Open Educational Resources for Management Education: Lessons from experience

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Summary

"Open movements" have gained increasing importance in various areas. In this paper we are interested in the particular case of Open Educational Resources (OER) and more specifically in the use of OER in Management Education. We first present the results of a two years length exploratory study concerning faculty's knowledge, experience and perception about OER with a particular focus on Management Education. This was so far an unstudied subject and our findings were interesting as a first step of understanding. We pointed out the main motivations and barriers relative to the production and use of OER and showed some significant differences between Economics/Management faculty and "other" faculty, the first ones being less advanced than the second ones.

We'll then come to describing our OER experience in Grenoble Ecole de Management. After our first study in 2006, we decided to launch an OER initiative in our Business School and developed our OpenCim website with the aim of providing open educational resources for Management Education. We deliberately focused on resources in French Language to address the francophone academic community (faculty and students). This initiative has so far been very successful. We gather a large and highly satisfied number of readers, among them many Africans. Moreover the feedback of producers (participating faculty) is, again, excellent and we think we have overcome the main barriers identified two years ago.

Keywords: OER, distance learning, management education, Open Educational Resources, e-learning, OpenCim

1 Introduction

According to Materu (Materu, 2004), the current decade could be termed the *o-decade* (following the 90's *e-decade*) because of the fast growing open movements (open source, open access, open education…). These movements have of course strong connections already identified in the literature (see for example Baldi, Heier & Stanzick, 2002). The development of the Internet thus tends to change the "rules of the game" in many areas by boosting various "open" movements. This paper deals with a late-comer: Open Educational Resources (OER) which is defined as "Digitised materials freely and openly offered for educators, students and self-learners to use and reuse for teaching, learning and research." (OECD, 2007). Even though the first stirrings of OER can be traced back to 1994, the real start is the announcement of the MIT's OpenCourseWare (OCW) initiative in 2001 since this organism tends to influence quite a lot the faculty all over the world.

Since the beginning of the 2000's the amount of courses has exploded. Wiley estimated the total number of courses about 2000 in 2006. In 2008 Connexion alone (a Rice University project[1]) proposes nearly 6000 courses. In the same vein, MIT OCW visits grew from about 200.000 per month end of 2003, to about 900.000 beginning of 2007.

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[1] http://cnx.org/

According to OECD, the reasons for such an increase in institutional engagement are to be found in:
- An academic tradition of sharing knowledge.
- The fact that free sharing should leverage taxpayers.
- The probable improvement of the quality and cost of content through a sharing and reuse process.
- The positive image of free sharing on public relations as well as on economic and commercial topics, notably as a way of fame.

Even though electronic publications are cheaper than paper ones, the cost of OER is not to be neglected. According to Beshear (2005), the UK Open University (UKOU) spends an average of $US 3 million per course on content development. Since they have about 200 courses, the total investment is about $US 600 million. Since they depreciate over 8 years, the ongoing development cost is about $US 75 million.

The budget of MIT OCW is $US 4.3 million and the Stanford Encyclopedia of Philosophy costs about $US 190.000 a year (OECD, 2007). OER then has to find its own way for sustainability. Open source software and Open access to scholarly publications preceded OER. It then, of course, tried to draw inspiration from the corresponding emerging economic models. OER is nevertheless very particular and also tends to develop specific models.

While free open source software (FOSS) has to finance the whole development of their projects, OER can benefit from existing resources. Each university has to develop courses, and the specific costs of OER are limited to:
- Conversion of the content.
- Management of intellectual property issues.
- Making the web accessible.

The $US 3 million per course of UKOU then cannot be extended to other universities since most of the resources (i.e. the courses) already exist. For example, main OER services for MIT OCW[2] are limited to:
- Audit courses, take lecture notes, and transcribe handwritten lecture notes.
- Intellectual property management.
- Structure lecture notes, organize course materials for digital publication, reformat and edit PDFs.
- Produce archival record of courses and content.

Furthermore, OER can benefit from many substitutions (Dholakia, 2006):
- Replacement of virtual learning environment like Blackboard, of data-repositories and of web sites.
- Replacement of printed material.
- Replacement, at least partial, of textbooks.

Costs nevertheless remain significant. Some authors analyzed the potential sustainability of OER (Dholakia, 2006, Downes, 2006, Hylen, 2006). Current funding models are very diverse and can be classified into three categories:

- **Altruistic funded model**: Since OER cannot be directly financed by users, the founders of OER, mostly Americans, obviously tried to get funds from donations. The Stanford Encyclopaedia of Philosophy thus obtained an overall $US 3 to 4 million fund generating an annual budget of about $US 190.000. Downes (2006) called it the *Endowment model*. Some organizations also try to get support and donations from a wide community of donators (Downes *Donations model*). This model is widely used in open

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[2] http://ocw.mit.edu

source and open content projects like Wikipedia (Foote, 2005) and the Apache Foundation. (Apache, 2005). Altruism is also a way to reduce the costs of OER.

