Current Trends in Open Source e-Learning

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Abstract

Open source software is generally gaining popularity. This is because of low costs, since the products are free, and high flexibility, since their source codes are available. In the e-learning sector, this is particularly true for open source e-learning management tools. However, open content has not yet gained similar popularity, although a lot of material is freely available. In this paper current experience with the open source initiative for e-learning tools ***CampusSource*** *is reflected and future development trends are anticipated. Then the newly launched open source initiative for content* ***CampusContent*** *is introduced. Assuming tools and content are freely available, it follows that support and supervision of students will gain importance.*

1. Introduction

After the internet hype of the past years, exaggerated expectations on e-learning have been drawn back. The initial experimental stage of e-learning can now be regarded as over and in the mean time, also due to lack of financial support for new experiments, a certain serious phase of e-learning, where the added value of the use of new media has to be apparent, has been reached. On the whole however, the use of new media is steadily increasing.

Teachers and educational institutions are now becoming aware, that there are three essentials for successful teaching in the network:

- pre-prepared content
- personal online supervision and support and
- a learning management system or various tools (for content management, communication, administration and support).

Many approaches for fulfilling these essentials are in practice today. In this paper we concentrate on the open source approach, which is particularly relevant for content and tools and is currently most successful for tools. In the following we regard trends in open source tools, open content and mutual online support and supervision.

2. Open source tools

Today, an increasing number of educational institutions decide to use open source tools. This on one hand is because in the past few years a number of mature learning management systems have become available on an open source basis. On the other hand many educational institutions suffer under severe funding restrictions. Obvious advantages of open source learning management systems are

- high scalability, flexibility and extensibility, since source codes are available
- no vendor lock as in case of commercial systems (implied by licensing and versioning policies of the vendor)
- low costs in both acquiring the software and operating the system and
- availability of a community for support and further development.

CampusSource [1], initially a German initiative, now has the world wide largest repository of learning management systems and tools under the GNU General Public License (GPL) [2]. The starting point of the initiative was the development of various e-learning tools between 1996 and 1999 in different universities in Nordrhein-Westfalen. These were then adapted over the following two years, so as to be adequate for open source usage. Since the opening of the open source pool of CampusSource in April 2001, a growing number of tools from other German universities outside Nordrhein-Westfalen have become available. Today fifteen different tools including seven complete electronic platforms are available in CampusSource and an active community supports their development. A number of small and medium companies offer support for these tools on a commercial basis. In the meantime software and documentation, originally in German, is also available in English. The CampusSource initiative is financially supported by the Ministry of Science and Research in Nordrhein-Westfalen.

Fig. 1 shows the development of registered users at CampusSource. The numbers are consolidated in the sense that each institution is counted only once, even if several members of an institution are registered. This means for example that a university is counted only once, even if several departments are registered and use different tools from the CampusSource pool.

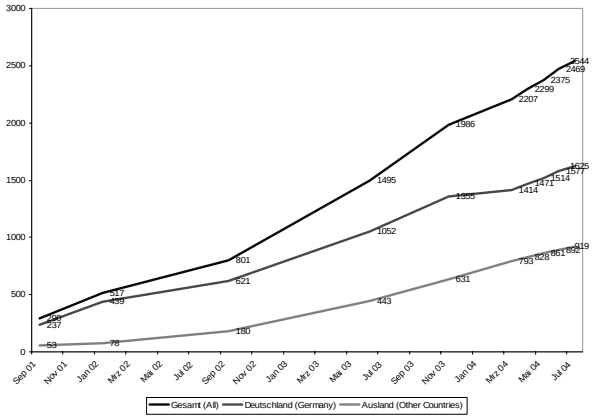

Fig. 1 Development of registered users at Campus-Source

Fig. 2 shows that besides universities also enterprises, educational institutions, and private persons use the CampusSource pool.

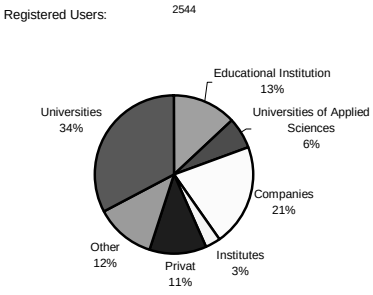

Fig. 2 Distribution of CampusSource Users

CampusSource users come from 91 different countries. **Fig. 3** shows the countries with more than 10 users.

The growth of demand for open source tools has led to a high interest on part of small and medium enterprises to participate as service providers for CampusSource products. Shortly qualified service providers will be listed on CampusSource home page, with the services they provide or a link will be set to their offers.

