



## E-D6

### Educational infrastructure: A preliminary version

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#### Abstract

*This deliverable reports about the current state of the educational infrastructure prototype, jointly developed in the education and training WP of the NoE REWERSE and the education area of the NoE KnowledgeWeb. As reported in T/E-D4, the prototype is based on the Universal Brokerage Platform, which is also used for the EducaNext platform, currently used in the NoE PROLEARN. The prototype is now known as 'Repository of EASE for Learning Units' (abbreviated: REASE), with EASE being the European Association for Semantic Web Education (formerly known as VISWE).*

*This report is written mainly in the form of a user manual how to apply for a user account and how to insert learning units on the platform.*

#### Keyword List

Semantic Web education, Learning unit repository, REASE, cooperation with KnowledgeWeb

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# Educational Infrastructure: A preliminary Version

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31. August 2005

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## Abstract

*This deliverable reports about the current state of the educational infrastructure prototype, jointly developed in the education and training WP of the NoE REVERSE and the education area of the NoE KnowledgeWeb. As reported in T/E-D4, the prototype is based on the Universal Brokerage Platform, which is also used for the EducaNext platform, currently used in the NoE PROLEARN. The prototype is now known as 'Repository of EASE for Learning Units' (abbreviated: REASE), with EASE being the European Association for Semantic Web Education (formerly known as VISWE).*

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## 1. Introduction.

This deliverable reports about a first prototype of the educational infrastructure for learning units. Its main purpose is to collect learning units about 'Semantic Web Studies' and related topics and to provide these learning units in one repository. As discussed in T/E-D4, the Universal Brokerage Platform (UBP) was best suited for the purposes of the different user groups, namely consumers and providers of learning units from both academia and industry.

Thus, UBP was chosen as a basis for the learning unit repository. It is similar to EducaNext<sup>1</sup>, which is also based on UBP, both being different instances of the same basic platform technology. To ensure that the repository can operate also beyond the EU funding for REVERSE, it will be hosted by the **E**uropean **A**ssociation for **S**emantic **W**eb **E**ducation (EASE), which will be responsible for the educational activities in KnowledgeWeb, but is also a partner of the NoE REVERSE. EASE is currently in the process of being founded (a first version of the statutes has been prepared) and will be jointly founded by REVERSE and KnowledgeWeb members. (EASE was formerly called VISWE, Virtual Institute for Semantic Web Education, but had to be renamed for legal reasons). As the repository will become one major part of the EASE activities, the official name of the repository, i.e. the educational infrastructure, is now "**R**epository of **E**ASE for Learning Units", abbreviated as **REASE**.

Currently, REASE is located at L3S and can be reached at:

<http://ubp.l3s.uni-hannover.de/ubp>

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<sup>1</sup> <http://www.educanext.org>

## 2. The Current Design

Though inspired by EducaNext, the design of REASE was heavily changed, especially as an outcome of an analysis regarding accessibility, for example, related to people with vision problems. As an example, the colours were adapted to increase the contrast, icons were changed in size and shape, and links were changed to always be underlined (not only marked by a special colour). The following figure depicts the main page of REASE.

Figure 1: REASE main page

The screenshot shows the REASE main page in a web browser. The browser address bar displays "http://ubp.l3s.uni-hannover.de/ubp". The page header includes the REASE logo and the text "Repository of EASE for Learning Units". A search bar is located in the top right corner, with a "Search catalogue" button. Below the search bar, there are links for "Advanced Search" and "Browse Catalogue". The user is identified as "Anonymous" with a "Login" link.

The main content area is divided into three columns:

