

UNFOLD Deliverable D10. UNFOLD Communities of Practice Report

Citation for published version (APA):

Griffiths, D., Burgos, D., Kew, C., Dias, A., Tattersall, C., Girardin, F., Blat, J., Berbegal, N., & Navarrete, T. (2006). *UNFOLD Deliverable D10. UNFOLD Communities of Practice Report*.

Document status and date:

Published: 22/05/2006

Document Version:

Peer reviewed version

Document license:

CC BY-NC-ND

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

<https://www.ou.nl/taverne-agreement>

Take down policy

If you believe that this document breaches copyright please contact us at:

pure-support@ou.nl

providing details and we will investigate your claim.

Downloaded from <https://research.ou.nl/> on date: 15 Jun. 2024

Open Universiteit
www.ou.nl





Project no. IST-2003-507835

Project acronym: UNFOLD

Project title: Understanding New Frameworks of Learning Design

Instrument: Coordination action

Thematic Priority: Technology Enhanced Learning

D10 UNFOLD Communities of Practice report

Start date of project: 01/01/2004

Duration: 24 months

Project manager name: Josep Blat

Project manager organisation name: FUPF

Revision v.1

Project ref. no.	IST-2003-507835
Project acronym	UNFOLD
Project full title	Understanding New Frameworks of Learning Design
Distribution level	PU
Contractual date of delivery	14th February 2006
Actual date of delivery	14th February 2006
Deliverable number	D10
Deliverable name	Communities of Practice report
Type	Report
Status & version	Final
Number of pages	40
WP / Task responsible	Bolton
Other contributors	FUPF, OUNL, EUCEN
Author(s)	Dai Griffiths, Daniel Burgos, Chris Kew, Ana Dias, Colin Tattersall, Fabien Girardin, Josep Blat, Nidia Berbegal, Toni Navarrete
EC Project Officer	Marco Marsella
Abstract	This deliverable describes the of the UNFOLD project from to
Keywords	UNFOLD, IMS Learning Design, outcome, CoP
Circulated to partners	6th February 2006
Mgt. Board approval	Pending

Partner Org.	Contact Person	Tel	Fax	Email Address
UPF	Dai Griffiths	+ 34 93 542 2173	+34 93 5422517	david.griffiths@upf.edu
Bolton Institute	Oleg Liber	+ 44 1204 903660	+44 1204 399074	o.liber@bolton.ac.uk
OUNL	Rob Koper	+ 31-455762317	+ 31 455762802	rob.koper@ou.nl
EUCEN	Carme Royo	+ 34 93 5421825	+ 34 93 5422975	executive.office@eucen.org

Table of Contents

<u>Table of Contents.....</u>	<u>3</u>
<u>Executive Summary.....</u>	<u>4</u>
<u>Introduction.....</u>	<u>6</u>
<u>The structure and infrastructure of the Communities of Practice CoPs.....</u>	<u>7</u>
<i>The CoPs identified.....</i>	<i>7</i>
<i>CoP infrastructure.....</i>	<i>7</i>
<i>Membership and participation.....</i>	<i>9</i>
<u>Facilitating research lines.....</u>	<u>11</u>
<u>Overview of Communities of Practice face to face events.....</u>	<u>13</u>
<i>Participation by Community of Practice.....</i>	<i>16</i>
<i>Types of activity at UNFOLD CoP meetings.....</i>	<i>17</i>
<i>Input into UNFOLD meetings.....</i>	<i>18</i>
<u>Online activities.....</u>	<u>19</u>
<u>Involving key projects and developers.....</u>	<u>24</u>
<u>Publications.....</u>	<u>29</u>
<u>Feedback to standards setting bodies.....</u>	<u>30</u>
<u>Conclusion.....</u>	<u>31</u>
<u>Appendices.....</u>	<u>32</u>
<i>Exemplar UoLs.....</i>	<i>32</i>
<i>Activity Nodes in LN4LD.....</i>	<i>34</i>
<i>UNFOLD Publications.....</i>	<i>36</i>

Executive Summary

This document summarises the work carried out with the UNFOLD Communities of Practice (CoPs) since their launch in the summer of 2004. Detailed information on the work carried out is available in the previously submitted deliverables of UNFOLD outcomes: D7.1 (July - December 2004), D7.2 (January - June 2005), and D7.3¹ (July - December 2005). This report provides a concise but inclusive overview of the work which is reported in these three deliverables.

The report describes the structure and infrastructure of the CoPs, and the principal research lines facilitated. An overview is provided of the face to face meetings carried out, which have been a key project action, and statistics are presented which characterise the achievements. Online activities are discussed, and the key players involved in the CoPs identified.

UNFOLD identified three principal user groups for the CoPs: System Developers, Learning Designers, and Teachers and Learning Providers. An online infrastructure was provided for these groups, online activities carried out, and face to face meetings held. High levels of participation were achieved, and by the end of the project there were 621 members of UNFOLD who were signed up for the fortnightly mailing list, and 892 were registered for the project site for forums and learning activities, a total of 1201 people.

Throughout the project face to face events proved to be the most significant activity. There was an average of over 50 participants at each event, with the vast majority of these paying for their own travel and subsistence. A strong programme of additional workshops, presentations and round table activities was also carried out. This strong focus was due to the slower than expected development of IMS LD tooling, which meant that the project was not working with communities of users but rather with members who wanted to find out more about the specification and learn how to use the emerging tool set. This explains why face to face meetings and workshops (supported by the UNFOLD resource base and infrastructure) proved to be valuable for members and the wider community. It also indicates why participation in online forums was relatively light, since they were more appropriate for supporting an established body of users engaged in professional practice.

More than half of the input sessions at face to face meetings were provided by members of the community, rather than by UNFOLD personnel, which is a strong indicator of commitment by the Communities. The results of the meetings were posted on the web for access by the wider community, and followed up in online forums and synchronous activities.

UNFOLD has brought together the great majority of the leading projects and researchers working in IMS Learning Design in Europe, and indeed from around the world. The greatest participation came from the UK and the Netherlands, which have a strong base in IMS LD, with strong interest in Spain, and also from France (which was the focus of a special effort by the project). In international terms the greatest participation was from Canada, with a small but significant participation from Australia. While the majority of participants were from the academic community, where IMS LD

¹ This is not defined as a project deliverable in the workplan, but in order to keep this present deliverable to a manageable size it has been decided to report separately on the final 6 months of UNFOLD outcomes.

has its origins, 50 representatives of commercial companies and independent Open Source foundations attended meetings.

Through project activities research lines were established, and a rich set of publications has emerged from the project, authored both by project personnel and by UNFOLD members, and have been published on the Web.

In the course of the project the adoption and implementation of IMS LD has grown significantly, and it seems clear that the activities of the UNFOLD Communities of Practice described in this deliverable have made a substantial contribution to ensuring this outcome. There has been enormous activity stimulated by UNFOLD, and in this sense the project has performed very well. The form that this took was determined by the needs of the members and the situation regarding IMS LD, as should be expected from a Coordination project, and the project believes that the focus of activities has shaped the future for IMS LD in the most appropriate way given the context within which the project was operating.

Introduction

The awareness raising activities of the first phase of the project (months 1-6, described in D5, Establishment of CoPs) had ensured that there was awareness of the UNFOLD project among the target user group. Since then, summer 2004, the UNFOLD Communities of Practice (CoPs) have been the principal focus of project activities.

Moving from awareness to participation is by no means a simple matter, as it involves a willingness to participate in UNFOLD activities where participants had to meet the costs out of their own budgets. Therefore, once the CoPs infrastructure was established, it was essential to contact the key actors in the field of Learning Design, and to encourage these people join and participate UNFOLD activities. This was done through the mailing list, but also through extensive email contacts between project staff and UNFOLD members (and potential members).

The success of this activity is demonstrated by the long and varied list of researchers projects and companies who have participated in UNFOLD events, as described below.

Since the launch facilitators have worked to organize a number of different support activities ranging from planning and managing meetings and workshops to producing and encouraging the production of papers and articles relating to the IMS Learning Design specification. In total the project has included six Community of Practice meetings each lasting three days with the exception of the final two day meeting in Berlin. An additional thirteen UNFOLD workshop events were organized in conjunction with established conferences, and a further eleven events included UNFOLD participation in the form of Keynote speeches, demonstrations, panel sessions and presentations designed to raise awareness and to encourage participation in the CoPs. Online chats account for another nine facilitated events which served to support both face to face events and publications on Learning Design namely the Springer book on Learning Design and the articles that made up the special edition of JIME. Further testimony to the work carried out by the UNFOLD project and its CoPs members include the production of numerous online resources developed for and by members of the various communities of practice in response to their needs and expectations.

As a result of such efforts to stimulate interactions a number of positive outcomes have emerged including the proposed integration of Learning Design into the Moodle CMS. At the UNFOLD CoP Meeting in Braga, Portugal, Moodle and IMS LD started a series of discussions focused on the integration and interoperability of both notations. Along the last six months the working team has produced three documents and has drawn a roadmap through several steps: a) exportation of a Moodle course to a IMS LD Unit of Learning, b) importation of a UoL into Moodle and c) built-in playing of a full UoL in Moodle. The first step (exportation) will be hopefully delivered in the next release of Moodle (1.6) along the first quarter of 2006. In addition, other parallel effort focused on integration comes from LAMS, Moodle and IMS LD and it aims to define an interoperable layer of services for these well known systems-specifications, meaning a basic common notation for synchronous and asynchronous elements.

This document serves as a review of CoP activity since the launch of the UNFOLD project and charts the work carried out by project staff in order to make the project the success that it became.

The structure and infrastructure of the Communities of Practice CoPs

The CoPs identified

As indicated by the project plan, the user group for UNFOLD was divided into three principal Communities of Practice:

- Systems Developers, who are developing editors, players and related applications for IMS LD
- Learning Designers, who are authoring learning Units of Learning using the applications provided by systems developers, to be used by teachers and learners.
- Teachers and Learning Providers, who use Units of Learning with learners, or who run the institutions which provide the infrastructure for doing this.

In designing UNFOLD activities and online support the project team always kept in mind the differing needs of these groups, and the need for them to obtain feedback from each other. Thus the various days of the three day CoP meetings were scheduled to achieve these outcomes, and forums and activities were provided for the three different groups.

This has proved to be a fruitful approach, in that we have achieved significant participation in the project by members of all these groups, and have been able to facilitate the exchange of information, skills and insights for them.

The distinction between these three CoPs proved to be clear and useful in planning UNFOLD practices. It was not always, however, a clean split between members, as a number of members wanted to participate at more than one level, in particularly many teachers were also interested in authoring.

As the project progressed a need was seen to address the needs of more communities. In particular activities were set up to support the needs of PhD researchers, with the organisation of seminars and publishing opportunities. There was also a concerted effort to involve a French speaking community, with significant success, particularly in view of the fact that there was no partner from a Francophone country in the project. This resulted in the participation of a high number of Francophone participants in UNFOLD events (for example when compared with Germany or Italy) an additional UNFOLD event in Paris, and an online event with a French discussion paper.