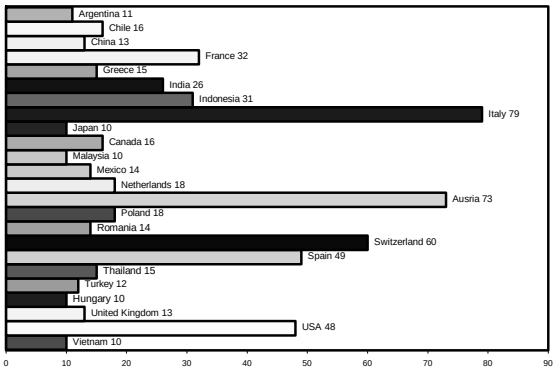

Fig. 3 Countries with more than 10 CampusSource Users

In the mean time several universities have applied for systems and tools developed by them to be included in the CampusSource pool. The enrolment procedure begins with a rudimentary check of the suitability of the software as an open source product by the CampusSource secretariat and two reviewers. On one hand some legal issues have to be satisfied (free from copyright of others, no commercial software used), on the other hand the product must be easy to handle (install, run, use). It is not seldom, that university groups which have developed a product for their own use are unable to do the required adaptations and often cannot guaranty long term support for their products. These do not qualify for CampusSource. In spite of this, the number of systems in the CampusSource pool will steadily increase.

A large number of competing open source systems in the CampusSource pool also means that only a small community of developers (which fosters and enhances the software) can be built for each system. It also means that basic functionalities are developed several times in the available systems, which of course is a waste of development resources. On the other hand to restrict the number of systems in the CampusSource pool by decree is surely not a reasonable choice. Thus another alternative has to be found, namely to achieve a certain convergence of the available systems.

A somewhat similar constraint emerges from the user‘s point of view. Most users find that no single system completely satisfies all their requirements. At the best, they would choose several functionalities from one system and some others from other systems. This of course is seldom possible, since even if available standards are met, compatibility at a functional level is not reached. This is because the architectural concepts followed and the interfaces implemented in the individual systems are often very different.

Modularity on a functional basis and convergence of the available systems will be a major issue in future, the ultimate vision being an extremely modular architecture with extensive compatibility. In this vision e-learning providers enumerate the features they require and put together software modules, which build an appropriate e-learning environment. This would be fully individual and highly scaleable and also enable different (pedagogical) e-learning scenarios. Users (students, teachers, administrators) would on the other hand be able to choose their individual working or learning environment.

Such modularity on a functional basis and the mentioned convergence of systems and tools are an urgent requirement in future. A first approach in this direction has already begun (see [3],[4]) and is being actively pursued by the CampusSource community.

3. Open content

In the past a vast quantity of multimedia content has been produced in different projects. Prominent examples of such projects are MIT's "OpenCourseWare" [5] in which more than 700 courses in 33 different subjects are offered on the internet and the German BMBF project "Neue Medien in der Bildung" whose product list encompasses nearly 400 pages [6].

Freely available content however is hardly used by teachers despite the high cost of the own production of high quality multimedia content. Thus the acceptance is very low. To overcome this low acceptance response is a main concern of the project **CampusContent** [7], which has just been launched at the FernUniverisität Hagen. It is conceived for five years and is funded by the German Research Association. The main idea is to have very fine granular learning object modules, which are well documented by metadata, easy to find and to reuse. This should for example enable professors to use the learning object modules in their lectures without having to fear, that their lecture notes get a strange note or rather that the feeling, "this is not my lecture anymore", comes up.

A multidisciplinary approach is followed in the project CampusContent to establish and run a service centre for the production, collection, quality control, dissemination and reuse of modular multimedia teaching materials for information technology, science and engineering on open content basis.

The major aim of the project is to establish content oriented communities for teaching, learning and research and to support them by methodical, technical and administrative measures. The approach includes the design of a course development model, the realisation of a software technical framework and support tools for the development of component oriented teaching and research materials. Furthermore some basic representative content components from several relevant fields and various media presentation forms will be developed and presented, so as to animate further material development activities and use of the available material. For further information refer to [7].

4. Support and supervision

As mentioned in the introduction of this paper, we have three essentials for successful teaching in the network: content, online support and learning management tools. As we have seen, two of these essentials, namely content and tools, are gradually becoming available as open source products. If we assume, that this trend is strongly successful, then we have the following situation. Excellent multimedia content and excellent learning management tools are available for free use by all teaching institutions. Thus for example the ranking of online teaching of universities will strongly depend on the quality of their support and their supervision of students. Soon more attention will have to be paid to this aspect. On the other hand it is quite feasible, that educational institutions will emerge, that use open source content and tools for their teaching and the sole service they offer will be support and supervision.

The situation depicted above is not just theoretical as can be seen on the following example. Two German Universities (Bochum and Hagen) are planning a joint master course on the internet. The delivery of the material and supervision and support of the students will be offered by an affiliated commercial institution. Of course, as far as adequate open source tools and contents are available, they may be used.

10. References

[1] CampusSource home page: www.campussource.de/org/

[2] GNU General Public License: www.opensource.org/licenses/gpl-license.html

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[5] MIT's OpenCourseWare
http://ocw.mit.edu/index.html

[6] BMBF project "Neue Medien in der Bildung" (in German)
http://www.medien-bildung.net/

[7] Homepage CampusContent
www.campuscontent.de