- Left Column:** A navigation menu with links for Home, Members & Registration, My Contributions, About, Help & Support, Contact, Your Feedback, and Links. At the bottom, there are logos for "knowledgeweb" and "REVERSE reasoning on the web".
- Middle Column:** A description of the REASE repository, stating it is based on the EducaNext platform and is intended to support the creation and sharing of knowledge for Higher Education in the areas Semantic Web and Ontology technologies. It is open to any member of the academic or research community. Below this, it states that the platform fosters collaboration among educators and researchers, allowing you to:
  - To participate in Knowledge Communities
  - To communicate with experts in your field
  - To exchange Learning Resources
  - To work together on the production of Educational Material: Textbooks, lecture notes, case studies, simulations, etc.
  - To deliver distributed Educational Activities: lectures, courses, workshops, case study discussions, etc.
  - To distribute electronic content: under license
- Right Column:** A "News" section with a list of updates from 2004 to 2005, and a "Browse Catalogue" section with a list of categories and their counts, such as "Basic Web Information Technology (7)", "Information Management (0)", "Knowledge Engineering / Ontology Engineering (12)", "Knowledge Representation and Reasoning (7)", "Ontologies for the Semantic Web (12)", "Proof in the Semantic Web (0)", "Resource Description Framework (RDF) / RDFSchemas (9)", "Security / Privacy Trust in the Semantic Web (1)", "Semantic Web Applications (0)", "Semantic Web Infrastructure (0)", "Semantic Web Languages (1)", and "Semantic Web Rules +".

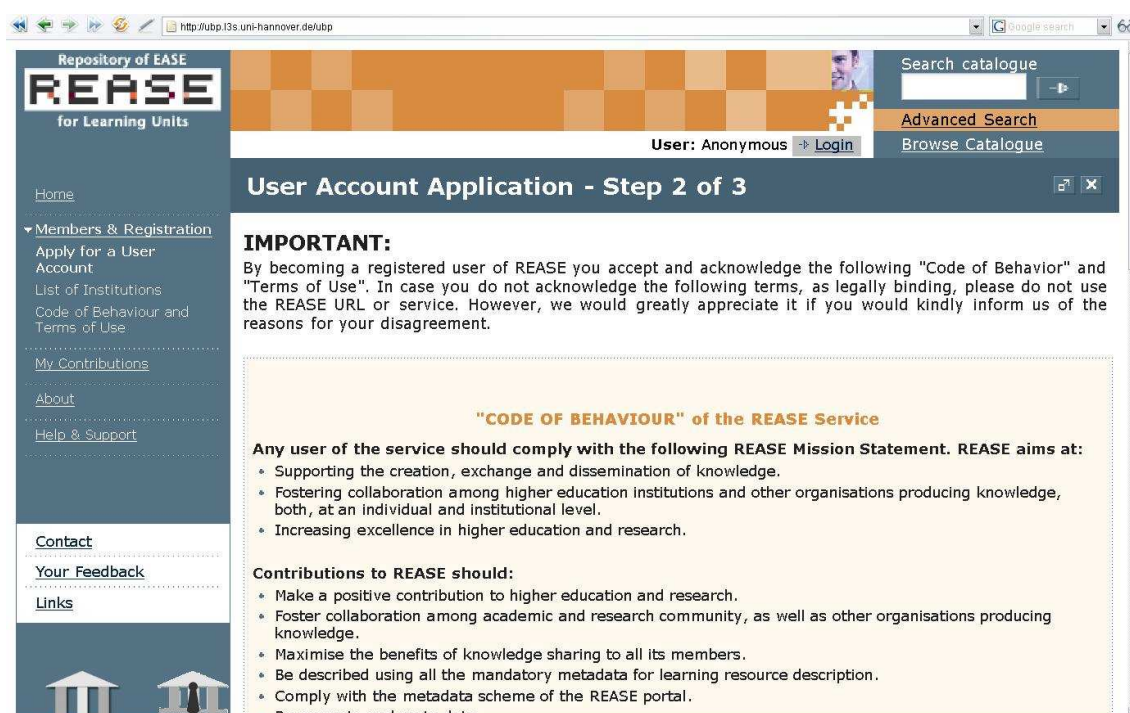
### 3. How to insert learning resources into REASE

As we expect many people from different European institutions to insert their learning material into REASE, the following description is intended as a small manual for this purpose.

Basically, four steps are necessary:

- 1) Register as a user on the portal (if you are not already registered). Visit <http://ubp.l3s.uni-hannover.de/ubp/regrApplyOverview>
  - a. You have to agree to the 'code of behaviour and terms of use' first

Figure 2: REASE Code of Behaviour and Terms of Use



- b. Then you can specify your personal information which is used to create a local account for you. During this process you are asked to specify an institution to which you belong. Look into the list of available institutions to see if it is already there, otherwise you have to define a new institution entry by selecting the 'other' institution. Note that it's only mandatory to provide a name and the country of your institution to make this process as easy as possible, but please provide a URL also where interested people can find more information about your institution. In case you are a private user, not associated to any institution, you can choose the 'none – individual user' option.