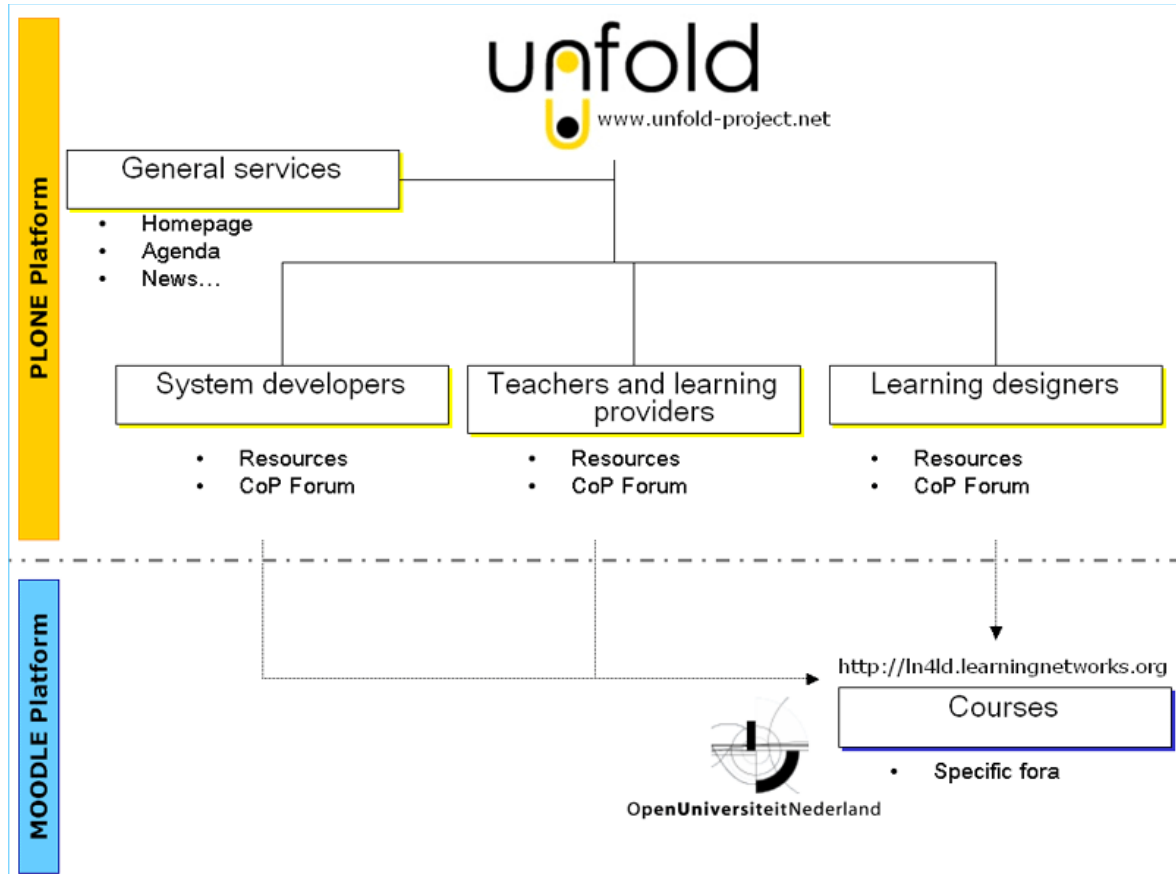
CoP infrastructure

The UNFOLD web infrastructure was designed from the outset to support the activities of the CoPs. In the first six months of the project, the awareness raising stage, the necessary web sites were created, the documentation and norms for the CoPs were established, and relevant resources concerning the CoPs, and Learning Design gathered and authored. This process is documented in project deliverable D5 Establishment of CoPs report.

In the first instance the web support provided consisted of two sites Firstly the main project website **www.unfold-project.net** was constructed with the open source content management system Plone. It hosted general IMS LD resources and

awareness raising materials, information about the project, and the resources and forums for the Systems Developers, and the Teachers and Learning Designers CoPs. Secondly the Learning Designers CoP was hosted on a site developed using PHP nuke, called **Learning Networks for Learning Design**.

Following evaluation and review of the first years activities it was decided in Easter of year two to focus all forum and learning activities on a Learning Networks for Learning Design site, rebuilt using Moodle, and to use the www.unfold-project.net site as the principal point of contact for the user group with the project, for documentation, and for managing the mailing list. This architecture is illustrated in the following graphic.



Additionally UNFOLD chat environment was implemented for the online seminars and discussions, and the papers produced by the project were stored on the Learning Networks DSpace server, which provides a permanent name space, to ensure long term access to project outcomes.

Membership and participation

Membership of the UNFOLD Plone site carried with it membership of the UNFOLD mailing list, and registration requested users to indicate which CoP they were most closely involved in.

The Moodle LN4LD platform also required users to register.

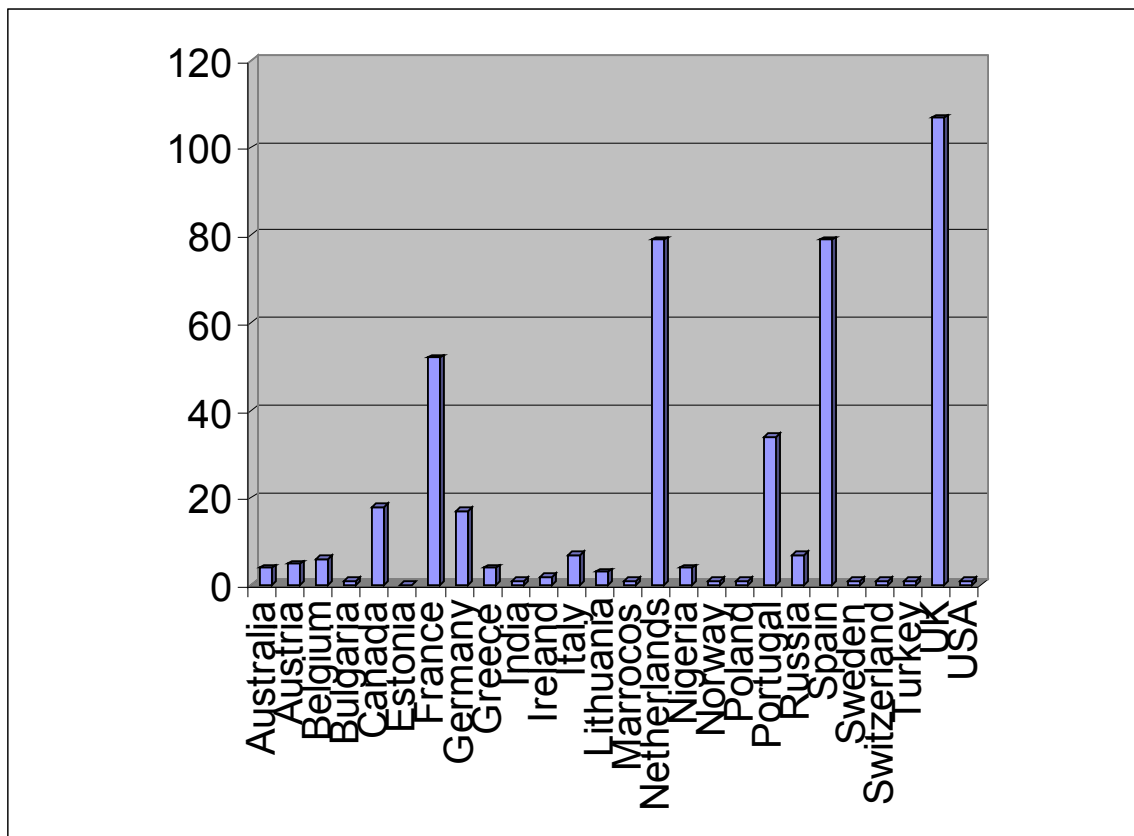
This provided flexibility for users, as they could choose to register with for the mailing list, for the activities on the LN4LD site, or for both.

By the end of the project the numbers of users registered on the sites was as follows

LN4LD members	892
UNFOLD members	621
Total of individuals	1210

Country of origin

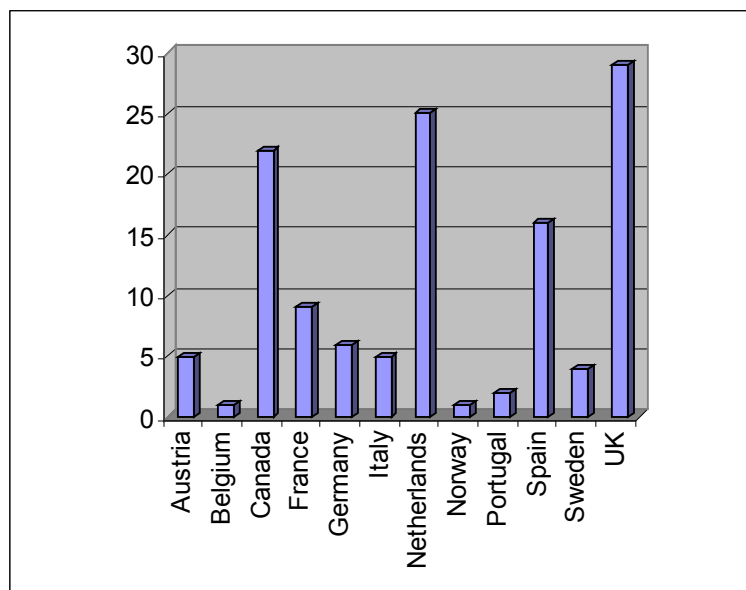
The majority of these members were only known to the project by their email addresses, and so their geographical distribution is hard to establish. Attendance at events and online seminars, however, provides a good picture of where the most active members were located



Attendance at in person events (total 437 at eight events)

Thus the highest rates of participation at face to face events came from the two countries where this might be expected, given their track record in developing the IMS LD specification and in implementing systems. To put these results in perspective,

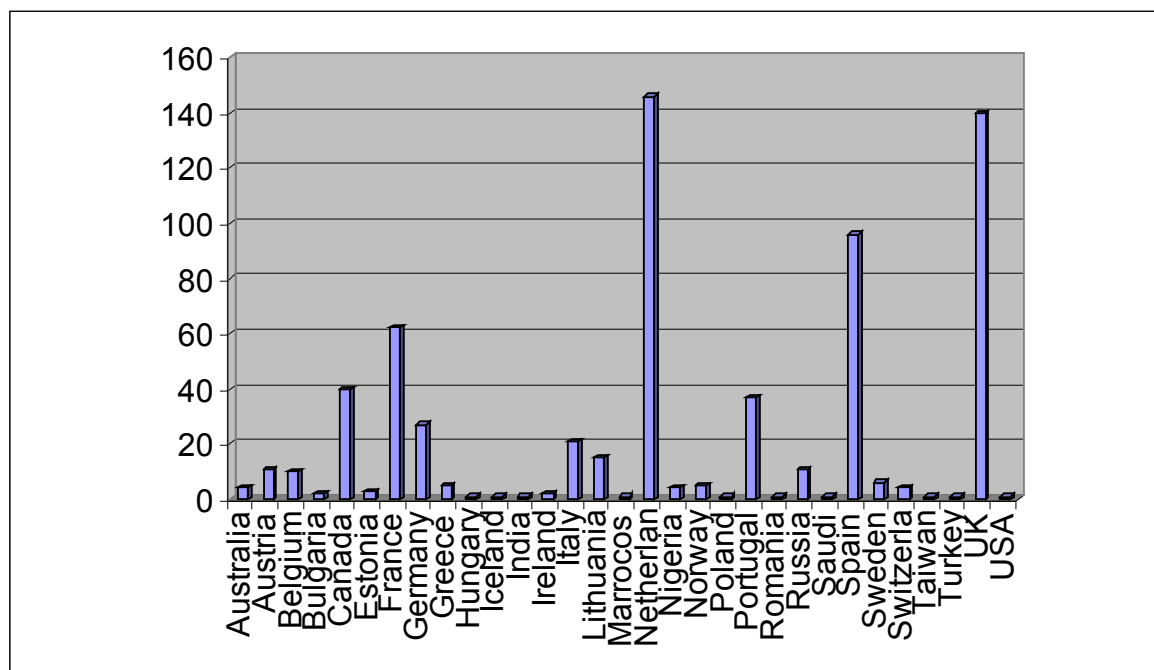
however, it should be remembered that the location of meetings had a strong influence on the attendance, with a natural tendency for a greater attendance from the host country. Thus the Portuguese attendance was largely at a single meeting in Portugal. On the other hand, there was only one UK event, compared with two in Netherlands, so the UK participation was clearly substantially more intense than that of the Netherlands. A surprising result is that the attendance from Spain and Netherlands was almost identical, despite the much less well established tradition of work with IMS LD in Spain. This is an indication that project work in the Spanish speaking community bore fruit. The results for France and Canada also reflect the efforts of the project to draw these communities into UNFOLD activities. There is also smaller but significant participation from Canada and Australia.



