# D8.6 Dissemination, training and exploitation results

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**Project Deliverable Report**

# D8.6 – Dissemination, Training and Exploitation Results

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| **Authors (Partner)** | Christoph Mauerhofer (BIT MEDIA), Kamakshi Rajagopal (OUNL), Wolfgang Greller (OUNL) with contributions from all partners |
| **Contact Person** | Christoph Mauerhofer (BIT MEDIA) Christoph.Mauerhofer@bit.at |
| **WP/Task responsible** | BIT MEDIA |
| **EC Project Officer** | Ms. M. Csap |
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# Table of Contents

# 1 Executive Summary

This document provides an overview of the activities regarding dissemination, exploitation and training in year 3 of the Language Technologies for Lifelong Learning (LTfLL) project. It also contains a brief outlook on future exploitation and impact of the project results.

The LTfLL project explored the opportunities provided by language technologies to support educational practice, which resulted in the development of tooling to provide learners and tutors with insight into learning performances. The project outcomes and achievements are (i) the six LTfLL applications and services, (ii) a variety of technical developments concerning widget technology and language technology infrastructure, (iii) methodological outputs such as the scenario-based design methodology and the common semantic framework and (iv) a number of more intangible insights and results.

This deliverable describes:

- the dissemination and training activities that were undertaken over the course of the project, focussing on year 3.

- the barriers, solutions and opportunities for exploitation of the LTfLL outcomes, and any exploitation results to date.

- and the impact of the LTfLL outcomes: Project results are positioned to support lifelong learners in real problem areas of educational practice. They contribute to the advancement of the scientific discipline of technology-enhanced learning.

This deliverable builds on the validation results described in D7.4 and on the roadmap presented in D2.5, as well as earlier deliverables from WP8.

# 2 Introduction

The focus of the final year of the LTfLL project lay on completing and validating the latest version of the LTfLL tools and the interaction between the tools, through the Short and Long Thread.

The LTfLL project explored the opportunities provided by language technologies to support educational practice. This exploration resulted in the creation of six loosely connected tools that provide learners (and tutors) with insight into their learning performance and offers them suggestions and feedback to adapt this performance in a suitable way. The project outcomes and achievements were identified in the project Final Report (D1.4) as fourfold: (i) the LTfLL applications and services, (ii) technical developments such as inter-widget communication, the connector framework for Elgg and language technology infrastructure, (iii) methodological outputs like the scenario-based design methodology or the common semantic framework, and (iv) other results. They were also described in the Roadmap (D2.5).

This deliverable describes the dissemination and training activities in connection with these achievements that were undertaken during year 3 of the project. Furthermore, the resulting exploitation opportunities will be discussed, as well as the impact to date of the research results on current and future learning practice.

# 3 Dissemination and Training

The LTfLL project team has established a set of services to support learning in different scenarios, which have been designed or recognized as additional approaches.

Therefore, a one-package approach of dissemination and training was established (WP8 – Additional Dissemination Planning) to enable interested parties to use our software. These end-users were important to collect feedback during the project to adjust the tools to a wide range of learning scenarios within the lifelong learning process.

The feedback provided by the end-users during workshops, training and validation activities also influenced the materials that were established (e.g. Quick Guides) for further dissemination, usage and sustainability of the LTfLL outcomes.

## 3.1 Dissemination through Publications and Print Materials

### 3.1.1 Research and Technical Publications

The project team has produced publications for all established outcomes of the project to provide public access to the results. Typically the following kind of information was published during the project:

- Language Technology Research

- Scenario-Design

- Validation Activities

- IT Technical Information

A list of the publications has been added to the annex of this report.

### 3.1.2  Dissemination by Print Material

The project team has produced two types of promotional materials, which were designed to support the dissemination activities of the project members:

*LTfLL hand-out flyer*

The hand-out flyer is designed as a small print material (A4-format, folded) and contains an overview of the LTfLL tools and results (positioning the learner, support and feedback, social and informal learning).

The hand-out flyer was distributed to personal contacts, as well as during workshops, conferences and other promotional events. The goal of this printed material is to be taken to the office or home as reminder of the LTfLL project to trigger activities (e.g. visit the project website or follow up on LTfLL services, which were presented during the workshop).

*LTfLL Poster*

The LTfLL posters are printed materials in larger sizes (A3 or A2) to act as eye-catcher during event activities (exhibitions, conferences, workshops…) and as permanent information in useful locations in partner organisations and external institutions (e.g. lounge area, entrance area, meeting rooms, corridors…).

One poster is a general LTfLL poster, which is presenting the project and the theme name "Language Technology for Lifelong Learning" and can be used for all kinds of activities. The other posters are designed to deliver more specific information (e.g. the functionality of one LTfLL service) and have been used in conferences and workshops to achieve attention and support the outlining of the functionality, or at manned exhibition desks to attract enquiries.

## 3.2 Dissemination at Conferences

The LTfLL project team delivered many presentations and other activities at different conferences around Europe to raise awareness of the project itself and the LTfLL services. Following the one-package approach, the activities at conferences were often combined with some hands-on workshops or demos.

A table with all conference attendances has been added to the annex of this report. The following listing of conferences / workshops illustrates typical examples of this strategy and what attendance meant in practice:

*14th International Conference on Artificial Intelligence in Education (AIED'09)*
*Brighton, 7 July 2009*

LTfLL organized a first Workshop on NLP in support of learning technologies, and presented 5 interactive poster sessions as part of this workshop which was adjacent to AIED'09. Website: http://webu2.upmf-grenoble.fr/sciedu/nlpsl/

The event was captured in the "Proceedings of Natural Language Processing in support of Learning: Metrics, feedback and connectivity", Dessus, P., Trausan-Matu, S., van Rosmalen, P. & Wild F.

*IEEE International Conference on Advanced Learning Technologies (ICALT 2009, ICALT 2010)*

Several papers were accepted and presented at the IEEE ICALT conferences, presenting the LTfLL project as a whole (a poster in 2009) and the results of work packages WP5 and WP6.

*European Conference on Technology Enhanced Learning (ECTEL 2010; ECTEL 2008)*
*September 2010; September 2008*

A presentation about the results obtained from the second validation round of PolyCAFe (in 2010). Presentation of the pilot software developed in the first year of LTfLL (in 2008).

*International Conference on Computer Supported Collaborative Learning (CSCL 2009; CSCL 2011), July 2009, July 2010*

Papers and presentations about the educational setting, use and outcomes of using PolyCAFe for the first and second validation round.

*11th International Conference on Intelligent Text Processing and Computational Linguistics (CICLING 2010), March 2010*

Paper and presentation on the language technologies and the polyphonic model for discourse analysis in online multi-party conversations employed by PolyCAFe.

*International Conference on Hybrid Learning 2010 (ICHL 2010), August 2010*

Invited keynote by Prof. Stefan Trausan-Matu about the polyphonic theory used for analyzing chat conversations with multiple participants and the results obtained with PolyCAFe.

*International Conference on Artificial Intelligence, Methodology, Systems and Applications  (AIMSA 2010; AIMSA 2008)*

Papers and presentations of the feedback generation and evaluation of chats in PolyCAFe.

## 3.3   Dissemination through Training and Workshops

The training and workshop activities were prepared based on the validation round results and experiences. During the validation activities the consortium members were able to realise the expectations of stakeholders (learners, tutors, managers …) for the usage of the LTfLL Services. These results were used to build services, which are intuitive and user friendly. Also the training and dissemination materials were customized for the different stakeholder groups to meet their requirements.

To achieve this goal the project team established a variety of materials for different usage and audiences:

A set of *"screencasts"* that were published on the internet are important to highlight the potential of the LTfLL services for interested people during their first contact with the LTfLL project. The screencasts are short and focus on the essential information to recognise the capabilities of the tools and designed to raise interest in the LTfLL services.

As a further benefit, the videos are used as part of workshop and training events as additional medium to illustrate the functionality and handling of the tools.

The *"learning materials for tutors"* are designed to explain the usage of the tools in the whole context of the scenarios which we designed and validated. This information is necessary to enable tutors to integrate one or more LTfLL tools in their learning environment and to recognise the benefits of their usage.

Learners, especially *lifelong* learners, are the main stakeholders of the LTfLL services, because they are designed and developed to support their learning activities in various manners. Many learners were highly interested in obtaining a benefit from our tools for their learning activities, but only some of them were interested in additional background information (e.g.: language technologies, scenarios).

Therefore, the *"training materials for learners"* have been designed to guide the learners in a short time to use the tools and to experience the benefits.

For the implementation of the LTfLL tools short technical guides, *"materials for system administrators"*, are offered by the project team. Keeping the implementation guides short and to the point intends to send out the signal that the implementation is not a big task for administrators, as this could be threshold in adopting the tools.

Also the developer community mainly consists of self-directed experienced people, who are interested to take in new information as fast as possible. Based on this assumption the *"materials for developers"* were designed to guide developers in using the software in their own environments by downloading the required files from Sourceforge.

The information provided in these training materials offer enough information for a self-motivated community or, alternatively, can be used as hand-out in support of a training or workshop session to trigger further activities after the event.

The "*general dissemination materials*" were designed to support events and activities with general stakeholders (e.g.: general public, policy makers, decision makers). The main goal during events and contacts addressed with these materials is to provide high level overview information of the LTfLL project and services and to highlight the benefits of the tools in various kinds of learning scenarios.

The following list illustrates some examples of workshops the project delivered to date. – A full list of the workshops and training events appears in the annex:

**12th Conference of the European Chapter of the Association for Computational Linguistics (EACL-09), March 2009**

The goal of the GEMS workshop was to further stimulate research on semantic spaces and distributional methods for NLP, by adopting an interdisciplinary approach to allow a proper exchange of ideas, results and resources among often independent communities. In particular, the workshop provided a common ground for a fruitful discussion among experts of distributional approaches, collocational corpus analysis and machine learning; researchers interested in the use of statistical models in NLP applications (e.g. question answering, summarization and textual entailment) and in other fields of science; and experts in formal computational semantics.

*Grenoble Pôle Cognition Conference, June 2010, Grenoble, France*

The most representative researchers working on cognitive science in Grenoble attended this conference, in which we presented Pensum. Some contacts were taken, notably with the director of METAH, LIG, Grenoble University, who agreed to welcome Philippe Dessus as a visiting researcher during the first semester of 2012.

*International Conference on Interactive Computer Aided Learning (ICL2010), September 2010*

This interdisciplinary conference aims to focus on the exchange of relevant trends and research results as well as the presentation of practical experiences gained while developing and testing elements of interactive computer aided learning.

*Natural language processing in support of learning: Metrics, feedback and connectivity.*

### 2nd Workshop (NLPSL 2010), Bucharest, September 2010

This event was organized by LTfLL as a follow-up on the workshop on NLP the year before on 7 July 2009 in Brighton. The Agenda was composed of 11 presentations (of which, 4 were from LTfLL partners). A sequence event is planned by the consortium for 2011.
Website: http://k-teams.cs.pub.ro/~nlpsl/

### 6th Conference on Professional Knowledge Management (WM2011): 3rd Workshop on the Convergence of Knowledge Management and E-Learning (CKME2011), February 2011

The Conference on Professional Knowledge Management provides a broad integrative overview of organizational, cultural, social and technical aspects on Knowledge Management. The conference focuses on bringing together different research disciplines and sharing experiences gained in the different areas where knowledge management is being applied.

### "Tag der Weiterbildung", February 2010, Austria

"Tag der Weiterbildung" (day of education) is a national event in Austria happening in different locations on the same date. BitMedia used the "Tag der Weiterbildung" in February 2010 to hold a number of information and training events in Graz (Austria).

As part of the events, a workshop for partners of other commercial training institutes in Austria on the use and benefits of the LeaPos Services was provided.

### JTEL Winterschool, February 2009 and 2010, Innsbruck, Austria

LTfLL sponsored the participation of a few selected PhD students (based on internationally reviewed applications consisting of their resume and research project) to this one week residential event. As part of the Winterschool a workshop presenting all the LTfLL services was held followed by a hands-on and feedback session. The event also provided direct interaction and networking opportunities between researchers in the field and related disciplines.

## *3.4 E-dissemination*

The e-dissemination activities and results are an important aspect for the further exploitation of the LTfLL outcomes beyond the project period. The main components of e-dissemination are the project website, links from external websites, web 2.0 activities combined with dedicated personal e-Mail activities and published presentations and videos.

All training materials, screencasts and other dissemination material have made been available on the project website under a Creative Commons licence for wider re-use.

### 3.4.1 Project website

The LTfLL project website structure was originally designed based on goals and concepts of the LTfLL project itself. This information was useful during the first part of the project to awaken interest in the project activities within the context of TEL research and language technology.

Guided by the results of the validation rounds, the tools produced by the project team were adjusted to customers' needs and got a friendly name. Simultaneous with the development of version 2 of the software, the structure of the project website was moved to a customer-oriented structure, where the tools and offered benefits became the focus of the content. The structure of project website was also designed to support further dissemination and training activities after the end of the project lifetime.

The main structure offers a short overview about the project and the tools, which are mainly interesting for "first-time-visitors", who did not have contact with the project and its approaches before. For contacts, who have been established during other dissemination and training activities, the link to more dedicated information (e.g.: individual services like PolyCAFe - http://www.ltfll-project.org/index.php/polycafe.html) were then provided.

The section "Technologies" addresses the language technology community to demonstrate the used technologies for practical education and in a learning context. This information is important to awaken the interest of language technology experts for the LTfLL outcomes (tools and research results). It is held in common understandable jargon-free language that can easily be followed by non-experts.

The part "For Developers" addresses the developer community to raise awareness of the

established results, that are important for developers (e.g. use of widget technologies in the project) and perhaps useful in similar software development contexts. These visitors of the website should be stimulated to install, trial and distribute the LTfLL tools to a wider range of interested stakeholders.

The "Resources" area contains a collection of useful information for a variety of visitors and is designed to direct them to available resources.

The information about the LTfLL project partners and individuals has on the one hand the goal to describe the involved partner institutes and people and on the other hand to provide contact information for interested visitors to follow up.

### 3.4.2  Links from external websites and partner websites

Links from external websites to the LTfLL website or specific topics on the site are useful to drive web traffic to the tools, outcomes and language technology information of the project. The project team used a variety of external websites and social networking approaches to attract different types of stakeholders.

As our main approach, we addressed community or research-oriented platforms to become known to a specific audience of learners, partners, researchers or other stakeholders. The presence on these websites offers a limited number of visitors, but each of these visitors is typically a high quality contact for the dissemination of the LTfLL results.

The following descriptions illustrate the presence of the LTfLL project on external web sites:

***TEL-Europe***

(http://www.teleurope.eu/pg/groups/754/language-technologies-for-lifelong-learning/)

TEL-Europe is the social platform of the STELLAR Network of Excellence and provides access to key stakeholder groups from the TEL arena, researchers, PhD students, managers and academics. The dedicated LTfLL group on the TEL-Europe forum currently has 40 active members. There is mutual linking to and from the LTfLL homepage, with invitations for website visitors to join the LTfLL community on TEL-Europe. This is a relatively recent development, but is expected to grow to more and more prominence as STELLAR continues to aggregate stakeholders from around Europe.

*Celstec.org and similar partner websites*

http://celstec.org/node/96

The Centre for Learning Sciences and Technologies (CELSTEC) is a Centre of Excellence in the fields of Learning Sciences and Technology Enhanced Learning. This site has been and continues to be publicised in many European research activities and is an important entry point to the LTfLL project.

In the same way, other partner websites or project portals (e.g. ProLearn: http://www.prolearn-academy.org/Events/summer-school-2010/summer-school-2010/workshops/langtechlife) promote and drive traffic to the project website. This also furthers search engine appearance. Despite language learning being a very popular topic, a search on Google.at on "language technology learning" holds 3 out of the top-ten results from LTfLL.

*Istworld*

http://bit.ly/e6Z5iC

The IST World portal offers information about experts, research groups, centres and companies involved in creating the technologies for the growing information society. Focus of the service is the expertise and experience of relevant players in European countries.

*IEEE Computer Society*

http://www.computer.org/portal/web/search/simple

The IEEE Computer Society is one of the world's leading organization of computing professionals and therefore an important platform to address a variety of audiences. A search on LTfLL reveals three entries of scientific importance.

*LTfLL Videos on YouTube*

The YouTube platform was used to publish the "LTfLL Trailer" and some screencasts. Since its release in 2005, the site has grown into the most widely known video portal on the internet for uploading and commenting on video material. It also hosts a lot of educational and training material available and searched for by YouTube audience (e.g.: technical information for developers and administrators). To reach also more technically oriented visitors, the project team also uploaded a video related to the "inter-widget communication" containing the LTfLL identifier.

*www.Slideshare.net*

http://www.slideshare.net/wgreller/language-technologies-presentation-innsbruck-2010

Slideshare.net has a similar concept to YouTube but offers a central location for publishing slides to a wider range of people. It is a good place to reach academic and academic-related audiences.

*AolVideo*

http://video.aol.com/video-detail/ltfll-positioning-service-learners-view/1396487282

Depending on the continuous modifications of these external websites, the links to the LTfLL project website have been modified a couple of times on some of these partner sites. Therefore, each listed link on external websites to our website provided in this report is a snapshot of a specific time frame. To archive these snapshot data, we have added some illustrative screenshots to the appendix of this document.

### 3.4.3 Web 2.0 Activities

In addition to the traditional internet activities, the project team actively engaged with important social platforms to assist the process of building an online community of interest.

To allow the project team an efficient way to interact in the social platforms we had established the list of stakeholders (educational practitioners, potential lead users, general public, learners in partner institutions, research community, developer community and policy makers) and highlighted the important benefits of the LTfLL services for each of them (D8.5 Exploitation & Sustainability Report).

Based on this strategy, postings and activities have happened on the following platforms:

- Facebook

- Linked-In

- Twitter

- Blog on the project website

*Facebook*

Facebook is a social network service, which is used by the general public independent of their specific interest. It is also increasingly used by commercial and research institutes to publish information of their services to a wide audience.

The project team has established a dedicated forum on this platform as one part of the strategy to provide discussions, which can easily be followed and is limited to information regarding the project.

The second part of the strategy was to post LTfLL based information in different group areas on the Facebook platform to create awareness. These postings were used to forward the attention of the interested stakeholders to the LTfLL website, the screencasts and the tools.