- **Institution funded model**: MIT OCW is the most famous example of this model, where an institution mainly aims at enlarging its notoriety and at the potential creation of brand. Such a model can be extended to various forms of *partnership model* (Dholakia, 2006) involving professional societies, or firms that focus on a particular field. The main potential of this model nevertheless relies on diverse public (governmental or local) institutions which want to promote general or specialized educational programs, like for example Canada's SchoolNet project. Interested organizations, alone or in a group, also can finance OER. Downes (2006) *Membership model* thus gathers a set of organizations which pay an annual fee, like Sakai Educational Partners Program. The *contributor pay model* quickly growing in Open Access could also be a way to implement institution funded model.

- **Value-added model**: A promising way to finance OER is to use it as a basis to supply profitable valued content. FOSS well known *Conversion model* (Sterne & Herring, 2005) uses free distribution of software to promote the sell of charged services. GNU-Linux distributions or Moodle work this way. One can for example (Dholakia, 2006) sell paper copies on a highly specialized topic or propose training for annual fees. The publication of on-demand textbooks also can participate in financing OER.

The diversity of models clearly shows that OER is in its infancy and still has to find its own original way. Donation models are difficult to transfer outside the Anglo-Saxon world and countries more "welfare state oriented" will undoubtedly favour institutional and governmental models. Even though contributor pay model is more adapted to open access than to OER, organizations looking for notoriety – notably private educational institutions – could promote it. In the near future, OER initiatives will probably use a mix of these existing models, but, considering that education is a public good, the real sustainability of OER will inevitably require a strong commitment of educational organizations and, moreover, of governments, notably in Europe.

2 OER and faculty

2.1 Objectives of the study

Our aim, when in 2006 we conducted our first exploratory analysis about how faculties perceive OER was to get an idea of their awareness, production and use of OER, to identify the main barriers and incentives for its development and consider possible evolutions for the future. We also intended to dedicate a part of this study to the specificities of Management Faculty, since it is the environment we belong to. As a matter of fact, our working in a Business School (Grenoble Ecole de Management, which is one of the top ten French Business schools) had led us to notice the relative rarity of OER in that field.

A rapid survey of OER directories showed an over-representation of "hard sciences", notably Mathematics and Computer Sciences, and the backwardness of Economics and Management, and allowed us to identify, a priori, three types of potential barriers which could be more important for Management faculty than for other faculty:
- Business Schools have a culture of competition.
- Faculty Management may be more interested in money.
- Last a French particularity: Students pay rather high fees in Business Schools which is not the case in other areas.

2.2 Methodology of the study

We adapted a questionnaire from an OECD survey[3], keeping two thirds of the questions and adding some specific ones so as to get 34 items divided into 4 categories (in addition to identification questions) : notoriety of OER, production of OER, use of OER, future of OER.
The survey was conducted online. We sent it to a sample of 30 HE institutions around the world and got 129 answers of faculties in a first run.

Among these 129 answers, 45% were from Economics or Management Professors, 20% were from Science, Mathematics and Computing; the last 35% coming from other areas.
A little more than half of the total were from public universities.

The average experience was around 13 years with a high standard deviation.

Our comparative studies were settled on 2 categories only: Economics and Management (57 persons) versus "others" (72 persons).

2.3 Main Results

In this paper, we only present the main results of this study and focus on faculty's perception about production of OER, which has become the most important issue to us. The complete results were presented at the EDINEB 2006 conference in Lisbon (Humbert & Rennard, 2006).

2.3.1 Notoriety

Our first question was about global OER awareness and knowledge with 4 possible answers: no idea, little idea, some knowledge and good knowledge. We got a nearly equal repartition among these categories (26%, 19%, 30%, 25%) as shown in figure 3 below. But as all spontaneous questions, it has to be interpreted with caution. In fact some respondents realized later in the questionnaire that they knew more or less what OER are.

Interestingly a significant difference (p = 0.01) appears between our 2 main categories, and Economics and Management Professors appear to have a significantly lower knowledge than "Others".
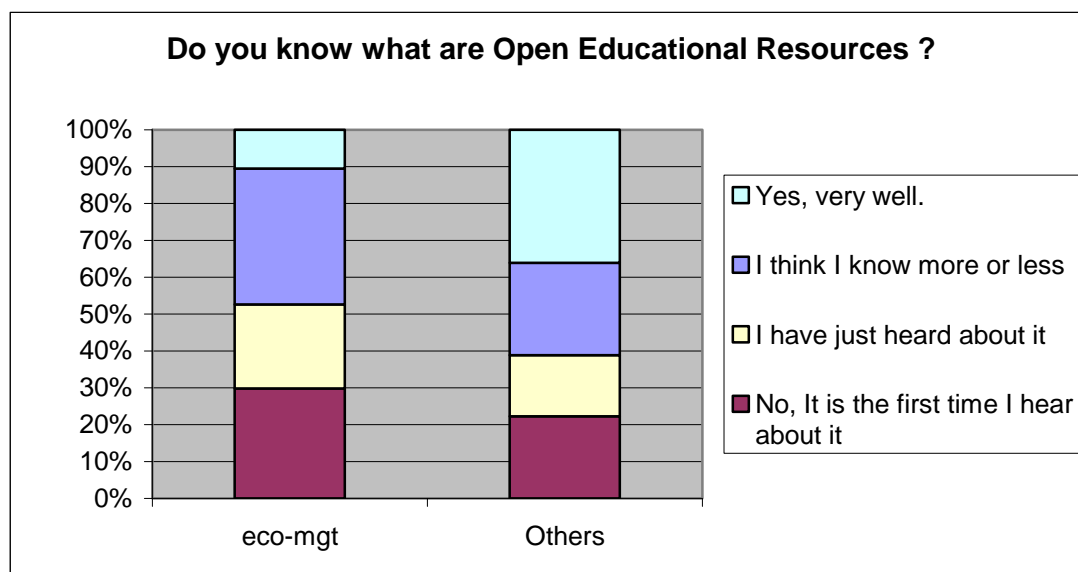
Figure 1. *Do you know what are Open Educational Resources?*