Participation in online events ((total 187 at nine events)

A similar pattern is shown in the online events, where geographic location was not an issue. Here France has a substantial participation, but the figure for Canada is very high, considering that participants had to get up early in the morning in order to participate.

The following graphic shows the statistics for the combined face to face and online events, and it provides a good overview of the areas with the strongest participation. In general terms this pattern reflects the distribution of interest in the IMS LD specification, which is, for example perceived to be much higher in Canada than in the US.



Participation in face to face and online events combined

Facilitating research lines

The clearest picture of the research lines facilitated by UNFOLD can be obtained from the extensive publications which were produced both by project personnel and by CoP members, and detailed in an appendix to this report. Here we summarise the principal lines of research followed.

System developers

There were extensive meetings with and between Open Source VLE providers and some commercial developers. To this may be added close coordination with the team producing Collage, which is built on another Open Source application, Reload. Other systems developers who were in active members were NetUniversité (a portal based system under development), and Mot+ (which was developing IMS LD export). Another key line of work revolved around service based architectures. Sessions related to this issue were held at all the final three CoPs meetings, and in the final meeting a full day parallel strand produced an UNFOLD architecture, which represented the recommendations of the CoP at the end of the project. One of the important outcomes of this work was the way in which it enabled the work being funded by JISC in the UK on the e-framework to be presented and enriched on a European stage. Two working groups were formed to work on the 'Layer of services between IMS LD, LAMS and Moodle' (Ernie Ghiglione, Daniel Burgos, Colin Tattersall, Rob Koper, Martin Dougiamas, Scott Wilson) and on 'Integration between IMS LD and Moodle' (Daniel Burgos, Martin Dougiamas, Rob Koper, Hubert Vogten, Colin Tattersall). The project also hosted and participated in the IMS working group for IMS Content Packaging, which is a key specification for IMS Learning Design.

Learning Designers

The project identified the development of templates and patterns for Learning Design as one of the keys to successful adoption of the specification, and a key area for Learning Designers.

This was reflected in discussion documents, an online event, the development of a methodology for template development and a focus on this issue at UNFOLD in person events, especially the Braga CoP meeting which had this as a specific theme. This effort has brought together a number of research groups who had not had previous contact with each other, most notably

- the Dialog+ team based in Southampton
- LAMS from Australia,
- Collage project from Spain
- NetUniversité from France
- Research Centre for Interactive Learning Environments, University of Wollongong
- ASK LDT (part of the iClass project)
- The SLeD team from the Open University of the UK
- The ACETS project, funded by JISC

This has led to a sharing of approaches and techniques which increase the effectiveness of the research groups involved, and creates a common understanding of the issues to be addressed. A number of papers have been published by UNFOLD partners and members which address this theme, as may be seen in the list of publications.

Teachers and Learning Providers

In the absence of suitable tools and delivery systems, the activities of the Teachers CoP were constrained by technical considerations. Nevertheless there was significant activity, and there were two principal lines of research.

Firstly, the role of teachers in the processes of authoring and adapting Units of Learning was debated was a clear theme from the first meeting in Barcelona. Work following this meeting resulted in discussion papers which then became a journal article:

Griffiths, David; Blat, Josep (2005) *The Role Of Teachers In Editing And Authoring Units Of Learning Using IMS Learning Design*. International Journal on Advanced Technology for Learning, Special Session on "Designing Learning Activities: From Content-based to Context-based Learning Services", volume 2, issue 3, October 2005.

This line was picked up by Griff Richards in his paper for the an UNFOLD online discussion paper Learning Design and Representations of Instructional Intent Griff Richards and Colin Knight and the following discussion, which is available on the Learning Networks for Learning Design server. This led to a focus on templates and patterns at a number of meetings (in particular in Braga) with strong input from the Open University of the UK, the Collage team in Valladolid and ACETS .

Secondly a related line of work addressed the way in which pedagogic practice could be described, and the merits of taxonomies and controlled vocabularies. This is an essential aspect of work for templates, as it enables teachers to find the kinds of activities which they need. Particularly active in this area were

- the LearningMapR team from Waterloo in Canada
- the team Led by Griff Richards from Simon Fraser University in Canada
- the 8 LEM team in Liège
- DialogPlus from Southampton University, a JISC project

- Learning Vocabularies, a JISC project
- LADIE, a JISC project
- John Casey of the University of the Highlands and Islands
- Jean-Philippe Pernin and Anne Lejeune of the CLIPS IMAG
- Wolfgang Greller, of Klagenfurt University, Austria

There was discussion of this issue at all meetings, and a final event all day session which made good progress in clarifying the problems to be addressed, while not resolving the clear differences in approach adopted by different participants. These groups were in most cases not aware of the work being carried out by each other, and UNFOLD provided an invaluable opportunity for them to coordinate their work. This is of particular importance in an area where taxonomies are intended to be inclusive, and is of particular practical importance given the work being done by the e-framework to create domain models for pedagogic activities as a first step towards a service based architecture.

Some of the outcomes are addressed in separate papers by Griff Richards, Dai Griffiths, and Jean-Philippe Pernin which may be found in the publications section of this report.

Overview of Communities of Practice face to face events

Over the course of the project UNFOLD has organised a large number of events, including

- 6 full UNFOLD CoP meetings
- 3 seminars in collaboration with other organisations
- 10 workshops
- 26 presentations, demonstrations, panel sessions, conference threads,

The more significant meetings are summarised below, and readers are directed to www.unfold-project.net for further details.

Soon after the launch of the project three evening seminars were run at a residential meeting in Schloss Dagstuhl, Germany, organised by the Valkenburg Group. This group is composed of organisations implementing Learning Design, many of whom had signed letters of support for UNFOLD. This was a valuable first opportunity to contact the user group, and receive feedback.

The project built on this first contact by preparing the web infrastructure and raising awareness of the UNFOLD among potential participants, and in July 2004 the CoPs were launched.

The six face to face meetings for the Communities of Practice were at the heart of project activities, and each lasted three days (with the exception of the final Berlin two day event). These meetings have offered members the opportunity to have in-depth discussions with others working in similar areas, and they have proved to be the principal means whereby the Communities of Practice have become a reality. They have also offered practical sessions which have developed the skill base in creating Units of Learning, and have included break out sessions to work on particular topics. Attendance

has ranged from forty to full houses of sixty or seventy, and participants have come from a wide spread of European countries, as well as from around the globe.

The themes addressed by the meetings have developed as time has gone by. When the first meeting was held in Barcelona in September of 2004 there were no tools for Learning Design available, and very few Units of Learning had been created other than those which were published as illustrations to the specification. The meeting focused on updating members on progress, and on planning for the most effective ways of working with the specification.

By the second meeting, in February 2005 in Valkenburg intensive work on tools development had come to fruition, and the meeting was the launch of the CopperCore Learning Design Engine, and the Reload Learning Design Editor Level A. There were workshops on creating Units of Learning with level A, with input from Rob Koper and other members of the UNFOLD team.

The following meeting in Barcelona in April built on this by offering workshops in Level B (which was by then supported by the RELOAD editor), again with input from Rob Koper and the UNFOLD team. There were also workshops by three additional tools, COSMOS, ASK-LDT, and MOT+, together with a colloquium discussing the research agenda for Learning Design, and initial discussions on usability.

The fourth meeting, in Braga in June, focused on making it easier for non-experts to work with Learning Design, and a large number of projects working on various aspects of this issue presented their work, including Dialog+, LearningMapR, NetUniversité and LAMS. There were also presentations on pedagogy and policy from the Helen Beetham of JISC, and from Dominique Verpoorten on the 8 Learning Event Model. The series of workshops started in Valkenburg came to a conclusion with a Level C workshop, presented by Rob Koper and Daniel Burgos of OUNL. A particularly welcome development was the participation of Martin Dougiamas of Moodle, who took the opportunity to announce that Moodle would be moving towards compliance with Learning Design.

The fifth meeting, in Glasgow in October highlighted the strategic and architectural issues involved in implementing Learning Design in an institution, with presentations from Bill Olivier (Technical Director of JISC), Scott Wilson of CETIS, James Dalziel of LAMS, and workshops on both the SLeD service based Learning Design player, and on the COLLAGE editor, which provides graphical templates enabling authors to create Units of Learning based on patterns, integrated with the Reload Learning Design Editor. One particularly exciting development was the first full pilot of Learning Design in a course, with Liverpool Hope University reporting on their use of SLeD.

The final CoP meeting in Berlin looked to the future, by mapping out the requirements for the next generation of Learning Design based systems, and to take the first steps to planning how this can be achieved. An architecture group reviewed existing architectures to determine how far they provide support for the required functionality, and a pedagogy group examined the possible vocabulary which could be used as the basis for dividing the functionality of the system into chunks which support teachers and learners in their use of the proposed system. The work was given focus by a presentation by Sue Bennett on the work of the Research Centre for Interactive

Learning Environments, University of Wollongong , Australia , which has addressed precisely this problem. Other valuable input was provided by Griff Richards of Simon Fraser University Canada , who provided an update on Canadian work on federated repositories of UoLs linked with federated networks of social software tools, and by Rachel Ellaway who described the work done in ACETS to use Learning Design to document teachers practice. Two other significant developments were reported: progress made in providing Learning Design interoperability for .LRN, and the announcement by Code AG, of one of the first commercial implementations of Learning Design to be released.

