Project Report

ID5.20: Final Specification of Integrated LearnWeb and KRService

Workpackage

WP5

Task

5.2

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Abstract (for dissemination)

This document describes the final functionalities for LearnWeb/KRService, which will be implemented in the last versions called V0.4 and V1.0, which will be available in autumn 2009. This document is organized in four main parts: Recommendations, Architecture, Specifications, Roadmap.

Keywords List

WP5, internal deliverable, core services, specification, LearnWeb, KRService, InterFedora

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Version History

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<th>Author(s)</th>
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Summary of Changes

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<td>All</td>
<td>Draft: Table of Contents</td>
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<td>All</td>
<td>Recommendations improved,</td>
</tr>
<tr>
<td>0.3</td>
<td>All</td>
<td>Recommendations agreed among partners, Assignments for architecture and functionalities</td>
</tr>
<tr>
<td>0.4</td>
<td>All</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Added Recommendations from Business Demonstrators</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Added recommendations from meetings in Utrecht and Sestri Levante, with Multi-Fedora and Liferay specifications</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Added minor improvements list</td>
</tr>
<tr>
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<td></td>
<td>Added roadmap and implementation schedule</td>
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<tr>
<td>0.5</td>
<td>All</td>
<td>Finished all chapters and prepared for skype chat</td>
</tr>
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<td>1.0</td>
<td>All</td>
<td>Finished all document</td>
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1 Introduction (Giunti)

This document specifies the functionalities and the architecture of the final version of LearnWeb to be delivered in autumn 2009 of the tools:

- LearnWeb2.0
- KRService

This document is organized in four main parts:

- Recommendations: chapters 2, 3, 4, 5
- Architecture: chapter 6
- Specifications: chapters 7, 8, 9
- Roadmap. Chapter 10

This document refers to the following:


2 Summary of recommendations from evaluation (UPF)

2.1 Recommendations from loadability tests (UPF)

The load tests have been carried out using the JMeter (http://jakarta.apache.org/jmeter/) [4] and over the LearnWeb tool installed in the following address: http://learnweb.it.fmi.uni-sofia.bg/ [5]. It has been used a ramp test with up to 300 simultaneous users for 10 minutes duration and 10 seconds between clicks. A test is set to continue when a sample error occurs. The tool measures the number of samples, the standard deviation, the throughput, the percentage of detected error, etc. (See ID5.17 for more details about the test parameters and results). The table below summarizes the main aspects that should be outcomes from the loadability tests.

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Requirement 1</th>
<th>Recommendation</th>
</tr>
</thead>
</table>
| A1     | Solve the links with an average time over 8 seconds. | - Change the following links (pages in the code)  
  o /users/logint?loginform=1  
  o /resources/view/favicon.ico  
  o /lang/eng  
  o /lang/bul |
2.2 Recommendations from usability tests *(UPF)*

The usability evaluation test whether the tool is being understood by the learner and how it is used and attractive to the user when used under specific conditions. The table below shows the summary of the outcomes from this analysis extracted from ID5.17.

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Usability</strong></td>
<td></td>
</tr>
</tbody>
</table>
| **Understandability** | - *Change:* When searching for a resource, the first option *type of file* is not visible enough.  
  - *Recommendation:* Make the *type of file* bigger.  
  - *Change:* The tree of resources’ categories  
  - *Recommendation:* Add a help icon explaining how the categories search a classification can affect the searching results.  
  - *Change:* Icon of the file when searching the resource, in the list of resource that appears as an outcome.  
  - *Recommendation:* Make it change colour when the user goes over it for indicating that it is clickable. |
| **Learnability** | - *Change:* The indications of where the user is at each moment  
  - *Recommendation:*  
    o Add an option in each page to come back to the previous page.  
    o Add an option to know in which option (My favourites, My resources…) the user is in each moment |
| **Operability** | - *Change:* Errors from *My favourites*  
  - *Recommendation:* Add comprehensible messages indicating the user what has gone wrong and what should be done.  
  - *Change:* The page where *My groups* is opened  
    - *Recommendation:* Open *My groups* in a new window.  
  - *Change:* The message :“welcome_home_msg” that appears in the main pages  
  - *Recommendation:* Avoid messages that are not understandable for the users. |
### 2.3 Recommendations from functionality tests *(UPF)*

This section summarizes the main outcomes of the functionality evaluation that includes the functionality and the calamities tests from the ID5.17.

