Glorep user's Guide

June 30, 2017

Suggested References

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2. Tasso, S., Pallottelli, S., Laganà, A., Mobile Device Access to Collaborative Distributed Repositories of Chemistry Learning Objects, Lecture Notes in Computer Science vol. 9786, ICCSA 2016, pp 443-454, isbn 978-3-319-42085-1, doi: 10.1007/978-3-319-42085-1_34, Springer, Cham, (2016)
3. Tasso, S., Pallottelli, S. , Rui, M., Laganà, A.: Learning Objects Efficient Handling in a Federation of Science Distributed Repositories, Lecture Notes in Computer Science, 8579, 615-626 (2014)
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7. Pallottelli, S., Tasso, S., Pannacci, N., Costantini, A., Faginas Lago, N.: Distributed and Collaborative Learning Objects Repositories on Grid Networks Lecture Notes in Computer Science 6019, 29-40 (2010)
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The Core Chemistry Repository of Learning Objects

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A key mission of the Virtual Education Community (VEC) Standing Committee (SC) of the European Chemistry Thematic Network (ECTN) Association is to harmonize the quality of teaching Chemistry in Europe and to adopt sustainable e-learning standards. To this end, significant efforts have been paid by the various ECTN working groups in order to work out suitable guidelines for the Core Chemistry teaching subjects and to develop libraries of Questions and Answers to be used for running Self Evaluation Sessions (SES)s electronic tests (EChemTest®).

To support the use of EChemtest® SESs and related e-learning activities, further efforts have been spent, mainly by the ECTN members of the University of Perugia, to the end of fostering both the production of Learning Objects (LO)s which are e-learning self consistent, reusable, and continuously improvable modules and the development of related distributed repositories. This is part of the efforts of building a CMMST (Chemistry Molecular and Materials Sciences and Technologies) VRC (Virtual Research Community) exploiting the networking and distributed synergistic computing technologies of the European Grid Infrastructure (EGI) within a Open Molecular Science approach.

In the last couple of decades, in fact, the adoption of e-learning has greatly enhanced the possibility of enriching teaching in university courses with multimedia supports ranging from simple electronic tests and slides to collaborative heavy computer simulations. However, most of the available materials are single person creatures with limited popularity and unlikely survival beyond the author's active life. In order to enhance the Open Science character of the produced LOs, a distributed repository environment called GLOREP (Grid-distributed LO REPository) enabling the shared preservation, classification and improvement of the e-learning materials has been built [1] and made available to the members of the ECTN VEC.

Goal of the present booklet is to offer an easy to use guide to encourage ECTN members to populate GLOREP with the LOs they produce for their courses and to share them for their further collaborative improvement through usage.

The main features of GLOREP and its Learning Objects

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GLOREP (Grid LO REPository) is a federation of geographically distributed repositories of learning objects consisting of:

- A set of servers, each bearing a Content Management System (Drupal)
- A set of clients requiring the services offered by the servers
- A network (Internet) connecting the servers and allowing clients to use the available facilities after authentication.

The main operations enabled by GLOREP for the user's are:

- Access a GLOREP web server
- Add Learning Objects to GLOREP
- Search Learning Objects in GLOREP
- Download Learning Objects from GLOREP.

GLOREP LOs are self-consistent, reusable, and continuously improvable e-learning modules integrable into more complex contents and able to communicate with the system and the users at different times to the end of exchanging information on their characteristics and usability. In particular, due to their learning nature and educational targets, LOs require special attention to the way contents, context and support materials are handled.

The simplicity of their articulation and the re-usability of their components are, therefore, a primary goal of the design of a LO that has to take into account the linearity of its structure, the clarity of its features, the logicality of its sequencing and the ability of being recycled.

A first question is: How big should be a LO? Although there are not generally agreed standards, a commonly accepted rule is that complex e-learning contents are broken down into individual, self-contained and designed to be used in multiple contexts units in order to form a repository of immediately available LOs. It is suggested that LOs, being the primary objects of the GLOREP system, are self-consistent learning units corresponding to a single 2/4 hours long lecture belonging to a teaching block corresponding to 1 European ECTS credit (6/8 hours) whose keywords are a subset of those of the teaching block.

A second question is: Which are the teaching strategies to be adopted? These are in general divided into the following six main categories:

- Tutorial and video tutorial
- Case of Study
- Simulation
- Problem solving
- Survey
- Summary

A third question is: How to articulate the pattern of assembling steps of a LO? The main steps in which the assembling of a LO can be articulated are:

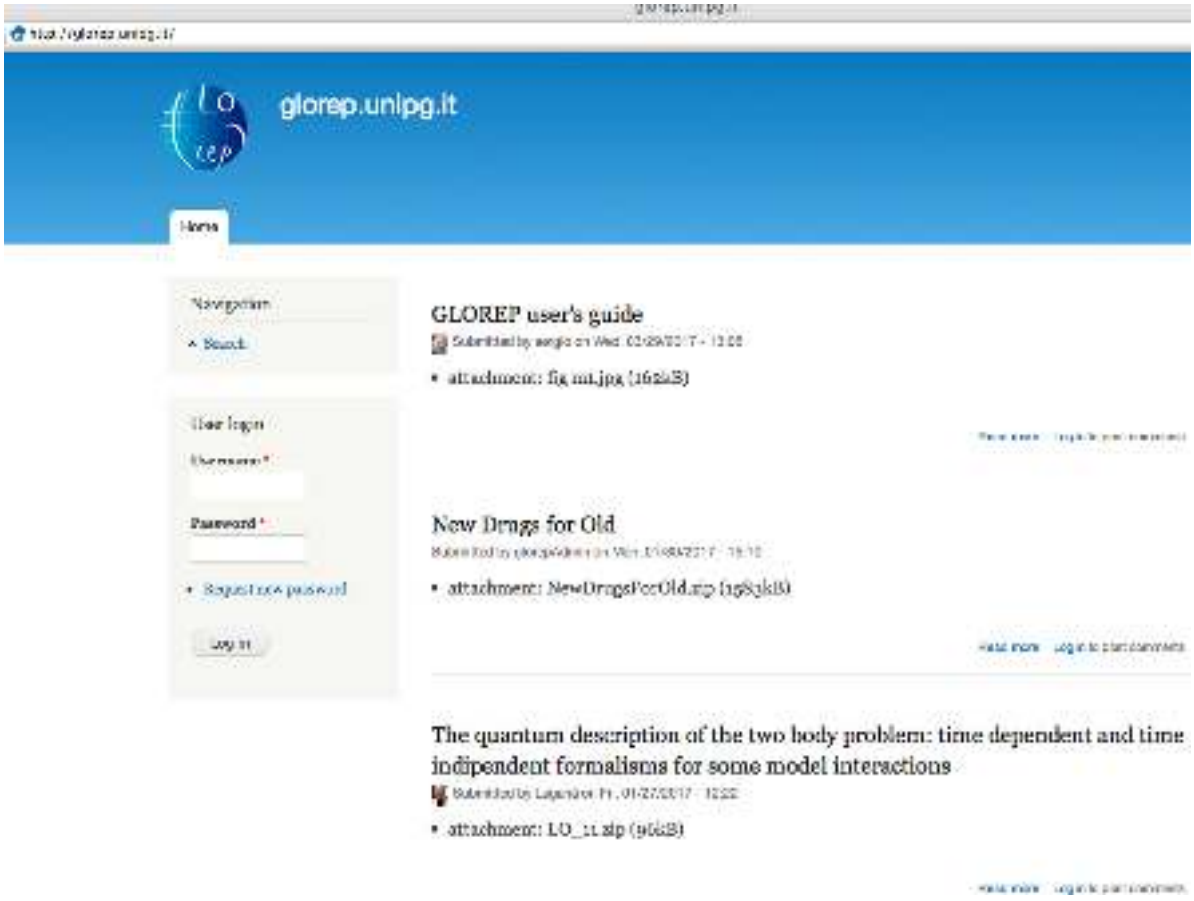
1. Design: Definition of the educational goals and objectives of the LO following the analysis of both the contents and the structural aspects and technologies.
2. Structuring: definition of cognitive context, production and content aggregation.
3. Implementation: formatting of content depending on the used technology,
4. Verification: monitoring and review of the content and the quality of teaching.
5. Experimentation: assessment validity and effectiveness.
6. Normalization: actual use of the LO.