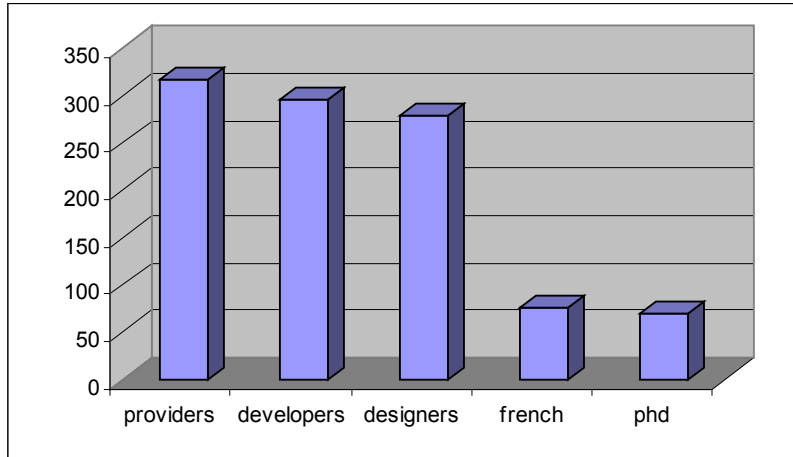
Three other multi-day seminars have been organised in collaboration with other organisations, each lasting two days. The first was in Paris in March 2005, organised together with AFNOR [<http://www.afnor.fr/>], the main group for standardisation in France, and it was intended to raise the profile of the specification and the project in this country . There proved to be substantial interest, and the initiative enabled the project to make contact with a number of new members and two implementation projects of which the community was previously unaware. As a continuation of this event some online activities (forums and online chats) were carried out at the UNFOLD website.

The second additional meeting was the workshop at Heerlen , organised jointly with ProLearn, which provided a platform for members to share their research. Papers accepted for presentation at the workshop were published in the Special Issue on Learning Design of the IEEE journal Educational Technology & Society, and a number of presentations were also made from the JIME special issue on Learning Design.

Finally, the project has collaborated in a seminar primarily intended for staff at the Universidad Complutense de Madrid, the second largest one in Spain with more than 140.000 students and 6.000 teachers, but also open for other institutions, where the needs of end users can be addressed directly. Along three days a group of over 40 teachers and learning designers worked together building learning scenarios in IMS LD and addressing the importance of re-using and re-purposing Units of Learning in blended learning,

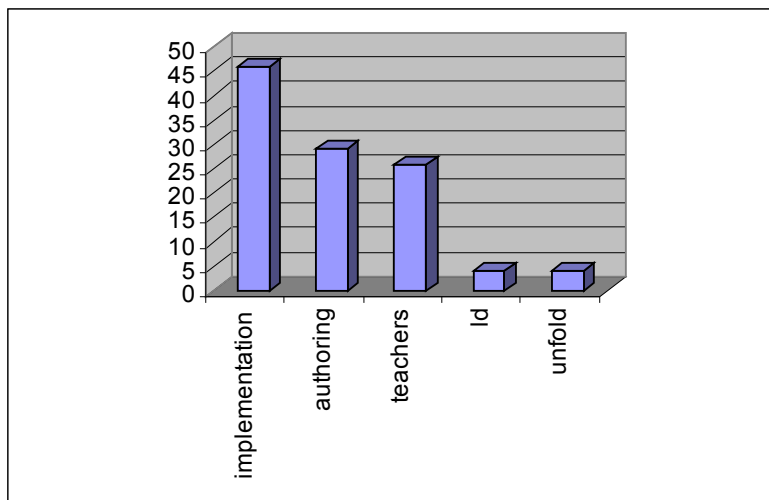
Participation by Community of Practice

The declaration of community affiliation on the UNFOLD main site provided a division as follows:



Declared membership of CoP

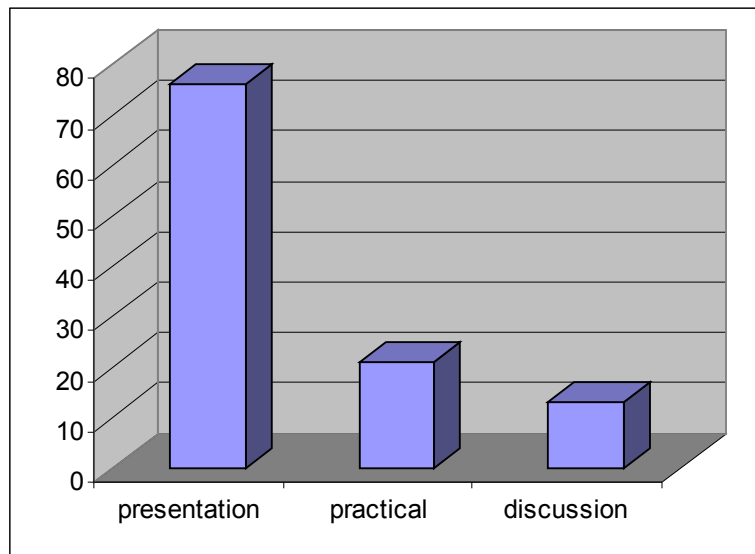
(total people = 621, some members of more than one CoP).



Topics of presentations, papers and discussions at CoP meetings

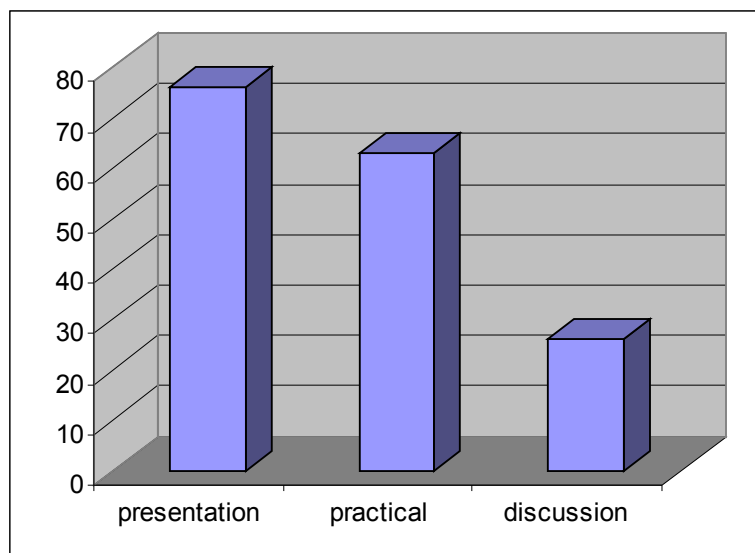
All the three CoPs were substantially represented in the topics of presentations, papers and discussions at CoP meetings. This indicates that the three areas identified by the project were all adequately addressed. The fact that implementation issues were more frequently addressed than authoring, which were in turn more frequent than teachers issues, reflects the state of tooling for IMS LD, where a number of tools were appearing, but where authoring facilities for learning designers were still not ideal, and few opportunities for working with learners were available.

Types of activity at UNFOLD CoP meetings



Number of presentation, practical and discussion sessions

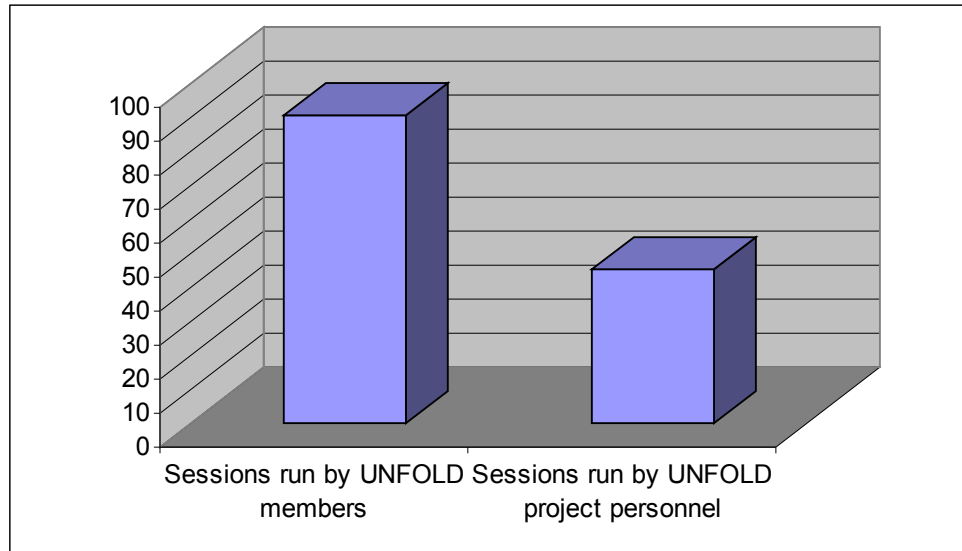
The UNFOLD communities of practice focused on practical activities and discussion sessions as well as on input on new developments and research in the area of IMS LD. This policy was adopted as there was a need to develop a sense of joint activity, and to develop the basic skills required by participants. In terms of numbers of sessions, there were substantially more presentation sessions than any other category, however it should be remembered that each presentation session was substantially shorter than the other sessions. In the following graphic a rough adjustment is made for the length of the sessions, and it seems clear that sessions with active participation took up at least half of the time of UNFOLD meetings.



Approximate adjustment for length of session (Practical x3, discussion x2)

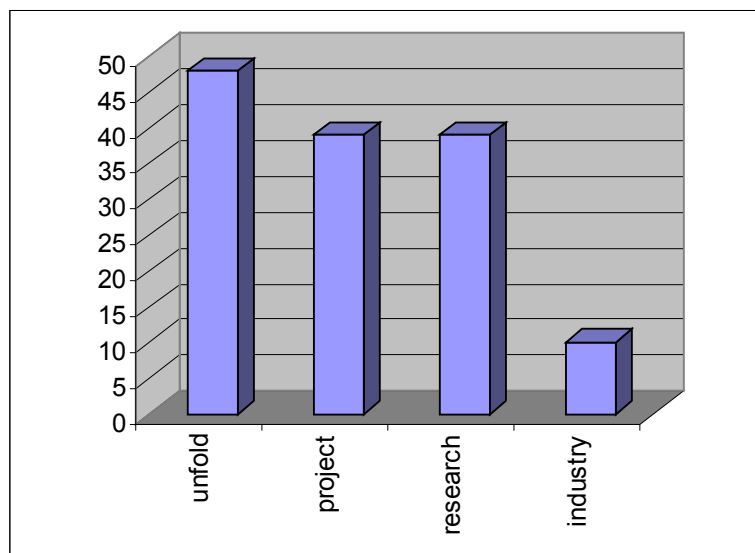
The multipliers used are probably on the low side, as practical workshop sessions typically took up a whole morning, as did one of the discussion sessions, while presentation sessions were typically 45-60 minutes.

Input into UNFOLD meetings



Proportion of sessions at CoP meetings run by project personnel and by UNFOLD members

A very positive result for the project is that twice as many sessions at UNFOLD meetings were run by members than were run by project personnel. This is a strong indication of the commitment to the project of the core membership, and the reality of UNFOLD as a coordination action, rather than simply a dissemination process.



Presenters and discussion leaders in CoP meetings by sector

Apart from contributions by UNFOLD staff, presentations, discussions and practical sessions came from three main sectors:

- Projects funded by the European Commission, (in particular Technology Enhanced Learning Projects) and national bodies (in particular JISC in the UK)

- The wider education community, especially, but not exclusively, higher and continuing education, the sectors which gave birth to the specification and where interest in it has been most evident.
- Organisations and projects from the industrial sector. This was taken to include both commercial organisations interested in using LD in training, and also software companies and independent Open Source foundations which are producing LD compliant tools, or planning to do so.

IMS LD has its origins in public education, and so it is unsurprising that this remains the area in which it has greatest strength. Nevertheless, UNFOLD has been aware throughout its activity of the need to reach the industrial sector. The project was launched to the industrial user group at the eLig (eLearning Industry Group) conference held jointly with EADTU (European Association of Distance Teaching Universities).