## LinkedIn

The LinkedIn platform was chosen as additional socila platform, because it provides a more business and professional approach to social networking, and is often used to find business opportunities or jobs. Therefore, the LinkedIn postings where designed to address the education-oriented business, language technology, and developer communities. Among other things promotion of inter-widget communication happened via the widget and app developer group.
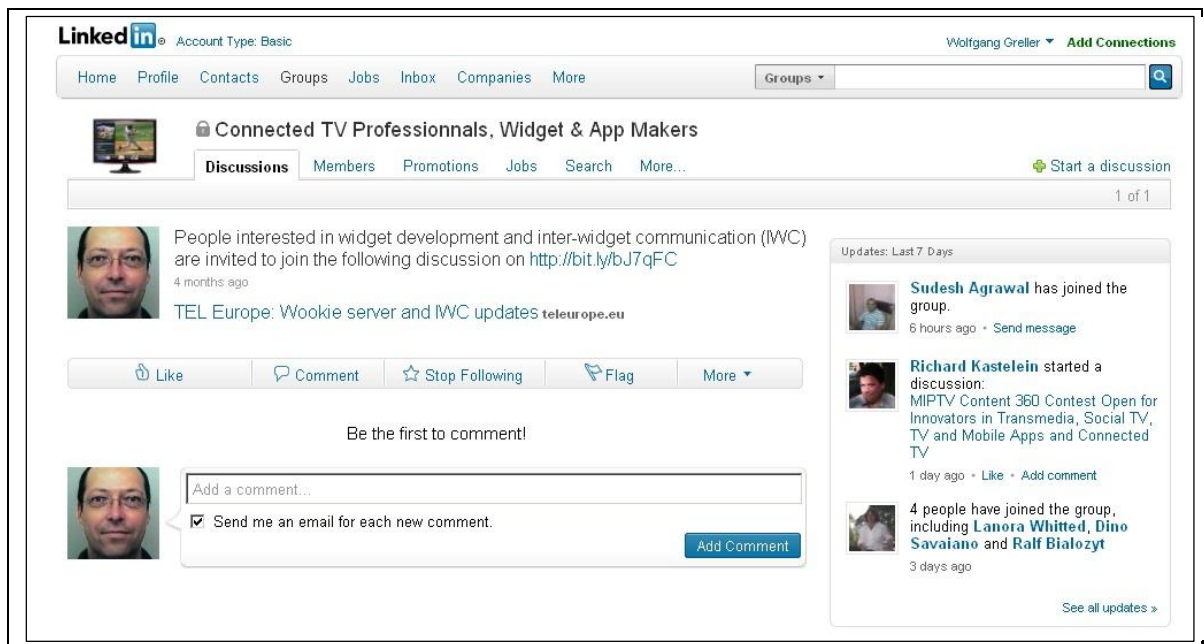
*Twitter*

The Twitter platform was used by project team members to send tweets (micro messages) to keep in touch with interested persons and stakeholders by using a trendy communication channel in addition to more traditional methods. It was mainly used in support of live events, such as during the Summer- or Winterschools.

*Weblogs (LTfLL Web Site)*

The Blogs on the LTfLL project web site were introduced to publish current information and news and were one part of the continuous update process to keep information fresh and new.

The blog postings on the project website offer preselected information for the LTfLL community, so that the audience is able to read the news in a short time without being bored by uninteresting entries.
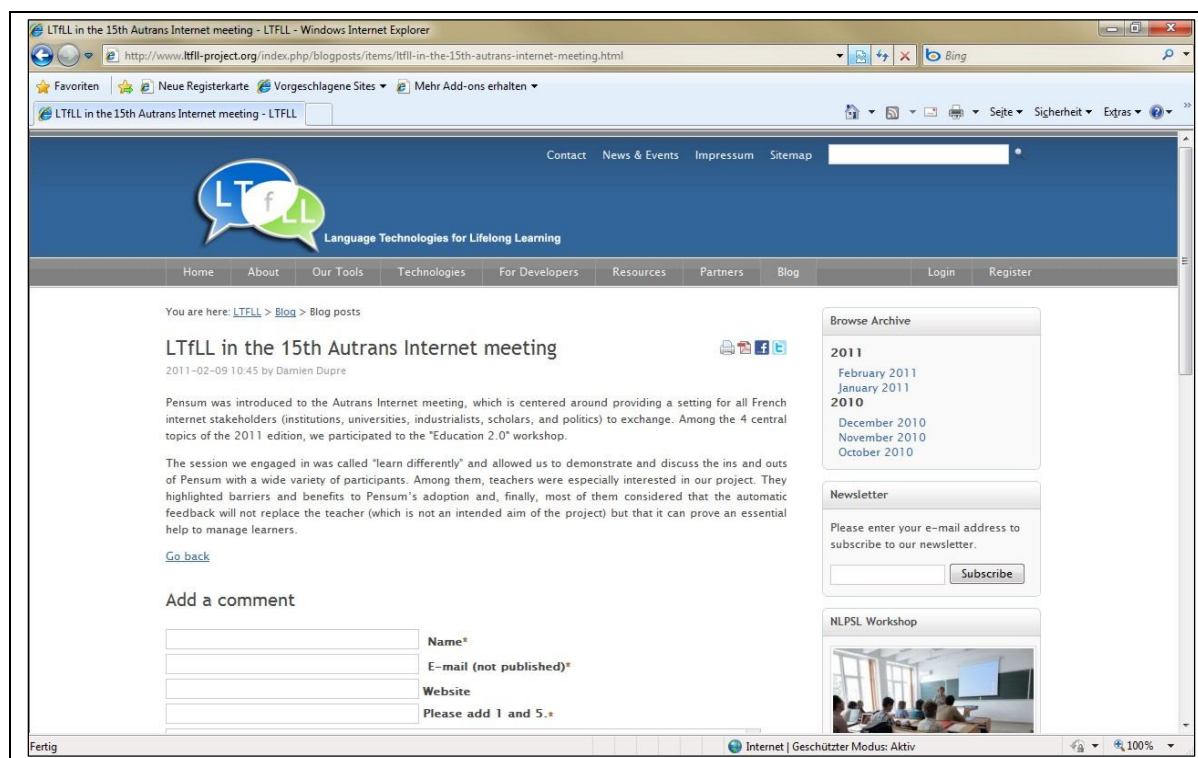
### 3.4.4 Screencast and LTfLL Overview video

The screencast videos quickly demonstrate the functionality of the LTfLL services and are able to guide stakeholders and end-users to start using the tools for their own testing.

An overview of the currently available screencasts has been attached in the annex. The link to each of the screencasts is also provided on the tools section of the project website.

## 3.5 Dissemination for Developers

For the successful exploitation in the developer community the LTfLL project team offers the outcomes of the project under General Public Licence (GPL-3).

The main portal for publishing the final software releases of the LTfLL tools at the end of the project is Sourceforge, where the team members also during the project had published different version of the LTfLL tools to enable community members to download and test the software.

*Sourceforge (http://sourceforge.net/projects/ltfll/)*
LTfLL Repository on Sourceforge (http://ltfll.svn.sourceforge.net/viewvc/ltfll/)
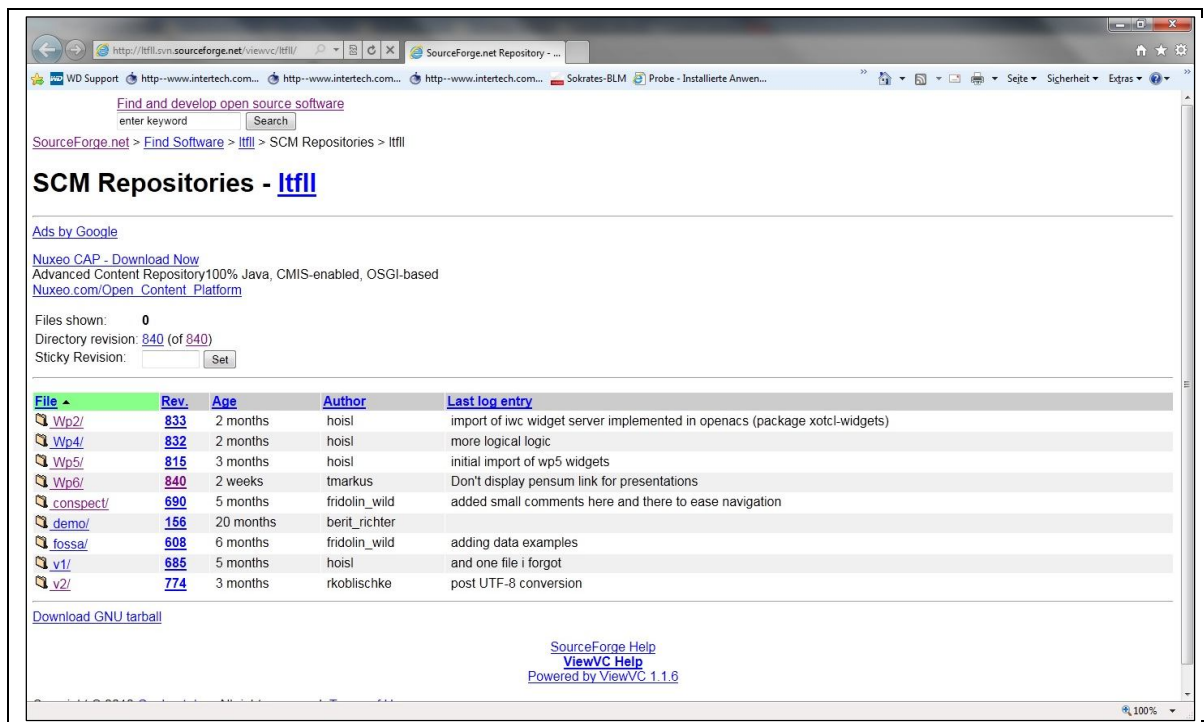


The SCM Repository offers the download of the LTfLL tools source-files

## 3.6 Contact-oriented dissemination and exploitation activities

All project members agreed to use their existing personal and professional contacts to establish dissemination activities or arrange meetings for discussing exploitation opportunities and to prepare for sustainability.

The following activities are typical examples for contact-oriented dissemination and

exploitation:

*E-learning manager's dissemination, 4.2.2011*

Presentation of Pensum to e-learning managers of UPMF, Grenoble University (jointly with law and economics departments)

*Researcher mobility exchange, June 2009*

Eugene Graziani (PhD student at Montreal University), worked on SRL (self-regulated learning) writing literature .
Hussein Atta Salem (Associate professor, Sohag University, Egypt), worked on validation round 3.

*Gallup Europe, July 2010*

A visit of the Scientific Coordinator from OUNL to the offices of Gallup Europe, resulted in interesting exchanges of work in the area of language technologies and formed the basis for a new collaborative research project proposal under the FP7-2011-Call7 on Language Technologies. This work brings together three LTfLL partners with three new partners in a project proposal building on the work done in LTfLL.

*Belgrade PhD research, July 2010*

Contact with Summerschool participants have led to a PhD research enquiry to the LTfLL team for our Annotation Tool being included in a PhD comparative study on automated annotation. This was followed up and is maintained with the LTfLL research team in Bulgaria.

# 4 Exploitation

This section describes the exploitation activities of the outcomes of the LTfLL project, undertaken during the project. As the outcomes are quite diverse, ranging from applications and services to expertise, the exploitation methodology chosen was also varied.

The exploitation target groups identified in D8.5 were i) researchers and developers, ii) content service providers, and iii) end-users such as tutors and learners. These groups were targeted through existing partnerships of consortium partners, targeted contact searches, and conferences and workshops.

First, the setting for exploitation is described, including the barriers and opportunities identified during the project. Then, the exploitation outcomes to date are discussed. Exploitation is centred around a continuation of the research on language technologies for supporting educational practice and the actual adoption of the developed LTfLL applications and services.

## 4.1  Barriers to, opportunities and solutions for LTfLL exploitation

The LTfLL exploitation activities are determined by the context and domains in which the project is situated, in particular, the barriers and opportunities identified in the project. These issues will be presented below. For more detail, we refer the reader to D7.4 and D2.5.

*BARRIERS*

The validation tests indicated some barriers that might stand in the way of a sweeping roll-out of language-technology-based applications and services into mainstream education:

- In general, language technologies are not yet mature enough to be developed into applications for the mainstream market. Especially accuracy and performance need further research.

- Although the importance of social learning has been recognized, its implementation in educational practice is still limited.

- Language technologies require a certain level of technical proficiency and skill in educators and learners. As they directly affect the current preparation, implementation

and follow-up of courses, an implementation of LTs requires appropriate change management within the adopting institution.

- Another issue concerning change management involves sufficient support and training in the using and understanding of the LT-based tools and the interpretation of the feedback given by such tools.

We only present a few pertinent barriers here. A far more detailed account of the findings of our stakeholder pilots can be found in D7.4.

*OPPORTUNITIES*

The LTfLL tools provide a number of clear opportunities to improve and efficiently support educational practice:

- The tools are ideally suited for self-regulated learning in collaborative settings. This reflects the environment in which lifelong learners operate.

- The tools provide a method for analysis beyond the visible data. As such, it provides a solution for a future problem, as educational practice is moving towards more web-based activities with more content creation and wider social learning. The LTfLL tools deal with expected problems of the future.

- The LTfLL applications and services were shown to provide increased tutor efficiency, organisation efficiency, relevant outputs and increased transparency.

In order to facilitate exploitation activities and ensure a wide reach and uptake, the project consortium made a conscious decision to use open source technology as much as possible. Also, the developed LTfLL technologies themselves are released under GPL3 licenses through the Sourceforge website. Installation notes for developers and training materials are included for each LTfLL application on the project website.

The LTfLL applications and services are complex tools, which depend on a host of underlying technologies and data. These third-party technologies are also governed by licences. In the table below, you can find a list of all third-party tools and their respective licence grouped per LTfLL application, The LTfLL tools have been tried and tested with these. Note, however,

that it is possible to substitute these third-party technologies with other comparable tools.

*Wookie Elgg 2.2, Wookie IWC 0.2 (GPL3)*

Widget version of the software follows LTfLL templates and can be integrated in Wookie-based environments.

http://sourceforge.net/projects/ltfll/

*WP2 space management system*

The space management system has a web service on top of it that we use to compute the similarities in the document to provide feedback. The code to the web service is included in our release but server set up should include http://augur.wu.ac.at/v2/wp2

| LTFLL Service | Third-party tools and licenses |
|---|---|
| LeaPos | LAMP server (GPL; Linux, Apache, MySQL & PHP)<br>rApache (Apache License Version 2.0)<br>R (GPL)<br>R package tm (GPL; modified) + dependencies<br>R package lsa (GPL; modified) + dependencies<br>SVDLIBC library (MIT)<br>jQuery (GPL) + jQuery.ui, jQuery.tablesorter, jQuery.highlight<br>Saphre (Apache Software License) |
| CONSPECT | jQuery 1.4.3<br>Tools for selecting elements and interacting with them.<br>http://jquery.com/<br><br>jQuery-ui 1.8.6<br>Specific interface elements (slider used in this case).<br><br>http://jqueryui.com/about<br><br>jQuery Context Menu Plugin 1.01<br>Provides facilities to create context menus in JS. The code for this was edited for Pensum.<br><br>http://abeautifulsite.net/2008/09/jquery-context-menu-plugin/<br>FOSSA 0.2 (ltfll, graphical rendering) |
| Pensum | jQuery 1.4.3<br>Tools for selecting elements and interacting with them.<br>http://jquery.com/<br><br>jQuery-ui 1.8.6<br>Specific interface elements (slider used in this case).<br><br>http://jqueryui.com/about<br><br>jQuery Context Menu Plugin 1.01 |

| | |
|---|---|
| | Provides facilities to create context menus in JS. The code for this was edited for Pensum. |
| | http://abeautifulsite.net/2008/09/jquery-context-menu-plugin/ |
| | LAMP server (GPL, Apache & PHP) <br> Pensum needs MySQL and PHP running. |
| PolyCafe | PolyCAFe tools and artefacts: BSD-style license <br> http://www.ltfll-project.org |
| iFLSS | iFLSS tools and artefacts: BSD-style license <br> http://www.ltfll-project.org |
| | DBpedia: Creative Commons Attribution-ShareAlike 3.0 licence <br> http://dbpedia.org |
| | LT4eL ontology & lexica: GPL <br> http://www.lt4el.eu |
| | Virtuoso: GPLv2 <br> http://virtuoso.openlinksw.com |
| | Sesame: BSD-style licence <br> http://openrdf.org |
| | JavaScript InfoVis Toolkit: BSD-style licence <br> http://thejit.org |

## *SOLUTIONS*

Out of the experience of the project, we defined a number of essential technical and organisational developments to be undertaken in order to enable the full exploitation of the LTfLL applications and services. Apart from these, we also identified a number of desirable items to have. For an in-depth discussion of these, we refer to the Roadmap document (D2.5).

The exploitation outcomes at the end of the LTfLL project reflect the environmental restrictions described above. In the following sections, the exploitation outcomes regarding research and the use of the LTfLL tools and services will be presented.

## 4.2   Research

All research partners in the LTfLL consortium will continue developing their expertise in their domain of interest, by building on the research results of the LTfLL project. The following describes the main research interests.

*OUNL*

OUNL's research interest is situated on qualitative learning analytics for educational data mining and a widening to sentiment analysis and data mining for student engagement measuring.

A PhD starting on these topics will start shortly continuing the research established by the candidate under LTfLL auspices. If the RESULT project proposal with Gallup (described above) is successful, further PhD positions will become available.

*UU*

Utrecht will continue a PhD-position at the Utrecht University Institute for Linguistics (UiL-OTS) where Thomas Markus will write a thesis and continue research performed during the LTfLL project, LTfLL tools and services.

*UPMF*

UPMF-PUB will continue their LTfLL-initiated collaboration in a 3-year-long French research project which aims to develop NLP tools for calibrating texts for reading (primary level). Two Master students and one PhD student from PUB-NCIT will be involved in this project, directed by Stefan Trausan-Matu (in collaboration with Philippe Dessus, UPMF).

Additionally, contact was made with the University of Sohag (Egypt) and the PLE research group at University of Mons (Belgium).

*PUB-NCIT*

**PUB-NCIT** will continue the research started in WP5 and WP6 of LTfLL. Traian Rebedea, Vlad Posea, Costin Chiru, Dan Mihaila and Mihai Dascalu will complete their PhD thesis which are based on the work in LTfLL. Several master theses will also continue the researches. As mentioned above, a collaboration with UPMF has started in the same sense.

## UNIMAN

UNIMAN is exploring the possibility of taking the validation expertise developed in LTfLL into further European projects. The project has also given the opportunity to start joint research between project partners in the form of bilateral and multilateral PhD collaborations, student exchanges, or supervision. The strengths of the project consortium will thereby be maintained.

## OUNL-PUB-NCIT

Prof. Dr. Stefan Trausan-Matu acts as an external reviewer for PhD students at CELSTEC-OUNL. Philippe Dessus has already in the past acted as reviewer in a LTfLL-related PhD.

## UU-UPMF

Student exchanges between UU and UPMF will take place.

Some project partners will also continue research through funded projects.