Figure 3: Applying for a REASE Account

The screenshot shows a web browser window with the URL <http://ubp13s.uni-hannover.de/ubp>. The page title is "User Account Application - Step 3 of 3". The main content area contains the following text: "Please enter at least your first and last name, your role within your institution, your desired username/ password, your e-mail address and select your institution from the list of institutions. If you do not find your institution, please select "Other" and enter the data for your institution."

The form is divided into two sections: "Account Information" and "Contact Information".

**Account Information**

Gender (Mandatory)	<input type="text"/>
First Name: (Mandatory)	<input type="text"/>
Last Name: (Mandatory)	<input type="text"/>
Role within Institution: (Mandatory)	<input type="text"/>
REASE Username: (Mandatory)	<input type="text"/>
Password: (Mandatory)	<input type="text"/>
Confirm Password: (Mandatory)	<input type="text"/>

**Contact Information**

E-mail: (Mandatory)	<input type="text"/>
Institution Name: (Mandatory)	<input type="text"/>

Below the Institution Name field, there is a dropdown menu labeled "Show institutions from" with the option "All countries" selected. Below this is a yellow search bar.

The left sidebar contains navigation links: Home, Members & Registration (Apply for a User Account, List of Institutions, Code of Behaviour and Terms of Use, My Contributions, About, Help & Support), Contact, Your Feedback, and Links. At the bottom of the sidebar, there are logos for "knowledgeweb" and "REVERSE reasoning on the web".

c. Wait for the approval of the REASE administrator.

- 2) Go to 'My contributions | Provide a new Learning Resource ' on the left side on the web page

Figure 4: Provide General Metadata about your Learning Unit

- 3) Enter the necessary data + meta data about your learning resource in the four available tabular pages. Please provide as much information as possible since the meta data will be used for searching in a later version of REASE, especially when the number of learning units in the repository becomes very high. In particular you should consider:

- a. The classification of your learning resource into one or several of the categories (this list is a result of first preliminary discussions on the Semantic Web curriculum, cf. deliverable E-D7, and might evolve over time):
  - i. Knowledge Engineering / Ontology Engineering
    - 1) Methodologies
    - 2) Ontology population / generation
    - 3) Maintenance and versioning (dynamics)
    - 4) Mapping / translation / matching / aligning (heterogeneity)
    - 5) Validation
    - 6) Interoperability / Integration
    - 7) Modularization and Composition
    - 8) Tools
  - ii. Knowledge Representation and Reasoning
    - 1) Logics
    - 2) Logic Programming
    - 3) Reasoning

- iii. Information Management
  - 1) Data Modeling
  - 2) Database systems
- iv. Basic Web information technologies
  - 1) XML
  - 2) Web data integration
  - 3) Security
  - 4) Web services
  - 5) Personalization techniques
  - 6) Web data extraction
  - 7) Architecture of Web Information Systems
- v. Semantic Web Infrastructure
  - 1) Architecture
  - 2) Semantic Web Services
- vi. Resource Description Framework / RDFSchema
- vii. Semantic Web Languages
  - 1) Query Languages
  - 2) Update Languages
- viii. Ontologies for the Semantic Web
  - 1) Ontology representation / Ontology languages / OWL
  - 2) Ontology Engineering
- ix. Semantic Web Rules + Logic
  - 1) Rule languages
  - 2) Rule Markup
  - 3) Reasoning languages
  - 4) Reasoning Engines
- x. Proof in the Semantic Web
- xi. Security / trust / privacy in the Semantic Web
- xii. Semantic Web Applications
  - 1) Knowledge Management
  - 2) E-Learning
  - 3) Bioinformatics
  - 4) Multimedia
  - 5) ehealth
  - 6) ebusiness
  - 7) Law
  - 8) Engineering
  - 9) eGovernment

xiii. Semantic Web Special Topics

- 1) Natural language processing / human language technologies
- 2) Social impact of the Semantic Web
- 3) Social networks and Semantic Web
- 4) Peer-to-peer and Semantic Web
- 5) Agents and Semantic Web
- 6) Semantic Grid
- 7) Outreach to industry
- 8) Benchmarking and scalability

*It is important to carefully select one or more appropriate topics in order to match expectations of the learners who want to work with your resources.*

- b. The learning resource type typically is 'educational material'
- c. Location: Please upload the material rather than providing a link to another web page. This is because we want to avoid broken links which tends to happen rather often. Do not forget to select a server for the upload, which is always 'Universal hosted server'. If you upload a single set of Powerpoint slides, a pdf version will be created automatically at the end of the day together with a small html file which points to both, the Powerpoint and the PDF version.
- d. Please pay an especial attention to the 4<sup>th</sup> page with the educational meta-data. These are necessary to identify the right target audience (curriculum) and to specify the prerequisites (e.g. other material in the repository) among other data.