Online activities

This intensive programme of face to face activities was supported by online activities. These included an opt in mailing list with over 500 members, news postings on the project web site, and documents and links. Forums were provided for members to raise issues and problems relating to the specification, and some valuable discussions were held. It was however found that members much preferred to discuss these issues face to face at the CoP meetings. There were also online synchronous discussions on the UNFOLD server, and these proved very productive and popular. They were of two types. Firstly three discussions were held to enable members who had not been able to attend the events to participate in the debates and exchanges. Secondly discussions were held on position papers and other publications by UNFOLD members.

- Bill Olivier discussed his paper on the state of Learning Design at the launch of the CoPs
- David Griffiths discussed a paper on The Role of Teachers in Authoring Units of Learning
- Griff Richards and Colin Knight discussed their paper on Learning Design and Representations of Instructional Intent,
- Members of the Moodle community and UNFOLD discussed their paper on interoperability of Learning Design and Moodle.
- The Springer Book on Learning Design was discussed with one of the Editors and some of the authors
- The JIME special issue on Learning Design was also the focus of a discussion.
- One of the papers in JIME focused on IMS LD and Moodle was also the main topic for one discussion.
- Jean-Philippe Pernin and Anne Lejeune moderated a discussion focused on models for the re-use of learning scenarios

The participants in these discussions were very keen to exchange ideas and to pick up on news of research which was relevant to their work. This may be why the synchronous online exchanges were more effective than the forums, as they enabled participants to get feedback from a large number of participants almost instantly, in a brainstorm-like environment, whereas the same interactions in a forum would have taken weeks, and might never have reached critical mass.

The average participation in these discussion was 21 people per session, and for each session an online facilitator was appointed - which proved to be a demanding task. After

each discussion the transcript was edited, sorted into threads, and posted for participants to read and discuss. These transcripts are now available on the LN4LD server.

Throughout the 18 months of the project online forums were maintained, and all queries posted were answered. It is clear, however, that this did not prove to be as useful a tool for project work as had been anticipated. In response to evaluation which revealed low levels of use, the project made a number of innovations, such as

- adding 'mail push' so that subscribers received mail in their personal mail client (month 9)
- providing a system of rewards so that more frequent posters were given privileged access to resources (month 12)
- a radical redesign of the project forums which were concentrated on the revised Learning Networks for Learning Design site (month 16)

The results did not vary significantly, although there were some bursts of activity. To give an example, in the final six months of the project facilitators initiated 29 threads (either directly or through close collaborators among the membership). The response was relatively low key, with only 84 responses.

The project team concludes that many participants preferred to communicate either in person at project events, or by email. This is understandable, in as much as the forums were originally intended to be a place for exchanging practical knowledge and skills, in particular for the creation and use of Units of Learning. This would require a certain degree of adoption, and of easy to use tooling, which was only starting to appear at the end of the project.

One forum area which did prove popular with members was the Moodle activity around exemplar IMS LD Units of Learning, made available by project personnel and members. By the end of the project there were 37 exemplar Units of Learning available, modelled mainly in Level A and B, but also with a first tryout in Level C. The variety of topics is high although all of them are mainly focused on Adaptive learning, learning flow, collaborative learning and personalization. These outcomes are categorized in 'use cases' and 'show cases' meaning the first ones those cases with actual content showing actual lesson plans, and the second ones those UoLs created to show specific features of the specification or some pedagogical aspect modelled with it. The authors come from any of the UNFOLD CoPs and they are usually attending the face to face events, raising pedagogical and technical questions in the forums and getting and providing practical support in the creation of these UoLs. UNFOLD websites play then an important role both, helping members of the CoPs to create their own UoLs and facilitating the dissemination of these outcomes

The success of this initiative only seems to demonstrate more clearly that members were principally interested in engaging in UNFOLD to obtain information and resources, to present and disseminate their work, to publish results, and to find unique opportunities for synchronous discussion. Interestingly activity on the forums is picking up gradually since the end of the project, which suggests that now that UNFOLD face to face events are not available members are seeking other possibilities.

Developers of commercial applications have been invited to attend events wherever possible, resulting in the participation of Chronotech, elive, Cosmos and GTK Press. Contact has also been established with BlackBoard. The majority of development efforts in the LD area are Open Source, and many of these are funded by educational institutions or grants from education authorities. There are, however, a large number of

independent Open Source organisations who are major players in the education market. UNFOLD has been in contact with a number of these, including LAMS, Moodle, Boddington and .LRN.

The collaboration established with the PROLEARN network of excellence has been significant, as it has enabled the project to obtain access to the PROLEARN network, which is explicitly designed to link academic and industrial expertise in education and training, and a joint event was organised with PROLEARN.

As a result of these and other awareness raising efforts there has been a significant industrial participation in UNFOLD events. The table on the following page lists 50 participants in UNFOLD events who have been identified as being from either commercial companies, or from independent Open Source foundations, that is to say 12% of the total participation.

A milestone was reached for the specification at the final CoP meeting when the first commercial implementation of IMS LD was presented by theCoDe, a German company.

Company	Country
Fachhochschule Vorarlberg Gmbh	Austria
GTK Press	Canada
AFIDE	France
AIRBUS	France
Aska	France
CESI On Line	France
Ferand Beghin, eLearning Consultant	France
InWent GmbH / Internationale Weiterbildung und Entwicklung GmbH	Germany
ANOVA Multimedia Studios GmbH	Germany
Capacity Building International	Germany
Fraunhofer FIT	Germany
TheCoDe	Germany
InWent GmbH / Internationale Weiterbildung und Entwicklung GmbH	Germany
MOU SA	Greece
Bifröst School of Business	Iceland
Didagroup	Italy
Euform.it	Italy
Garamond srl	Italy
Giunti Interactive Labs	Italy
Berg Interactive Media and Communication	Netherlands
CED-Groep Rotterdam	Netherlands
Chronotech	Netherlands
Deskjob	Netherlands
Eduolive	Netherlands
ETINE IT & Education Services	Netherlands
Kennisnet	Netherlands
LogicaCMG	Netherlands
MemoTrainer BV	Netherlands
Sofos Consultancy Amsterdam	Netherlands
The Mediator Group	Netherlands
Threeships enterprises bv	Netherlands
Turpin Vision bv	Netherlands
WeistraConsult	Netherlands
wynneconsult	Netherlands
Fronter AS	Norway
it.solutions	Norway
SIVECO Romania	Romania
Evintia	Spain
Master-D	Spain
Pedagogia Interactiva eLearning Consultancy	Spain
Sadiel	Spain
SEGI-Consulting	Spain
www.a3net.net	Spain
Institute for Information Industry	Taiwan
Siemens Business Services	Turkey
Nelson Thornes Publishers	UK
Cordys	Worldwide
NETg (a Thompson Learning Company)	Worldwide

The participation of projects is discussed in the following section of this document. Membership from the industrial sector was as, while a more detailed analysis of the UNFOLD membership is provided in Evaluation Report D8.3

Involving key projects and developers

A significant indicator of the strength of the UNFOLD Communities of Practice is the number of projects which have provided input into UNFOLD face to face events, as detailed in the table below. As far as the project has been able to establish, these include all the major research groups and projects working on IMS LD in Europe, and a significant proportion of those on a worldwide scale, with the exception of those working in Taiwan and Japan. This extensive participation raised the velocity at which information flowed around the LD world, and provided the opportunity for extended discussion of approaches and implementation. In all cases papers or presentations were made available on the project website so that remote participants could obtain the information, and discuss it on the project forums.

Centrally funded projects (European or National) which have actively contributed to UNFOLD				
project	institution / funding body	Project focus	Country	UNFOLD activity
Aloha Project	Edusource	Repositories project	Canada	Participation in face to face, and online meetings
LORNET network	Canadian thematic network in learning technology		Canada	Collaboration in events
SPLASH Project, Edusource	Edusource	Repository system	Canada	Participation in face to face, and online meetings
<u>ALFANET</u>	EC IST programme	Developing a set of components for e-learning providers using personalisation and adaptation.	Europe	Participation in UNFOLD events and demonstration of software
ASK-LDT	iClass project	LD Editor	Europe	Presentation and workshop provision
CopperAuthor	Alfanet	LD Editor	Europe	Participation, Presentations
CopperCore LD Engine		Core of LD Player	Europe	Participation, Presentations, papers, workshops
<u>TELL</u>	EC Elearning Programme	Will produce design patterns for networked supported collaborative learning which will be stored into a pattern repository. It is anticipated that IMS LD will play a role in this.		Participation in UNFOLD events
<u>iClass</u>	IST Technology Enhanced Learning Integrated Project	Developing an intelligent cognitive-based open learning system and environment. This includes the ASK-LDT editor, which generates UOLs compliant with IMS LD Level B	Europe	Participation in UNFOLD events and demonstration of applications
<u>Prolearn</u>	IST Technology Enhanced Network of Excellence	Seeking to bridge the gap between research and education at universities, and training and continuous education that is provided for and within companies.	Europe	UNFOLD participation in 2 PROLEARN events, PROLEARN participation in 2 UNFOLD events, joint organisation of 2 seminars.
<u>ACETS</u>	JISC,	Investigating pedagogical use of reusable learning objects.	UK	Participation. Presentations, paper
<u>Kaleidoscope</u>	IST Technology Enhanced Network of Excellence	Brings together European teams in technology-enhanced learning, comprising more than 800 researchers.		Concertation, participation by members in CoP meeting.

<u>DialogPlus</u>	US National Science Foundation / JISC	Developing and deploying reusable digital learning nuggets through the Alexandria Digital Library. A tool has been developed to help teachers to define learning activities through a taxonomy.	UK	Participation in UNFOLD events, online activities, and demonstration of tools.
e-framework		Wider scope successor to ELF	UK	Participation, presentations
<u>ELeGI</u>	IST Technology Enhanced Learning Integrated Project	Defining and implementing an advanced service-oriented Grid based software architecture for learning. It is anticipated that this will integrate IMS LD.	Europe	Focused 1.5 day seminar provided by UNFOLD, participation in UNFOLD CoP meeting
<u>FREMA</u>	JISC funded project	Developing a reference model for systems in the Assessment Domain that are built on top of Service-Oriented Architectures, such as Web Services and the Grid, and in particular the JISC e-Learning Framework (ELF).		Participation in UNFOLD events
<u>ELF (ELearning Framework)</u>	JISC funded initiative	An initiative by JISC, DEST, Carnegie Mellon Learning Services Architecture Lab and others to build a common approach to Service Oriented Architectures for education. See here for relevance to LD.	UK	Participation in UNFOLD events, presentations
<u>LADIE</u>	JISC funded project	The LADIE ELF reference model project is mapping the Learning Activity Domain to the ELF, through the consideration of the design, construction and execution of learning activities		Participation in UNFOLD events, presentations
Pedagogical Vocabularies	UK JISC funded project	Study of vocabularies for pedagogy	UK	Participation in events, presentation
Reload	UK JISC funded project	LD editor	UK	Participation, presentations, provision of workshops...
SLeD	UK JISC funded project	Service based LD player	UK	Participation, presentations, provision of workshops...
Slide	UK JISC funded project	Demonstration project using SLeD	UK	Participation, presentations
<u>COPRAS</u>	IST Support Action	Provides supporting in moving the outcomes of IST projects through the standardisation process	Europe	UNFOLD attendance at COPRAS meeting
<u>SAKAI</u>	Consortium of universities supported by Mellon foundation	US based community source software development project for higher education. It incorporates the MIT Open Knowledge Initiative.	US	Meetings
<u>TELCERT</u>	EC IST TEL	Development of test suite for IMS specifications	Europe	Concertation