OUNL, PUB, and WUW have submitted a shared proposal under the most recent Language Technologies call in FP7, building on the experience developed in the LTfLL project. The title of the proposal is RESULT: Recording Engagement and Sentiment Using Language Technologies. Coordinating Partner is Gallup Europe.

UU also participated in a project proposal (EU FP7 STREP - "MUDES"), which is to innovate multilingual language and knowledge technologies and exploit them as metadata-processing utilities for multilingual unstructured data. It will target the problem of comparability, findability and interoperability of textual data and their meaningful management across languages in the employment domain. UU will exploit its experience with semantic matching and mining, as acquired during the LT4eL and LTfLL-projects, in order to integrate professional social networks and large employee skills models. UU is also planning to submit a project proposal based on the iFLSS in the Lifelong Learning Programme.

Further joint research between project partners and academic institutions outside the project consortium has also been explored. One likely collaboration brought about after the presentation at the JTEL WinterSchool 2010 will be between OUNL and the University of Paderborn (DE) through the PhD project of Kamakshi Rajagopal.

## *4.3   LTfLL applications and services*

The LTfLL project consortium investigated the possibility of exploiting the applications and services developed in the LTfLL project.

The validation and dissemination exercises (described in D7.4. and above) have shown that the LTfLL technology is very much advanced and futuristic from a teaching and learning perspective. This pertains to the complexity of the technology as well as the pedagogic concepts, which underlie the tools and which are still not commonplace in mainstream education. Exploitation of the tools themselves, therefore, will need some further development and investment of time for the set-up.

Within the partnership, the following exploitation activities were developed:

Project partner BitMedia has agreed to support an undertaking by the "Hauptschule Hitzendorf" (AT).  The school is delivering the content of the "ECDL-Requirments" (European Computer Driving License) to their pupils with the goal to achieve this certification. The director of the school (Waltraud Zebedin) and the primary IT-teacher (Maria Pall) are interested in adding LTfLL tools to their educational process.

This context is very similar to the conditions in the pilot scenario, where the LeaPos Services was validated. BitMedia would act as a hosting service of the LTfLL schools. After evaluation of this first trial, BitMedia might consider rolling this service out to other schools.

The OUNL is considering offering the LTfLL tools as part of its Masters' courses. This idea was developed after some tutor workshops.  Especially, the tool PolyCafe gained much attention within the flexible, distance-learning context of the OUNL.

The PolyCafe system will be used in hybrid learning activities at the Politechnica University of Bucharest.

There is also some interest in the exploitation of the tools from people and institutions outside the project consortium. Notable contacts were:

Teachers:

- An English Lecturer from Aalto University – School of Science and Technology, Finland: This contact was made at the demonstration session at Online Educa Berlin. There was a huge interest in LeaPos and CONSPECT, but the complexity of the system especially in transferring it to another domain was a concern.

- An Italian teacher and researcher at National Institute of Continuing Education for Adults (IDEKE)- Greek Ministry of Education: This contact was made during the JTEL WinterSchool 2010 in Innsbruck, Austria. The concepts and the possibilities of language technologies were hugely appreciated. Usability was seen as a huge barrier to uptake in mainstream education.

## *4.4 Conclusions*

The LTfLL project has resulted in many exploitation opportunities, both regarding research outcomes and the use of the LTfLL tools. The outcomes have created a strong research network of the project partners, who have valorised this through setting up and engaging in bilateral and multilateral joint research projects. The biggest challenges are situated in the exploitation of the LTfLL applications and services. Technologically, they need further development for a real uptake in mainstream education. Pedagogically, the end-users need training in the set-up, use and interpretation of these tools.

# 5 Impact

In this section, we present the impact of the LTfLL project, starting with its outcomes on education and lifelong learning in the modern knowledge society. We will then specify the scientific impact of the project outcomes on the different domains that LTfLL contributed to in this interdisciplinary project. Finally, we will also look at the benefits for the stakeholders of the LTfLL tools.

## 5.1 Societal Impact

In modern knowledge society, professionals need to be flexible, adaptive and independent to participate in the competitive working environments. Lifelong learning has long been identified as a critical requirement for the modern knowledge society (Communities, 2010). Learning is part of people's lives, across several aspects of their daily activities, in cooperation and collaboration with others.

Modern day working and learning are strongly connected by the use of information and communication technologies. Increased use of these technologies has given learners in the knowledge society the huge advantage of being able to interact with their peers constantly and flexibly through various means. However, the potential access to information, knowledge and peers has exploded beyond the control of individual knowledge workers. The personal responsibility of individuals to stay on top of the huge amount of content and resources available is a cause for much work overload and stress.

The LTfLL project has shown that it is achievable to create learning support services that are suitable for a given learning situation, and are accessible and easy-to-use by learners and tutors helping them to make sense of content and interaction products. The developed tools support individual tutors and learners in different aspects of educational practice. Additionally, they are versatile in their use to be able to be employed in different circumstances. The tools provide more varied views on complex data, giving it an added dimension. Thereby, they provide tutors and learners with more insight into such data, enabling them to react suitably. The LTfLL tools can be employed in the context of daily working and learning, across several aspects of professional daily activities. The tools play to the strengths of social connectivity, making peers a vital part in the user's learning. Self-assessment and peer assessment form the basis of the pedagogy on which these tools have

been built. It has been shown that this use of technology can create further motivation for self-study; it can support and encourage individual reflection, which is a crucial part in professional learning.

The outcomes of the LTfLL project have successfully demonstrated the value and suitability of Language Technologies in supporting educational practice. Language Technologies are uniquely suitable as they complement the natural interaction methods between tutors and learners, and learners and their peers, through analysis of natural language. Moreover, the LTfLL tools focused on text-based natural language, which is omnipresent in learning. This imposes fewer restrictions on the uptake of the tool into mainstream education.

Future research can build on this project by investigating spoken natural language or speech-to-text transcription artefacts, thereby extending the functionalities to multimedia resources.

The LTfLL consortium has demonstrated that language technologies offer a credible and appropriate solution to content overload, and thereby, a way of dealing with the challenges of learning in modern world.

## 5.2 Scientific impact

As an interdisciplinary project, the LTfLL outcomes have an impact on different scientific domains.

The LTfLL project enhanced the existing methodology of scenario-based design, building on educational use cases that contain problem and solution scenarios. These were mapped into an information and interaction scenario that informed the technical design of the tools as well as a validation scenario to enable conceptual validation. A detailed description of the implemented methodology as well as templates for re-use can be found in D3.1. The elaborate use of the scenario-based design methodology and following validation methodology has an impact on future technical developments in the field of Technology-Enhanced Learning.

The LTfLL project also contributed to the field of Language Technology, in methodology and technology development. The Common Semantic Framework (CSF) was developed to combine formal ontologies (more or less static snapshots of a domain) with informal vocabulary from folksonomies (the 'contemporary' state of a domain language within a Community of Practice). To combine these two perspectives is therefore a way to more

accurately represent a domain language. The PolyCAFe system implemented the Bakhtin polyphonic dialogism ideas for the analysis of multi-parts chat systems.

Regarding language technology development, the project adapted and improved the R-LSA and text mining packages in order to deal with a huge amount of processing data. With this it was possible to generate significant improvements in performance of these approaches that make them more suited to support ad-hoc feedback to users close to real-time. Furthermore, a language technology infrastructure was built suited to fit the needs of computational resources, flexibility, and transferability. This infrastructure includes lexica, grammars and background corpora, as well as ontologies.

The LTfLL project has outcomes with contributions in Computer-Supported Collaborative Learning. PolyCAFe provides support for students and teachers using chats and forums for collaborative learning.The outcomes of the LTfLL project also have an impact in the field of Computer Science. Significant contributions were made to widget-based platform development through the inter-widget communication, connector framework for Elgg and the widget single-sign-on (SSO) method that were developed in the project. In addition to the Wookie widget engine, we implemented and tested our approach on a second widget engine and connector framework based on the web application framework OpenACS. This enabled us to prove transferability of our developments and gain important experience for planning architectures of widget-based mash-up PLEs (MUPPLEs).

## 5.3   Benefits for LTfLL stakeholders

The LTfLL outcomes benefit all stakeholders identified in D8.5: researchers and developers, content service providers, and end-users.

Researchers and developers benefit from the research outcomes of the LTfLL project in Technology-Enhanced Learning, Computer Science and Language Technology through the many academic publications produced in the project. Regarding technology development, they benefit through (i) the technical contributions to the respective Communities of Practices, (ii) the design methodologies elaborated and well documented in the project, and (iii) the expertise built by the project consortium during the project duration.

The technical output of the LTfLL project also benefits content service providers, showing them the scope and applicability of language technologies in supporting educational practice. It can encourage further development into commercialisation of the tools for use in mainstream education, or innovation of new applications and services. A number of technical improvements that we see as essential for wider adoption and commercialisation were elaborated in the Roadmap (D2.5).

The LTfLL tools show a practical application for language technologies in supporting educational practice, fulfilling real needs of the end-users: tutors and learners. These tools address different aspects of learning and different forms of educational practice. It shows the versatility of language technologies in the use for educational services.

In general, all the tools offer a way of monitoring the learning activities and progress of larger groups of individuals and the possibilities to act when it is necessary. Tutors can follow the progress of their student groups; learners can monitor their own progress in relation to expected performance or to the performance of their peers.

Each LTfLL application or service brings its own benefits to the end-user. LeaPos (Learner Positioning) gives the learner feedback on covered and missing concepts in learner-created texts. The automated analyses make learning more efficient: learners are directly referred to the resources of value or need to go through fewer resources to find what they need.  It is best used within the context of a formal learning environment and in relation to a known curriculum. CONSPECT offers learners the opportunity to compare their own texts with expected coverage (model answers) or peers' performance. This tool can be used by lifelong learners of all ages. By using it throughout the learning process, it is able to visualize individual competence development. From Pensum, the learner can get real-time support during summary writing. PolyCAFe gives learners and tutors insight into the interactions that take place on multi-party forums and in chat discussions in the contexts of a course. Learners can invoke different views and get a better understanding of their contribution in these interactions. The Formal Learning Support System (FLSS) is a semantic search and retrieval service that facilitates the discovery of relevant materials with respect to a specific topic. The structured resource facilitates navigation, thereby making it easier to find relevant related resources. A key component of the FLSS service is the automated annotation tool. It forms an integral part of FLSS, but is also in use in the LeaPoS service. The inFormal Learning

Support System (iFLSS) offers learners a way to acquire knowledge in an autonomous way using their social networks. Automatically enriched ontologies provide them with the expert view on a domain combined with the vocabulary of the Community of Practice. Through ontology-based search and the employment of their own social networks they can find suitable and qualitative learning materials, without the need of tutors to assist them.

## 5.4 Conclusion for the Impact

The outcomes of the LTfLL project show credible and achievable ways of optimally supporting lifelong learners in the modern knowledge society. This interdisciplinary project has contributed to several scientific fields and benefits researchers and developers, practitioners and commercial entrepreneurs.

The LTfLL project is a frontrunner in the recently emerging field of Learning Analytics. In the Horizon Report of 2011 (Johnson, Smith, Willis, Levine & Haywood, 2011), Learning Analytics are described as "the interpretation of a wide range of data produced by and gathered on behalf of students in order to assess academic progress, predict future performance, and spot potential issues." The LTfLL applications and services completely fit into this domain of educational data mining and sense making of collected student data. In the Horizon report, Learning Analytics are presented as a technology with a time-to-adoption horizon of four to five years. So far, data collection has been centred on statistical quantitative approaches. Language technologies such as the ones used in LTfLL offer an innovative point-of-view combining a qualitative and quantitative approach.  Learner data, intentionally created (such as texts or resources) and unintentionally created (such as indicators from learning environments), can be mined to provide feedback to tutors and learners.  In this way, learning behaviour can be continued or adapted as necessary.

# 6 Conclusions

In this deliverable, the dissemination, training, exploitation and impact of the LTfLL project was presented. The main conclusions are described below.

The LTfLL concepts and outcomes are highly relevant for supporting lifelong learning. The developed tolls encourage independent self-regulated learning in collaborative settings. In this respect, the LTfLL is timely in offering solutions for expected upcoming issues in educational practice.

Mainstream uptake of LTfLL technology will need more development and time. For full-fledged adoption of this technology, language technologies need to improve in performance and accuracy. Also, significant change management issues need to be resolved in education practice.

In this respect, the LTfLL project is quite futuristic and advanced. To facilitate widespread exploitation, the LTfLL consortium has made provisions regarding transfer of knowledge and technology transfer.  Training materials on the tools have been created; a community space around the LTfLL tools have been set up on the project website and the TEL Europe site..

The LTfLL project seems to be a frontrunner in the activities around the upcoming research area of Learning Analytics, approaching the issues from a qualitative as well as quantitative point-of-view. The project has provided the platform to develop much expertise in this area by the project partners.

# 7 Annex

## 7.1 Overview of Screencasts
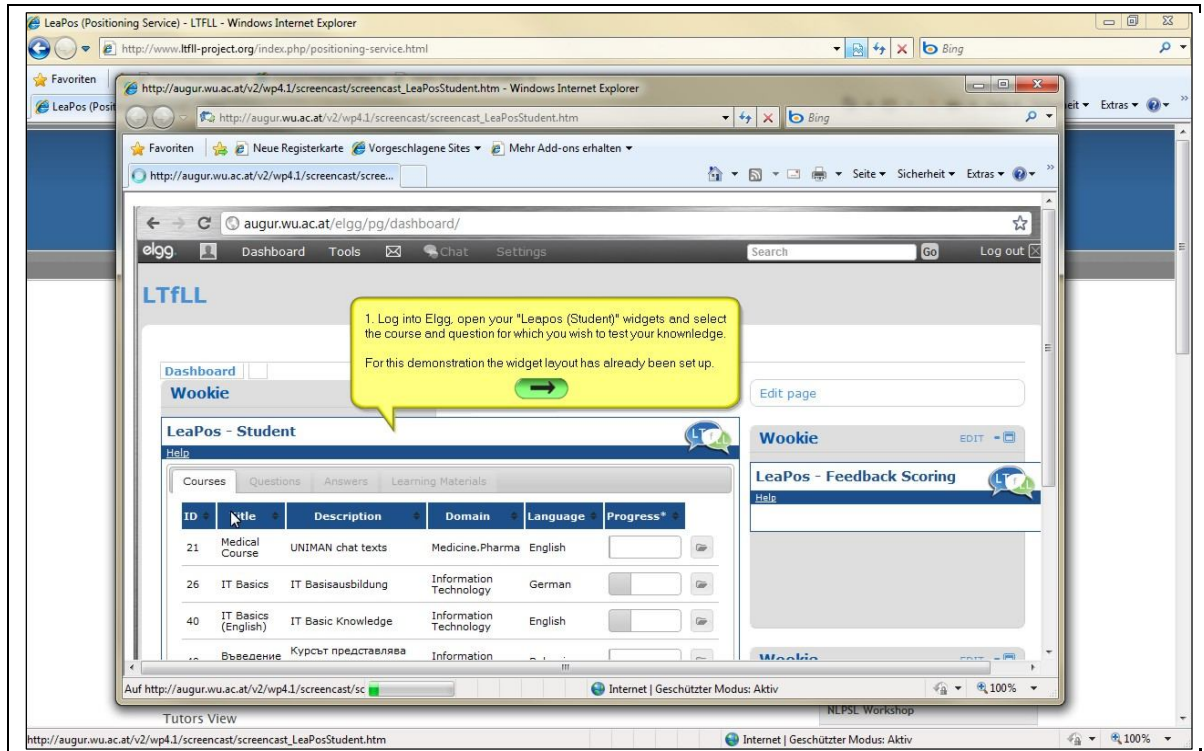


LeaPos screencast
http://www.ltfll-project.org/index.php/leapos-screencast-student.html
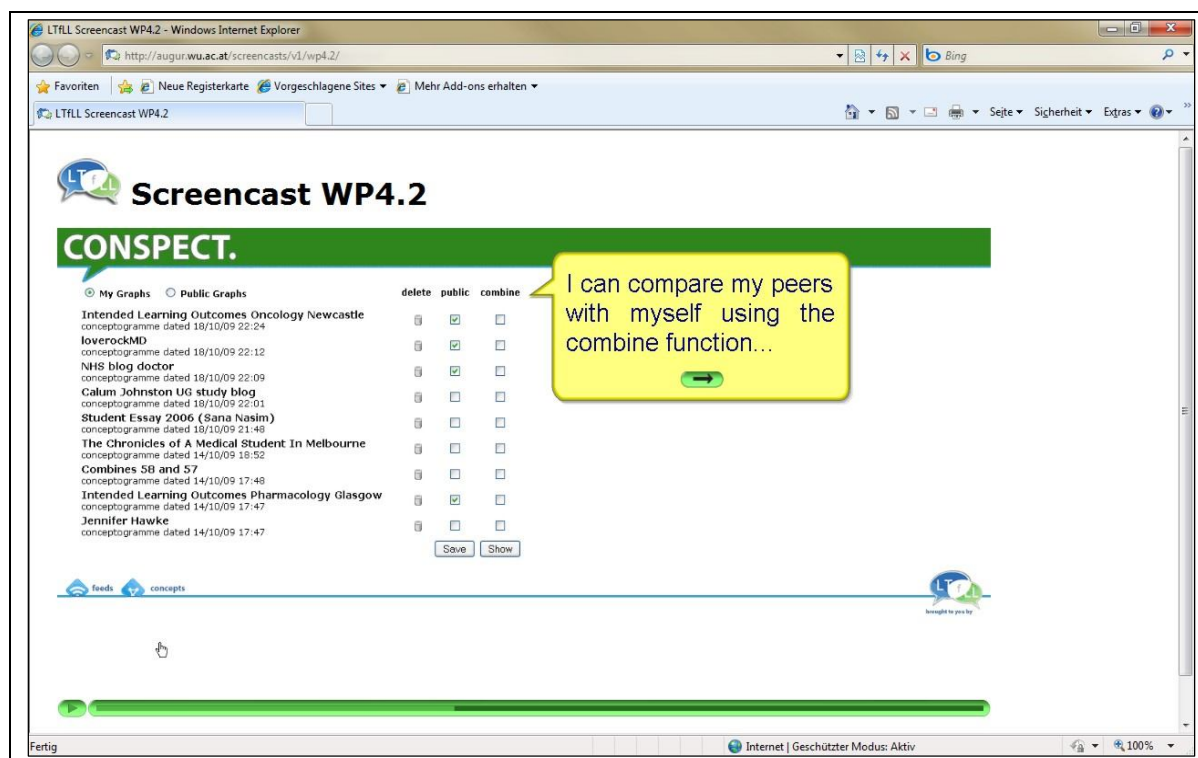
CONSPECT screencast

