

HYBRID METHOD TO DESIGN MULTI-LANGUAGE WEB SITES

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Abstract: Language promotes the most suitable way for expressing ideas, habits and values. For a multinational educational project (Comenius 2.1.) with a widespread European target group, it is very important to provide the online educational resources (courses, virtual instruments, etc.) through the project website, in several languages: English (as a world-wide spoken language) and partners' languages. This paper briefly presents three methods to create multi-language web sites and proposes a new architecture – the hybrid method architecture. In addition an example of a multi-language web site implementation is illustrated.

VccSSe WEB SITE ARCHITECTURE

VccSSe (Virtual Community Collaborating Space for Science Education) - <http://vccsse.ssai.valahia.ro> - is a Comenius 2.1. Project funded by the European Commission. The project is aimed to adapt, develop, test, implement and disseminate training modules, teaching methodologies and pedagogical strategies based on the use of Virtual Instruments, with the view to their implementation in the classroom, through Information and Communication Technology tools. In this sense, the partnership assumes to build various pedagogical approaches in a virtual space able to offer efficient ways of using specific tools for logical understanding of the fundamental concepts in sciences. The target groups are formed by approximately 180 in-service teachers from primary and secondary schools involved in Sciences teaching areas in the partner countries (Romania, Spain, Poland, Finland and Greece), institutions' local coordinators, tutors, researchers, local educational authorities and over 3500 pupils who become indirect beneficiaries. In addition, teachers and trainers from Europe will benefit from the project outputs consisting of a number of on-line simulating laboratories. Having in view the huge amount of transnational work and outputs, the main channel of dissemination is represented by the project web page. In this context, the whole on-line content - first created in English - had to be translated in other 5 languages: Romanian, Spanish, Polish, Finnish and Greek.