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[3] http://www.oecd.org

A precise question about MIT, showed that globally 46% of our sample had never heard (or forgotten) about their open courseware initiative, 26% had heard about it and 32% had heard about it and visited the corresponding website.
Here again, Economics and Management Faculty's knowledge proved to be lower than others' knowledge.

2.3.2   Production of OER

Incentives to produce OER

In an open-ended question about incentives, money came first, followed by time issues, acknowledgment and recognition issues.

We also tried to measure the importance of some criteria. A five-point Likert scale was used with responses ranking from 1-"not important" to 5 - " very important".

Figure 2, below, presents a comparison of the results for 2 categories of faculties: Economics and Management versus others.

Incentives to produce of OER

☐ Others ■ Eco-Mgt

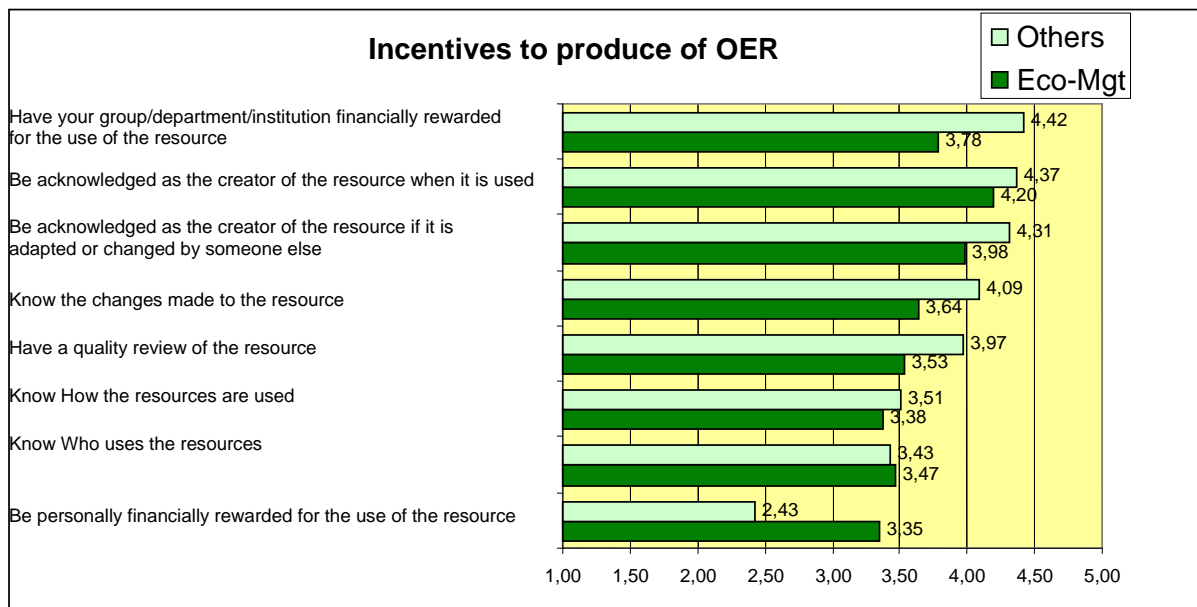|	
Have your group/department/institution financially rewarded for the use of the resource	4,42 / 3,78
Be acknowledged as the creator of the resource when it is used	4,37 / 4,20
Be acknowledged as the creator of the resource if it is adapted or changed by someone else	4,31 / 3,98
Know the changes made to the resource	4,09 / 3,64
Have a quality review of the resource	3,97 / 3,53
Know How the resources are used	3,51 / 3,38
Know Who uses the resources	3,43 / 3,47
Be personally financially rewarded for the use of the resource	2,43 / 3,35

Figure 2. Incentives to produce of OER

Globally, acknowledgment (for usage or modification) was the most important issue for our respondents. Feedback and knowledge about the use come after and are above average.
Personal Financial reward was surprisingly at the last rank (it came first in the open-ended question). In one way, it seems normal that respondent think that money should come from another source than users (by definition of openness) but why not having a reward proportional to the use? This might be an indication that more research should be conducted about economic models. They also prefer financial reward to go to the group, which is more in accordance with the altruistic motivations.