http://www.ltfll-project.org/index.php/conspect-screencast.html



PolyCAFe screencast

http://www.ltfll-project.org/index.php/polycafe-screencast.html

PENSUM screencast

http://www.ltfll-project.org/index.php/pensum-screencast-basic.html

http://www.ltfll-project.org/index.php/pensum-screencast-advanced.html
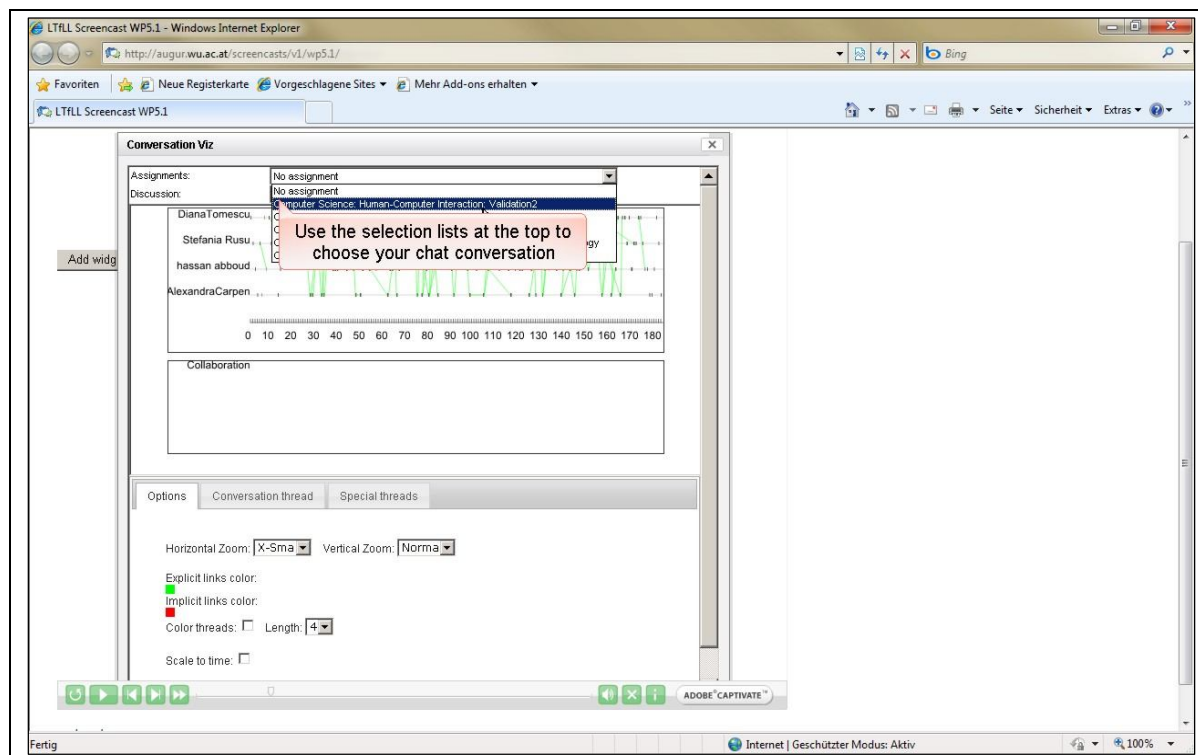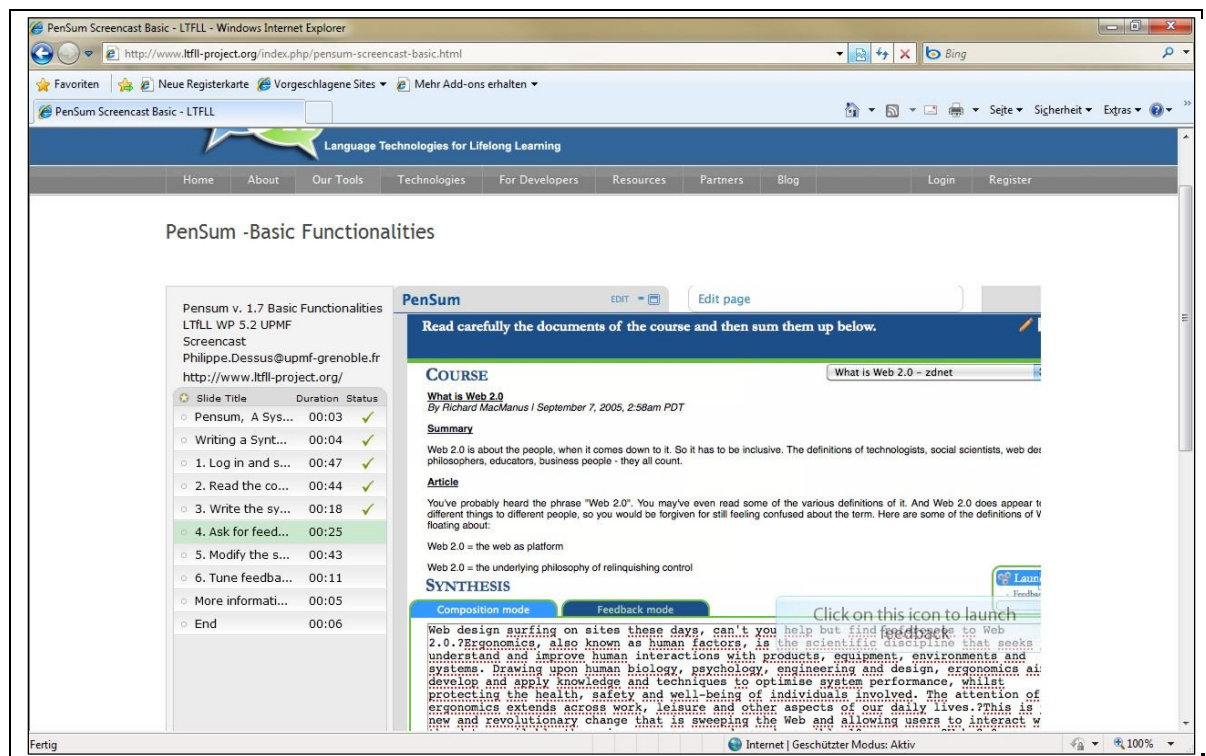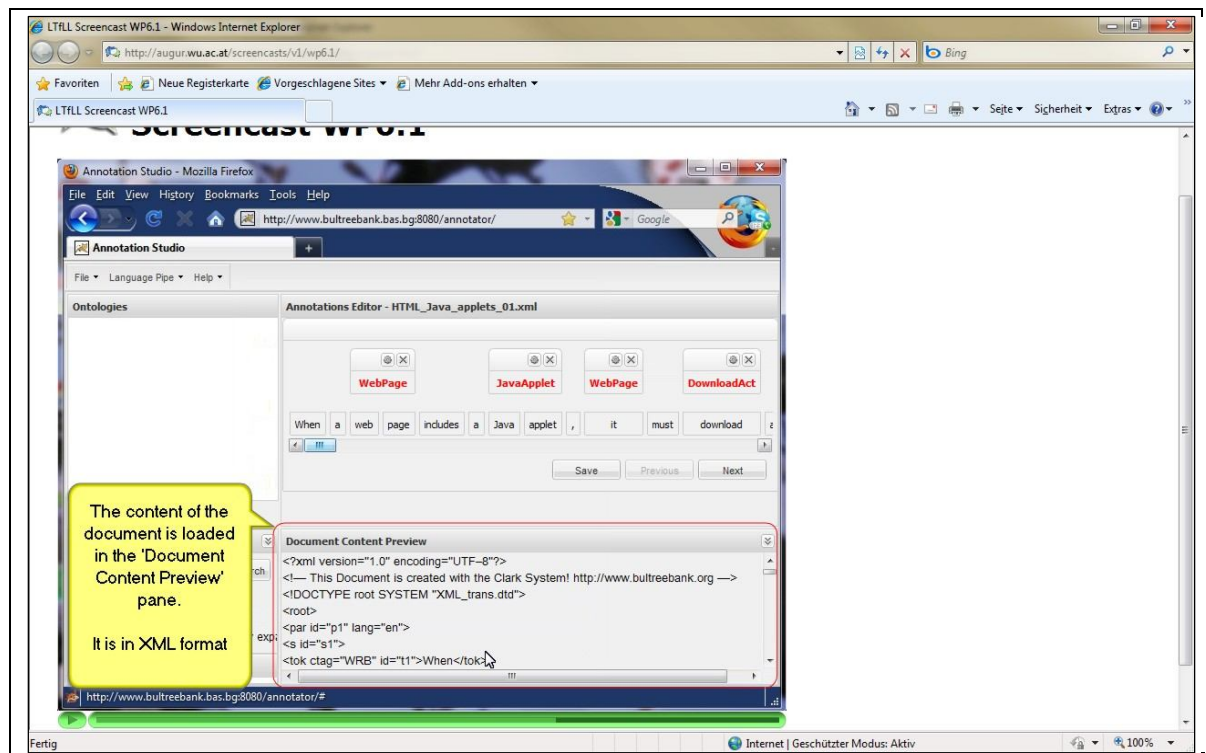


Common Semantic Framework: WP6.1 Screencast
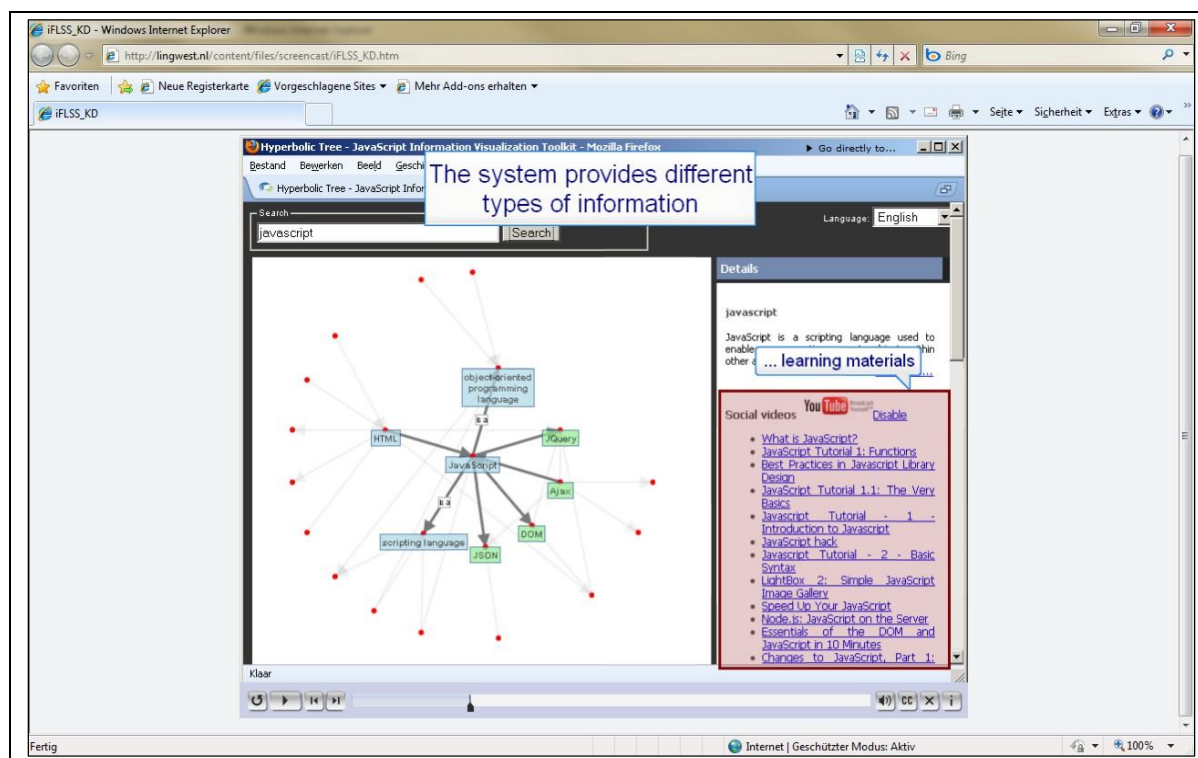
http://www.ltfll-project.org/index.php/common-semantic-framework-screencast-wp61.html

Common Semantic Framework: WP6.2a Screencast
http://www.ltfll-project.org/index.php/csf-screencast-wp62a.html



Common Semantic Framework: WP6.2a Screencast
http://www.ltfll-project.org/index.php/csf-screencast-wp62b.html
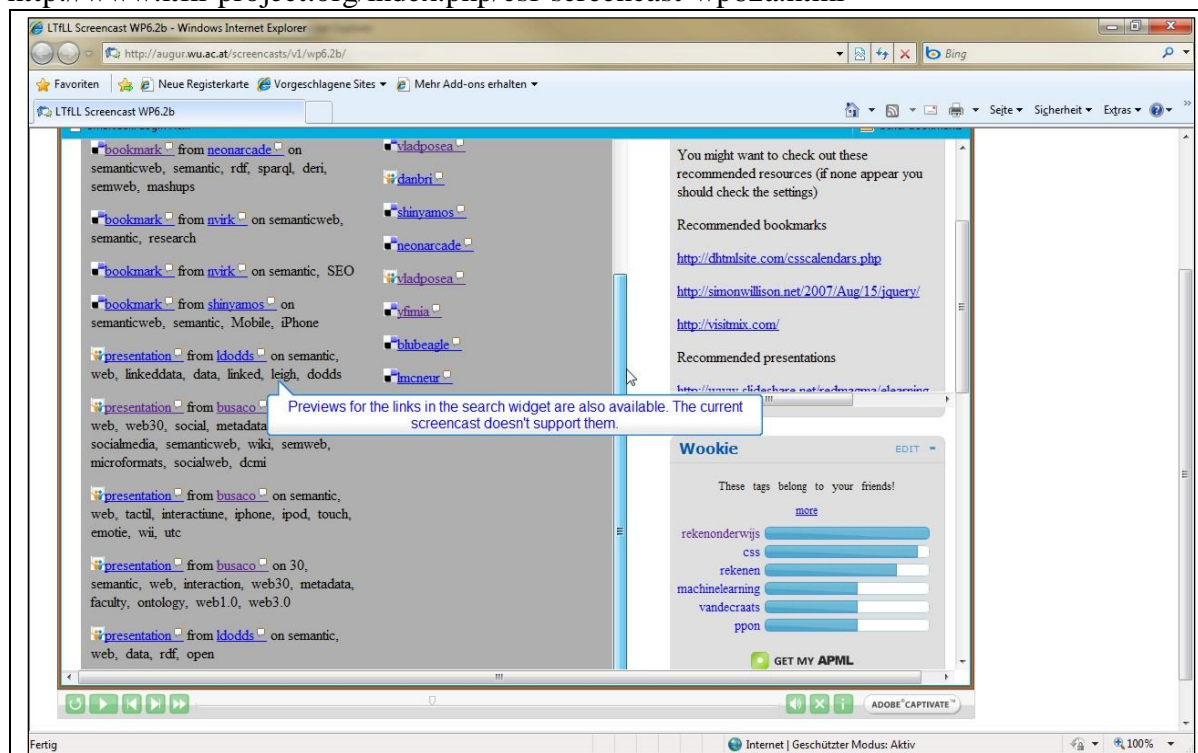
Long Thread Trailer
http://www.ltfll-project.org/index.php/long-thread-trailor.html
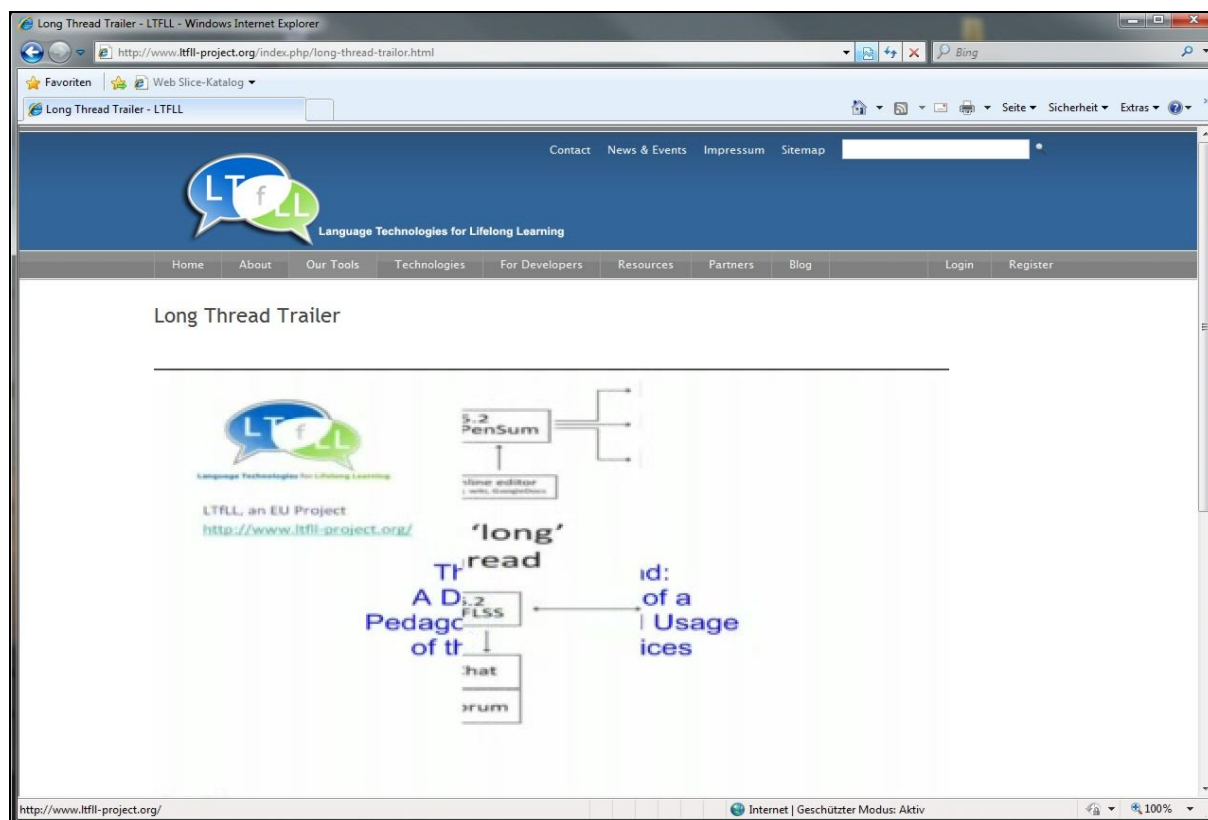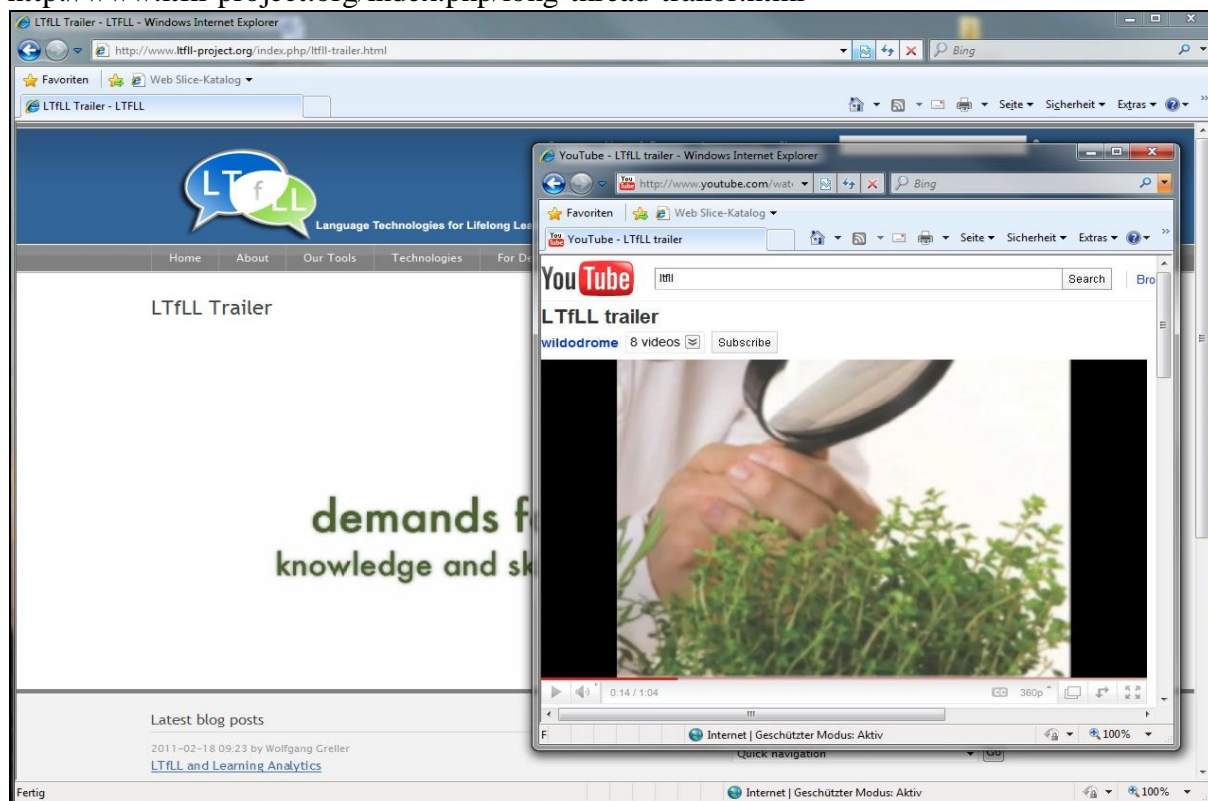