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Functionality</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Field type</th>
<th></th>
</tr>
</thead>
</table>
| Login field | - **Change:** The login field message when entering a space.  
- **Recommendation:** Add a message indicating that spaces are not accepted in the login field. |

<table>
<thead>
<tr>
<th>Paging up and paging down on overview screens</th>
<th></th>
</tr>
</thead>
</table>
| Home overview | - **Change:** Welcome message  
- **Recommendation:** Make the welcome message available for all the languages |
| Search | - **Change:** Search bar  
- **Recommendation:** Make the search bar available always from any of the overview pages. |
| My profile | - **Change:** Availability of the search bar  
- **Recommendation:** Include *My Profile* functionality in the upper menu at the same level of *My Home Page*. |

<table>
<thead>
<tr>
<th>Completeness</th>
<th></th>
</tr>
</thead>
</table>
| Authorizing | - **Change:** Authorizing the accounts  
- **Recommendation:** Solve the error when authorizing the accounts. |
| Change photo in the profile | - **Change:** -  
- **Recommendation:** Add functionality Change Photo in the profile |
| Upload modified version (in the Recourse overview) | - **Change:** Sentences in German  
- **Recommendation:** Translate sentences to English |

<table>
<thead>
<tr>
<th>Position on screen</th>
<th></th>
</tr>
</thead>
</table>
| Searching bar | **Change:** Position of the search bar.  
**Recommendation:** Locate the search bar in the upper menu. |

<table>
<thead>
<tr>
<th>Calamities</th>
<th></th>
</tr>
</thead>
</table>
| Authentication | **Change:** -  
**Recommendation:** Integrate LearnWeb_v0.3 in Liferay. |
| Manage resources | - **Change:** Upload a picture  
- **Recommendation:**  
  o Message needed for informing the user that has to accept the authorization required by the tool.  
  o When uploading a picture, a new window is opened. Once published the resource, all the process is done in this window and a new menu with the home access appear in |


the upper menu. The user has now two windows opened with the same window. Once uploaded the resource, the user should be redirected again to the main window with the main program page.

- **Change**: My tags
- **Recommendation**: Solve the problem when associating a tag to a resource when uploading it.

- **Change**: My groups
- **Recommendation**: Open the My Groups in another navigation page.

### Home page and navigation flow

<table>
<thead>
<tr>
<th>Feature</th>
<th>Change</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Help</td>
<td></td>
<td>Add a help menu and manuals in the main upper bar.</td>
</tr>
<tr>
<td>Navigation buttons</td>
<td></td>
<td>Locate the Back button in a fix place (bottom left of the screen) and make it bigger and more visible.</td>
</tr>
<tr>
<td>Tag clouds</td>
<td></td>
<td>Choose a colour for representing those words that belong to the same category of resources.</td>
</tr>
<tr>
<td>Download from the search page</td>
<td></td>
<td>Delete this menu in this functionality and add it as functionality on the main upper bar.</td>
</tr>
<tr>
<td>Category management</td>
<td></td>
<td>Clarify the usefulness of the category classification with a message to the user</td>
</tr>
<tr>
<td>Sharing</td>
<td></td>
<td>Send an email when sharing a resource</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Make this functionality work properly.</td>
</tr>
</tbody>
</table>
3 Summary of recommendations from developers

3.1 Performance improvements (Giunti)

3.1.1 Computing excellence class on Fedora
Currently the excellence class of users is computed in the php pages; this implies that it is recomputed for each page display (resending request to Fedora for getting counters). This may be improved moving the computation on Fedora, triggered for each counter change. This ensures that excellence class is always computed just once.