If needed, one can re-iterate some of the phases listed above, for corrections and/or improvements.

Handing GLOREP

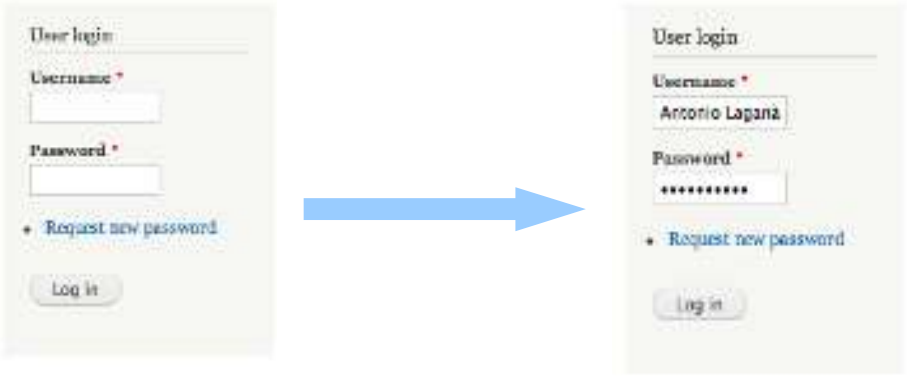
1. Access to a GLOREP site

The GLOREP federation is accessible from any one of its federated servers. System administrators are suggested to use the pattern: *http://glorep.domain* for all the servers (e.g. *http://glorep.unipg.it*) and the local home page of GLOREP looks as follows



2. Logging in

LO search in GLOREP can be carried out by anyone. On the contrary LO upload/download to/from GLOREP can be made only by users authenticated in at least one GLOREP server. To the end of accessing GLOREP authenticated user must type in their credentials (**Username** and **Password**) into the **User login** form below

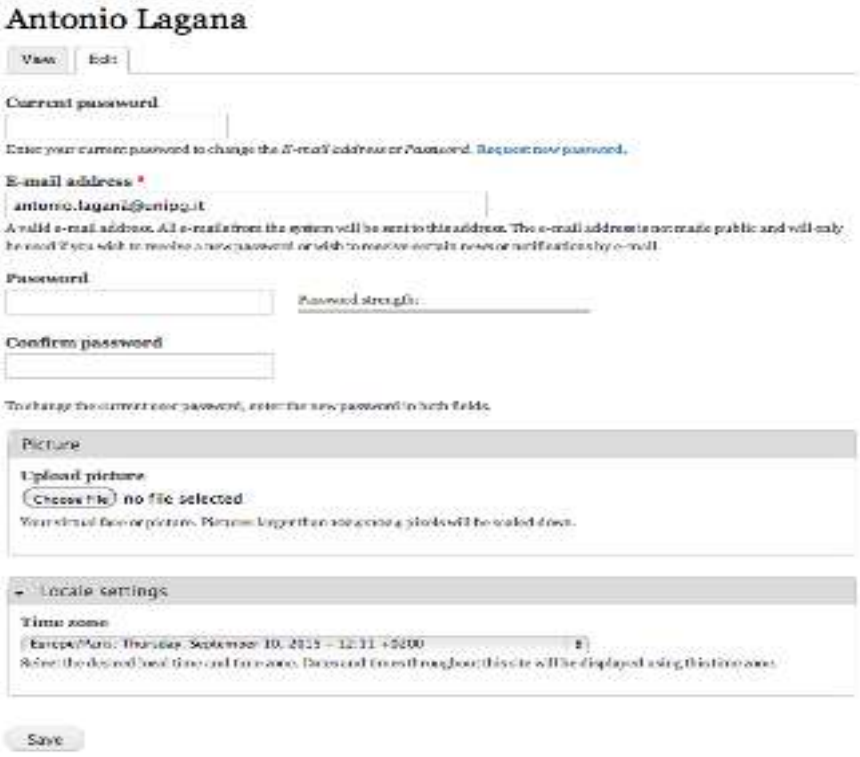


and then just click the ***Log in*** button (please make sure your account is active in the GLOREP site).