Industrial contribution to UNFOLD events (including Open Source foundations)				
project		Project focus	Country	UNFOLD activity
GTK Press Komposer		CP editor with plans for LD compliance	Canada	Participation in event, presentation
COSMOS LD Editor		LD editor	Germany	Participation in events, provision of workshop
Educreator		LD editor	Netherlands	Participation and presentation
.LRN		Open Source VLE	Worldwide	Participation and presentation
Cordys Educator		Tool with plans for LD compliance	Worldwide	Participation and presentations
LAMS		Learning Activity Management System	Worldwide	Participation in events and working group
Moodle		Open Source VLE	Worldwide	Participation in events and working group

Individual researchers or institutions which have actively contributed to UNFOLD				
project	institution / funding body	Project focus	Country	UNFOLD activity
Learning Designs project, RILE	Wollangong University	Representation of learning activities	Australia	Participation and presentation
8LEM	LABset, Université de Liège	Methodology to help teachers and trainers to conceive and/or describe teaching sequences and strategies. Provides possible structure for development of IMS LD templates and patterns.	Belgium	Participation in UNFOLD events and online activity
LearningMapR		Interactive pedagogic guide with UoLs	Canada	Participation, papers, online discussions
MOT+		Graphical pedagogic editor, LD export	Canada	Participation, papers, provision of workshop
COW		IMS LD compliant workflow tool	France	Participation and paper
Editeur de parcours graphique	Laboratoire d'informatique de Paris 6 & AIDA (NoE Kaleidoscope)	A learning unit editor and a simulator based on the IMS LD model.	France	Participation in CoP meeting, presentation
netUniversité	Université de Compiègne	Pedagogic guide and delivery system	France	Participation, presentations, paper
CASLO	DEI Uni. Carlos III Madrid	Collaborativ XML tool	Spain	Participation, Presentations, paper
Telematic Systems Group	Universidad de Vigo	Reuse and interoperability of UoLs	Spain	Participation and papers
COLLAGE	GSIC/EMIC, University of Valladolid	Helps users in the process of creating their own (collaborative) Learning Designs starting with existing patterns.	Spain	Participation in UNFOLD events and presentation of workshops. paper
GRIDCOLE	GSIC/EMIC, University of Valladolid	Uses IMS-LD to provide formal description of teaching-learning processes, and Open Grid Services Architecture (OGSA) to define a service-oriented structure for grid computing environments	Spain	Participation in UNFOLD events

Publications

In the second year of its activity UNFOLD has facilitated the production of a number of publications. These may be considered in two categories:

a) publications by UNFOLD personnel drawing out the results of the project. These include some papers written by Dai Griffiths, Hans Hummel, Rob Koper and Daniel Burgos, mainly, are focused on the creation, development and use of the UNFOLD Project and virtual communities, their results and some research based on this.

The LN4LD series, headed by Hummel et al, show the starting up of the UNFOLD community, the ways to encourage user active participation and the relation between face to face meetings, online activities and the increase of useful contributions. In several papers, Griffiths also shows the pedagogical implications of IMS LD to the Teacher CoP and how to improve the re-use of Units of Learning and the adaptation of regular lesson plans to effective online learning objects.

On the other hand, Burgos et al have contributed to spread the UNFOLD project and the related outcomes writing several papers adapted to local national contexts. Published in Russia, Portugal, France, Spain and Argentina this series of articles explain what UNFOLD is and why and how is useful to the elearning community.

b) publications facilitated by UNFOLD through calls for papers to be presented at UNFOLD events.

The Valkenburg workshop, held in September 2005, was a key event for project publications. Not only was a substantial volume of proceedings produced, but a total of twelve accepted papers were published in the special issues on Learning Design of the IEEE journal Educational Technology & Society [<http://www.ifets.info>]. These articles give an overview of current lines of research including: the use of ontologies and the semantic web, learning design patterns, the development and use of Learning Design tools. A copy of the proceedings of this event is included with the paper copy of this deliverable, but this does not include the papers from the IEEE ETS journal.

Another journal special issue closely related to UNFOLD was the Journal of Interactive Media in Education (JIME) Special Issue on Advances in Learning Design (<http://www-jime.open.ac.uk/2005/01>), edited by Colin Tattersall and Rob Koper. This issue contains 17 issues, all but one of which were written by participants in UNFOLD, and in some cases were directly facilitated by UNFOLD. A number of these papers were also presented at the Valkenburg seminar.

The final publication of the UNFOLD project, “The UNFOLD Project, understanding and using Learning Design”, edited by Daniel Burgos and Dai Griffiths, also included a number of articles on the UNFOLD project and on Learning Design, and a paper by Rob Koper. This booklet is a collaborative work of all the CoPs in UNFOLD and it was written by a dozen of different members, living in several countries, using the UNFOLD websites as the main communication resource. Along three months, and after more than one hundred postings in forums the redaction team came up with a final outcome publicly available, as a proof of a practical use of the UNFOLD network itself.

Lastly, a few articles were accepted and published attending the call for papers in several conferences. For instance, Online Educa Berlin, Online Educa Madrid, SIGOSSEE, SPECEDE, Web Based Communities or Icalt, to mention only some.

A full list of UNFOLD publications is available in the annex to this document.

Feedback to standards setting bodies

The project has maintained contact with standards setting bodies throughout its lifetime. The links with the IMS LD working group of IMS were clear at all times, because a number of members of that group were partners in the project. This ensured that the outcomes of the project were represented at IMS meetings.

A services group was established, which is working on a specification for the integration of services between disparate IMS LD compliant applications. This includes members of LAMS and Moodle, and is feeding back proposals to the IMS LD working group through OUNL.

Links were not, however, restricted to IMS LD. The project also hosted a meeting of the Content Packaging working group, a specification which is of great importance to IMS LD. The interoperability of QTI with IMS LD was an issue which received extensive discussion in the Communities of Practice meetings, and this was fed into the QTI working group by a member of the UNFOLD team who was active in the QTI working group, which has recently published IMS QTI 2.1, which is in part informed by the outcomes of UNFOLD.

The project has also remained in contact with CEN/ISS, and attended the meeting of that organisation in Sheffield

Conclusion

In this summary of activities we have indicated the richness and intensity of UNFOLD activities. Through them we have been able to bring together the majority of the key players in the Communities of Practice involved in IMS LD, and to share new developments, develop expertise together, and present and discuss papers. We believe that it is clear that UNFOLD has made a contribution to progress made by the LD Specification.

While it is hard to identify the precise outcomes of many project actions, which have been joined to other individual and institutional efforts to support adoption, there are a number of clear outcomes which illustrate the role which the project has played.

- raising of the skill set of the Learning Design communities by offering an extensive programme of workshops
- development of the COLLAGE on top of the RELOAD open source editor following contacts in UNFOLD meetings
- development of the COSMOS editor, following requests from users at the Valkenburg meeting
- creation of an editorial board for the LearningMapR collection of LD exemplars
- providing a user group for future versions of SLeD
- Bringing development groups which had not formerly been involved in the IMS LD discourse into the discussions, specifically LAMS, Boddington, .LRN and Moodle.
- adoption of a roadplan for IMS LD compliance by Moodle
- the implementation of an IMS LD player by .LRN
- Creation of special issues of JIME and IEEE journals which would not otherwise have taken place, together with the generation of a large number of publications.

This achievement is not entirely what was envisaged when the project plan was written three years ago. A Community of Practice as it is usually understood is based on a groups of people who all perform similar practical tasks, and who exchange support and insight with each other. Such exchange was not possible in all areas of the UNFOLD project, because the necessary tooling was developed much more slowly than had been anticipated when the workplan was formulated. It is one of the strengths of the UNFOLD project that it responded to these circumstances by providing appropriate activities for the phase of development of the specification. As a result the CoPs have had a greater than anticipated focus on making emerging tools available, on supporting the development of basic understanding and skills in the user group, and on exchanging theoretical and practical frameworks. Similarly there has been less emphasis than anticipated on the exchange of practical insight and working practices, simply because the technical infrastructure for supporting these working practices was not sufficiently evolved. For example, it was only in the final phase of the project that the first work using IMS LD with learners in an authentic context was reported, and presented at UNFOLD meetings, and the first commercial implementation of the specification was presented.

Thus there has been enormous activity stimulated by UNFOLD, and in this sense the project has performed very well. The form that this took was determined by the needs of the members and the situation regarding IMS LD, as should be expected from a Coordination project, and the project believes that the focus of activities has shaped the future for IMS LD in the most appropriate way given the context within which the project was operating.

Appendices

Exemplar UoLs

One of the main requests of the participants at the first CoPs meeting was to have some to have some LD compliant examples of lessons or courses which could be run using a Learning Design player and edited in an authoring suite. In order to facilitate the use of the specification the OUNL pioneered the production and cataloguing of Units of Learning (UoLs) in the context of the Learning designers CoP. Initially the UoLs consisted exclusively of contributions from the project partners, particularly Daniel Burgos of the OUNL, but soon came to include UoLs developed by CoP members taking the original number of UoLs at the start of 2005 from nine to thirty seven by the end of the project.

Example units of learning

Nr	Title	Level	Author	Remarks
1	Hello World	A	Colin Tattersall	The most simple UoL
2	A Simple Learning Activity	A	Owen O'Neill	Three learning activities and a simple resource
3	Candidas. The great unknown (I)	A	Daniel Burgos	A small course for Level A with actual content and small questionnaires after each learning activity and a general quiz with the right answers in the end of the activity structure
4	Learning Activities With Conditions	B	Owen O'Neill	This learning design containing one role and three learning activities and a resource provided in an environment. The learner can optionally choose to receive extra information to help him to complete the activity
5	What is Greatness	B	Colin Tattersall	A simple educational scenario with monitoring services and properties and conditions
6	IMS Learning Design Level 0. Basics about the spec	A	Daniel Burgos and Nidia Berbegal	Unit of Learning developed by OUNL and UPF funded by UNFOLD Project describing the basics of IMS Learning Design in a plain style for open dissemination
7	IMS LD Level 0 in HTML format. Click here to see the UoL directly in your browser	HTML	Daniel Burgos et al	You will find a method to learn what IMS LD is and how it runs
8	IMS LD Nivel 0 (fundamentos de la especificación en español)	HTML	Daniel Burgos et al	A través de estas páginas encontrarás un método para aprender qué es IMS LD y cómo funciona
9	Programmed Instruction	B	Colin Tattersall and Owen O'Neill	A very simple example demonstrating programmed instruction. Students must answer each question correctly before being permitted to view the next question.
10	Candidas II. Several itineraries and complementary information	A	Daniel Burgos	We provide a small course for Level A with actual content small questionnaires after each learning activity and a general quiz with the right answers in the end of the activity structure. We also provide complementary reading material to support the main course The user can choose the itinerary of its own learning
11	From Lesson Plan to LD	A	Rob Koper	How to structure a course using IMS learning Design (LD) at level A