Some differences could be detected between Economics and Management Professors versus others. All scores for the first category were below those of the second one (though not significantly) except for the personal financial reward, which was significantly ($p < 0.05$) more important for Economics and Management Faculties whereas group financial reward appeared significantly less important to them.

Barriers to production

With the same Likert-scale we had proposed our respondents to grade the importance of a list of barriers, and obtained the following average scores presented in a decreasing order for the "others" category in figure 3:
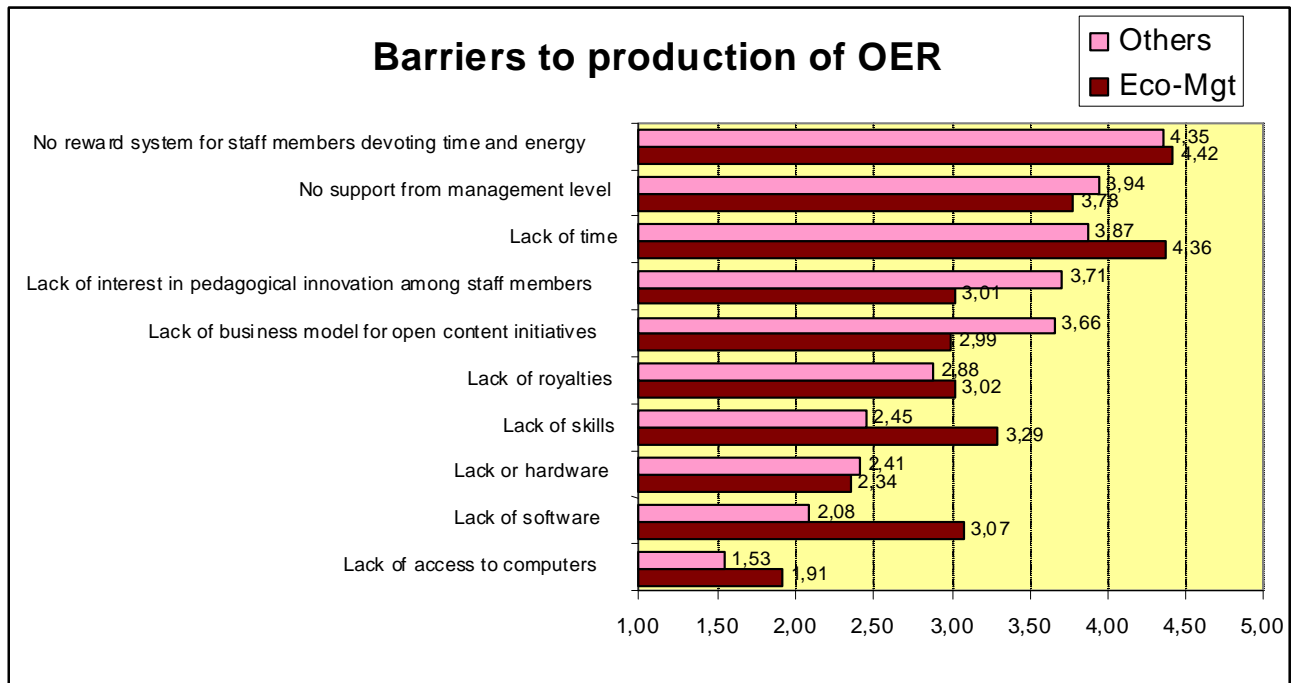