LTfLL Trailer on YouTube and on the project web site
http://www.ltfll-project.org/index.php/ltfll-trailer.html

## 7.2 Overview of the Web Site
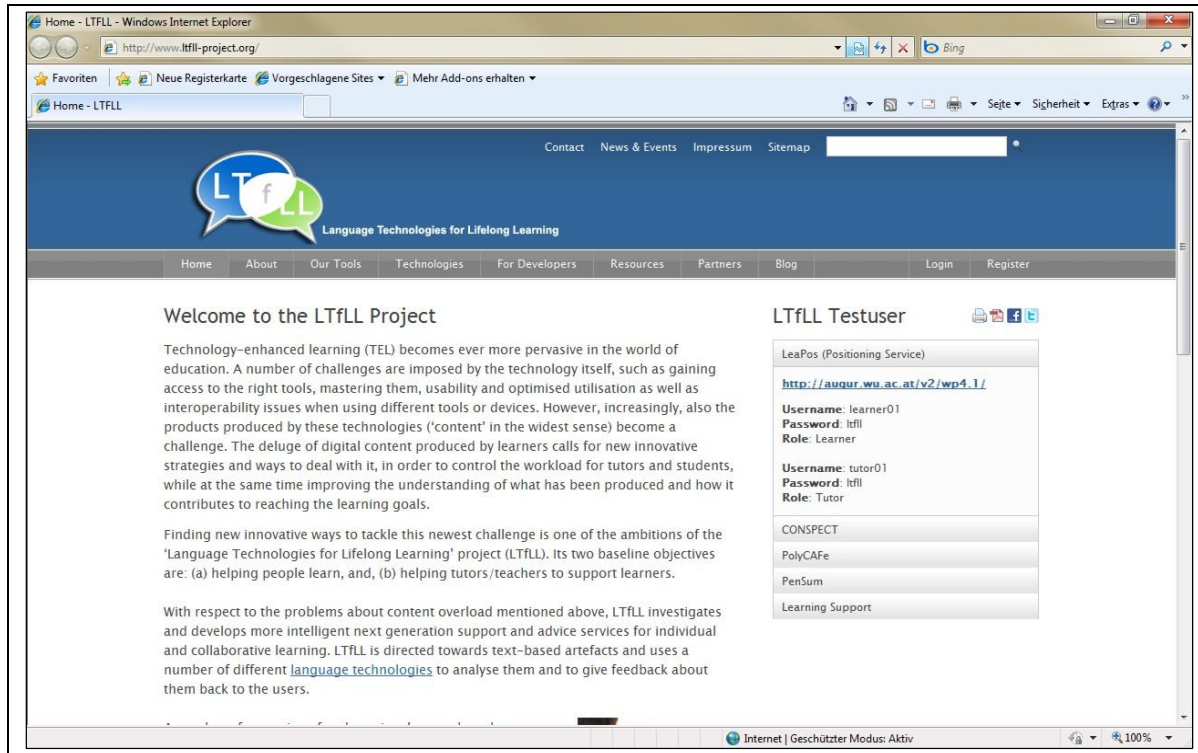


The "Home-Area" is used to provide a short overview of the LTfLL Project.
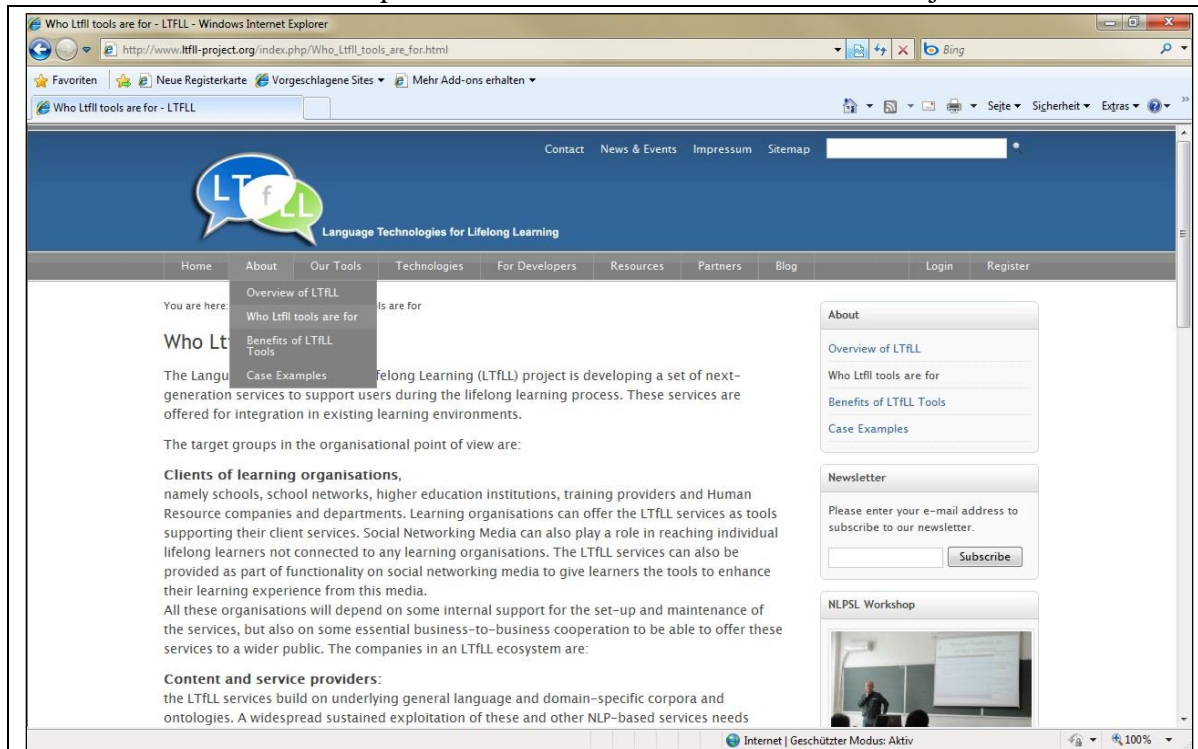


The Section "About" is designed to explain the visitors the opportunities offered by the LTfLL Services.
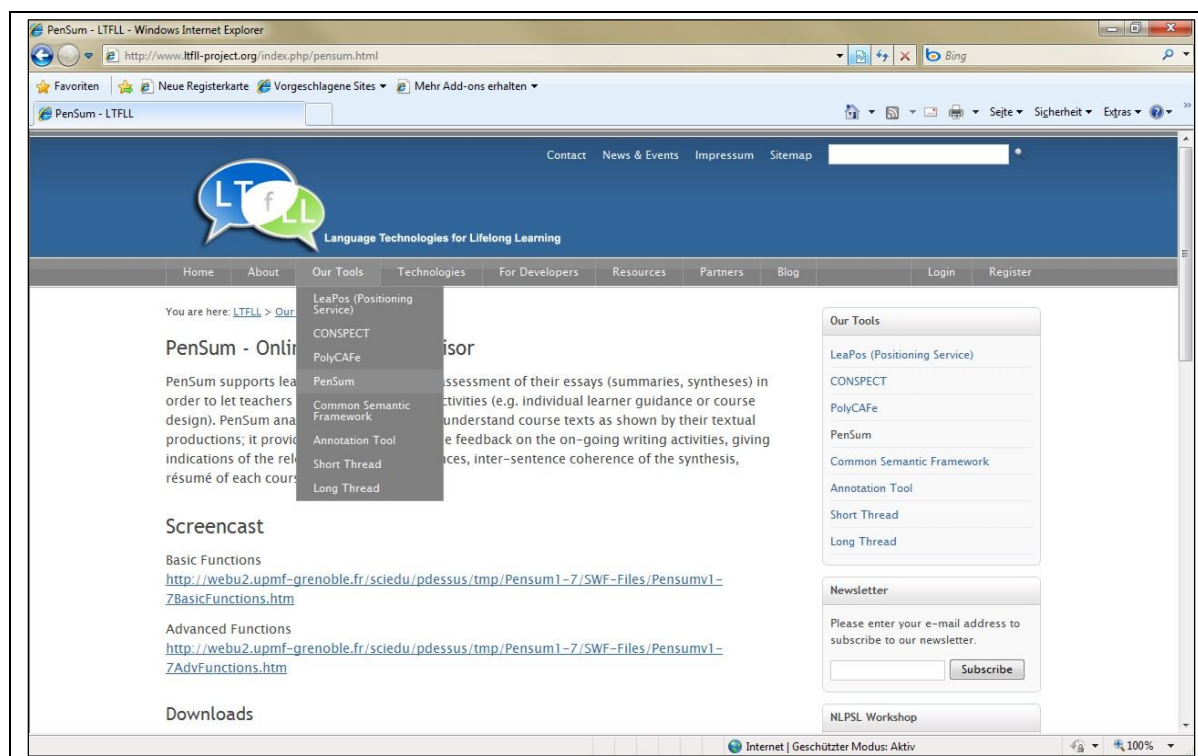
In the third section each LTfLL tool and the Thread scenarios are presented including the screencast and download materials.
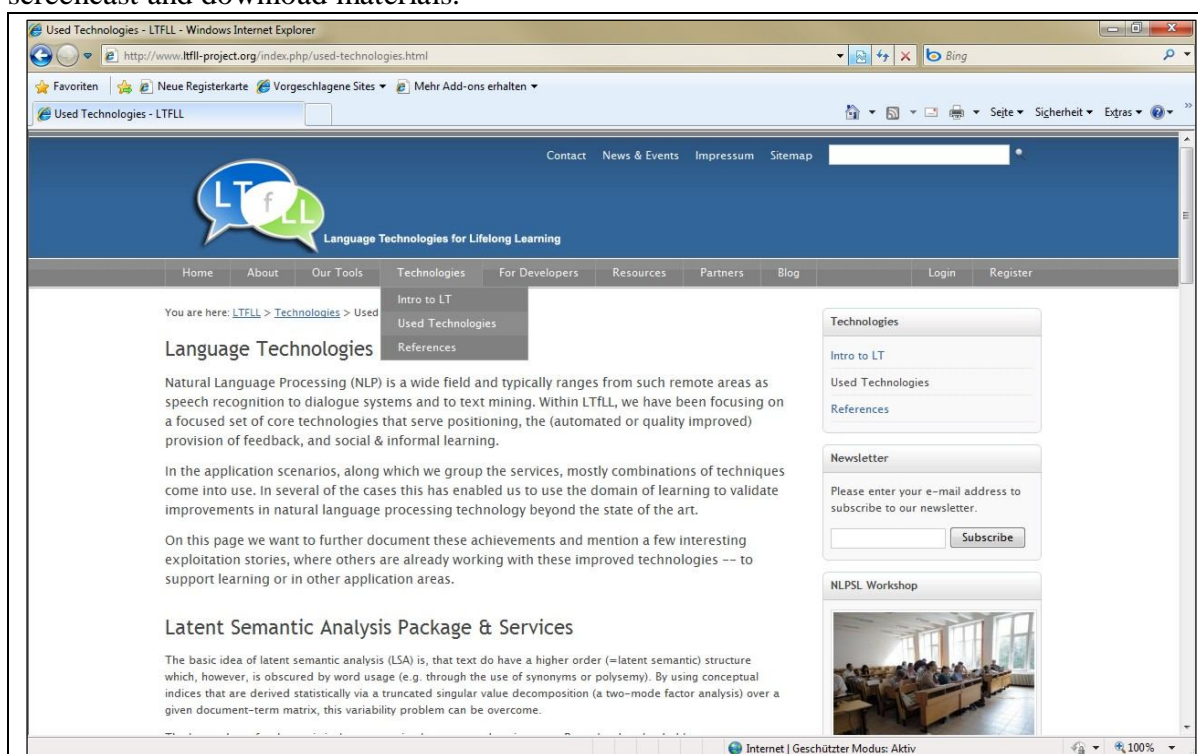


The Technologies section is addressing the language technology expert community.
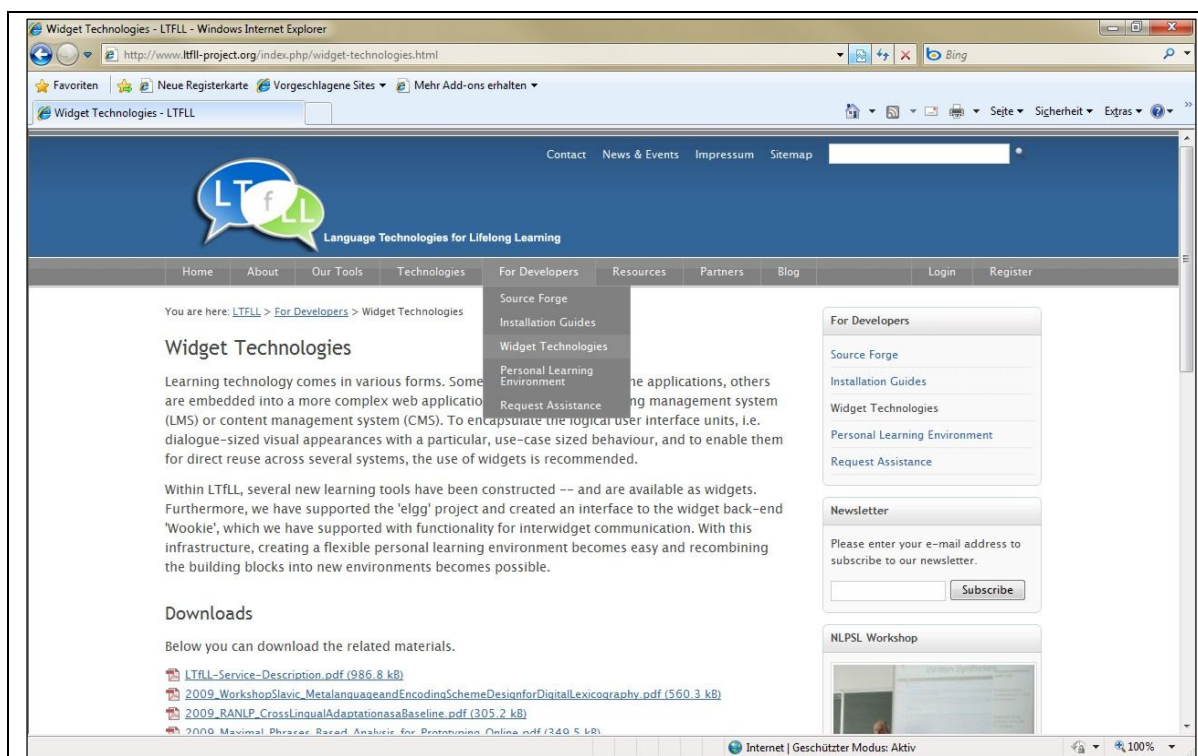
The developer community is addressed in an specific section on the project web site, because the members are important as part of the dissemination strategy.
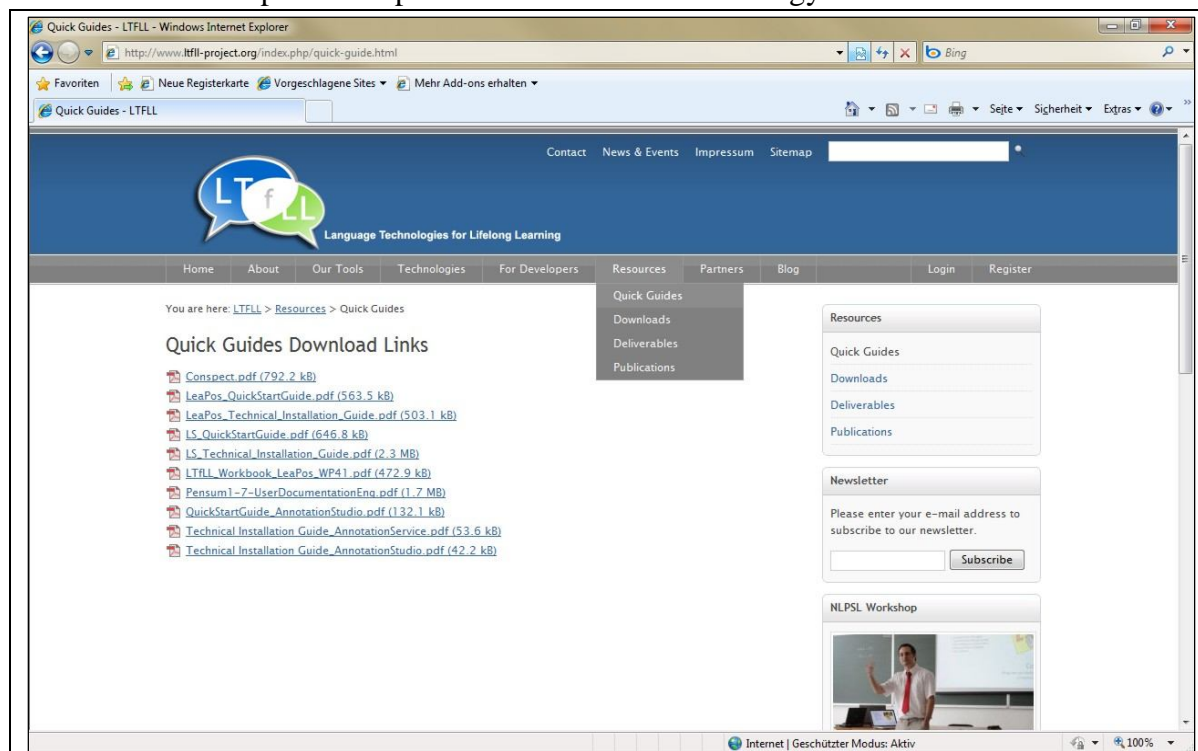