12	From Lesson Plan to LD	B	Rob Koper	How to structure a course using IMS learning Design (LD) at level B
13	Learning to listen to Jazz	B	Colin Tattersall and Daniel Burgos	Show case using properties conditions visibility and adaptive learning
14	Character	A	David White	Developed at the UNFOLD CoP Meeting in Valkenburg 2005
15	Endolab	A	Elly Langewis	Developed at the UNFOLD CoP Meeting in Valkenburg 2005
16	Become a writer	A	Helen Grives	Developed at the UNFOLD CoP Meeting in Valkenburg 2005
17	Brainstorming lost in the Moon	A	Davinia Hernández-Leo	Developed at the UNFOLD CoP Meeting in Valkenburg 2005
18	Mechanical response on materials	A	Sofia Torrao	Developed at the UNFOLD CoP Meeting in Valkenburg 2005
19	Pc Architecture	A	Oleg Alshev	Developed at the UNFOLD CoP Meeting in Valkenburg 2005
20	Privaatrecht	A	Andre Koehorst	Developed at the UNFOLD CoP Meeting in Valkenburg 2005
21	Sample UoL	A	Victor Zhukov	Developed at the UNFOLD CoP Meeting in Valkenburg 2005
22	Stroop	A	David Bean	Developed at the UNFOLD CoP Meeting in Valkenburg 2005
23	Test Drive	A	Wim Van Born	Developed at the UNFOLD CoP Meeting in Valkenburg 2005
24	Interactive brain writing	B	Andreas Buehler and Sebastian Leibold	Use of What is Greatness as a base
25	Geo-Quiz 1	B	Daniel Burgos	Programmed incremental instruction. With properties conditions enumerated answers and contextual feedback
26	Geo-Quiz 2	B	Daniel Burgos	Properties conditions calculations and adaptive feedback
27	Requesting a file	A	Daniel Burgos	Use case. File property used to upload a file
28	Free Style Assesment	B	Daniel Burgos	Monitoring services global elements properties 2 roles conditions. Flow between a teacher and a student while submitting and correcting an assignment
29	Notification in Level C	C	Daniel Burgos et al	Use case to show an email sent by the system to the teacher when a learner ends an activity. Need of setting-up a SMTP server
30	Should there be a European Constitution	B	Colin Tattersall	Show case illustrating multi-learner multi-role Unit of Learning with properties a service (the monitor service) imslldcontent
31	Introduction to Tai Chi	A	Chistopher Kew	Show case with actual content introducing Tai-Chi
32	The connected learner	A	Alex Little	Show case with actual content about six topical issues in e-learning
33	Chemical Hazard	A	Gayle Calverley	Developed at the UNFOLD CoP Meeting in Valkenburg 2005
34	Geo-Quiz 3	B	Daniel	Use case. Adaptive learning flow depending on user

			Burgos	results
35	Quo Builder	B	Daniel Burgos	Use case. Personalization and adaptive learning flow depending on user results. 1 role
36	Quo Builder 2	B	Daniel Burgos	Show case. Personalization, run-time tracking and adaptive learning flow depending on user results. 2 roles
37	Caminatas	A	Daniel Burgos	Generic game into a learning scenario modelled in IMS LD

It can be seen that the majority of UoLs are level A courses, which is a reflection of the fact that the first versions of authoring tools only supported this level of the specification. However, as the tools become increasingly more powerful and usable it is anticipated that more level B and level C samples will be forthcoming. All of the above and UoLs can be found on the Learning Networks site: (<http://moodle.learningnetworks.org>). Having reached the end of the project it is envisaged that the production of example Units of Learning for information purposes will continue in WP6 of the TENCompetence project and will form part of ProLearn's remit in their effort to promote the IMS Learning Design specification.

Patterns and templates that capture teacher activity and effective practice have been put forward as a way of facilitating the UoL creation process as well as helping to inform the development of tooling. Discussions on patterns have formed the focus of many discussions during CoP events in 2005 among the Learning Designer and Teacher CoPs. In practical terms there are three IMS LD compliant tools that enable users to create Units of Learning through the use of patterns. These include: Collage (ref), netUniversité (ref) and LearningMapR(ref). The development of such tools is crucial to making IMS LD more accessible to non-technical practitioners.

Activity Nodes in LN4LD

The different topics of interest in the community are usually supported by online activities like online chats and discussion forums. All of them have always some additional support at the LN4LD website. A transcript of every chat and specific forums around several topics suggested by the CoPs have their reflection in the LN4LD site. A high number of items, or Activity Nodes, share the common and specific interests and they provide an easy way of tracking the discussions, resources and activities and also to contribute with individual and collective information. The Activity Nodes are categorized in 6 areas, so far:

1. Available Units of Learning about LD

Getting started with the IMS LD Specification

[Understanding the basics of IMS Learning Design](#)

How to modify a Unit of Learning

Experience a running Unit of Learning

IMS Learning Design and Metadata

[Runnable LD Example Units of Learning](#)

Change Proposals IMS LD Specification

2. Discussion forums

Discussion forums on IMS LD

On line chats discussions

[Booklet for Berlin 2005 \(private working group\)](#)

3. Scheduled Events

TENCompetence. Learning Networks for Lifelong Competence Development. March 30th-31st, 2006, Sofia, Bulgaria
ADALE Adaptive Learning And IMS Learning Design Workshop Series

4. Previous Events

UNFOLD/Complutense Workshop , Madrid Dec 12-14, 2005

UNFOLD CoP Berlin, Nov 28th-29th, 2005

UNFOLD CoP Meeting in Glasgow, October 12th-14th

[UNFOLD/ProLearn Valkenburg September 2005](#)

[UNFOLD Presence at Alt-i-lab June 2005](#)

[UNFOLD CoP Meeting in Braga \(Portugal\) June 2005](#)

[UNFOLD Presence at Campus Virtual June 2005 \(en castellano\)](#)

[Online Educa Madrid Mayo 2005 \(en castellano\)](#)

[UNFOLD CoP Meeting in Barcelona April 2005](#)

[UNFOLD hands-on meeting in Valkenburg 2005](#)

[UNFOLD presence at the Online Educa Berlín 2004](#)

[UNFOLD session at the EADTU 2004 conference](#)

[UNFOLD Workshop at EUCEN Conference 2004](#)

[UNFOLD Paris Workshop March 2005](#)

5. CopperCore embedded units of learning Services Test

6. Mapping Moodle - IMS LD

[Mapping Moodle - LD, Export, v1](#)

UNFOLD Publications

UNFOLD publications for journals and conferences, January to December 2005

Berggren, Anders; Burgos, Daniel; Fontana, Josep M.; Hinkelman, Don; Hung, Vu; Hursh, Anthony; Tielemans, Ger. (2005) *Practical and Pedagogical Issues for Teacher Adoption of IMS Learning Design Standards in Moodle LMS*. Journal of Interactive Media on Education, Special issue on "Learning Design". September 2005
[<http://hdl.handle.net/1820/388>]

Berlanga, A., & García, F. (2005) [IMS LD reusable elements for adaptive learning designs](#) Journal of Interactive Media on Education, Special issue on "Learning Design". September 2005 [http://www-jime.open.ac.uk/2005/11/berlanga-2005-11.pdf]

Brouns, F., Koper, R., Manderveld, J., Van Bruggen, J., Sloep, P., Van Rosmalen, P., Tattersall, C. & Vogten, H. (2005) [A first exploration of an inductive analysis approach for detecting learning design patterns](#) Journal of Interactive Media on Education, Special issue on "Learning Design". September 2005 [http://www-jime.open.ac.uk/2005/03/brouns-2005-03.pdf]

Brouns, F., Koper, R., Manderveld, J., Van Bruggen, J., Sloep, P., Van Rosmalen, P., Tattersall, C. & Vogten, H. (2005) *A first exploration of an inductive analysis approach for detecting learning design patterns*. Journal of Interactive Media in Education (Advances in Learning Design. Special Issue, eds. Colin Tattersall, Rob Koper), 2005/03 September 2005
[<http://hdl.handle.net/1820/437>]

Burgos, D., Arnaud, M., Neuhauser, P., Koper, R. (2005) *IMS Learning Design : la flexibilité pédagogique au service des besoins de la e-formation*. La Revue de l'EPI. France: L'association Enseignement Public et Informatique December 2005.
[<http://hdl.handle.net/1e820/470>]

Burgos, D., Berbegal, N., Griffiths, D., Tattersall, C., Koper, R. (2005) *IMS Learning Design desde dentro. Una especificación escenarios de aprendizaje online (parte I)*. In Learning Review. Issue 9. October-November, 2005. Buenos Aires
[<http://hdl.handle.net/1820/473>]

Burgos, D., Berbegal, N., Griffiths, D., Tattersall, C., Koper, R. (2005) *IMS Learning Design desde dentro. Una especificación para crear escenarios de aprendizaje online (parte II)*. In Learning Review. Issue 10. December 2005 – January 2006. Buenos Aires

Burgos, D., Griffiths, D. (2005) *E-learning specifications. An introduction*. In *Elearning Review*. Available at www.elearningeuropa.info and <http://hdl.handle.net/1820/547>

Burgos, D., Koper, R (2005) *Practical pedagogical uses of IMS Learning Design's Level B*

<p>SIGOSSEE conference 2005. Conference paper. Netherlands October 2005 [http://hdl.handle.net/1820/471]</p>
<p>Burgos, D., Koper, R. (in press) <i>O IMS-Learning Design e a necessidade de uma especificação pedagogicamente expressiva.</i> (2006) In <i>Cadernos e-learning.</i> Issue x. 2006. Porto: TecMinho/Minho University Continuing Education Office (in press)</p>
<p>Burgos, D., Koper, R. (2005) <i>Virtual communities, research groups and projects on IMS Learning Design. State of the art, key factors and forthcoming challenges.</i> E-Journal of Educational Research, Assessment and Evaluation, vol. 11, issue 2 October 2005 [http://hdl.handle.net/1820/469].</p>
<p>Burgos, D., Tattersall, C., Koper, R. (2005) <i>Re-purposing existing generic games and simulations for e-learning. Submitted to the special issue of Computers in Human Behavior on Education and pedagogy with learning objects and learning designs.</i> Available at http://hdl.handle.net/1820/508</p>
<p>Burgos, Daniel, Berbegal, Nidia, Griffiths, Dai, Tattersall, Colin, Koper, Rob. (2005) <i>Do we need specifications in e-learning? The IMS Learning Design approach.</i> BINARIA Magazine. Issue 5. 2005. European University of Madrid. Spain</p>
<p>Burgos, Daniel, Berbegal, Nidia, Griffiths, Dai, Tattersall, Colin, Koper, Rob. (2005) <i>IMS Learning Design: How specifications could change the current e-learning landscape.</i> e-Learning World. Issue 2. 2005. Moscow State University of Economics, Statistics and Informatics - MESI. Russia [http://hdl.handle.net/1820/354]</p>
<p>Burgos, Daniel. (2005) <i>Utilización de estándares en el aprendizaje virtual.</i> II Jornadas Campus Virtual. Universidad Complutense de Madrid. Spain [http://hdl.handle.net/1820/359]</p>
<p>Burgos, Daniel; Tattersall, Colin; Koper, Rob. (2005) <i>¿Puede IMS Learning Design ser utilizada para modelar juegos educativos?.</i> Online Educa Madrid 2005. Conference paper. Spain [http://hdl.handle.net/1820/329]</p>
<p>Burgos, Daniel; Tattersall, Colin; Koper, Rob. (2005) <i>¿Puede IMS Learning Design ser utilizada para modelar juegos educativos?.</i> Online Educa Madrid 2005. Conference paper. Spain [http://hdl.handle.net/1820/329]</p>
<p>Burgos, D., Hummel, H., Tattersall, C., Brouns, F., Kurvers, H., Koper, R. (2006) <i>Influence of face-to-face meetings on virtual community activity: the case of Learning Network for Learning Design Web Based Communities 2006.</i> Conference paper. Spain. Submitted in September 2005 [http://hdl.handle.net/1820/472]</p>
<p>Buzza, Dawn., Richards, L., Bean, D., Harrigan, Kevin. & Carey, T. (2005) LearningMapR: A Prototype Tool for Creating IMS-LD Compliant Units of Learning Journal of Interactive Media on Education, Special issue on "Learning Design". September 2005 [http://www-jime.open.ac.uk/2005/17/buzza-2005-17.pdf]</p>
<p>Caeiro-Rodríguez, M., Llamas-Nistal, Martín. & Anido-Rifón, L. (2005) Towards a Benchmark for the Evaluation of LD Expressiveness and Suitability Journal of Interactive Media on Education, Special issue on "Learning Design". September 2005 [http://www-</p>