Figure 3. *Barriers to production of OER*

Obviously production of online resources (open or not) is time-consuming, and faculties favour research activities, which are more rewarded, than pedagogical activities. Our results were quite consistent with those of OECD. In their study, the most significant barriers were said to be the lack of time, followed by the lack of a reward system to encourage staff members to devote time and energy to producing open content. The only significant differences between our 2 categories concerned the lack of skills and hardware, still higher for Economics and Management faculties though remaining at a medium level.
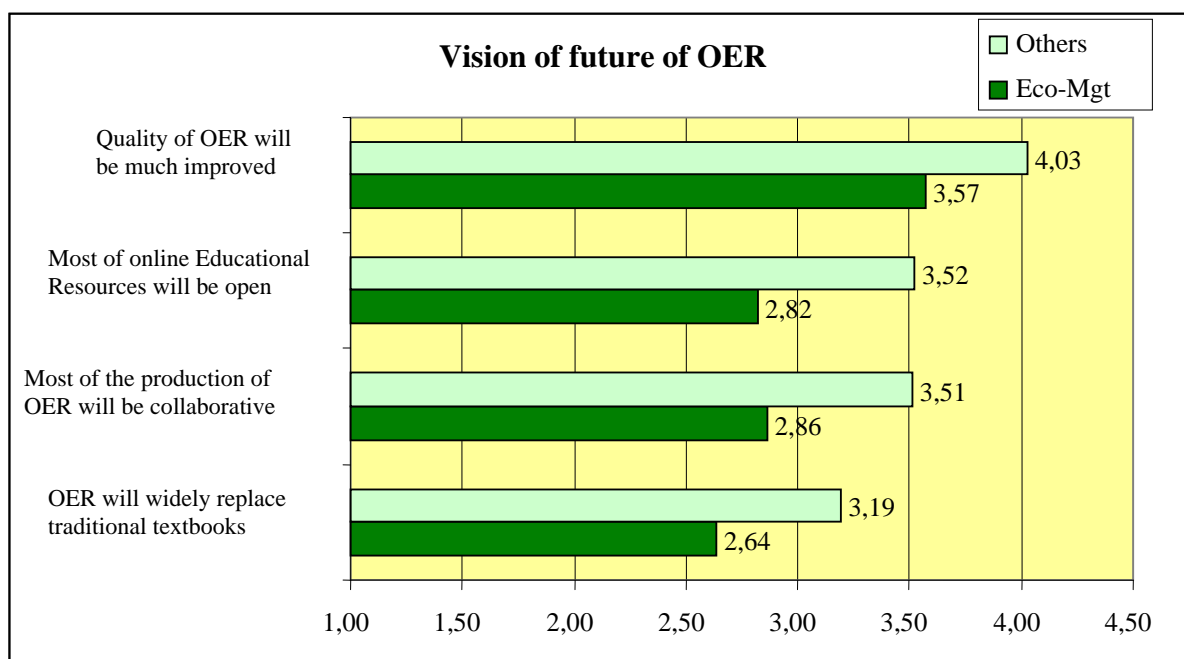
2.3.3 Future of OER

As shown in figure 4, our respondents are globally confident about the future of OER (although a little less for Economics and Management faculties). They consider it more as an opportunity than a threat (globally: 4.35) and believe in collaborative production and multimedia development. They are rather concerned by legal issues. (Economics and Management faculties are significantly more).
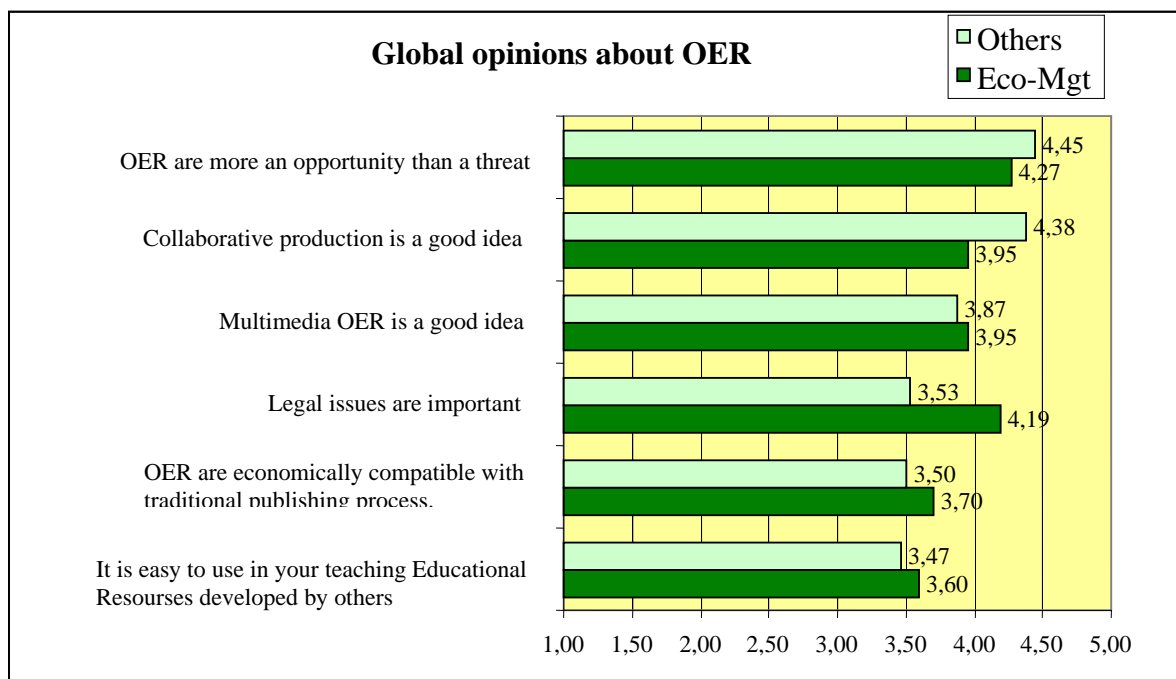
Figure 4. *Global opinions about OER*

We asked our respondents to evaluate the probabilities of different possibilities for the future of OER (with a Likert-scale: from 1: very unlikely - to 5: very likely). Results are presented in figure 5. These possibilities get scores slightly above average, especially for "Other" faculties who appear to be significantly more optimistic than Economics and Management ones.

Globally, our respondents are confident in the improvement of quality (3.8), and rather confident in the development of collaborative production (3.2). Most of them bet that most of online Educational Resources will be open"(3.15), but are less confident in having them used in replacement of traditional textbooks (2.9).