3. Account Editing and Logout

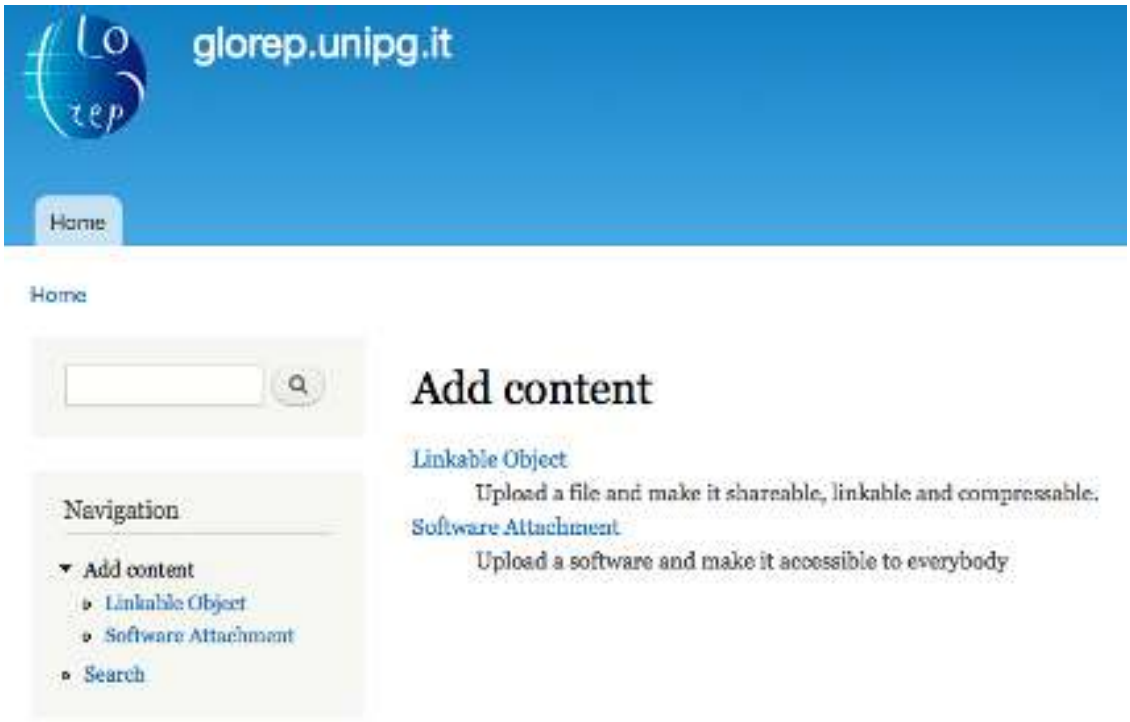
Authenticated users can edit their account by clicking on the ***My account*** link and can exit from the account by clicking on the ***Log out*** link.

In order to modify the password, the email and upload a profile picture one enters the Edit mode in the screenshot below and confirms any modification introduced by clicking the ***Save*** button.



4. Contents addition: Create Linkable Object

GLOREP provides the users with the possibility of adding two types of contents: Linkable Objects (Learning Object)s and Software Attachments.
A Software Attachment is a software product requested by some Linkable Objects for their running (e.g. for reading or handling the content). A Linkable Object is any other type of files like slides, books, experiments, etc.
Linkable Object can be added by clicking ***Add Content- Linkable Object*** link on the **Navigation** panel on the left hand side of the pages or in their central part.



This will open the **Create Linkable Object** page.
At this point one has to fill out the related form. The red marked fields (*) are mandatory while the others are optional. The fields proposed comply with the IEEE LOM (Learning Object Metadata) standard. In the creation phase one can choose to add any desired information to the Linkable Object.
In the **Create Linkable Object** page, both fields, ***Title*** and ***Description***, can be filled. In the description, one has to illustrate the Linkable Object. To this end it is recommended to use in the description some hot keywords so as to make the work of the automatic **Taxonomy Assistant** more efficient.
As soon as you ***click out*** *of the* ***Description*** form the **Taxonomy Assistant** hints you the best category for your Linkable Object and it adds a list of tags you should use both to better describe the Linkable Object and to allow a more accurate search of it.
The Taxonomy Assistant hints you the maximum relevance category for your Linkable Object based on the title and the description you have entered before.
You just have to find the adviced category in the list of category of **Chemistry & Allied sciences** or **Mathematics**.

Title *

Photocatalytic water oxidation at soft interfaces

Description *

Article about photo-catalytic water oxidation

Please insert a description for this Learning Object

Choose a Category

Chemistry & allied sciences *

--none--

Mathematics *

--none--

Refresh Hint

This is the list of categories that are compatible with the text and their value inherence (Hin value) and relevance (max for single term% | total %):
(Remember that ***you haven't yet selected a category*** *from the vocabularies)*

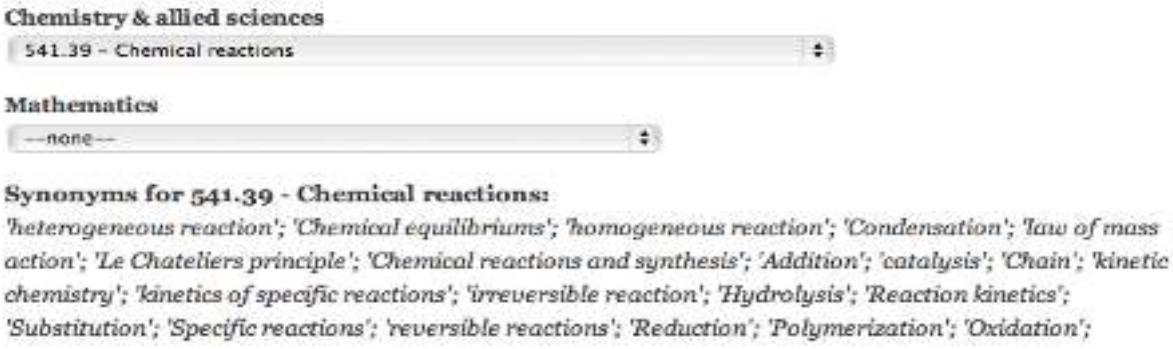
Category	Keywords	Hin Value	Max Relevance	Total Relevance
541.39 - Chemical reactions	'oxidation'	100	12.5%	25%
546.2 - Hydrogen and its Compounds	'water'	66.7	12.5%	25%
547.2 - Organic Chemical Reactions	'oxidation'	66.7	12.5%	25%
541.34 - Solutions Chemistry	'water'	50	12.5%	25%

The current version of the application supports the cataloguing of LOs in the fields of both mathematics and chemistry. Categories are built out from the Dewey Decimal Classification (DDC) schema because DDC is a multi-discipline updated international classification standard that covers all the relevant fields, associates a describing label to the subject numeric code and can define classes and subclasses at different specialization levels.

The particular case of chemical subjects is illustrated below.