Figure 5: Educational Metadata

The screenshot shows a web browser window with the URL <http://ubp.l3s.uni-hannover.de/ubp>. The page title is "Provide a new Learning Resource". The navigation menu on the left includes: Home, Members & Registration, My Contributions (with sub-items: List of provided Learning Resources, Provide a new Learning Resource, Manage Contributors, UNIVERSAL License Agreement, UNIVERSAL Restricted License Agreement), My Favourites, About, Help & Support, Administration, Contact, Your Feedback, and Links. The main content area has four tabs: General (1), General (2), Technical, and Educational (selected). The "Educational Information" section contains the following fields:

- Educational Objectives:** (Optional) - Text input field.
- Method of Instruction:** (Optional) - Dropdown menu with options: Directed Learning, Self-directed Learning, Collaborative Learning.
- Location of Additional Information:** (Optional) - Text input field.
- Curriculum:** (Mandatory) - Text input field.
- Prerequisites:** (Optional) - Text input field.
- ECTS Credits:** (Optional) - Text input field.

At the bottom of the form, there are three buttons: "Previous", "Cancel", and "Finish".

As a result of this activity (after a click on the 'finish' button...) the learning resource and its meta-data is stored as your personal contribution. This will not yet be publicly

available (i.e., you are the only one who can change the data, not even the administrators are allowed to do so).

- 4) Finally, you have to offer your learning resource. First you specify the target audience (for all users including non-registered ones, for registered users only, for a certain community only). You can further decide if the resources shall be visible in the catalogue even outside the specified target audience. Then, you have to choose a license under which you want to publish the resource, for example, a public domain licence or a free distribution for academic purposes only (with / without modifications). You can also specify a customized licence. Finally, you can specify a questionnaire to be used for the evaluation of the resource. There is only a very simple questionnaire available currently.

Figure 6: Making an Offer

The screenshot shows a web browser window with the URL <http://ubp13s.uni-hannover.de/ubp>. The page has a navigation menu on the left with categories like 'Members & Registration', 'My Contributions', 'Administration', and 'Contact'. The main content area is titled 'Offer type and target audience' and has three tabs: 'Type', 'License', and 'Evaluation'. The 'Type' tab is active. The form contains three sections:

- Select offer type: (Mandatory)**: Three radio button options:
  - Public offer**: Learning resources with a public offer can be accessed by all REASE users even those who are not authenticated (anonymous users)
  - Restrict offer to all registered users** Type
  - Restrict offer to selected communities and/or users**: This option can be selected to restrict the offer to specific users, communities and/or institutions.
- Availability upon request:** A question: 'Do you want to announce the availability of your Learning Resource public (but without yet rendering it accessible) by making it **available upon request**?'. If you select "yes", the Learning Resource will also be visible to users (registered or non-registered) who do not belong to the restricted target audience of your offer! Two radio button options:
  - Yes
  - No
- Availability to faculty only:** A question: 'Do you want to restrict the offer to **faculty** only?'. Two radio button options:
  - Yes
  - No

At the bottom of the form are three buttons: 'Cancel', 'Next', and 'Finish'.

- 5) When you have finished your offer, the catalogue administrator will validate your offer and approve it if everything is ok.

Please, note also the recommendations on the REASE how-to at:

<http://www.13s.de/~diederich/kweb/rease-howto.html>

where we have compiled a small up-to-date web page with important hints, on how to insert the resources into REASE.

## **4. Summary and Future Work**

This report describes REASE, the repository of EASE for learning units, which is a still evolving prototype of the educational infrastructure in REVERSE, shared with the NoE KnowledgeWeb. Further adaptations might become necessary, for example, if access to some resources should be restricted to EASE members only (which is currently under discussion).