Figure 5. *Vision of future of OER*

3   The OpenCim project[4]

3.1 Presentation

Grenoble Ecole de management is a graduate school of business with a high European ranking. It is accredited by AACSB International (Association to Advance Collegiate Schools of Business), EQUIS (European Quality Improvement System), AMBA (Association of MBAs) and has nearly 3000 students in Grenoble and 1500 students in other locations around the world.
After our initial study described in Part 2, we were convinced that there was a need for more Open Educational Resources in the Management area. We were also aware of the lack of resources in French. We had the advantage of a rather long experience of e-learning for our internal needs and for helping other institutions in e-learning development. For instance, we had managed an important EU-sponsored project: MEDFORIST, aimed at implementing a Euro-Mediterranean network for sharing information systems and technology (IST) resources through e-learning. (Medforist, 2008).

This is why we decided to launch our OER initiative : OpenCim, standing for **Open C**ourseware **In M**anagement. OpenCim is a course management system that offers courseware in management, freely accessible by Internet. Its goal is to provide French speaking educators, students, and self-learners with free access to a part of Grenoble Ecole de Management courses materials. Accessing published materials doesn't require any registration and the use of the materials is not degree-granting or certificate-granting. Figure 6 below shows a screenshot of the site's homepage which presents the goals of the site and the courses catalogue (links to course web page). A course, on OpenCim, is a rationalized sequence of educational material.

The project started in September 2006, with a limited number of courses but favouring a search for quality and coherence inside each course. Unlike some other open courseware initiatives, we did not want to offer just the Powerpoint slides, used by the teacher during his course in the classroom. This kind of resource, without any comment, is insufficient to learn anything or to be reused in the proper teaching context. In 2007 it received a grant from the Rhone-Alpes region within the framework of the Regional Plan for Higher Education and Research. This grant has allowed us to accelerate the development process.

OPENCIM was the second OER initiative in France, following ParisTech[5] launched in November 2003. The project makes available through Internet, pedagogical resources used among the 11 French institutes of education and research, members of ParisTech collective entity. The teaching fields ParisTech proposes are mathematics, physics, chemistry, mechanics, sciences, etc.

We are, for now, the only French institution member of the OpenCourseWare Consortium[6].

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[4] http://opencim.grenoble-em.com/
[5] http://graduateschool.paristech.org/
[6] http://www.ocwconsortium.org/

Figure 6. OpenCim website

3.2 Technical choices

We based our technical choices on the objectives of Open CourseWare which are to provide free, openly available, IP cleared, educational material. Users then must not need to register to access the OER and, since a course is a rationalized sequence of educational material, we had to find or develop software able to provide free access to structured material.

Since there is no standard for CMS software, we were looking for a tool allowing us to put online sequences of training under general formats (such as SCORM) so that the contents were most portable.

We decided to choose Moodle that we have been using internally since 2004, as a CMS for our programmes. Our knowledge of this software clearly eased the implementation of our OER project. Moodle[7] is an Open Source CMS which complies with consortium's recommendations, but also offers the flexibility and modularity we needed to allow the evolution of our open courseware project. By using Moodle, we also wanted to recognise the great value of the open source paradigm.

The features we are now using are recognition and the integration of standards of publication of SCORM type. We are also using the global search tool which makes it possible to search the whole available resources of the site. Thus the CMS, as well as each course, are referred on the search engines, which increases our visibility on the web.

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[7] http://www.moodle.org/

On the user's side, Moodle allows fine parameters setting for the authentication. If a user wants to take part in a forum discussion, he will have to create a member profile. If he just wants to consult the offered resources, the access can remain an anonymous one, without registering through a generic guest profile.

For the project's future features and orientation, the software authorizes implementation of other learning community platforms, like Eduspaces[8], a social network software for education. Eduspaces allows the users to constitute a learning community sharing the same interests, to incorporate or remix the contents.

3.3 Pedagogical choices

Up to now, we have decided to offer our own e-content. We do not offer translated open educational resources from other institutions such as MIT.

For a course, the minimum requirements are the title, the summary, course materials and the copyright/left licence. We encourage teachers to give other resources than just slides. It is an important requirement because just reading slides out of context is of limited value, even to those who may teach in the same field. So most courses offer slides supplemented by teacher's video taped explanations, flash animated demonstration, or videos.

3.4 The process of inclusion of a course

Most courses are adapted from our internal CMS. In this case, the course is first transferred from the first Moodle server to the second one. Then, it is contextualised and cleaned from useless information for its diffusion on OpenCim (dates, calendar of exams…).

Each suggested resource is attentively re-examined for intellectual property clearance. A search for quotations is carried out in a clearness preoccupation from the point of view of intellectual property. In the same way, images which are not under open licence are replaced by images under Creative Commons licence. Multi-media resources sometimes require additional processing like a conversion to Macromedia Flash and an adaptation to the SCORM standard.

Some other resources are specially designed for OpenCim and they do not exist on our internal CMS. Usually they correspond to videotaping of conferences. In this case the process of intellectual property clearance is directly done.

