also permits reciprocal enrichment through the sharing of knowledge and practices, as well as the consequent opportunity for the development of new products. This aspect leads to the raising of the quality level of contents and development methods, reducing costs and opening the way for the enjoyment of a bigger and bigger number of users.

The prospect of an «open online catalogue» — envisaged both as repository, knowledge and product-exchange marketplace — promoted by the EMDEL project takes the step from here forward. The EMDEL catalogue develops the products proposed by partners through the logic of the presentation and valorisation of reciprocal experiences. As a result of the opening of the catalogue to the valorisation and promotion needs of trans-national and European vocational training experiences, further products have been added. Thus, the Catalogue has the aim of collecting and organizing information data related to the coursewares by any European party interested in making visible, available and/or accessible its products. This aspect contributes to the promotion and the development of a network for the circulation of ideas and *best practices.* Numerous parties are interested in accessing the Catalogue. People can look it up, as with a search engine, to find training-courses they are interested in and, where possible, they can enter and attend courses. Sector operators, such as bodies, vocational training agencies

[2] http://imsprojects.org, http://www.adlnet.org, http://ltsc.ieee.org

[3] IEEE fully defines LO as: «any entity, digital or non-digital, that may be used for learning, education or training» (IEEE, 2003).

and content producers, may use the Catalogue to release their products and, at the same time, to find partners to start-up specific co-operation and synergies. Indeed, one of the main goals of the EMDEL project is to promote the exchange of materials — also in the form of trade — among producers. This process enables valorisation as a direct diffusion of *best practices,* and also as the promotion and development of partnerships and co-operation among those bodies willing to make use of their reciprocal experience.

Another opportunity offered by the EMDEL is the post-production and localization of products in different languages, realized through trade agreements among producers. In this case, the players of the process for the transfer of innovation are: the export body associated with the product to be transferred that puts the courseware at the disposal of beneficiaries, and the beneficiary of the transfer, that combines it with his own vocational training-actions. In this way, the EMDEL project realizes the intermediation-phase between the supply and demand of vocational training, so as to realize the transfer of the product at European level. Finally, among all those interested in using the Catalogue, there are territorial public bodies, government agencies and stakeholders in general, that can use the Catalogue as an instrument to monitor the development of the relationship-network, and, consequently, to promote actions aimed at further valorising the *best practices* and models of e-learning, within different European countries.

3. Why did we do it

The initial objectives for creating an online catalogue, as stated in the project proposal, were as follows:

– describe the products belonging to the partner organisations that could be interesting at transnational level;
– give the opportunity to the trainers and managers of Distance Learning systems to know what is on offer on the market in the context of Distance Learning modules;
– facilitate the exchange and the purchase of Distance Learning products.

The purpose of the catalogue is to obtain an overview of the access to, and production of, Distance Learning products, first and foremost for the project partners, and secondly for the rest of Europe. The need to have an exchange and dissemination platform for Distance Learning products among different countries, and among different levels of education, was tackled with the creation of a broad selection of products of all types of subject-areas.

The target groups for the contents of the online catalogue are university students and business owners, as well as adult students in formal and informal education, while the main users of the catalogue are organisations, as opposed to learners.

4. What were the challenges (obstacles to overcome)

The first challenge with developing a framework for the production of a database was to define what a course really is. The countries involved had greatly differing ideas as to what constitutes a course. Examples of definitions included: digital self-study material on CD, as well as complete web-based university study programmes including lectures and tutoring.

Defining the target group proved to be the next challenge. Was the database built for the needs of the project partners, or did we create the database to be a national European resource, or was it meant to be something in between both of the previously-mentioned ideas? We decided that the database was to be built to suit both the project partners, and external parties in our contexts.

Another challenge was to make the catalogue important and visible in the European arena. For that purpose, the benefits of providing information for the catalogue should be demonstrated and the wide promotional campaign should be carried out. One of the value-added services in the catalogue is the tools for measuring quality and customer satisfaction, so the organization seeking courses to buy can already have an overview of the quality of the proposed products. The evaluation of the single courses can be made by three different parties: experts, tutors and the students. Questionnaires for quality assessment turned out to be too long to be filled without irritation on the part of the user. Another concern was the question: who should fill in the expert questionnaire? If the «expert» is from the same organization that provides the courses, there is a doubt whether he/she can be neutral in his/her evaluation. It seems that the most correct way to proceed would be to have a database of independent experts who could be invited to carry out the evaluation of the products; moreover, in order to keep track of the quality of evaluations, it might be useful to have the expert's name alongside each evaluation. While discussing such issues with several organizations that own their own course-catalogues, the need for the automatic transfer of course-descriptions from one catalogue to another arose. Upload/download of the single course-card as a separate file would also be useful to facilitate exchange with other catalogues and databases. This need for the exchange of product-data between different catalogues raises the issue of the interoperability of databases. In this respect, the importance of adopting the LOM (Learning Objects Metadata) standard is evident.