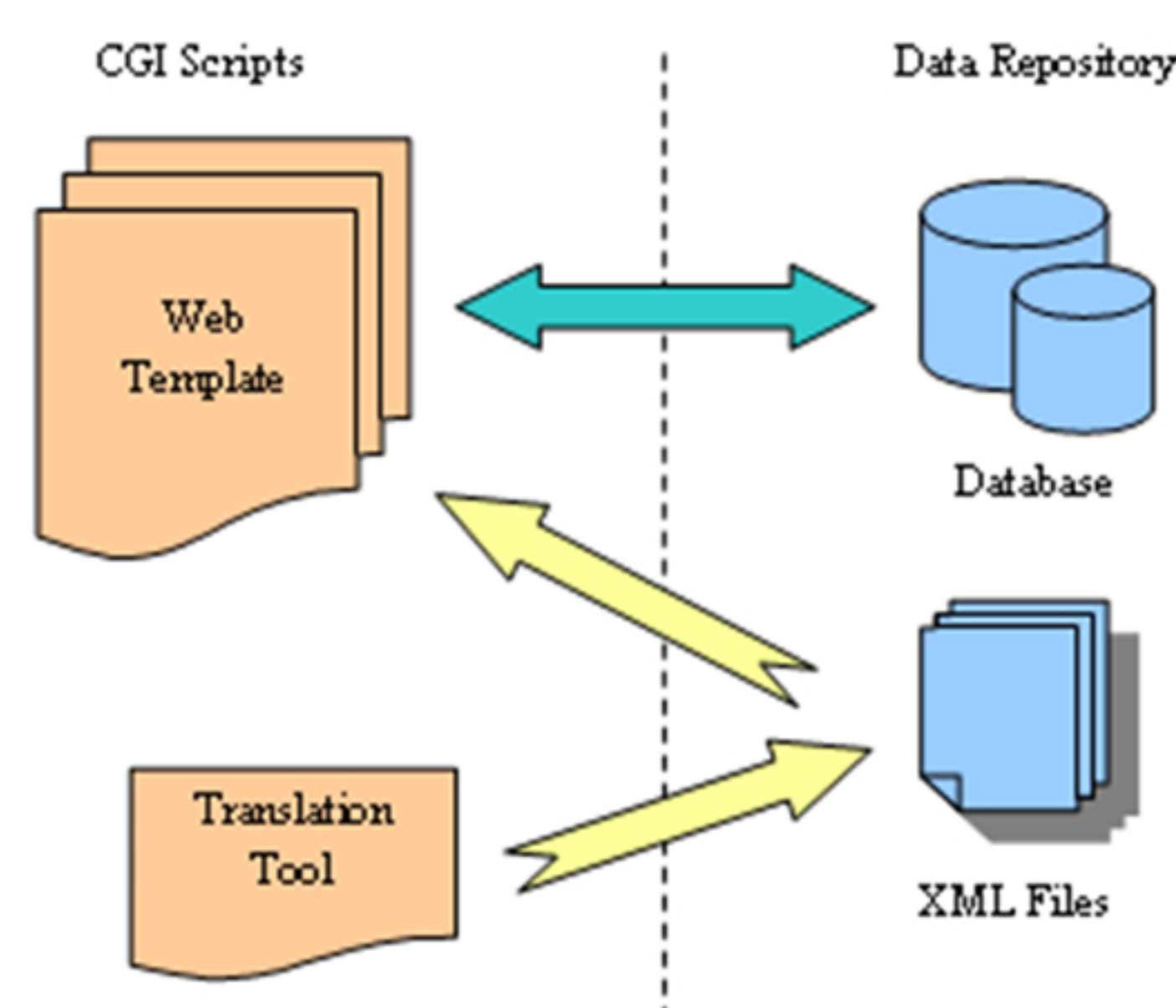
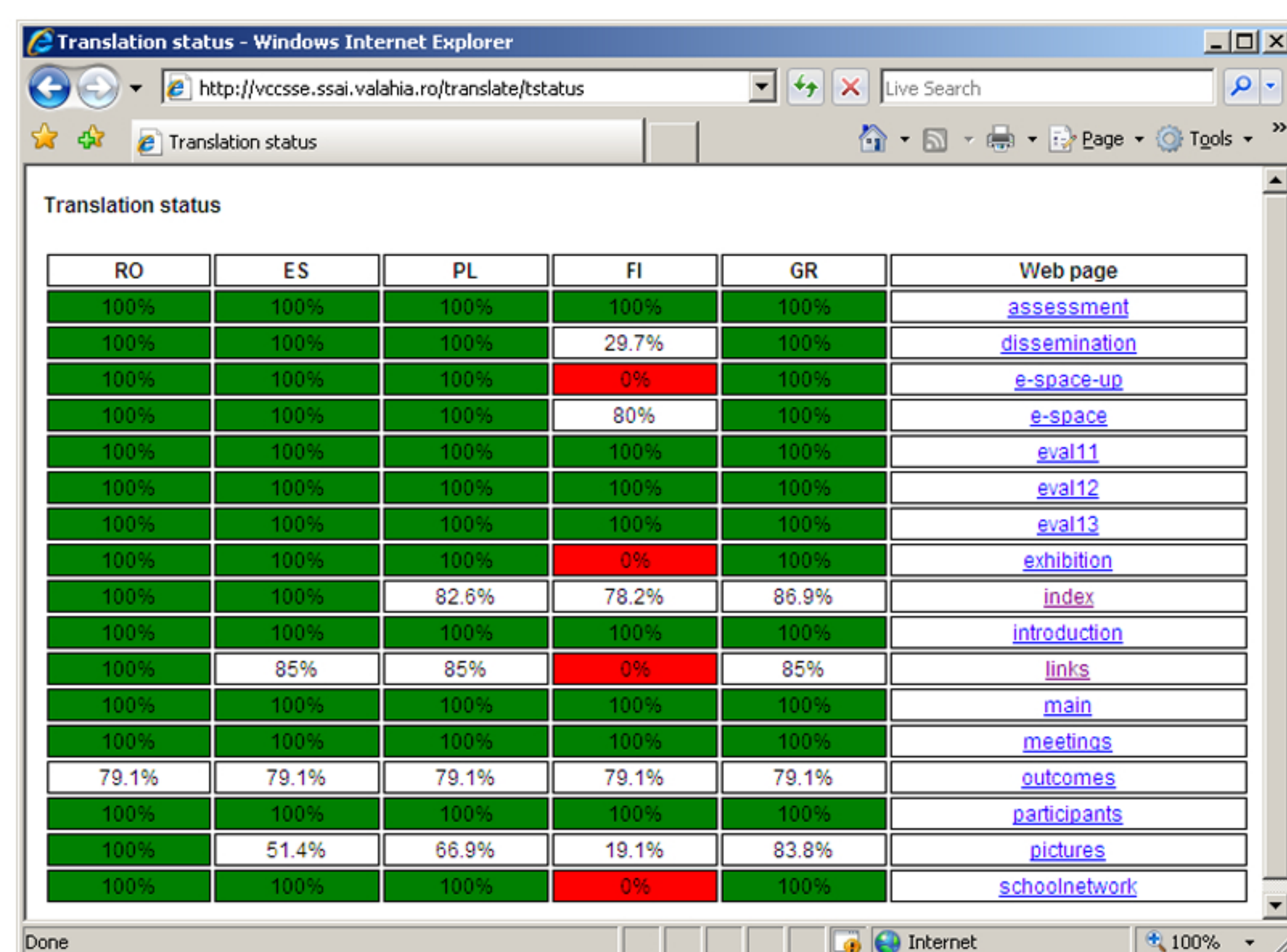