Finally, descriptive metadata of the course and resources are then added to best qualify them and increase the quality of information available for the research tools.

All resources on OpenCim have IP clearance and are published under a Creative Commons licence. Most of the time, authors choose the Attribution-Non commercial-share alike license that allows others to use, copy, distribute and make derivative works for non commercial purposes. The fact that each author may use a different license means the participant who wants to reuse the materials has to understand how the license works.

3.5 Attendance of OpenCim

Users can register on the web site or can just get connected as guests. Of course most visitors choose the second option but registered users are more interesting for us; we have a better traceability of their online behaviour and it can be useful to improve the content or presentation. The first courses were put online at the beginning of 2007. 6 months later, without any advertising action, or referencing, and only few available courses (less than 10), there were 850 registered users. In June 2008 there are 4620 registered users and about 840 guests per day.

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[8] http://eduspace.net/

The graph of Figure 7 below shows an important progression between May 2008 and June 2008, which is our student recruitment period. OpenCim is then used as well by learners and by people (future students) who are looking for information about our school. It then satisfies both usual requirement of OER: knowledge diffusion and visibility improvement.
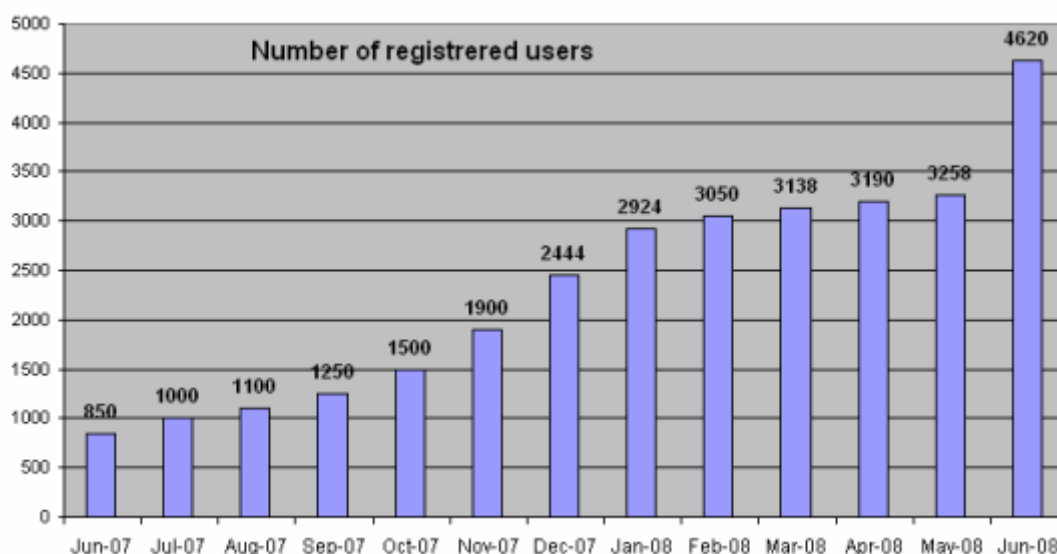
Figure 7. *Number of registered users*

The world distribution of the registered users, illustrated in figure 8, shows that about half come from France, then North Africa and sub-Saharan Africa. These results clearly show the need of Francophone resources particularly in African countries. One of the objectives of OER is to ease the access to knowledge for developing countries who lack teaching resources. We think that we have met this objective. Such results should encourage other Francophone institutions to develop OER in their own field.
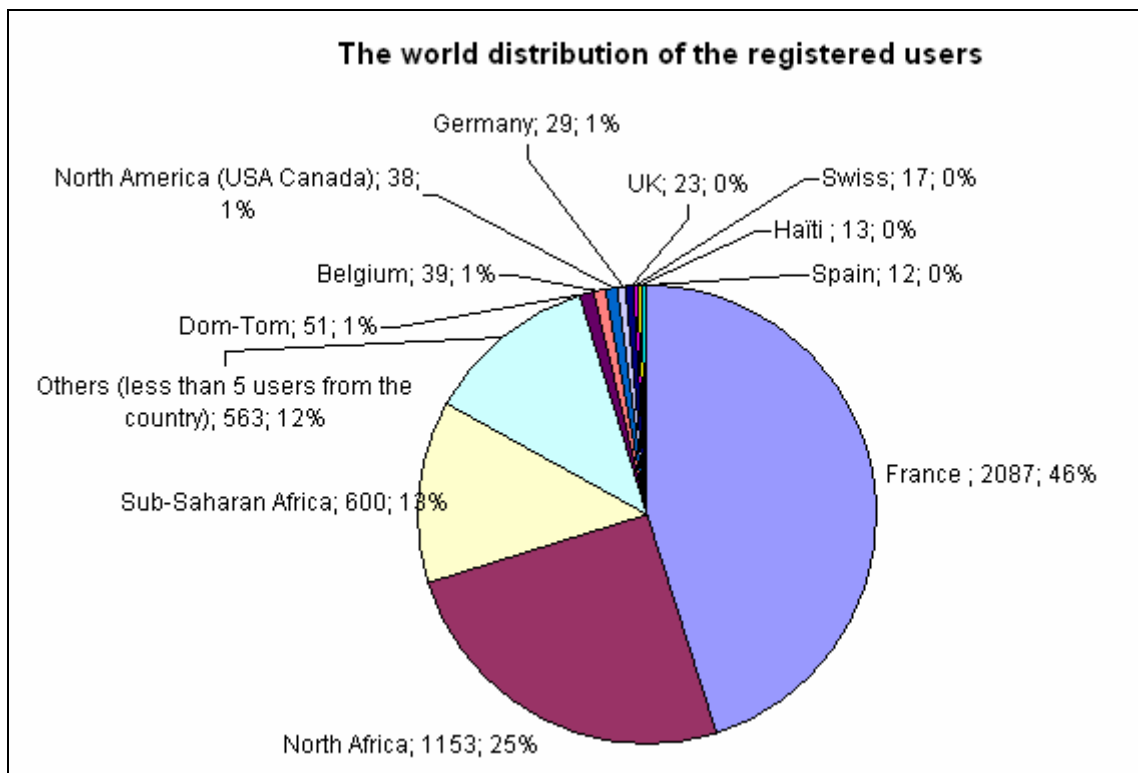
Figure 8. *The world distribution of the registered users*