3.1.2 Improving comments and comment-ratings
Comment rates are re-computed at each display. This slows down the page rendering.

3.2 Web2.0 integration improvements (UHANN)
Some experiments have been carried out by UHANN researchers the framework of WP5 and the results have been collected into a prototype called “InterWeb”. Now UHANN recommends considering this prototype sufficiently mature to be eligible for integration within LearnWeb.

InterWeb is a Meta Web2.0 integration service which includes the common functionality of 10 Web 2.0 tools (listed later). InterWeb provides a uniformed interface for single sign on, searching, upload as well as for social activity monitoring like friends.

InterWeb is recommended because:

- InterWeb provides a central point for single sign on and authorization for a bundle of Web2.0 services.
- InterWeb provides a search result set which includes the results from all supported Web2.0 services. Also preview icons are provided within each search result.
- InterWeb provides a uniform upload interface for the types of the resources, handlebar by the supported services.
- InterWeb provides a uniform view on the social network of the user, which consists of all friends, identified by supported services.

All the above recommendations are described in chapter 8.4 “InterWeb Specifications”

3.3 Functionalities improvements (Giunti + SU)
3.3.1 Deleting tags
A user should be able to delete one of his tags. The page “MyTags” should list the resources linked to the tags and should allow deletions.
Tags deletion achieves also tag modification, overcoming typo while tagging.

3.3.2 Managing Learning Activity
The link from PDP to LearnWeb already exists (see http://pdp.it.fmi.uni-sofia.bg/ note tencompetence icon displayed in the top right corner of the editors, “insert link to resource from LearnWeb”).
On the other hand the link from LearnWeb to PDP is difficult, because a Learning Activity is meaningless when standalone; it needs to be immersed into a Competence of a Competence Profile.

LearnWeb will prevent the upload of Learning Activities from file; LearnWeb will only deal with Learning Activities uploaded from PDP, therefore PDP will be enhanced with a new button “publish to LearnWeb”, but LearnWeb will not have any functionality for adding/uploading Learning Activities.

3.3.3 Thumbnail of TENC objects
The preview page should display a significant thumbnail for UoLs, Competence Profiles, Learning Activities, etc.

3.3.4 Internationalization
The localisation files for the different languages should be updated to meet the new functionalities by translating the new phrases.

Category management should be extended to allow adding translations of categories.

3.4 Administration improvements (Giunti)

3.4.1 Managing “unfair” users
The administrator should have the possibility to assign/release a user to the excellence class 5 “unfair”. This is useful when a user is responsible of abuses.
4 Recommendations from Business Demonstrators

4.1 University of Genoa (*Giunti*)

Some metadata fields are limited to 40 characters and this may cause problems (i.e. the Author field may contain several names and exceed 40 characters)

The fields to be extended are:

- Title
- Url
- Subject
- Type
- Format
- Source
- Coverage
- Creator
- Publisher
- Relation
- Language
- Tag

4.2 Elsa – University of Hannover (*Giunti*)

Teacher impressions of LearnWeb 2.0:

Teacher 1:

- the system is not inviting to use: the developers should really think on how to motivate the user with appropriate dialogues

Teacher 2:

- Interesting starting point for self-directed and cooperative learning
- Interface not intuitive
- Usage scenarios for collaborative search should be developed and explicitly suggested to the users: even Web 2.0 users had difficulties in doing this

Teacher 3:

- LearnWeb 2.0 is a system for knowledge management
- Not many functions for collaborative work: no communication facilities!
- Group support for blended learning (with offline communication) is possible with LearnWeb 2.0
- Interface not intuitive: in particular the first screen after the login does not provide any pointer on what to do next. Also, the input fields were not self-descriptive

Uses for LearnWeb 2.0
• Teacher 1: stimulating group work, supporting blended learning, personal information gathering. Useful for literature research.
• Teacher 2: not mature enough, but eventually for cooperative work in blended learning; should not be limited to only one seminar; support for distance learning with asynchronous communication (!). Good tool for learning how to judge and rate Web material