The Resources Area is used to build collections of available download material.
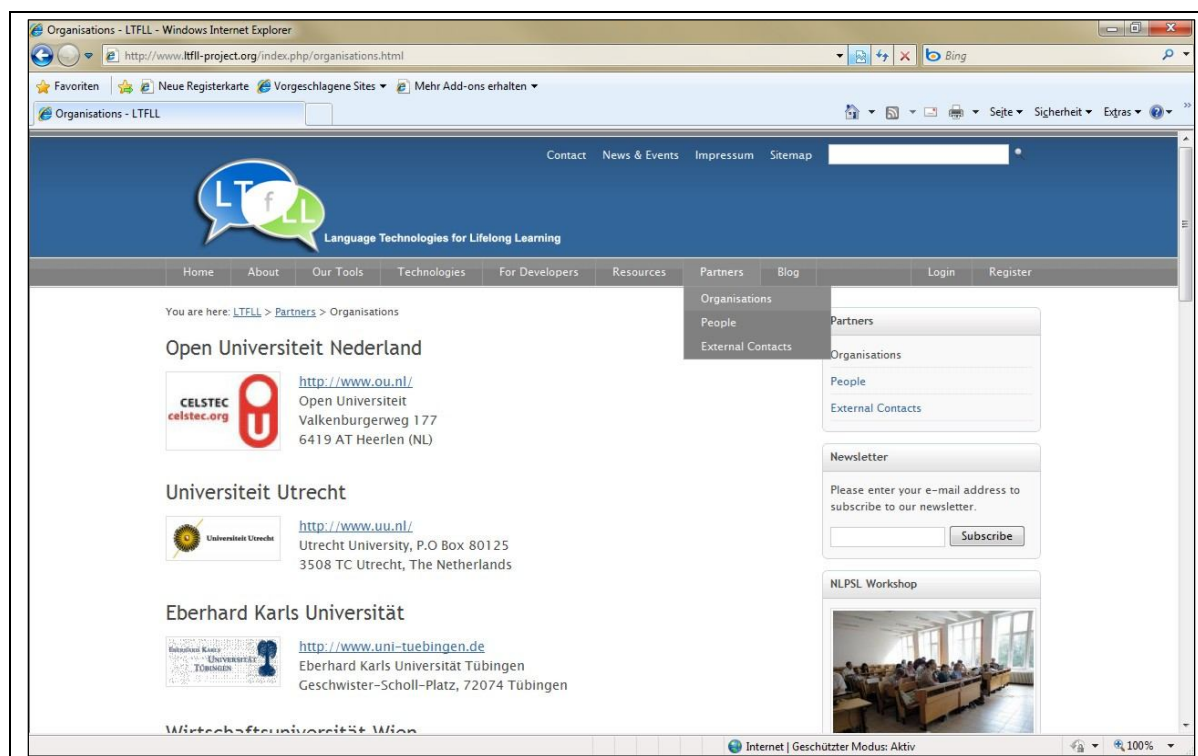
The partners section is useful for the visitors to get in contact with involved members of the LTfLL project.
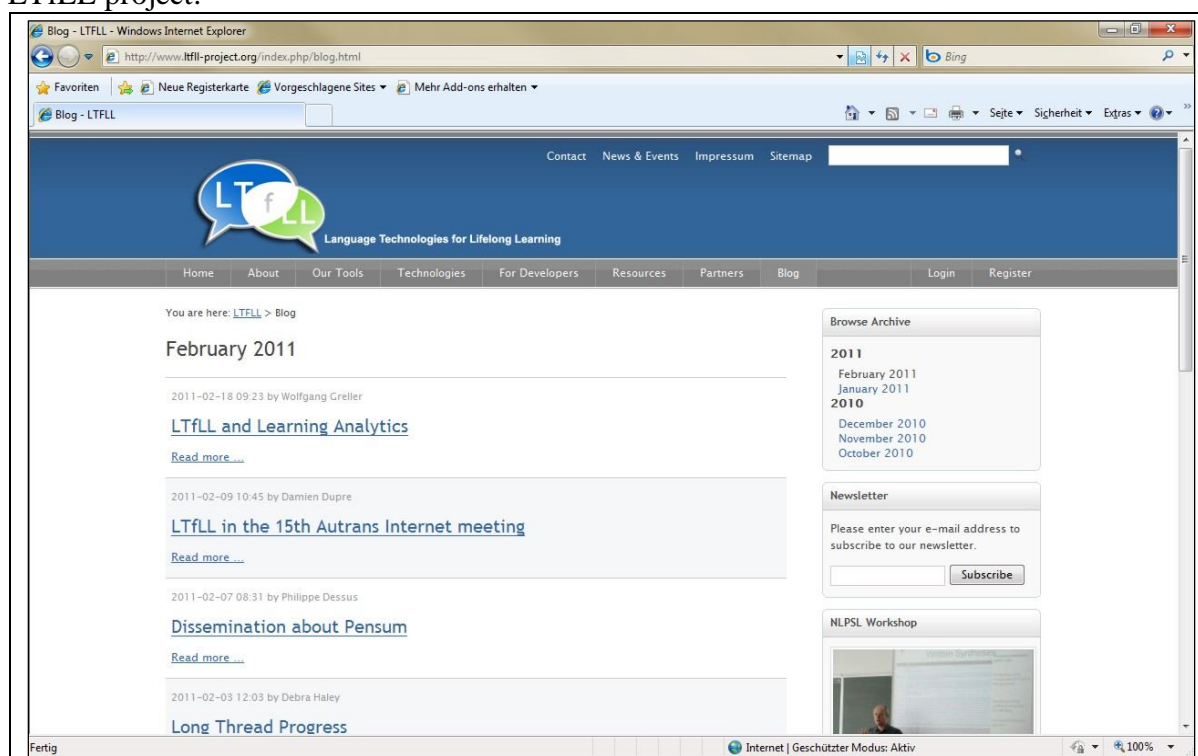


The blogs have been used to provide continuously changing content and information on the web site.

## 7.3 Overview of links from external Web Sites

*TEL-Europe*
(http://www.teleurope.eu/pg/groups/754/language-technologies-for-lifelong-learning/)
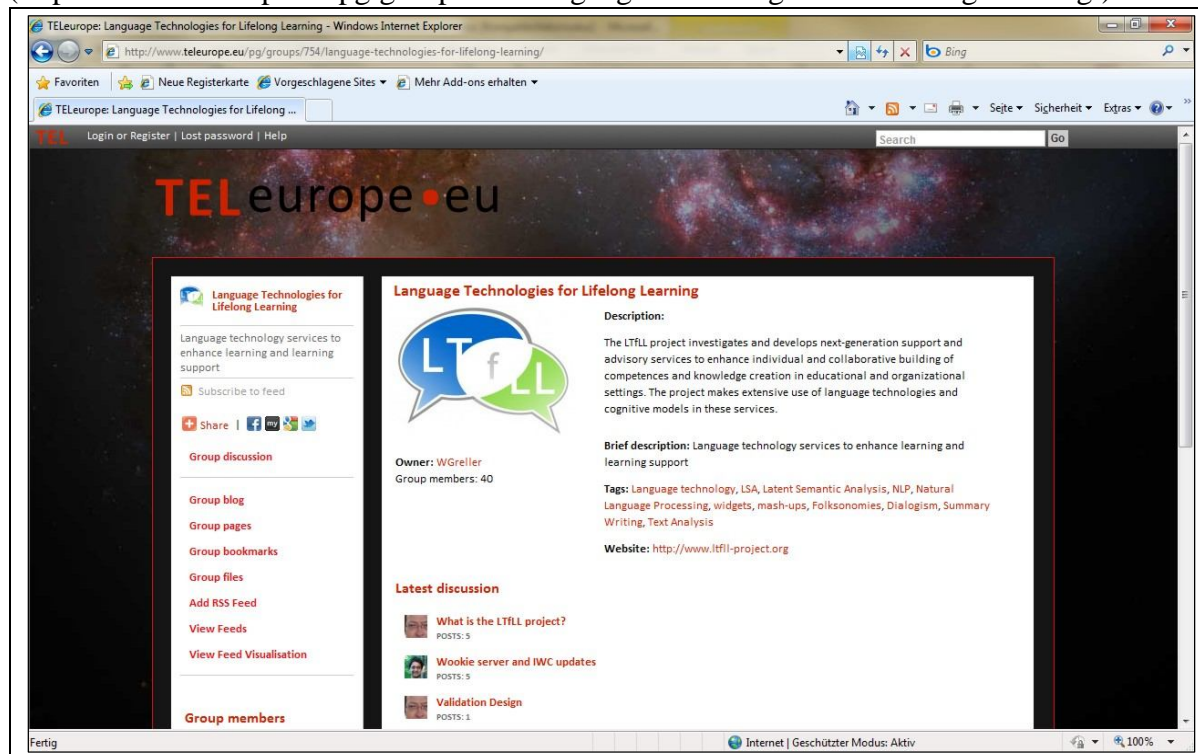
## Seminar für Sprachwissenschaft (Universität Tübingen)
http://www.sfs.uni-tuebingen.de/projectdisplay.shtml?value=32
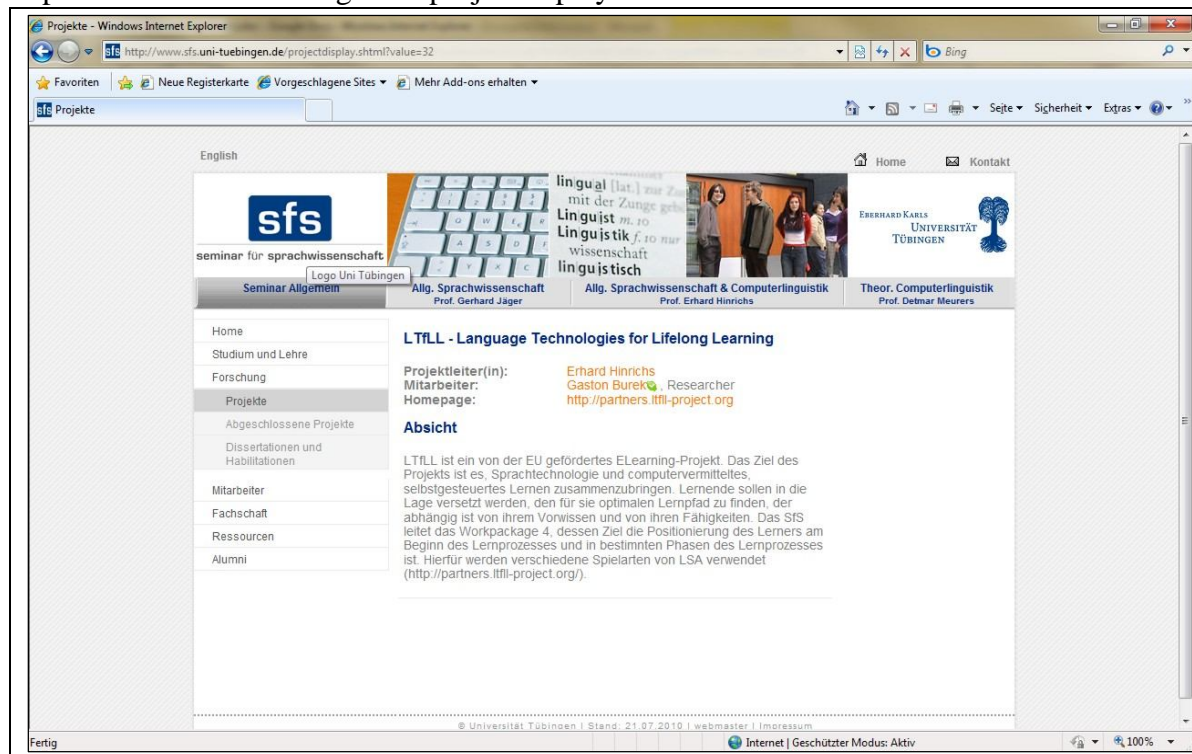


## Center for Research in Computing
http://crc.open.ac.uk/Projects/LTFLL



## Celstec.org (http://celstec.org/node/96)

*istworld*

(http://www.ist-world.org/ProjectDetails.aspx?ProjectId=980eaa85cfcc405a9c84806a312e2118)

### KMi
(http://kmi.open.ac.uk/projects/name/LTfLL)



### IEEE Computer Society
(http://www.computer.org/portal/web/guest/home)
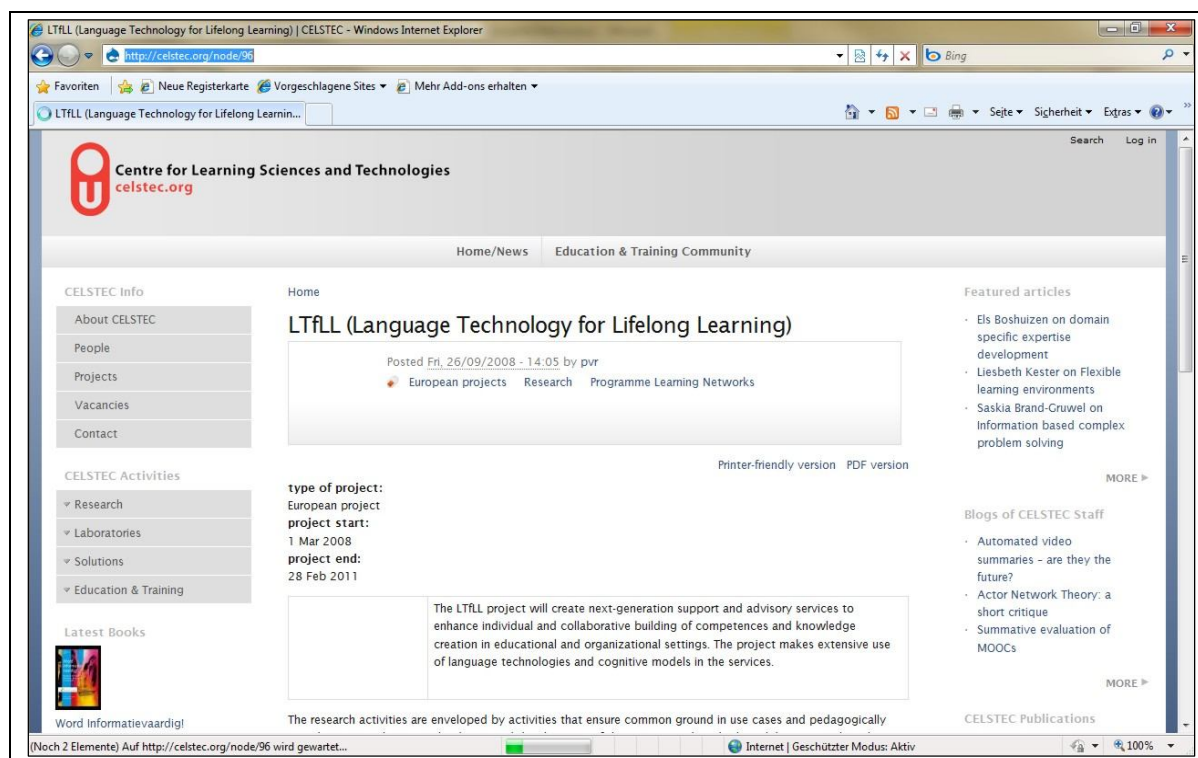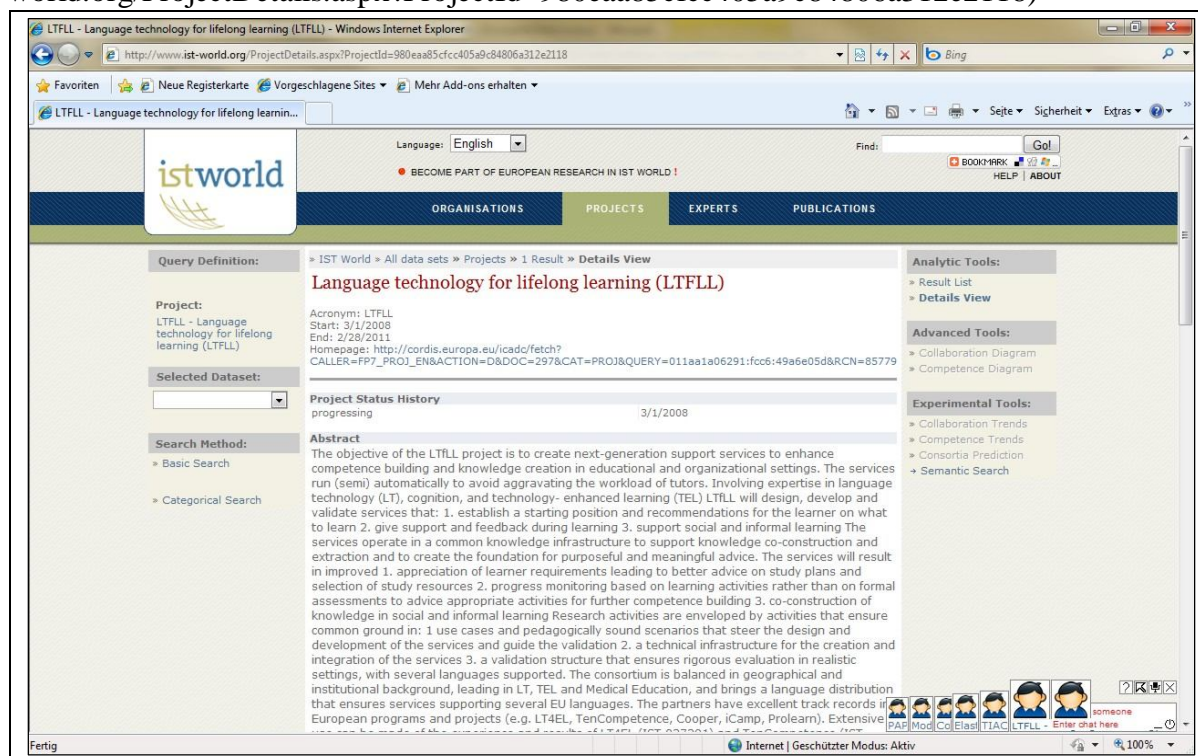