We don't know the proportion of people accessing our course via a search engine or directly from the catalogue on the home page of the courseware. We will implement some analysis tool in the future to get this information. On average, the site attracts nearly 1000 visitors per day.

3.6 Users feedback

Many users give very positive feedback about the open Courseware. Some of them post on the site global forum and usually comment their experience with this courseware. For instance they can explain in what circumstances they have used the site or suggest improvements. According to our first estimations, most of users are "students" either self-students or students enrolled in other universities trying to get additional learning resources, but we also have feedback from other professors who have used these resources for their own teaching. Obviously many practical questions are also asked about possibilities of graduation. Other users try to contact directly a course creator (throughout a forum or by e-mail) for learning assistance. Unfortunately, most of the time the faculty cannot spend time in providing this assistance, which is clearly stated on the OpenCim web site. One of our objectives for the future is to develop and organize learning communities among users. These communities have sometimes started to emerge spontaneously and we want to promote this development.

3.7 Participating Faculty feedback

After this 2 years experience, faculty perception was a main issue for us. We had, of course, taken into account the results of our previous survey and tried to provide the most important incentives while working on decreasing the impact of identified barriers to OER production.

Time issues happened to be less crucial than expected by the faculty. In fact, most of the OER production was only an adaptation of the e-content previously developed for internal purposes, and most of this adaptation was done by the e-learning team. Among participating faculties, nobody complained about time issues during our interviews, and at the opposite we collected positive testimonies about time issues like this one:

"Transposing my e-resources from our "internal Moodle" to Open-cim was a matter of two days only. I just had to check with the e-learning staff what part of the resources could be proposed with a Creative Common licence"

Management support has been very high. The deans of the School have very clearly stated the importance of this OER project and promoted it in many circumstances, like faculty meetings. Most of them have set an example by participating to OER production.

No specific rewarding system has been set up but most of our participating faculty has found a reward in the high frequentation of the site coupled with a high satisfaction of users.
"At first, I was rather reluctant to "give" my content to OPENCIM. I have changed my mind because of the huge number of visitors and their positive feedback."

They believe now that this OER production has broadened their reputation thanks to good press coverage.
"It was rather unexpected for me but I think that in some way, it was good for my reputation"

In certain cases, another reward has been the suggestions of improvement provided by users.
"I have received very relevant comments on a part of my course and I have used these comments to make some important changes".

Finally the fear about "getting stolen" nearly disappeared with a better knowledge of what a Creative Common licence is.

As far as we can conclude from this case study, it appears that Management faculties, which was more reluctant than others to enter the world of OER, can change their mind with a better knowledge in a practical experience.

3.8 Management feedback

As written before, school management have actively promoted the OpenCim project. Interviewed after this 2 years experience, they relate their satisfaction with the site frequentation and the positive impact on the school's reputation. They also confess to be proud to demonstrate that even a (semi private) business school can have altruistic motivations and share knowledge as well as academic publicly financed institutions.

4 Conclusion

Globally, our OER initiative has been very successful up to now. It has proved to fill existing gaps (French-speaking learners and Management learners), and we were very satisfied with the users' and participating faculties' reaction. To improve our open courseware and get a better knowledge of users' current use and of their expectations, we will perform a user survey with an online questionnaire.

The second population that interest us are the faculty and specially the differences between Management Faculty and Science Faculty. We will perform a new faculty survey to know if our hypothesis (from our interviews) about the reduction of the differences between Management Faculty and Science Faculty is valid when extended to a larger population.

An OER project is also a good opportunity to study self-learners and improve our knowledge about how people learn on line and the means of developing efficient online communities of learners. Our project for the future is to study users' expectations and the evolution of Management Faculty and Science Faculty perception in order to identify potential ways of progress.

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