• Should be combined with ePortfolios. Teachers should provide material via LearnWeb 2.0 before students start using it
• Teacher 3: Learning internet skills

Who can use LearnWeb 2.0?
• Teacher 1: not mature yet, but in principle for all Elsa-supported employees at the university
• Teacher 2: the Elsa offers learning tools. We could offer the tools, once the software is mature enough and we have a clear picture on how to use it

Most relevant issues:
• complex interface leads to high need for support
• design-based research should lead to application scenarios
• privacy issues are not yet solved

5 Recommendations from meetings in Utrecht and Sestri Levante

5.1 Integration in Liferay (SU)

LearnWeb should be contained into Liferay and keep the state. This means that if a user changes from a LearnWeb page (e.g. preview) to another page (e.g. PDP), when he comes back to LearnWeb he gets the same page where he was (e.g. the resource preview)

5.2 Liferay resources

Since the users can store resources also in Liferay, LearnWeb functionalities should be extended to search for resources in Liferay and to add/upload resources from Liferay. This could be achieved by using Liferay APIs.

5.3 Multi-Fedora access (UHANN)

LearnWeb will search in several Fedora installations. Each Fedora installation will be considered as a user group. The upload will be always done into the Fedora that is hard assigned the user.
6 Architecture

6.1 Authentication (SU)

Referring to the recommendation from functionality test, sect. 2.3, item “Login field”, the implementation will consist in adding a message indicating that allowed symbols are Latin alphabetic characters between a and z and A and Z, digits and _.

Referring to the recommendation from functionality test, sect. 2.3, item “Authentication”, the implementation will consist in

- configuring Liferay to use CAS
- implementation of CAS authentication mechanism in LearnWeb, so when the user logs in Liferay he/she will be automatically authenticated in LearnWeb (SSO).

6.2 Authorisation (SU)

The current authorisation in LearnWeb is at web application level. However, resources can be retrieved, added or deleted by other TenCompetence tools using the KRService. This requires the authorisation to be implemented at the service layer. The access to a resource depends on the rights for the resource that can be:

- Public (all users can retrieve the resource);
- Users (only authenticated users can retrieve the resource);
- Private (only the owner has access to the resource).

Updating metadata, uploading a new version and deleting of a resource should be allowed only to the owner and administrators. Unauthenticated users can retrieve only public resources.

The KRService can use the Protune framework for the implementation of authorisation or implement its own authorisation. Using Protune can slow down the performance, LearnWeb will depend on another server and there may be some synchronization issues.

Referring to the recommendation from functionality test, sect. 2.3, item “Authorizing”, will consist in implementing authorization mechanism at service layer (currently authorization mechanism is implemented at the client side. This should be changed regarding integration issues with other tools which are not aware of Protune Framework.)

6.3 Registration (SU)

Referring to the recommendation from functionality test, sect. 2.3, item “Change photo in the profile”. Currently in the TENC Data Model there is no possibility for storing users’ photos. On the other hand, Liferay supports changing user photo in the profile, so there is no need to duplicate this functionality in LearnWeb.
6.4 Calamities (Giunti + SU)

Referring to the recommendation from functionality test, sect. 2.3, item “Calamities”, this is no more valid, because in the InterWeb version there is no more need for the authorization while uploading a resource. After the upload the add page is opened, thus everything that happens after the adding of the resources (including redirect) does not have to do with InterWeb.

6.5 Performances improvements (SU)

Referring to the recommendation from loadability test, sect 2.1, the improvement will consist in:

- The automatic login into Web 2.0 tools will be done on demand (like in InterWeb) but not during the user login into LearnWeb. In this way login process will be speed up
- KR Search Service will be changed in a way that only Fedora will be searched for resources while searching in Web 2.0 tools will be implemented by InterWeb
- Optimization of retrieving objects from KR Services and LearnWeb application will be implemented for performance improvement (using of cache mechanism).
7 User interface specification

7.1 Understandability, learnability and operability (Altran)

Referring to the recommendation from usability test, sect 2.2, the implementation will consist in:

- **Change:** When searching for a resource, the first option *type of file* is not visible enough.
  - **Recommendation:** Make the *type of file* bigger.
  - **Implementation:** Is needed to use bigger icons changing the width and/or height of the html *img* tag.