540 – Chemistry & allied sciences
–541 – Physical Chemistry
––541.2 – Theoretical Chemistry
––541.3 – Miscellaneous Topics in Physical Chemistry
–––541.33 – Surface Chemistry
–––541.34 – Solutions Chemistry
–––541.35 – Photochemistry
–––541.36 – Thermochemistry & Thermodynamics
–––541.37 – Electro Chemistry & Magneto Chemistry
–––541.38 – Radio Chemistry (Nuclear Chemistry)
–––541.39 – Chemical reactions
––541.7 – Optical Activity
–542 – Techniques, Procedures, Apparatus, Equipment & Materials
––542.1 – Laboratories
––542.2 – Containers and Accessory Equipment
––542.3 – Testing and Measuring
––542.4 – Heating and Distilling
––542.6 – Filtering and Dialysis
––542.7 – Gas Production, Processing, Measuring
––542.8 – Auxiliary Techniques and Procedures, Electrical and Electronic Equipment
–––542.84 – Electrical Equipment
–––542.85 – Chemistry Data Processing
–543 – Analytical chemistry
––543.1 – General Topics in Analytical Chemistry
––543.2 – Classical Methods
––543.4 – Electro Chemical Analysis
––543.5 – Optical Spectroscopy (Spectrum Analysis)
––543.6 – Non-Optical Spectroscopy
––543.8 – Chromatography
–546 – Inorganic Chemistry
––546.2 – Hydrogen and its Compounds
––546.3 – Metals, Metallic Compunds, Alloys
––546.4 – Group 3
––546.5 – Groups 4, 5, 6, 7
––546.6 – Groups 8, 9, 10, 11, 12, 13, 14
––546.7 – Groups 15, 16, 17, 18
––546.8 – Periodic Law and Periodic Table
–547 – Organic Chemistry
––547.1 – Physical And Theoretical Chemistry
––547.2 – Organic Chemical Reactions
––547.4 – Aliphatic Compounds
––547.5 – Cyclic Compounds
––547.6 – Aromatic Compounds
––547.7 – Macro-Molecules and Related Compounds
––547.8 – Other Organic Substances

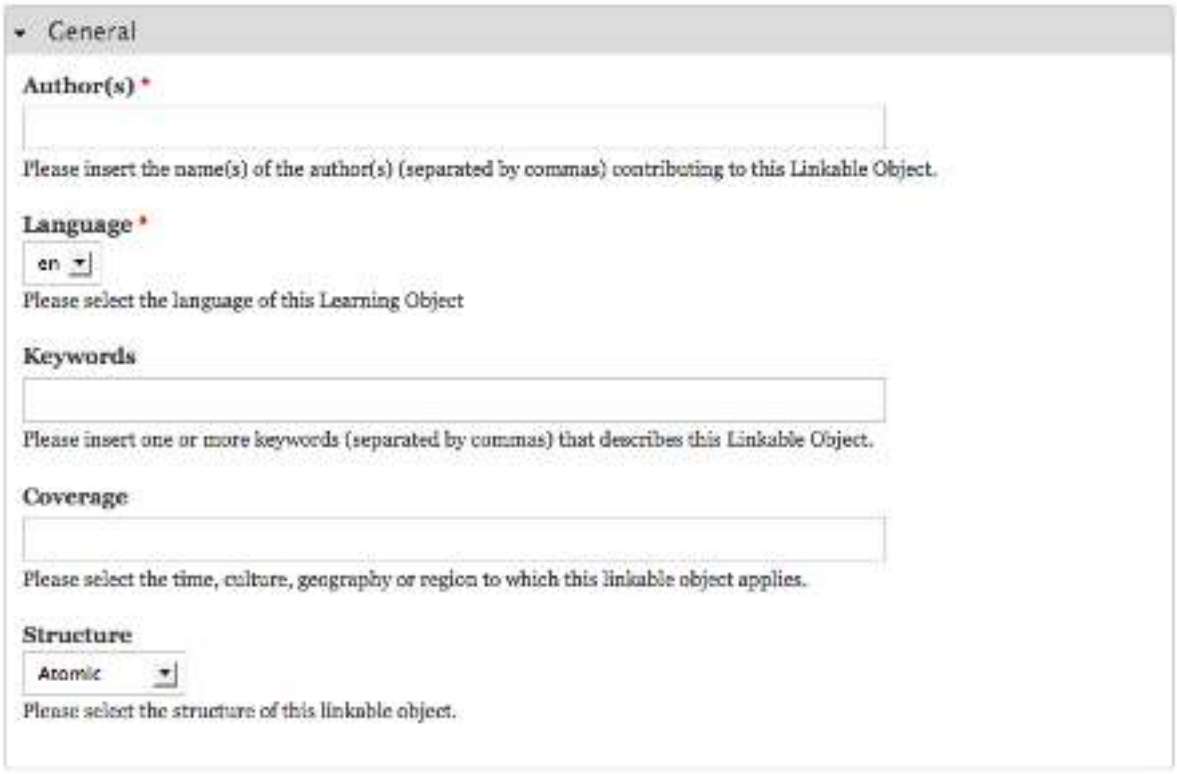
As an example if you choose *541.39 - Chemical reactions*, the following list of synonyms appears:



Then, using the suggested synonyms, you can refine your description and you can (if you wish) push the ***Refresh Hint*** button to re-run the taxonomy assistant.

Now you can add to the considered Linkable Object extra information that is IEEE LOM compatible and that, if filled properly, will be visible in your Linkable Object.

The following information are grouped in the **General** form.