Figure 1: Hybrid method architecture



RO	ES	PL	FI	GR	Web page
100%	100%	100%	100%	100%	assessment
100%	100%	100%	29.7%	100%	dissemination
100%	100%	100%	0%	100%	e-space-up
100%	100%	100%	80%	100%	e-space
100%	100%	100%	100%	100%	eval11
100%	100%	100%	100%	100%	eval12
100%	100%	100%	100%	100%	eval13
100%	100%	100%	0%	100%	exhibition
100%	100%	82.6%	78.2%	86.9%	index
100%	100%	100%	100%	100%	introduction
100%	85%	85%	0%	85%	links
100%	100%	100%	100%	100%	main
100%	100%	100%	100%	100%	meetings
79.1%	79.1%	79.1%	79.1%	79.1%	outcomes
100%	100%	100%	100%	100%	participants
100%	51.4%	66.9%	19.1%	83.8%	pictures
100%	100%	100%	0%	100%	schoolnetwork

Figure 2: Web translation status

CONCLUSIONS

The hybrid method architecture for designing multilanguage web sites was implemented in the Comenius 2.1 Project VccSSe (Virtual Community Collaborating Space for Science Education). The website is available since the beginning of the year 2007 and it can be accessed at: <http://vccsse.ssai.valahia.ro>. The web site is under development until the end of the project. It is easy to add new web pages or new languages for translation without making changes in the site architecture. The English content posted on the site has been translated in all five languages of the project partners (Romanian, Spanish, Polish, Finnish and Greek) using only the translation tool. The translation tool – a very small and fast script - can be used to create new web pages in other languages or to update the online-content for a specific language. This tool cannot be used to change the English content. To fulfil this action, another web tool was developed.

HYBRID METHOD ARCHITECTURE

The hybrid method architecture emerges elements from three mostly used methods in the multilanguages web site development. This new method proposes to valorise the advantages of these methods and reduce their disadvantages. Table 1 explains how the disadvantages of one method can be eliminated, using the powerful characteristics of another one. The disadvantages of the hybrid method can be eliminated by creating several web instruments for information uploading on the server and the web site maintain (figure 2, figure 3). The programming language selected to create the script and the server performances are also very important. According to this method, a template file will be created for each web page. The template can be created using any programming language for CGI interfaces (figure 1).

The template file will generate the web page format using the data extracted from the da-

Method	Advantages	Disadvantages
Replication (Site / Selective)	Increased number of languages; High performance - low server overhead.	The uniformity of the site is not preserved; Large number of web files to maintain.
Dynamic Content Generation using Database	Maintain the site uniformity using a web template; It is a good choice for small sites with reduced multimedia content.	Reduced number of languages; Slow performance on server; Difficult to load information in the database.
Dynamic Content Generation using XML Files	Better performance on server unlike dynamic content using database; It is a good choice for larger sites.	Can be implemented only at the initial phase of the design. Difficult to store information on site.
Hybrid method	There is no limit for numbers of languages; Better performance on server (use files on disk and database); The uniformity of the site is preserved; The web site is easy to maintain.	It is difficult to maintain the information on site without any additional instruments; Medium server overhead.