5. What did we learn (what was successful, what went wrong)

Initially, the EMDEL portal was designed as a project website but turned out to be the main gateway to the Catalogue of Distance Learning products. This fact raised new requirements as regards the design of the portal and the user-interface, so it was significantly improved at the end of the project. Some positive features associated with the final version of the portal are highlighted:

1. user-friendly, light and color-balanced site design;
2. easy and intuitive site navigation system;
3. courses clearly grouped into specific corse-categories;
4. very flexible course search-system:
   – it is possible to search by entering words or parts of words within «course information», additionally specifying if these words must or must not be included in search results;
   – there is also an advanced search system which allows users to search for courses by specifying specific course attributes;
   – search results are displayed in multiple pages, by specifying relevant, though not overloaded, and sufficient course-information;
   – it is easy to get additional information about finding course by means of the links supplied.

The following are the main lessons learned from the development of the catalogue:

– great effort is needed to advertise and promote the catalogue in order to attract new organisations and to enlarge the supply of the products. It is hoped that, after some time, a critical supply-mass will be reached, and participation in the catalogue will become prestigious. This will lead to a greater focus on improving services in order to better serve the existing catalogue-participants;
– the improvement and perfection of such a catalogue is on-going, as the technological development in this field is very fast and the growing community of users will produce new requests for service improvement, as well as new ideas for new services;
– compliance with the standards, as well as interoperability with other databases on distance learning product will become a key-issue in the future, for the purpose of expanding catalogue-based supply. Ways to integrate information from other databases without transferring it physically should be found as this would help solve problems by attracting big providers and updating database records;
– though the idea of having evaluation along with each course was very attractive, the questionnaires for Customer satisfaction and Quality were too long to be filled-in honestly by the students, tutors and experts. The idea of having paid independent-experts for neutral evaluation of the courses should be considered in the future.

6. Future prospects

The future prospects for the catalogue very much depend on the availability of resources for further EMDEL portal development, together with partners commitment to continue catalogue-updating and promotion. If sufficient resources

are available, the catalogue could become a European market-place for Distance Learning products. At present, the most urgent things to do are:

– adopt LOM standards for the catalogue i.e. the highest priority;
– develop an interface to integrate the EMDEL catalogue with those of course-providers;
– shorten the quality-evaluation questionnaires.

Some other improvements can also be considered:

– catalogue product-groups should be alphabetically arranged with sub-groups for main groups, that potentially may have a lot of courses introduced;
– development of the expert-database together with ideas on how to motivate them to evaluate products;
– decisions regarding which organisation should be the responsible for catalogue-maintenance and up-dating in the future.

Acknowledgments

The project has been realized thanks to the presence and experience of the Organizations listed below.

Project Promoter: Tuscany Region, Department of Training Policy, ESF Service and Vocational Training System, Italy.

Partners: Univeristy of Liége, LabSET (Laboratoire de Soutien à l'Enseignement Télématique), Belgium; VOX, Norwegian Institute for Adult Education, Norway; Kaunas University of Technology, Kaunas Regional Distance Education Study Centre, Lithuania; Swedish Agency for Flexible Learning, Sweden; Gdansk University of Technology, Distance Education Centre, Poland; University of Szeged, Distance Education Study Centre, Hungary; NFA (Nordic Folk Academy), Sweden.

BIBLIOGRAPHY

Degen, B. (updated May 2001). Capitalizing on the Learning Object Economy - The Strategic Benefits of Standard Learning Objects. *Scientific American.*, [WWW document] URL:<http://www.learningobjectsnetwork.com/WhitePaper_StrategicBenefitsOfStandardLearningObjects.pdf> active 15th December 2004.

Dlnet. (updated 2002). Guidelines for the Reviewer. *National Science Digital Library*. [WWW document] URL:<http://www.dlnet.vt.edu/ReviewerGuidelines.jsp> active 21th November 2005.

Downes, S. (2002). Design and Reusability of Learning Objects in an Academic Context: A New Economy of Education?, *National Research Council*, Moncton, Canada, paper submitted to eLearning: una sfida per l'università, Milan, November 12, 2002.

Duval, E., Hodgins, W., Rehak, D., Robson, R. (2003). Introduction to the proceedings. *Proceedings of Learning Objects 2003 Symposium*, 24 June 2003, Honolulu. [WWW document] URL:<http://www.cs.kuleuven.ac.be/~erikd/PRES/2003/LO2003/Introduction.pdf> active 21st November 2005.