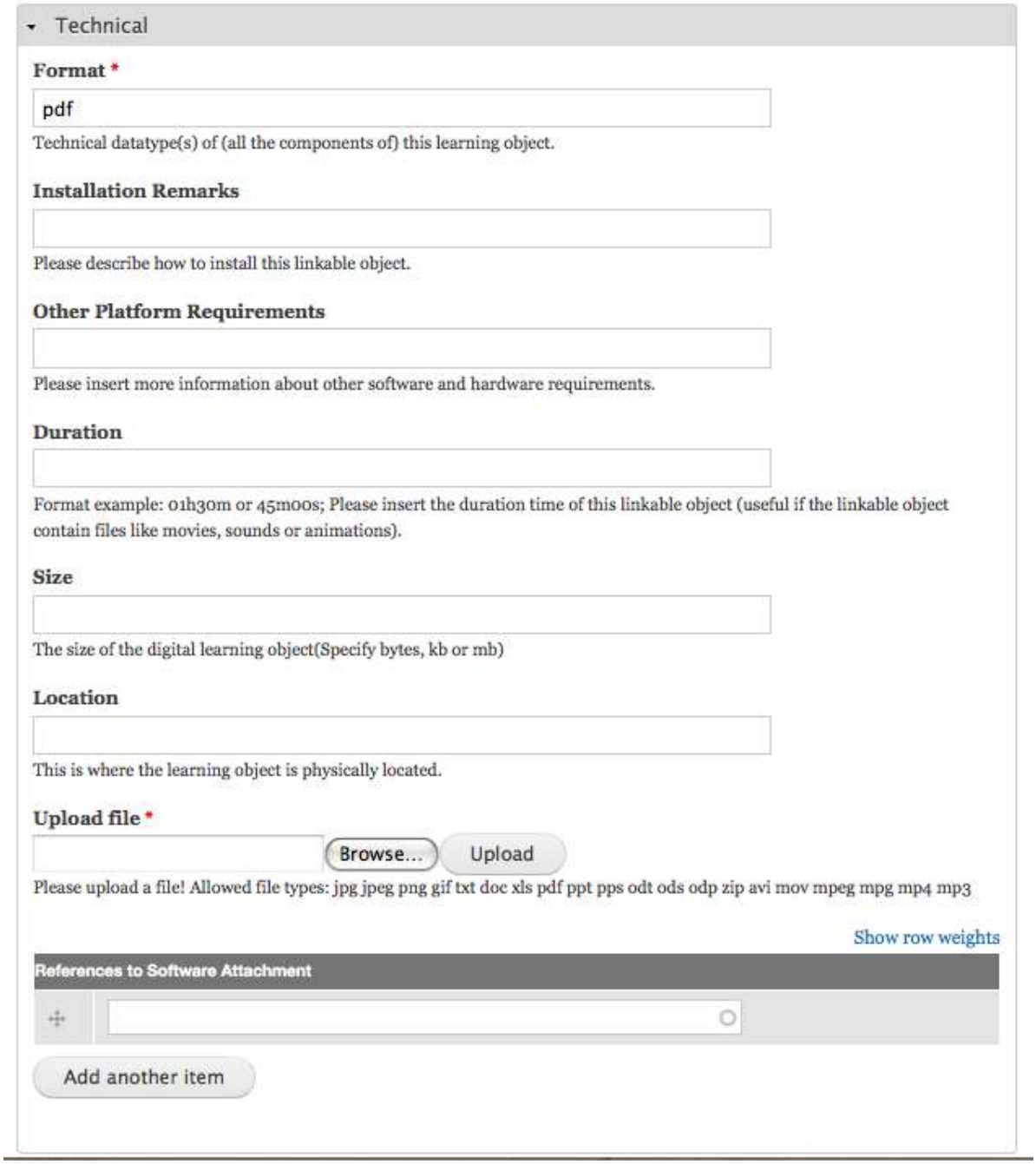


In the ***Author(s)*** field (*) you must add the name/s (separated by commas) of the Author/s contributing to this LO.

In the ***Language*** field (set to English (en) by default) you can also set your choice of language.

In the ***Keywords*** field you can add some words or some of the synonyms appeared before in order to make the search more accurate.

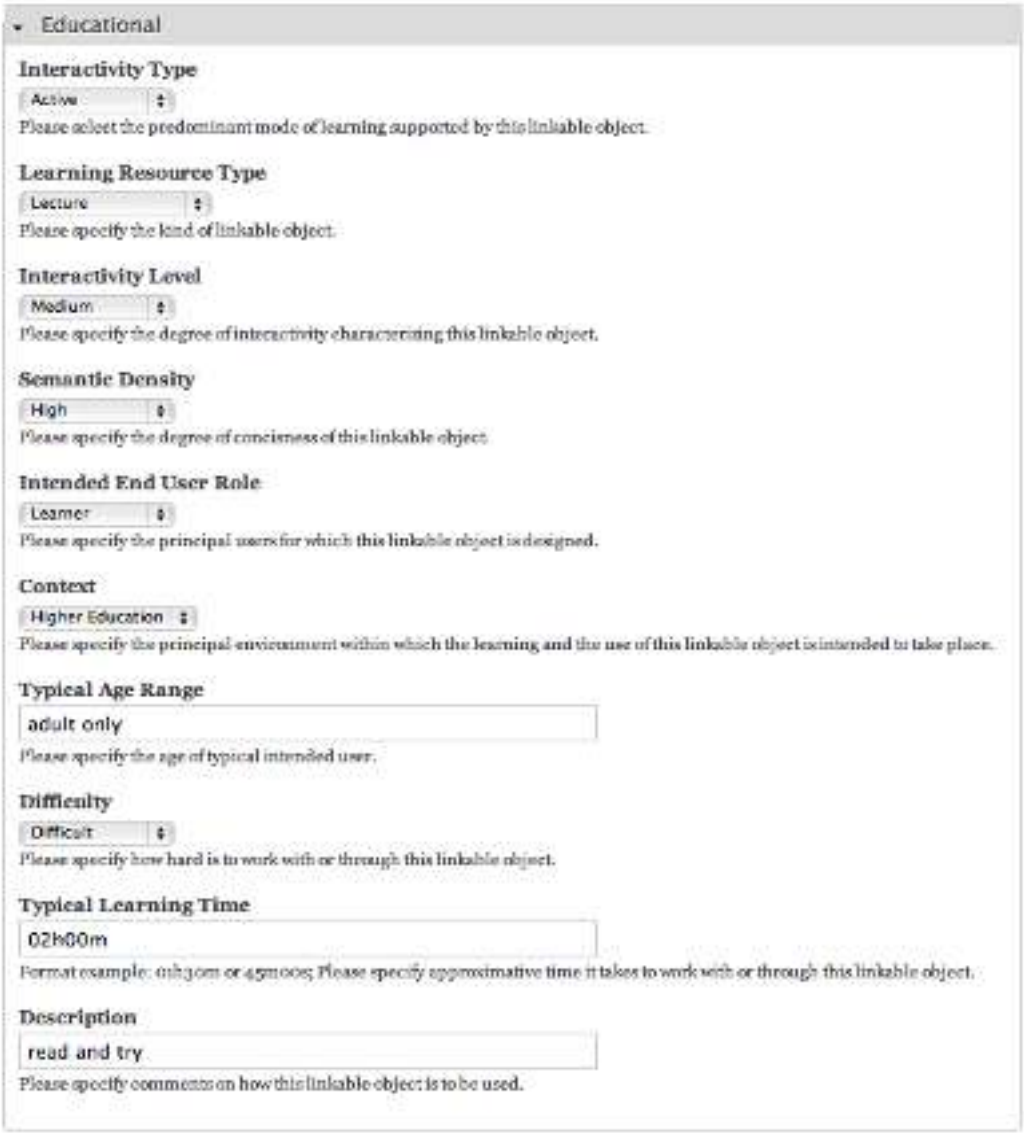
Other ***Technical*** information, such as the ***format*** of the Learning Object file, can be added. Then you can **upload** the file of the Learning Object. Click on the ***Choose File*** or ***Browse*** button, choose the file from the PC file system and then clicking on the ***Upload*** button to transfer the file in a temporary server storage.