- **Change:** The tree of resources’ categories
  - **Recommendation:** Add a help icon explaining how the categories search a classification can affect the searching results.
  - **Implementation:** Is needed to add an icon representing a question tag (it is an html *img* tag) and showing a tooltip when the mouse is put over the icon (it can be done easily using the property title of the *img* tag).

- **Change:** Icon of the file when searching the resource, in the list of resource that appears as an outcome.
  - **Recommendation:** Make it change colour when the user goes over it for indicating that it is clickable.
  - **Implementation:** Is needed to convert the image into a link so only is necessary to add an html *a* tag.

- **Change:** The indications of where the user is at each moment
  - **Recommendation:**
    - Add an option in each page to come back to the previous page.
    - Add an option to know in which option (My favourites, My resources...) the user is in each moment.
  - **Implementation:** Is needed to make the same component for back button than the component from LearnWeb v3.0. In order to show where is the user is possible to add a component in the upper bar of the web, just below the bar that shows the search box.

- **Change:** The page where *My groups* is opened.
  - **Recommendation:** Open *My groups* in a new window.
  - **Implementation:** Is needed to change the property target of the html *a* tag.

- **Change:** The message :“*welcome_home_msg*”that appears in the main pages.
  - **Recommendation:** Avoid messages that are not understandable for the users.
  - **Implementation:** Is needed to translate all messages to every language, if there isn’t a translation show the English phrase (for it is needed to add an “if” sentence in the code of the translation module).
Referring to the recommendation from functionality test, sect. 2.3, item “Help”, the implementation will consist in:

- **Recommendation:** Add a help menu and manuals in the main upper bar.
- **Implementation:** Is needed to add a new link in the upper bar and a new module, which can be just a page, with the content of the help. Also this help must be translated to every language.

Referring to the recommendation from functionality test, sect. 2.3, item “Navigation buttons”, the implementation will consist in:

- **Recommendations:** Locate the Back button in a fix place (bottom left of the screen) and make it bigger and more visible.
- **Implementation:** This functionality is described above (Is needed to make the same component for back button that the component from LearnWeb v3.0).

Referring to the recommendation from functionality test, sect. 2.3, item “Tag clouds”, the implementation will consist in:

- **Change:** colours.
- **Recommendation:** Choose a colour for representing those words that belong to the same category of resources.
- **Implementation:** It can’t be done because for example two resources from different categories can have the same tag, and this tag can’t be of two colours.

Referring to the recommendation from functionality test, sect. 2.3, item “Category management”, the implementation will consist in:

- **Change:** Functionalities in selecting a category
- **Recommendation:** Clarify the usefulness of the category classification with a message to the user
- **Implementation:** This functionality is described above (Is needed to add an icon representing a question tag (it is an html img tag) and showing a tooltip when the mouse is put over the icon, it can be done easily using the property title of the img tag).

Referring to the recommendation from functionality test, sect. 2.3, item “Sharing”, the implementation will consist in:

- **Change:** Send an email when sharing a resource.
- **Recommendation:** Make this functionality work properly.
- **Implementation:** Is needed to make the same functionality than in the previous version of LearnWeb.

### 7.2 Home page and upper bar (Altran)

Referring to the recommendation from functionality test, sect. 2.3, items “Home overview”, “Search”, “My profile” and “Searching bar”, the implementation will consist in:
**Home overview**
- **Change:** Welcome message.
- **Recommendation:** Make the welcome message available for all the languages
- **Implementation:** Is needed to translate the message, no changes in the code are required.