Ellis, R.K. (2001). LCMS Roundup. *Learning Circuits.* [WWW document] URL:<http://www.learningcircuits.org/2001/aug2001/ttools.html> active 21th November 2005.

European Commission (1993). Growth, Competitiveness, Employment: The Challenges and Ways Forward into the 21st Century. *White Paper*. COM (93) 700, 5 December 1993. Parts A and B. Bulletin of the European Communities, (6)93 [WWW document] URL:<http://aei.pitt.edu/archive/00001139/> active 21st November 2005.

European Commission (2001). The eLearning Action Plan. Designing tomorrow's education, *COM(2001) 172 final*, [WWW document] URL:<http://europa.eu.int/eur-lex/en/com/cnc/2001/com2001_0172en01.pdf> active 21st November 2005.

European Commission (2002). eEurope 2005: An Information Society for All, COM(2002) 263, [WWW document] URL:<http://europa.eu.int/comm/information_society/eeurope/index_en.htm> active 21st November 2005.

European Commission (2002). The valorization plan – Guidelines for the project promoters, [WWW document] URL:<http://europa.eu.int/comm/education/programmes/leonardo/new/valorization/doc_en.html> active 15th December 2004.

European Commission (2004). Valorization strategy for the Leonardo da Vinci vocational training programme, [WWW document] URL:<http://europa.eu.int/comm/education/programmes/leonardo/new/valorization/doc_en.html> active 15th December 2004.

Federighi, P. (1996). *Strategie per la gestione dei processi educativi nel contesto europeo. Dal lifelong learning ad una società ad iniziativa diffusa*, Napoli, Liguori.

Fini, A.,Vanni, L. (2004), *Learning Object e Metadati. Quando, come e perché avvalersene*, Trento, Erickson.

Friesen, N. (2002). Survey of Learning Object Metadata Implementations, *CanCore*. [WWW document] URL:<http://www.cancore.ca/lomsurvey.html> active 21st November 2005.

Hodgins, H. W. (2000). The future of learning objects. In D. A., Wiley (Ed.). *The Instructional Use of Learning Objects.* Bloomington, in Association for Educational Communications and Technology [WWW document] URL:<http://reusability.org/read/chapters/hodgins.doc> active 21st April 2004.

Iannella R. (2003). Trading Learning Objects. *Proceedings of the EDUCAUSE in Australasia Conference*, 6-9 May 2003.

IEEE (2003). Learning Object Metadata Working Group. *IEEE LTSC-WG12 2003.* [WWW document] URL:<http://ltsc.ieee.org/wg12/index.html> active 21st November 2005.

Kember, K., Kelly, M. (1991). Lessons to be Learned? Parallels between Australia and Hong Kong in the development of Distance Education, in *Distance Education*, 1(12): 7-26.

Kraan, W. (2002). Objective Re-Usable Competency, CETIS. [WWW document] URL:<http://www.cetis.ac.uk/content/20021101143354> active 21st November 2005.

Lyon, G. (2001). The Internet Marketplace and Digital Rights Management. [WWW document] URL:<http://www.itl.nist.gov/div895/docs/GLyonDRMWhitepaper.pdf> active 21st November 2005.

MacLeod, D. (2001). Fathom it out, in *Guardian Unlimited*, 8 May 2001. [WWW document] URL:<http://www.guardian.co.uk/Archive/Article/0,4273,4182126,00.html> active 21st November 2005.

McLean, N., Lynch, C. (2003). Interoperability between Information and Learning Environments: Bridging the Gaps, June 2003. [WWW document] URL:<http://www.imsglobal.org/DLims_white_paper_publicdraft_1.pdf> active 21st November 2005.

Orefice, P. (1997). Pour une théorie de la convergence en éducation des adultes, International Council for Adult Education, in *Convergence*, 2-3 : 138-149, Toronto, ICAE.

Regione Toscana (2000). Complemento di Programmazione. Fondo Sociale Europeo obiettivo 3, 2000-2006.

Rosenberg, M.J. (2001). *e-Learning. Strategies for delivering knowledge in the digital age*, New York, Mc Graw Hill.

Wiley, D. A. (2000), Connecting learning objects to instructional design theory: a definition, a metaphor, and a taxonomy, p. 7, in D. A. Wiley (Ed.). The Instructional Use of Learning Objects, Bloomington, in Association for Educational Communications and Technology. [WWW document] URL:<http://reusability.org/read/chapters/wiley.doc> active 21st April 2004.