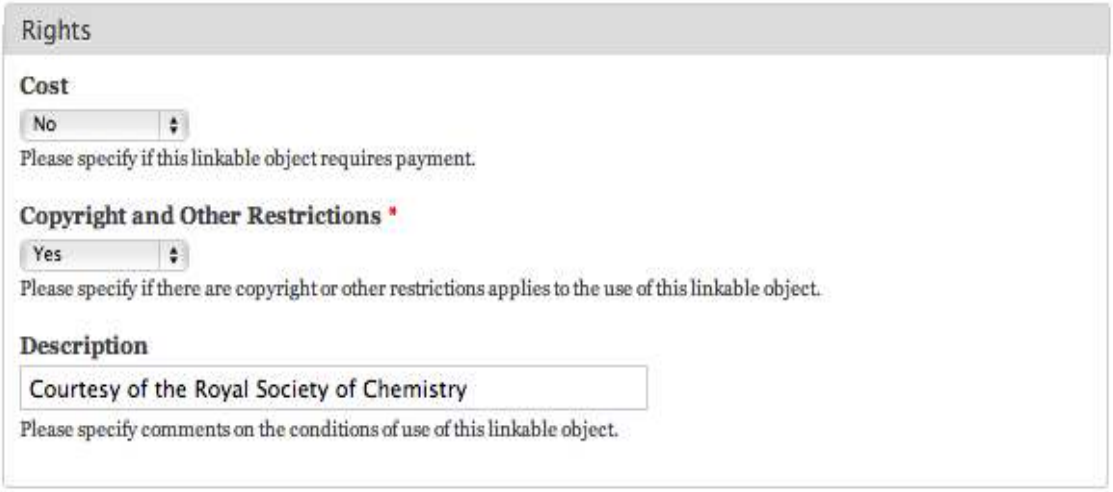
The allowed maximum file size is 90Mb. If extra storage is needed you can contact the Administrator (please remember: you can also compress your file in a zip file) for an extension.

You can also input additional information about the version or the status of the Learning Object

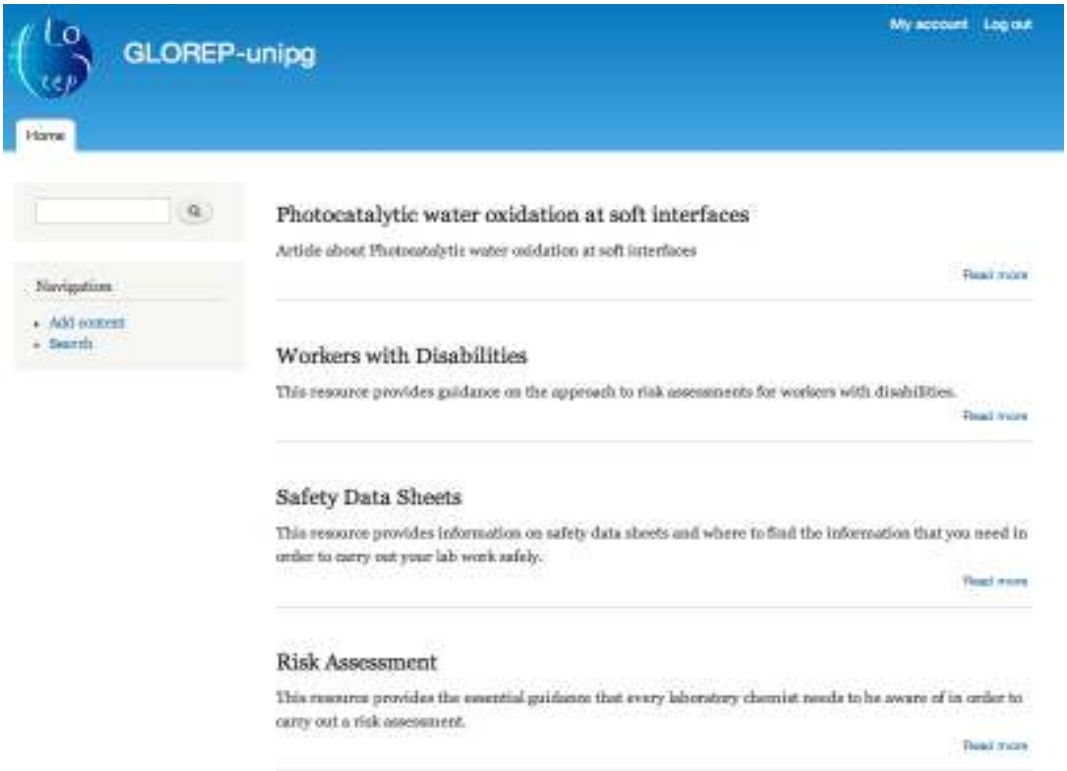
Furthermore you can add relevant educational information:



Of particular importance for further use and manipulation of the Linkable Object is the compulsory field ***Copyright and Other Restrictions*** in which you can choose whether the file you upload is protected and you specify in the **Description** field its conditions of use.