**Search**
- **Change:** Search bar.
- **Recommendation:** Make the search bar available always from any of the overview pages.
- **Implementation:** Is needed to know in which pages is not shown and then add the component in the code.

**My profile**
- **Change:** Availability of the search bar.
- **Recommendation:** Include My Profile functionality in the upper menu at the same level of My Home Page.
- **Implementation:** Now My profile and My home page are the same page so for this is not needed any change.

Referring to the recommendation from the Business Demonstrator Elsa, sect. 4.2, the implementation will consist in:
- Substituting the textual description in home-page left-area with the tutorial video of LearnWeb usage
- Adding in the central area of home-page the label “last uploaded resources (click for view)
- Adding in the right area of home-page the label “most used resources (click for view)

### 7.3 Toolbars (**UHANN**) 

This toolbar will work as a shortcut interface for the LearnWeb2.0 users:
- allowing direct links to LearnWeb pages and functionalities;
- allowing adding a web resource directly while visiting it, without the burden to search it from LearnWeb;
- allowing LearnWeb search without entering LearnWeb home page;
- allowing the integration with the SpreadCrumbs in-context annotation system.

The below figures explain the toolbar functionality. Figure 7.3.1 and Fig 7.3.2 shows how the toolbar looks:
The “Resources” and “Upload a Resource” menu items are shortcuts to the functionalities featuring on LearnWeb 2.0 Website. The links on the menu redirect the user to the specific feature (Fig 7.3.3 and Fig 7.3.4).
Fig 7.3.4. Direct links to LearnWeb pages and functionalities

The toolbar will also integrate the Web annotation service SpreadCrumbs. With SpreadCrumbs the users are able to annotate the pages with in-context annotations. The toolbar will have the same menu options as the SpreadCrumbs stand-alone toolbar and will be responsible for rendering the annotations (Fig 7.3.4.). The menu options consist in the Enable (Login) button which enquiry the user to login on the service and an “Add Crumb” button which pops up a window for adding an annotation on the current Web site. The in-context annotations look like a post-it note that the user can place on any area of the Web page. These annotations can be shared with the user’s facebook contacts moreover they work as additional metadata for enhancing refinding. Fig. 7.3.5 shows the visualization of a page annotated with the tool.

Fig 7.3.4. SpreadCrumbs integration
Fig 7.3.5. Page with a SpreadCrumb in-context annotation

The last feature of the tool bar is the “Add This!” button which is a shortcut to annotate the current visualized content in LearnWeb.

Fig 7.3.6. Add current page to LearnWeb repository

When adding the current resource to LearnWeb the user is redirect to the LearnWeb “add resource” page with the contents of the resource and with fields already filled. In addition the users can tag/comment/rate the resource.
Additionally a search field for the resources, annotated in LearnWeb2.0 will be available in the bar (see right part of figure 3.2.2). This brings the user directly into LearnWeb search page with the list already filled.

The implementation consists basically in the FireFox extension. It is a package of XUL and javascript implementation with AJAX calls for the PHP pages on our servers and for some external services APIs.

The icon of toolbars functions should not be a cake, but the TENCompetence icon.

7.4 *Metadata field enlargement (Giunti)*

Referring to the recommendation from Business Demonstrator University of Genoa, sect. 4.1, the implementation will consist in enlarging the field to unspecified length. If not possible, the maximum length should be something like 255 characters.
8 Functionalities specification

8.1 Tag deletion *(Giunti + SU)*

Referring to the recommendation from developers about deleting tags, sect. 3.3.1, the implementation will consist in the deletion of the link tag-resource, followed by deletion of the tag itself when no links remains.

8.1.1 KRService issues

The KRService should implement a service for deleting the tag-resource link. This service will check after the deletion whether there are links of the tag with other resources. If there are no other links the service will delete also the tag.

8.1.2 LearnWeb issues

The page “MyTags” should list the resources linked to the tags and should allow deletions.