### Institute for Information Systems & New Media

(http://wi.wu-wien.ac.at/nm/ltfll)
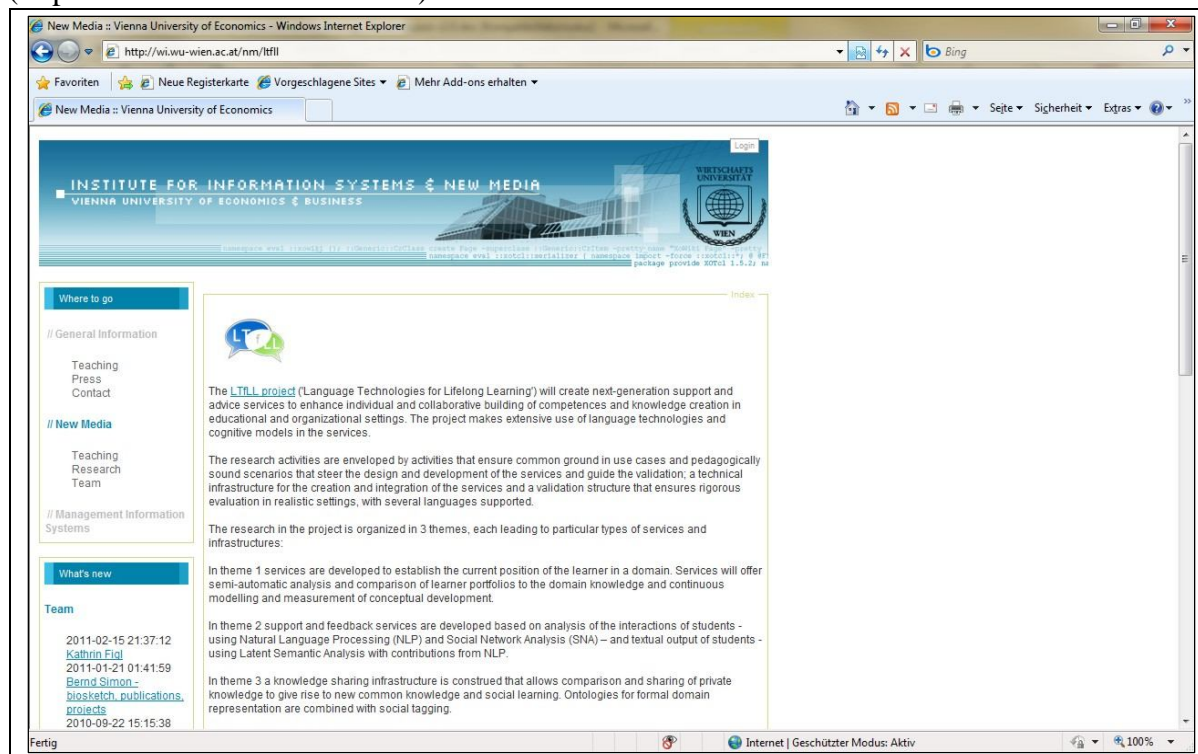


## MSH-Alpes (Maison des Sciences de l'Homme)

http://www.msh-alpes.fr/fr/projets-en-emergence

## Pole Cogniton

http://www.grenoblecognition.fr/
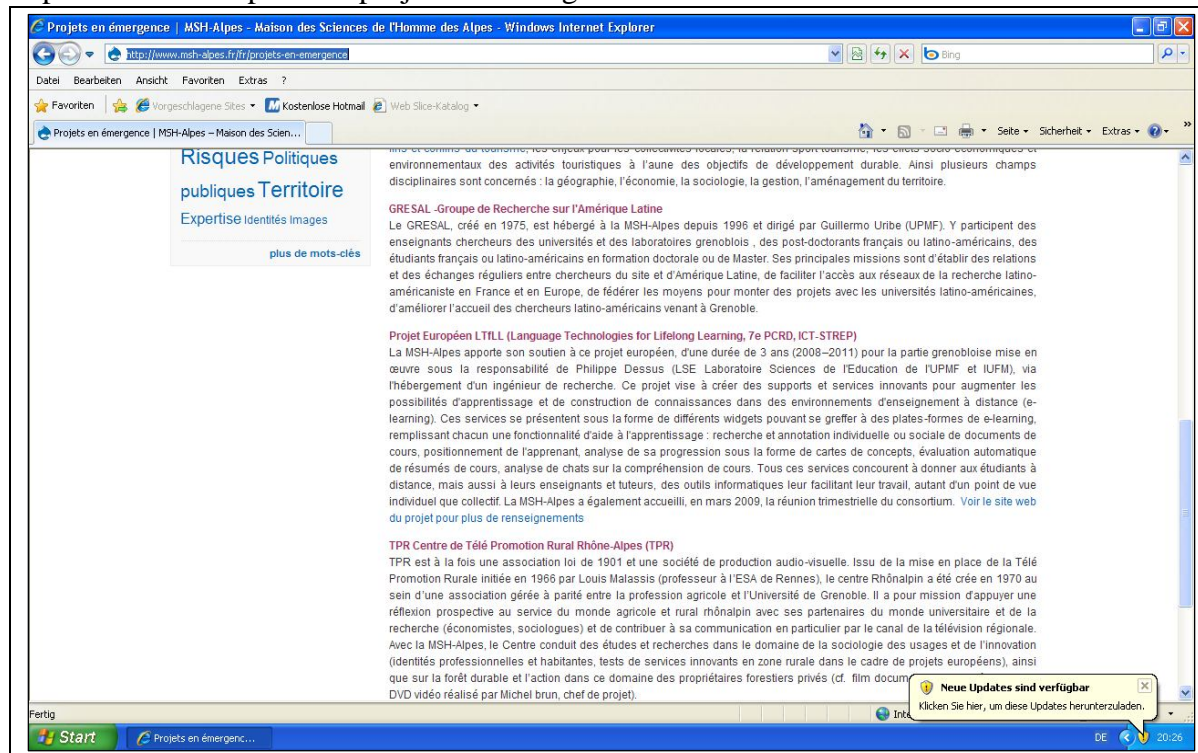


## LTfLL Videos on YouTube:

### www.Slideshare.net

http://www.slideshare.net/wgreller/language-technologies-presentation-innsbruck-2010



### AolVideo

(http://video.aol.com/video-detail/ltfll-positioning-service-learners-view/1396487282)
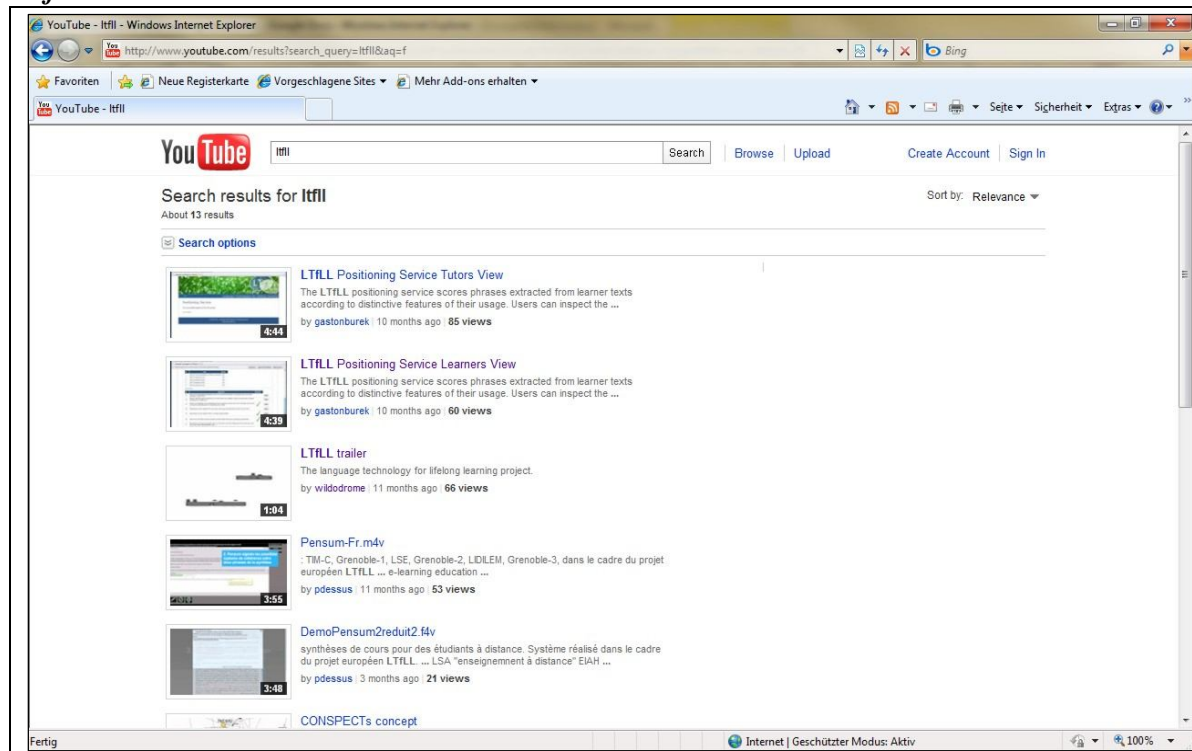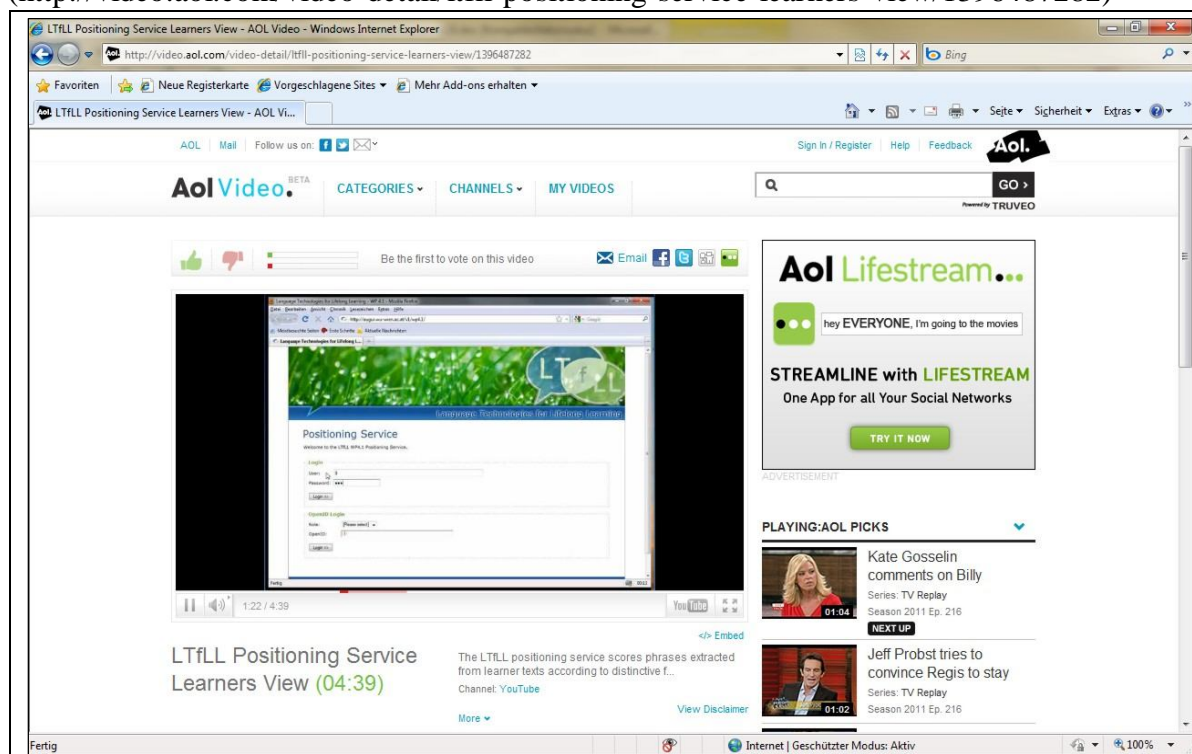
## 7.4 References

CoE, 2010' 2010 joint progress report of the Council and the Commission on the implementation of the 'Education and Training 2010 work programme' ( 1 )

New Media Consortium, Horizon report 2011

## 7.5 Print Materials



LTfLL Flyer – page 1

LTfLL Flyer – page 2



LTfLL Poster – Standard

LTfLL Posters at ALT-C 2010, Nottingham



LTfll Poster at CSCL 2009, Rhodes

LTfLL Workshop Folder, University Utrecht

## 7.6 *Publications*

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Permanent identifiers[1] (if available) | Is/Will open access[2] provided to this publication? |
| NO. | Title | Main author | Title of the periodical or the series | Number, date or frequency | Publisher | Place of publication | Year of publication | Relevant pages | | |
| **PAPERS** | | | | | | | | | | |
| 1 | *Language Design for a Personal Learning Environment Design Language* | *Mödritscher, F., Wild, F., Sigurdarson, S.* | *Proceedings of the MUPPLE'08 Workshop* | | *CEUR-WS, ISSN 1613-0073* | *Maastricht, The Netherlands* | *2008* | *pp. 5 - 13* | | *yes/no* |
| 2 | *Designing for Change: Mash-Up Personal Learning Environments* | *Wild, F., Mödritscher, F., Sigurdarson, S.* | *eLearning Papers* | *2008(9)* | *European Commissio n* | | *2008* | | | |
| 3 | *What is teaching? Cognitive-based tutoring principles for the design of a learning environment* | *Dessus, P., Mandin, S. & Zampa, V.* | *In S. Tazi & K. Zreik (Eds.), Common Innovation in e-learning, Machine learning and Humanoid (ICHSL'6)* | | *IEEE/Euro pia* | *Paris* | *2008* | *pp. 49 - 55* | | |
| 4 | *Extraction of Socio-semantic Data from Chat Conversations in Collaborative Learning Communities* | *Rebedea,T., . Trăuşan-Matu, S., Chiru, C.* | *Lecture Notes in Computer Science* | *5192* | *Springer* | *Germany* | *2008* | *pp. 366 – 377* | | |
| 5 | *ASAP- An Advanced System for Assessing Chat Participants* | *Dascalu, M., Chioaşcă, E.V.,. Trăuşan-Matu, S.* | *Lecture Notes on Artificial Intelligence* | *5253* | *Springer* | *Germany* | *2008* | *pp. 58 – 68* | | |
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| 91 | *Exploring Formative Feedback on Textual Assignments with the help of automatically created visual representations* | *Berlanga A., van Rosmalen, P., & Boshuizen., H., & Sloep, P.B.* | *Journal of Computer Assisted Learning* | | | | | *Submitted* |
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| | TEMPLATE A2: LIST OF DISSEMINATION ACTIVITIES | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | Type of activities[3] | Main leader | Title | Date | Place | Type of audience[4] | Size of audience | Countries addressed |
| 1 | *Open workshop* | *WUW, OUNL* | *Mash-Up Personal Learning Environments* | *September 2008* | | *Scientific* | *42* | *Mainly Europe and Australia* |
| 2 | *Conference* | *Rebedea, T.* | *European Conference on Technology Enhanced Learning 2008* | *September 2008* | | *Scientific* | *20* | *Europe* |
| 3 | *Workshop* | *IPP-BAS* | *Lexical-Semantic and Ontological Resources Maintenance, Representation, and Standards Workshop of the GLDV Working Group on Lexicography at KONVENS 2008, 30 September - 2 October 2008, Berlin, Germany*<br><br>*Presentation of paper "Kiril Simov and Petya Osenova, A seed lexicon for Bulgarian".* | *September 2008* | *Berlin* | *Scientific* | *40* | |
| 4 | *Conference* | *Dascalu, M., Chioasca, E.* | *Artificial Intelligence Methodology, Systems, Applications (AIMSA) 2008* | *September 2008* | | *Scientific* | *20* | *International* |
| 5 | *SIG meeting* | *WUW, UTU* | *GSCL SIG e-Learning at the KONVENS 2008, Berlin* | *October 2008* | | *Scientific* | *10* | *Germany, Switzerland, Austria* |
| 6 | *Symposium* | *Rosmalen van, P.* | *Peer ondersteuning bij studentvragen (Peer support for student questions* | *November 2008* | | *Scientific* | *40* | *The Netherlands* |
| 7 | *Project Poster* | *BITMEDIA* | | *November 2008* | | *General* | | *all* |
| 8 | *Project leaflet* | *BITMEDIA, OUNL* | | *November 2008* | | *General* | | *all* |
| 9 | *Conference* | *Dascalu,* | *Conferinta Nationala de Interactiune Om-* | *October 2008* | | *Scientific* | *20* | *Romania* |