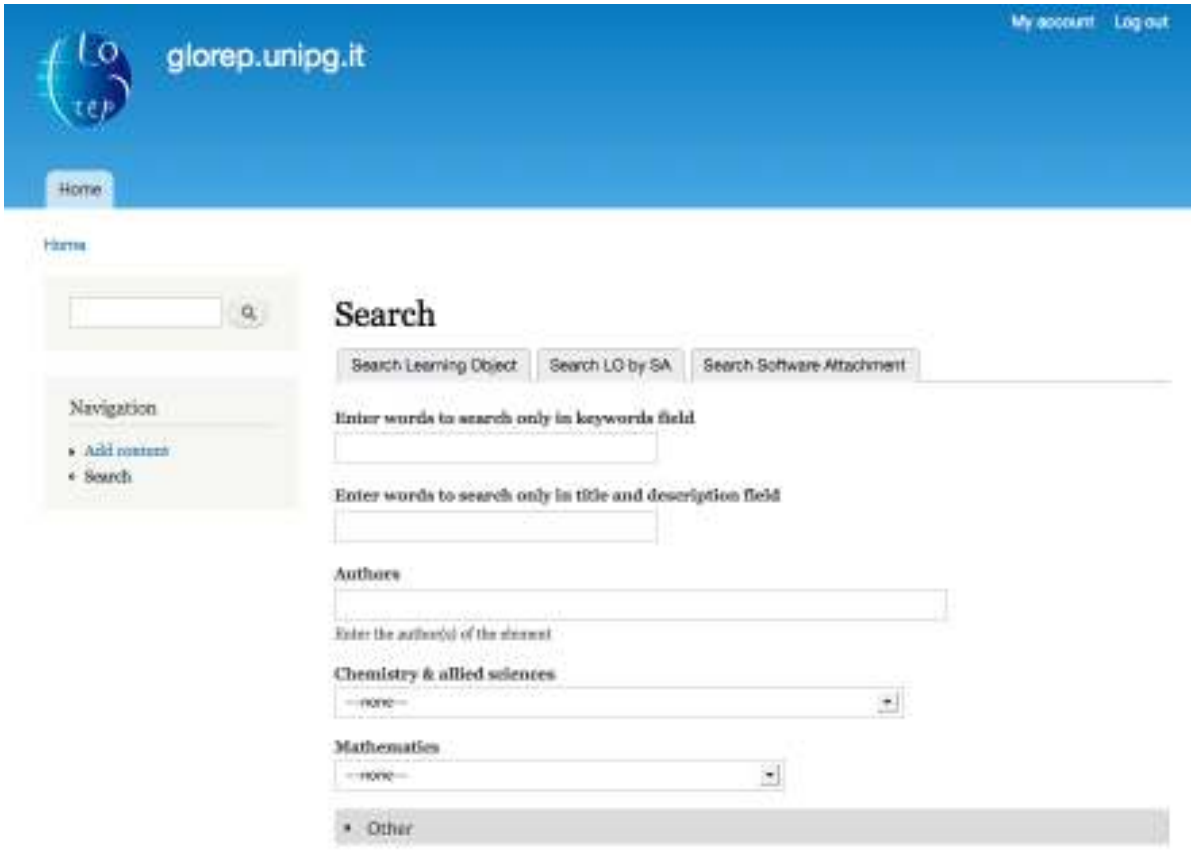


Once you have filled the required field(s) you can click ***Save*** button in order to save your Linkable Object (this can be possibly modified later). At this point you have successfully added a content in GLOREP!



5. Contents search: Search for a Linkable Object

All users (authenticated or not) can search a Linkable Object in the repository.
To do this just click ***Search*** on the **Navigation** panel on the left side of the page.
This will open the **Search** page where you can do an advanced search by filtering with some LO metadata**.**



Here you can search by:

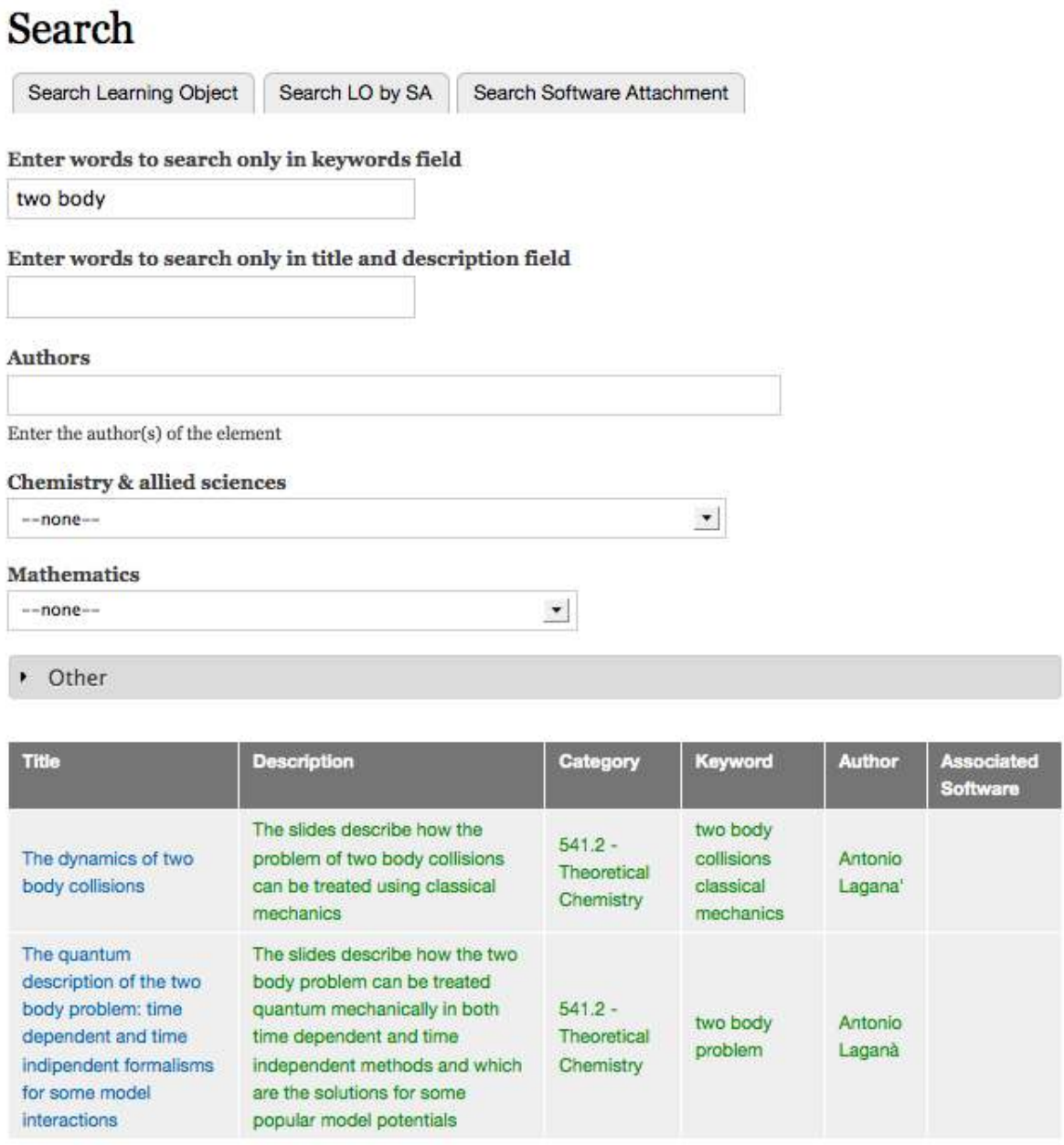
- ***keywords*** inserted in *Keywords* field,
- ***words*** inserted in *Title* and *Description* fields,
- ***authors***,
- ***selected category*** of the taxonomy.

And by clicking on ***Other*** you can add other filters in your search (all filters are optional).