8.2 Excellence class computation *(Giunti + SU)*

Referring to the recommendation from developers about excellence classes, sect. 3.1.1, the implementation will consist in implementing users’ classes at KR service layer so calculating of users’ excellence classes will be optimized.

Referring to the recommendation from developers about comment ratings, sect. 3.1.2, the implementation will consist in pre-computing users’ ratings at service layer.

8.3 Administration improvements *(Giunti)*

Referring to the recommendation from developers about managing “unfair” users, sect. 3.4.1, the implementation will consist in adding panel in the administration page for searching a user (by username, full-name, id or email) and a select-box for changing his class. The select-box is automatically selected with the current user class.
8.4 InterWeb and InterFedora specifications (UHANN)

8.4.1 Registration and authorization

A user needs an account by InterWeb like it is needed at any other Web2.0 tool. InterWeb provides an interface for automatic account creation which can be implemented at LearnWeb.

![Figure 1: Registration at InterWeb](image)

(c) 2009 - 2009 Tristan Wehrmaker
8.4.2 Single sign on

Now it is possible to authorize the InterWeb at several Web 2.0 tool profiles of the user. InterWeb provides also an interface which allows doing the authorization from third party applications like LearnWeb directly.

![Figure 3: Single sign on interface by InterWeb](image)

LearnWeb can be authorized to access the accounts at these tools using authorize buttons, or the login mask (dependent on the tool). The more tools the user selects, the more functionality can LearnWeb offer for this user.

![Figure 4: Implementation of the SSO interface in LearnWeb](image)

**Note:** This authorization has to be done only once. The user will not need to login and authorize the next times you visit LearnWeb2.0
Referring to the recommendation from TENC meetings, sect. 5.3, more than one Fedora may be accessed during search. The diverse Fedoras are defined in the “My Profile” panel like this:

![Figure 5: Multi-Fedora definition](image)

Notice that the InterFedora and InterWeb are separated. In particular, the InterFedora access is implemented at KRService level (Java) and not at LearnWeb level (Php). This ensures the best performances, thanks to the Java multi-threading system.

The Php part of LearnWeb deals just with the GUI for allowing the user to define the diverse Fedoras.

The Fedora search service we have now is kept, but it will return results from different repositories and each result has an additional attribute "repository name".

The list of the currently supported Web 2.0 tools:

<table>
<thead>
<tr>
<th>Web 2.0 Tool</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>YouTube</td>
<td>Video</td>
</tr>
<tr>
<td>Flickr</td>
<td>Photo, Video</td>
</tr>
</tbody>
</table>
Besides the Web2.0 tools, the currently supported Knowledge tool is just TENC Fedora.

**Recommendation:** InterWeb provides an interface for implementation of an integration wrapper for any tool. This integration does not require changing LearnWeb software. Thus toolset can be combined regarding to the customer needs.

### 8.4.3 Web resource Search
InterWeb provides an interface for a uniform search within available services. The search results are provided as a list and as well as a RSS feed, which allows for storing it as a live bookmark.

There are provided several options for adjusting the search. Advanced search provides a mask with a possibility to adjust the details of the search query. The user can select the type of the resource, creation date as well the rank order and the number of the results. This mask can be used for both, search within user resources, or general search.

**Figure 6: Advanced search mask**

**Recommendation:** Some options may be skipped within the implementation in order to lighten the interface.
The results obtained from InterWeb are merged with the results obtained from InterFedora search and from Liferay search. The merged results are presented in the standard LearnWeb format, i.e. an orderable table.

Referring to the recommendation from TENC meetings, sect. 5.3, the result list should be enhanced with an indication of the specific Fedora searched, like in the following figure:

![Multi-Fedora search results](image)

**Figure 7: Multi-Fedora search results**

### 8.4.4 Own Web 2.0 resource Search

The user can see and search within all his resources, stored in different Web 2.0 tools. It is possible to add these resources to LearnWeb2.0
8.4.5 Social network

It is possible to display all friends of the user at a given Web 2.0 service as an RSS feed.