jime.open.ac.uk/2005/04/caeiro-2005-04.pdf]
<p>Calverley, G. (2005) Making the Institutional Business Case for Introducing Learning Design Tools Journal of Interactive Media on Education, Special issue on "Learning Design". September 2005 [http://www-jime.open.ac.uk/2005/16/calverley-2005-16.pdf]</p>
<p>De la Teja, I., Lundgren-Cayrol, K & Paquette, G. (2005) Transposing MISA Learning Scenarios into IMS Units of Learning Journal of Interactive Media on Education, Special issue on "Learning Design". September 2005 [http://jime.open.ac.uk/2005/13/]</p>
<p>De Vries, F., Tattersall, C., & Koper, R. (in press). <i>Pre-Discussion Paper Future developments of IMS Learning Design tooling</i>. Educational Technology & Society 2006 [http://hdl.handle.net/1820/553]</p>
<p>Giacomini Pacurar, E., Trigano, P. & Zamfirescu, C. (2005) An IMS LD Graphic Editor using the graphs representation for modifying the course structures Journal of Interactive Media on Education, Special issue on "Learning Design". September 2005 [http://www-jime.open.ac.uk/2005/15/giacomini-2005-15.pdf]</p>
<p>Giacomini Pacurar, E., Trigano, P. & Alupoae, S. (2005) A QTI editor integrated into the netUniversité web portal using IMS LD Journal of Interactive Media on Education, Special issue on "Learning Design". September 2005 [http://www-jime.open.ac.uk/2005/09/giacomini-2005-09.pdf]</p>
<p>Gráinne Conole, G. & Karen Fill, K. (2005) A learning design toolkit to create pedagogically effective learning activities Journal of Interactive Media on Education, Special issue on "Learning Design". September 2005 [http://www-jime.open.ac.uk/2005/08/conole-2005-08.pdf]</p>
<p>Greller, W. (2005) Managing IMS Learning Design Journal of Interactive Media on Education, Special issue on "Learning Design". September 2005 [http://jime.open.ac.uk/2005/12/greller-2005-12.pdf]</p>
<p>Griffiths D, Garcia R, Blat J, Sayago S. (2005) <i>La aportación de IMS Learning Design a la creación de recursos pedagógicos reutilizables</i>. Revista de Educación a Distancia, http://www.um.es/lead/red/griffiths16.pdf</p>
<p>Griffiths, D. (2005) <i>Print to Pixels: the Implications for the Development of Learning Resources</i>. Proceedings of I2LOR 2005, second annual e-learning conference on Intelligent Interactive Learning Object Repositories. Vancouver, 2005.</p>
<p>Griffiths, David; Blat, Josep (2005) <i>The Role Of Teachers In Editing And Authoring Units Of Learning Using IMS Learning Design</i>. International Journal on Advanced Technology for Learning, Special Session on "Designing Learning Activities: From Content-based to Context-based Learning Services", volume 2, issue 3, October 2005. [http://www.unfold-project.net/general_resources_folder/teaching/griffiths_atl.pdf]</p>
<p>Griffiths, David; Blat, Josep; Elferink, Raymond; Zondergeld, Sara (2005) <i>Open Source and IMS Learning Design: Building the Infrastructure for eLearning</i>. Proceedings of Open Source Systems 2005, Genova, 11-15 July 2005. [http://oss2005.case.unibz.it/Papers/OES/ES2.pdf]</p>

<p>Harrer, A. Malzahn, N., Hoeksema, K. & Ulrich Hoppe, U. (2005) Learning Design Engines as Remote Control to Learning Support Environments Journal of Interactive Media on Education, Special issue on "Learning Design". September 2005 [http://www-jime.open.ac.uk/2005/05/harrer-2005-05.pdf]</p>
<p>Hernández-Leo D., Asensio-Pérez, J., Dimitriadis, Y. (2005) <i>Computational Representation of Collaborative Learning Flow Patterns using IMS Learning Design</i> Journal of Educational Technology & Society 2005, Vol. 8, Issue 4 [http://www.ifets.info/others/abstract.php?art_id=580]</p>
<p>Hummel, H., Burgos, D., Tattersall, C., Brouns, F., Kurvers, H., Koper, R. (2005) <i>Influence of face-to-face meetings on virtual community activity: the case of Learning Network for Learning Design</i>. Accepted at WBC2006 conference. Available at http://hdl.handle.net/1820/472</p>
<p>Hummel, H., Koper, R. & Tattersall, C. (2005) <i>LO -> LA: From a Learning Object centric view towards a Learning Activity perspective</i> [http://hdl.handle.net/1820/340]</p>
<p>Hummel, H; Tattersall, C; Burgos, D; Brouns, F; Kurvers, H & Koper, R. (2005) Facilitating participation: From the EML web site to the Learning Network for Learning Design IADIS Conference on Web-Based Communities (WBC2005) Carvoeiro, Portugal, February 2005 [http://hdl.handle.net/1820/338]</p>
<p>Hummel, Hans; Burgos, Daniel; Tattersall, Colin; Brouns, Francis; Kurvers, Hub; Koper, Rob. <i>Encouraging contributions in Learning Networks using incentive mechanisms</i>. Submitted to the Journal of Computer Assisted Learning (JCAL) 2005 [http://hdl.handle.net/1820/339]</p>
<p>Hummel, Hans; Tattersall, Colin; Burgos, Daniel; Brouns, Francis; Kurvers, Hub; Koper, Rob. (2005) <i>Critical facilities for active participation in learning networks</i>. Web based communities 2005 conference [http://hdl.handle.net/1820/319]</p>
<p>Hummel, Hans; Tattersall, Colin; Burgos, Daniel; Brouns, Francis; Kurvers, Hub; Koper, Rob. <i>Critical Facilities for Active Participation in Learning Networks</i>, submitted to the International Journal of Web-based Communities (IJWBC), vol. 2 (2005), issue 1 [http://hdl.handle.net/1820/349]</p>
<p>Hummel, Hans; Tattersall, Colin; Burgos, Daniel; Brouns, Francis; Kurvers, Hub; Koper, Rob. (2005) <i>Critical facilities for active participation in learning networks</i>. Web based communities 2005 conference [http://hdl.handle.net/1820/319]</p>
<p>Knight, C., Gašević, D. & Richards, G. (2005) Ontologies to integrate learning design and learning content Journal of Interactive Media on Education, Special issue on "Learning Design". September 2005 [http://www-jime.open.ac.uk/2005/07/knight-2005-07.pdf]</p>
<p>Koper, R & Tattersall, C. (2005) Learning Design: A Handbook on Modelling and Delivering Networked Education and Training (Preface, reproduced with permission from Springer) Journal of Interactive Media on Education, Special issue on "Learning Design". September 2005 [http://hdl.handle.net/1820/268]</p>
<p>Koper, Rob, Burgos, Daniel. (2005) <i>Developing advanced units of learning using IMS Learning Design level B</i>. International Journal on Advanced Technology for Learning, Special Session on "Designing Learning Activities: From Content-based to Context-based Learning</p>

Services”, volume 2, issue 3, October 2005 [http://hdl.handle.net/1820/333]
McAndrew, P., Nadolski, R., Little, A. (2005) <i>Developing an Approach for Learning Design Players</i> . Journal of Interactive Media in Education, Journal of Interactive Media on Education, Special issue on “Learning Design”. September 2005 [http://hdl.handle.net/1820/448]
Milligan, C., Beauvoir, P., & Sharples, P. (2005) <i>The Reload Learning Design Tools</i> . Journal of Interactive Media on Education, Special issue on “Learning Design”. September 2005 [http://www-jime.open.ac.uk/2005/06/milligan-2005-06.pdf]
Navarro, L., Díaz, A. Such, M., Morón Martín, D. & Peco, P. (2005) <i>Learning Units Design based in Grid Computing</i> . Journal of Interactive Media on Education, Special issue on “Learning Design”. September 2005 [http://www-jime.open.ac.uk/2005/10/navarro-2005-10.pdf]
Nimwegen, C., Burgos, D. (2005) <i>Performance in a planning task: The (ir)relevance of interface style and users’ cognitive style</i> . Accepted for the “Special Interest Group for Computer-Human Interaction” SIGCHI.NL conference. The Hague, The Netherlands. October 13th, 2005 [www.sigchi.nl]. Available at http://hdl.handle.net/1820/468
Nimwegen, C., Burgos, D. (2005) <i>The Paradox of the Assisted User: Guidance Leads to more Shallow Behavior</i> . Submitted to CHI Conference 2006
O'Neill, O., Nadolski, R., Koper, R. (2005) <i>Implementing E-learning Specifications with Conformance Testing: Profiling for IMS Learning Design</i> . October 2005 [http://hdl.handle.net/1820/444]
Tattersall, C. & Koper, R. (2005) <i>Advances in Learning Design: Special Issue Editorial</i> . Journal of Interactive Media in Education October 2005 [http://hdl.handle.net/1820/460]
Tattersall, C., Burgos, D., Vogten, H., Martens, H., Koper, R., (2005) <i>How to use IMS Learning Design and SCORM 2004 together</i> SCORM 2006 conference. Taiwan July 2005 [http://hdl.handle.net/1820/429]
Van Es, R., Koper, R. (2005) <i>Testing the pedagogical expressiveness of LD</i> . <i>Educational Technology & Society</i> . February 2005 [http://hdl.handle.net/1820/305]
Vogten, H., Tattersall, C., Koper, R., Van Rosmalen, P., Brouns, F., Van Bruggen, J., Sloep, P., & Martens, H (2005) <i>Designing a learning design engine as a collection of finite state machines</i> 2005 [http://hdl.handle.net/1820/303]
Westera, W., Brouns, F., Pannekeet, K., Janssen, J., & Manderveld, J (2005) <i>Achieving E-learning with IMS Learning Design - Workflow Implications at the Open University of the Netherlands</i> . <i>Educational Technology & Society</i> , 8 (3), 216-225. October 2005 [http://hdl.handle.net/1820/443]

UNFOLD – Proceedings and Booklets

Burgos, D., Griffiths, D. (Eds.) (2005) [The UNFOLD Project. Understanding and using Learning Design](http://hdl.handle.net/1820/548) –December 2005 [http://hdl.handle.net/1820/548]

Koper, R., Tattersall, C., Burgos, D.(Eds.) (2005) *Current State on IMS Learning Design. Proceedings of the UNFOLD/Prolearn joint workshop, Valkenburg, September 22nd-23rd, 2005. Heerlen: Open University of The Netherlands [http://hdl.handle.net/1820/474]*