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|---|---|---|---|---|---|---|---|---|
| | | *M., Chioasca, E., Trausan-Matu, S.* | *Calculator* | | | | | |
| *10* | *Seminar* | *UU* | *Location: University of Malta* | *October 2008* | | *Scientific* | *10* | *Malta* |
| *11* | *Seminar* | *Van Bruggen, J., & Van Rosmalen, P.* | *Het gebruik van taaltechnologie in het onderwijs (The use of language technologie in education)* | *October 2008* | | *Scientific* | *35* | *The Netherlands* |
| *12* | *Seminar* | *UU* | *Location: Utrecht Institute of Linguistics 30 minutes presentation; 30 minutes feedback+discussion* | *November 2008* | | *Scientific* | *10* | *Netherlands* |
| *13* | *Workshop NLP* | | *AIED 2009, Brigthon UK* | *July 2009* | | *Academic, Researchers* | | *Europe* |
| *14* | *Presentation* | *UU* | *ECTEL* | *October 2009* | *Nice* | *Scientists, Industry* | *50* | *International* |
| *15* | *Guest lecture* | *UKOU* | *The geometry of learning* | *November 2009* | *Utrecht* | *Scientists from Utrecht, Amsterdam, Nijmegen* | *15* | *Netherlands* |
| *16* | *Tutorial* | *UKOU* | *Meaningful Interaction Analysis* | *November 2009* | *Utrecht* | *Scientists from Utrecht, Amsterdam, Nijmegen* | *8* | *Netherlands* |
| *17* | *Online discussion forum* | *WUW* | *Wookie Plugin for Elgg* | *November 2009* | | *TEL researcher* | *168* | *International* |
| *18* | *Conference* | | *ICALT 2009, Riga Latvia* | *2009* | | *Academic, Education and Researchers* | | *International* |
| *19* | *Workshop* | *Wild, F., Kalz, M., Palmer, M. and Mueller, D.* | *MUPPLE'09 at 4th European Conference on Technology Enhanced Learning (EC-TEL'09) Proceedings of the Second International Workshop on Mashup Personal Learning Environments (MUPPLE09), eds. Fridolin Wild, Marco Kalz, Matthias Palmer, Daniel Mueller* | *2009* | *Nice* | *Scientists, Industry* | *40* | *International* |
| *20* | *Workshop* | *UPBNCIT* | *Pinpointing pivotal moments in collaboration* | *2009* | *Garmisch-Partenkirchen / Germany* | *Scientists* | *40* | *Germany* |

| 21 | Magazine publication | WUW | General LTfLL information + overview | 2009 | | economical and educational decision makers, students + alumni | ~25.000 | Austria |
|----|----|----|----|----|----|----|----|----|
| 22 | Mail newsletter | WUW | Internal WUW email newsletter | 2009 | | University employees | ~60 | Austria |
| 23 | Software + code releases | All | First versions of software released + continuous code commitments | 2009/10 | | TEL developer + community | some thousand | International |
| 24 | Developer training: Software components | WUW | Guidelines + training for installing software components | 2009 | | Software developer | | International |
| 25 | Developer training: Widgets | WUW | Guidelines + training for widget developments and integration | 2009 | | Software developer | | International |
| 26 | Online discussion forum | WUW | Wookie Plugin for Elgg | 2009 | | TEL-researcher | ~300 | international |
| 27 | Scientific seminar in Institute de Recherche en Informatique de Toulouse | PUB-NCIT | Intelligent and Collaborative Systems on the Web, presentation made by Stefan Trausan-Matu | 2009 | | Academic | 30 | France |
| 28 | Invited talk | PUB-NCIT | Polyphonic-Based Analysis and Assessment of Computer-Supported Collaborative Learning Conversations, presentation made by Stefan Trausan-Matu | 2009 | | Academic | 30 | France |
| 29 | Dessus, P.: The four pillars of educational ICT research Education & Technology Summer School. Strasbourg, France. | P. Dessus – UPMF | [Invited Conference]. http://webu2.upmf-grenoble.fr/sciedu/pdessus/talk/unistra09-1.pdf http://webu2.upmf-grenoble.fr/sciedu/pdessus/talk/unistra09-2.pdf | 2009 | Strasbourg | PhD students | 30 | France, Germany, Norway, some African Countries |
| 30 | Workshop held in collaboration with the 14th Int. Conf. on Artificial Intelligence in Education (AIED'09) (48 p.) [, 7 July] | Dessus, P., Trausan-Matu, S., van Rosmalen, P. & Wild F. | Proc. of Natural Language Processing in support of Learning: Metrics, feedback and connectivity | 2009 | | | 30 | World-wide |
| 31 | Conference | UU | EC-TEL 2009 | 2009 | | Research/ Industry | 25-30 | Europe |
| 32 | Conference | UU, IPP-BAS, PUB- | CISSE-EIAE 2009 | 2009 | | Research/ Industry | 20-25 | Europe |

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|---|---|---|---|---|---|---|---|---|
| | | NCIT | | | | | | |
| 33 | Conference | UU, IPP-BAS, PUB-NCIT | CLIN 2010 | 2009 | | Research/ Industry | 30 | Netherlands, Belgium (rest of Europe) |
| 34 | LTfLL Consortium meeting, Grenoble | | Validation training | 2009 | | LTfLL Consortium members | | |
| 35 | On-line Educa | Bit media | International Conference | 2009 | | On-Line education providers and customers | | EU countries |
| 36 | International Conference on Webbased Learning (ICWL) | PUB-NCIT | Presentation of work of PUB-NCIT through an accepted paper. | 2009 | Aachen, Germany | Industry and Academic | 70 | International |
| 37 | STELLAR Summer School | PUB-NCIT | Joint European Summer School on technology Enhanced Learning (LTfLL was co-organizer). Dissemination of WP5.1 work. | 2009 | Terchova, Slovakia | Academic | 50 | International |
| 38 | STELLAR Workshop "Pinpointing Pivotal Moments in Collaboration" | PUB-NCIT | Presentation of the WP5.1 results by Stefan Trausan-Matu | 2009 | Garmisch, Germany | Industry and academic | 40 | International |
| 39 | Recent Advances in Natural Language Processing (RANLP) conference | IPP-BAS | 3 paper presentations | 2009 | Borovets, Bulgaria | Top conference in NLP | | International |
| 40 | Workshop | OUUK | MASHL'09 at ICL'09 (ash-ups for learning) | 2009 | | | | |
| 41 | Conference | | Edumedia 2009, Salzburg, Austria | May 2010 | | Academic, Researchers, Educators and practicioners | | Europe |
| 42 | Hands-on Workshop: Language Technologies Mash-ups | OUNL/WUW | JTEL Winter School on Advanced Learning Technologies | 2010 | | PhD students | ~50 | International |
| 43 | IBM Academic Days for Universities in Romania | PUB-NCIT | Presentation of work in WP5 of LTfLL made by Stefan Trausan-Matu | 2010 | | Industry and academic | 80 | Romania |
| 44 | Continuous Professional Development for doctors | UNIMAN | Manchester Medical Education Conference | | | Hospital consultants, GPs, Manchester Medical School staff | | UK |

| 45 | LTfLL Consortium meeting, Graz | | Threading workshop | 2010 | | LTfLL Consortium members | | |
|----|----|----|----|----|----|----|----|----|
| 46 | IBM Academic Days for Universities in Romania | PUB-NCIT | Presentation of PolyCAFe (WP5.1) of LTfLL made by Stfean Trausan-Matu | 2010 | Romania | Industry and academic | 80 | Romania |
| 47 | Dissemination Event | UNI-MAN, OUNL | Rud de Moor Centrum/Heerlen | 2010 | | Educational practitioners involved in teachers' training/development | 20 | Netherland, Germany |
| 48 | Manchester Medical Education Conferenc | UNI-MAN | Manchester, UK | 2010 | | Hospital doctors, GPs and academics from NW England involved in training undergraduate doctors | 8 | New England |
| 49 | Workshop | UU | Supporting eLearning with Language Resources and Semantic Data | 2010 | Malta | Research, Industry | 30 | Europe |
| 50 | Conference LREC | UU, IPP-BAS | | 2010 | Malta | Research, Industry | 50 | Europe |
| 51 | Conference | UU | hackdeoverheid.nl | 2010 | Amsterdam, Netherlands | journalists, developers, government employees | 120 | Denmark, UK, The Netherlands |
| 52 | Workshop | | First Tübingen Workshop on Machine Learning | 2010 | Tübingen, Germany | Scientifics | | Europe |
| 53 | Workshop | UNIMAN | University of Manchester medical education research group | 2010 | Manchester | Medical education researchers | | UK |
| 54 | Conference | PUB-NCIT | ROEDUNET 2010, Sibiu, Romania | 2010 | Sibiu | Academics, Education and Researchers | | International |
| 55 | Conference | PUB-NCIT, UPMF, UU, OUUK | ICALT 2010, Sousse, Tunisia | 2010 | Sousse | Academics, Education and Researchers | | International |
| 56 | Conference | PUB-NCIT | ICHL 2010, Beijing, China | 2010 | Beijing | Academics, Education and Researchers | | International |
| 57 | Conference | UNIMAN, OUUK, | ECEL, Porto, Portugal | 2010 | Porto, Portugal | E-learning practitioners | | Europe |

| 58 | Conference | UNIMAN, OUUK | AMEE, Glasgow UK | 2010 | Glasgow, UK | Medical education researchers and practitioners | | Europe, some worldwide |
|---|---|---|---|---|---|---|---|---|
| 59 | Conference | UNIMAN, UTU, WUW, BIT, OUUK, IPP-BAS | ALT-C, Nottingham UK | 2010 | Nottingham, UK | Educational practitioners and learning technologists | | UK, some worldwide |
| 60 | Presentation | OUNL | Gallup Europe | 2010 | | Commercial company | | Europe |
| 61 | Presentation & demo | OUNL | CELSTEC | 2010 | Heerlen, The Netherlands | Academics and researchers | | The Netherlands |
| 62 | Conference | PUB-NCIT | ROCHI, Bucharest, Romania | 2010 | Bucharest, Romania | Academics, Education, Industry and Researchers | | Romania |
| 63 | Workshop | LTfLLL Consortium | NLPSL, Bucharest, Romania | 2010 | Bucharest, Romania | Academics, Education and Researchers | | Europe |
| 64 | Press Release | WUW | WU Vienna Research Newsletter | 2010 | | General, Scientific, and Management | | Austria |
| 65 | Conference | WUW, OUNL | ICL 2010, Hasselt, Belgium | 2010 | Hasselt, Belgium | Academics and Researchers | | International |
| 66 | Conference | OUNL, IPP-BAS | META-NET, Brussels, Belgium | 2010 | Brussel, Belgium | Language Technology Network | | International |
| 67 | Conference | UU, PUB-NCIT | ECTEL 2010, Barcelona, Spain | 2010 | Barcelona, Spain | Academics, Education, Industry and Researchers | | International |
| 68 | Conference | PUB-NCIT | AIMSA 2010 | 2010 | | Academics, Industry and Researchers | | International |
| 69 | Workshop | PUB-NCIT | Doctoral Day 2010 | 2010 | | Academics, Students | | National |
| 70 | Workshop | OUNL | Demonstration session at Conference Online Educa Berlin 2010 | 2010 | Berlin, Germany | Practitioners, Researchers, Policy makers, Industry, General | | Global |
| 71 | Conference | OUNL | ECEL, Porto, Portugal | 2010 | | E-learning | | Europe |

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|---|---|---|---|---|---|---|---|---|
| | | | | | | | | *practitioners* |
| *72* | *Workshop* | *UMAN* | *University of Manchester medical education research group* | *2010* | | *Medical education researchers* | | *UK* |
| *73* | *Workshop* | *PUB-NCIT* | *CICLING 2010, Iasi, Romania* | *2010* | | *Academics, Education and Researchers* | | *International* |
| *74* | *Conference* | *OUUK* | *CSEDU 2010, Valencia, Spain* | *2010* | | *Academics, Education and Researchers* | | *International* |
| *75* | *Conference* | | *ICALT 2010, Sousse, Tunisia* | *2010* | | *Academics, Education and Researchers* | | *International* |
| *76* | *Conference* | | *LREC 2010, Valletta, Malta* | *2010* | | *Academics, Industry and Researchers* | | *International* |
| *77* | *Conference* | | *ESWC 2010, Heraklion, Greece* | *2010* | | *Academics, Industry and Researchers* | | *International* |
| *78* | *Conference* | | *IC4E 2011, Mumbai, India* | *2010* | | *Academics, Industry and Researchers* | | *International* |
| *79* | *Workshop* | *PUB-NCIT* | *CS Department Scientific Seminar* | *2010* | | *Teachers, Ph.D. students* | | *Local, CS Department, PUB* |
| *80* | *Workshop* | | *Regular Scentific Seminar at IPP-BAS, Sofia* | *2010* | | *researchers and teachers in IT* | | *National* |
| *81* | *Workshop* | | *Grenoble Pôle Cognition* | *2010* | | *Academics and Researchers* | | *Regional* |
| *82* | *Workshop and PhD sponsorship* | | *JTEL Winter School on Advanced Learning Technologies 2010* | *2010* | | *Academics, Researchers and PhD Students* | | *International* |
| *83* | *Workshop and PhD sponsorship* | | *Joint European Summer School on Technology Enhanced Learning 2009* | *2010* | | *Academics, Researchers and PhD Students* | | *Europe* |
| *84* | *Workshop* | *OUUK* | *NLPSL 2010* | *2010* | *Bukarest, Romania* | | | |
| *85* | *Workshop* | *OUUK* | *MUPPLE'09 at ECTEL* | *2010* | | | | |
| *86* | *Workshop* | *OUUK* | *MUPPLE'10 at ECTEL (mash-up personal learning environments)* | *2010* | | | | |

| 87 | Workshop | OUUK | TORELL at ICL'10 (tools and languages technology resources) | 2010 | | | | |
| 88 | Workshop | OUUK | ELCT'10 at Konvens'10 (Language technology and text-technological methods for E-learning) | 2010 | | | | |
| 89 | Workshop | OUUK | Workshop on supporting eLearning with Language Resources and Semantic Data at LREC'10 | 2010 | | | | |
| 90 | Workshop | OUUK | Workshop on workshop on Language Technologies for Lifelong Learning at the Joint European Summer School on Technology Enhanced Learning | 2010 | Ohrid Macedonia | | | |
| 91 | Presentation | OUNL | University of Maastricht | 2011 | | Academic, Researchers, Ph Students | | The Netherlands |
| 92 | Autrans | BIT | Autrans 2011 | 2011 | | E-learning managers & practitioners | | National |
| 93 | Conference | UU | CKME2011 - 3rd Workshop on the Convergence of Knowledge Management and E-Learning | 2011 | | Academics and Researchers | | International |

## 7.7 *Exploitable Foreground*

| 8 TABLE B1: EXPLOITABLE FOREGROUND | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Type of Exploitable Foreground[5] | Description of exploitable foreground | Confident ial Click on YES/NO | Foreseen embargo date dd/mm/yyyy | Exploitable product(s) or measure(s) | Sector(s) of application[6] | Timetable, commercial or any other use | Patents or other IPR exploitation (licenses) | Owner & Other Beneficiary(s) involved |
| General advancement of knowledge | Learners save time during learning | No | 2011 | LeaPos PenSum CONSPECT | P (Education), M (Professional, scientific and technical activities) | | GPL-3 | GPL licenses as listed |
| General advancement of knowledge | Needed time per tutor is reduced (overall cost per individual is reduced). | No | 2011 | LeaPos, PenSum, CONSPECT | P (Education), M (Professional, scientific and technical activities) | | GPL-3 | GPL licenses as listed |
| General advancement of knowledge | Learners get immediate feedback by LTfLL tools | No | 2011 | All LTfLL Services | P (Education), M (Professional, scientific and technical activities) | | GPL-3 | GPL licenses as listed |
| General advancement of knowledge | The quality of learning is increased (learners answers are improved, learners written products are improved) | No | 2011 | LeaPos, PenSum | P (Education), M (Professional, scientific and technical activities) | | GPL-3 | GPL licenses as listed |
| General advancement of knowledge | A collaborative building of knowledge is supported | No | 2011 | iFLSS FLSS | P (Education), M (Professional, scientific and technical activities) | | GPL-3 | GPL licenses as listed |
| General advancement of knowledge | Language Technology guided learning motivates the learners | No | 2011 | LeaPos, iFLSS, FLSS | P (Education), M (Professional, scientific and technical activities) | | GPL-3 | GPL licenses as listed |
| General advancement of knowledge | Tutors are able to locate learners lagging behind the group | No | 2011 | CONSPECT LeaPos, PolyCAFe | P (Education), M (Professional, scientific and technical activities) | | GPL-3 | GPL licenses as listed |

| General advancement of knowledge | Semi-automatic authoring for annotation | No | 2011 | Annotation Tool | P (Education), M (Professional, scientific and technical activities) | | GPL-3 | GPL licenses as listed |
|---|---|---|---|---|---|---|---|---|
| General advancement of knowledge | Learners improve their understanding | No | 2011 | All LTfLL Services | P (Education), M (Professional, scientific and technical activities) | | GPL-3 | GPL licenses as listed |

### *Learners save time during learning*

The support offered by language technology based services increases the efficacy of learning by avoiding unused or inefficiently used time slots. The LeaPos services provides not only feedback for the existing knowledge of the learner, it also offers information for next steps for learning. Therefore the learners are able to increase their productivity. By using the PenSum service, learners are getting the required feedback regarding their summary text. This guides the learners directly to the required improvements of the document also facilitating reflection. The CONSPECT service information is available for learners to compare their knowledge with other learners or professionals and recognise eventual weaknesses and knowledge gaps.

### *Needed time per tutor is reduced (overall cost per individual is reduced)*

The tools help reduce the time required by tutors in different scenarios: LeaPos reduces the time needed by the tutor for the positioning of one learner by using the system feedback as initial information and guidance. By using the PenSum service, students themselves are able to improve the quality of their writing without interaction with human resources. CONSPECT provides overview information about a learner's knowledge which can be used to trigger more targeted learning activities with a minimal amount of intervention from the tutors.

### *Learners get immediate feedback from LTfLL tools*

The LTfLL tools can be made continuously available as online services (24x7), because they are based on internet technologies and do not require any preparation tasks by the learner. Therefore, learners are able to use the LTfLL services anytime depending on their own requirements.

### *The quality of learning is increased (learners' answers are improved, learners' written products are improved)*

The tools PenSum and LeaPos provide useful and balanced feedback to learners (based on the provided initial data to the system). This feedback does not depend on one individual person and their availability – it depends on the common understanding and rating of a group of tutors. Using such feedback leads learners to a higher quality answers and course submissions. The reflective practice built into the LTfLL tools also supports improved self-directed learning.

### *Collaborative building of knowledge is supported*

The concept of the Learning Support Systems (FLSS and iFLSS) is useful in areas of new knowledge which are trendy among a community of practice (research activities, computer technology, establishing of strategies, concepts or theories, other knowledge building process…). The service adds an interaction functionality to a group of collaborative learners or users. Social connections add credibility and trust to internet-based knowledge resources.

### *Language Technology guided learning motivates the learners*

The LeaPos and i/FLSS services provide useful pointers to learners to find suitable learning materials and enables them to move forward in their learning process without additional attention by the tutors. As shown during the validation this "autonomy of learning" acts as a motivation for the learners.

### *Tutors are able to locate learners lagging behind the group*

The use of LTfLL tools (e.g. LeaPos, CONSPECT, PolyCAFe) enables tutors to locate learners with weakness in their knowledge by using the collected data without much effort. Using this information, tutors are able to provide targeted intervention to these learners. This opportunity is important for optimising the support for individuals in a group of learners to guarantee that each learner meets the required skills level.

### *Semi-automatic authoring for annotation*

The semi-automatic annotation is very useful for supporting semantic activities in the background of the technology, where the tutors and language technology specialists are interacting to update the existing data, which is used by the LTfLL services.

### *Learners improve their understanding*

Using a set of different LTfLL tools provides a variety of different information and feedback to learners. Based on this collection of additional information available, learners can improve their understanding in general (required skills, their own position – relative to others…).