Possible rendering could look like in the Error! Reference source not found.
Referring to the recommendation from functionality test, sect. 2.3, item “Manage resources”, the user will be redirected back to the main page with all resources of the user upload has been completed.

8.5 Minor improvements (GIUNTI)

8.5.1 Localization
Referring to the recommendation from functionalities improvements, sect 3.3.4, all messages should be available in English, Spanish and Bulgarian.
9 Integration in TENC framework

9.1 Liferay integration *(Giunti + SU)*

9.1.1 Liferay frame *(SU)*

Referring to the recommendation from meeting in Utrecht and Sestri Levante, sect. 5.1, LearnWeb will be an iFrame within Liferay environment. LearnWeb will keep the state exploiting cookies. This solution avoids configuring LearnWeb as a Portlet.

9.1.2 Liferay repository

Referring to the recommendation from meeting in Utrecht and Sestri Levante, sect. 5.2, Liferay resources will be considered as another repository, so the LearnWeb search will consist in:

- search into Fedoras,
- search on Web2.0 through InterWeb,
- search into Liferay,
- at the end sort the results,
- pagination in Fedora is possible, but pagination with sorting not.

9.1.3 KRService issues

KR Services will be implemented for searching resources in Document Libraries and Image Galleries using Liferay API’s.

9.1.4 LearnWeb issues

The search page will display the Liferay icon in the result list (if not yet added into Fedora).
The preview page will:

- Consist in the Liferay resource viewer (if resource is not already added to Fedora)
- Use the Liferay thumbnail (if the resource is added to Fedora)

9.2 Integration with PDP *(Giunti + SU)*

As explained in sect Error! Reference source not found., LearnWeb will prevent uploading Learning Activities, but will allow searching for Learning Activities.
9.2.1 KRService issues

Support of a new resource type “Learning Activity” will be implemented at service layer that will allow uploading a learning activity from PDP Web Client into LearnWeb and retrieving it.

9.2.2 LearnWeb issues

Within LearnWeb, the “search” page will display “Learning activity” in the type field. The “preview” page will allow to play the Learning Activity by calling automatically PDP Web Tool when the user clicks on the thumbnail. A dialog will appear where user can choose/create Personal Development Plan and the Learning Activity will be automatically added to the PDP’s activity list..

9.3 Integration with TENC objects (Giunti)

Referring to the recommendation from developers about thumbnails of TENC objects, sect. 3.3.3, the implementation will consist in the following:

Thumbnail for UoLs will be defined considering the Liferay UoLs player. It will be something like the following:
The following figure depicts the thumbnail for:

- Competence Profiles
- Competences
- Learning Activities
10 Roadmap (Giunti)

Two versions are planned:
- V.0.4 to be delivered by 28-9-2009 and presented at EC-TEL conference in Nice. This version will constitute ID5.21.1
- V.1.0 to be delivered by 30-10-2009 for TENC closing event in Manchester. This version will constitute ID5.21.2

The implementation schedule is the following:

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<thead>
<tr>
<th>Item</th>
<th>What to do</th>
<th>Ref</th>
<th>Delivered by</th>
<th>Implemented by</th>
<th>Note</th>
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<td>7.2</td>
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<td>6</td>
<td>Toolbars</td>
<td>7.3</td>
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<td>Metadata field enlargement</td>
<td>7.4</td>
<td>28-9-2009</td>
<td>Giunti</td>
<td></td>
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<td>8</td>
<td>Tag deletion</td>
<td>8.1</td>
<td>30-10-2009</td>
<td>Giunti + SU</td>
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11 Conclusions (Giunti)

This document describes the final specification of a product that has been controversial. LearnWeb has been misunderstood by many users, and this is why this document has a great deal in recommendations from users.

There are few innovations in the specification described here, because the focus is mainly in robustness and integration.
The conclusion is a roadmap with two steps: urgent implementations for the conference EC-TEL, and final implementation for the project end.

12 References

[5] LearnWeb for testing: http://learnweb.it.fmi.uni-sofia.bg/