Table 1: Hybrid method versus other methods

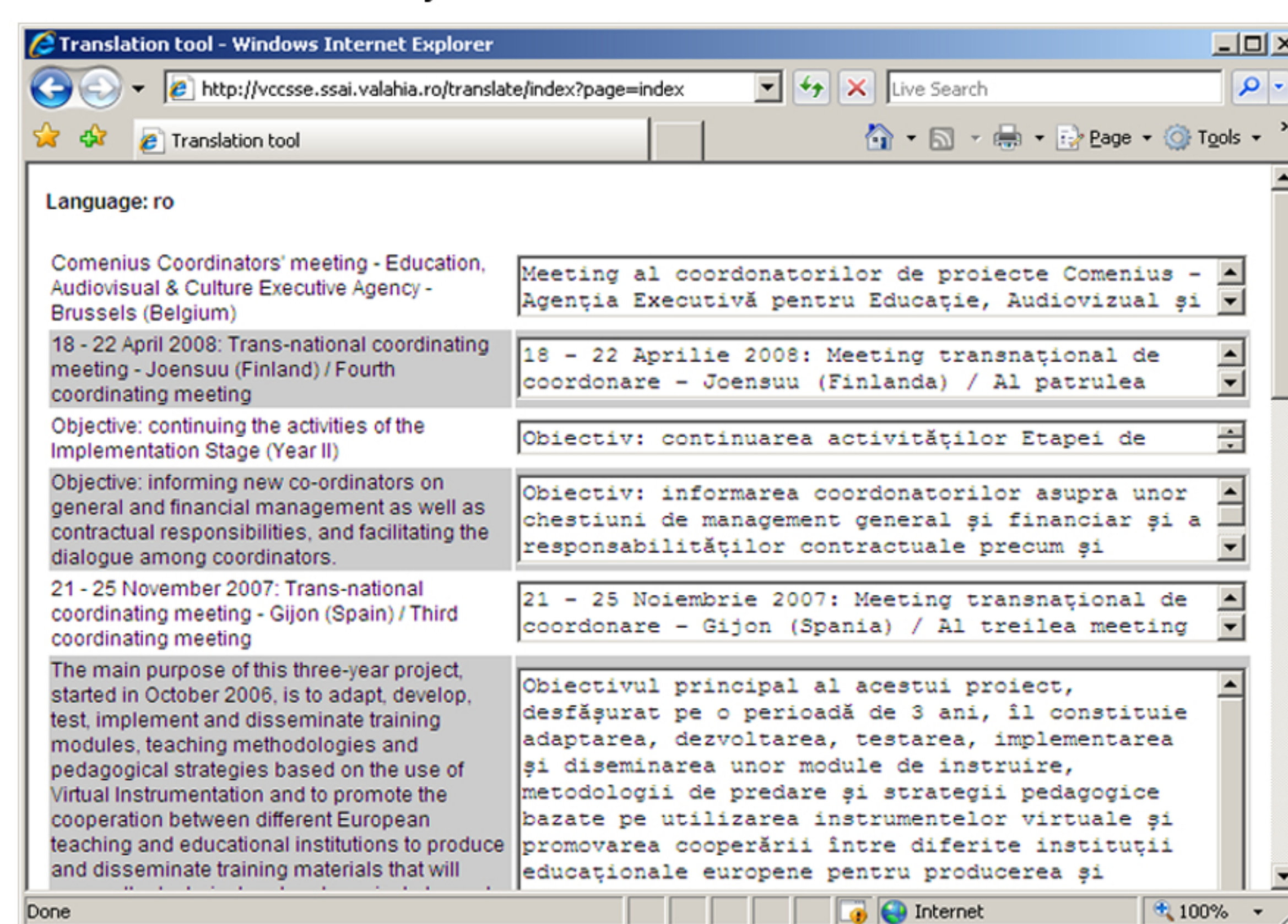


Figure 3: Web translation tool

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