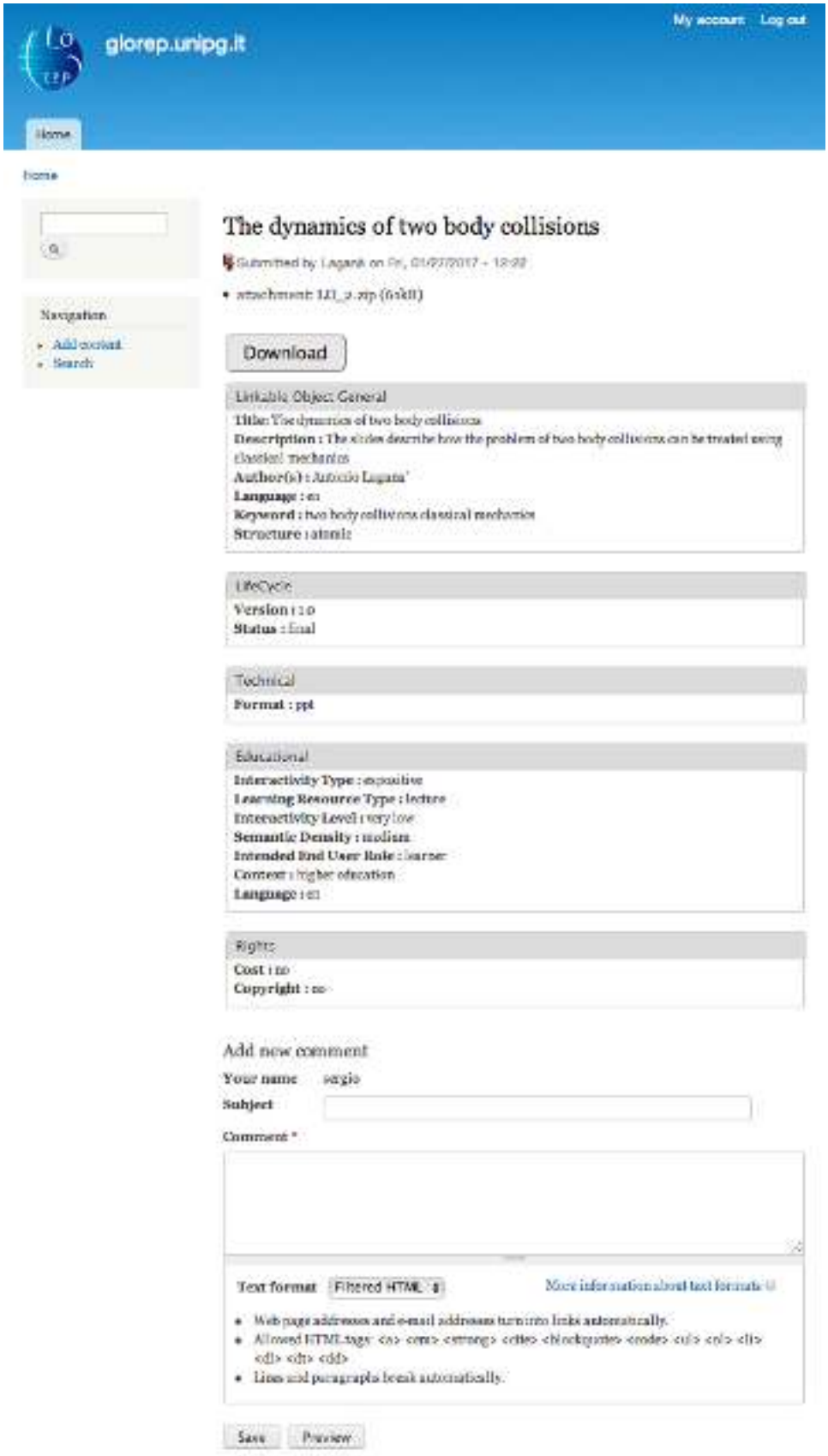
6. The demo search case "*two body*"

Here we give an example of a simple advanced search.

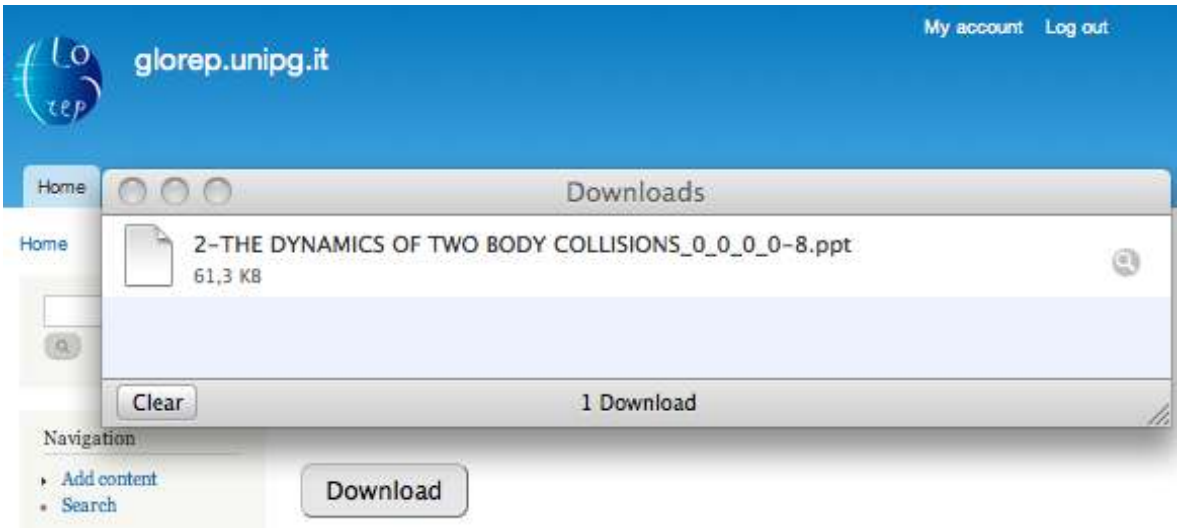
a. Type the "*two body*" **words** to search in keywords field.
b. By clicking out of the field the results of your search will show up at the bottom of the page.



The *click* on one of the Linkable Object titles to open it. If you try the first here is what you get.
It will open the Linkable Object page (see next screenshot), in which you can read the entire description and other information.
In the page bottom an authenticated user can ***Save*** any comment about the Learning Object and its usage (suggestions, errors, different versions, etc.)


glorep.unipg.it
My account
Log out
Home
Home
Navigation
Add content
Search
The dynamics of two body collisions
Submitted by Lagana on Fri, 01/27/2017 - 13:02
attachment: LL1_2.zip (6.6kB)
Download
Linkable Object: General
Title: The dynamics of two body collisions
Description : The slides describe how the problem of two body collisions can be treated using classical mechanics
Author(s) : Antonio Lagana'
Language : en
Keyword : two body collisions classical mechanics
Structure : atomic
LifeCycle
Version : 1.0
Status : final
Technical
Format : ppt
Educational
Interactivity Type : expositive
Learning Resource Type : lecture
Interactivity Level : very low
Semantic Density : medium
Intended End User Role : learner
Context : higher education
Language : en
Rights
Cost : no
Copyright : no
Add new comment
Your name sergio
Subject
Comment *
Text format Filtered HTML
More information about text formats
Web page addresses and e-mail addresses turn into links automatically.
Allowed HTML tags: <a>   <cite> <blockquote> <code>   <dl> <dt> <dd>
Lines and paragraphs break automatically.
Save
Preview

By clicking ***Download*** button an authenti-cated user can start the download of the package (containing in this case the ppt file).



Now the authenticated user has successfully downloaded the Learning Object on her/his PC.