

# Open Source Web Applications. How it Spread through the Internet and their Contribution to Education.

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**Abstract:** *Open Source Web Applications are all those applications that are accessible through the World Wide Web[1], and also their source code is open to anyone who wants to participate in their amendment. The benefits of the World Community from these applications are enormous. The use of open source applications begins already at school. At University it doesn't create just users, but develops students' programming skills. At the same time, it promotes and contributes to the research conducted by the academic community. Later, in the workplace, these applications are always useful and can help in all areas of daily work as well as in the development of a company. It's very important that the open source applications promote cooperation and exchange of knowledge between people, through discussion groups(forum), since they allow the simultaneous work. Furthermore, the benefits are economic as well, since it can be saved a great amount of financial resources, that would be spent for the purchase of the necessary software licenses[2].*

**Keywords:** *Dynamic simulation models, Open source web applications, Web 2.0[3], Education.*

## I. INTRODUCTION

In this research, we shall indicate that the Open Source Web Applications can turn out to be a "Social" tool[4], which may help to the communication of Global working groups[5], as much as the tool that aims to the communication of people from anywhere around the world, either for research or entertainment purposes. On the other hand, the social tools of the Internet due to the ease with which can be used, have managed to overcome all these limitations that existed in past years, when the access to knowledge and the usage of the internet was parlance for the few and highly qualified ones.

Finally, the open source web apps expand students' knowledge, offering them the opportunity to come into contact with people of other countries, through discussion groups on the internet (forum), to broaden their horizons beyond the boundaries of their countries and to derive "global" knowledge[6]. These applications give students the chance to join a global team that has the same goal: to create common tools.

To see whether in fact the field of higher education knows, uses and develops Open Source Web Applications, we conducted a qualitative and quantitative research[7] to students and professors of

Faculty of Sciences. The questions were, whether the students know, use and develop social software, whether professors use and promote Web Applications and whether Universities have the resources to develop and promote Open Source Web Application.

Based to the survey findings, we concluded that such applications are not widespread in the University community. Students do not know that Open Source applications can become a tool for everyday use, although some of them use those applications, without knowing that they belong to the open source applications.

So far, we come to the conclusion that Universities and professors should undertake the role of promoting the Open Source Web Applications, through the courses, in a way that more applications become familiar and useful to students.

This will result in the actual evolution of open source web applications, as more people will be involved in their use and development.

## II. METHODS

### A. Dynamic Simulation Model

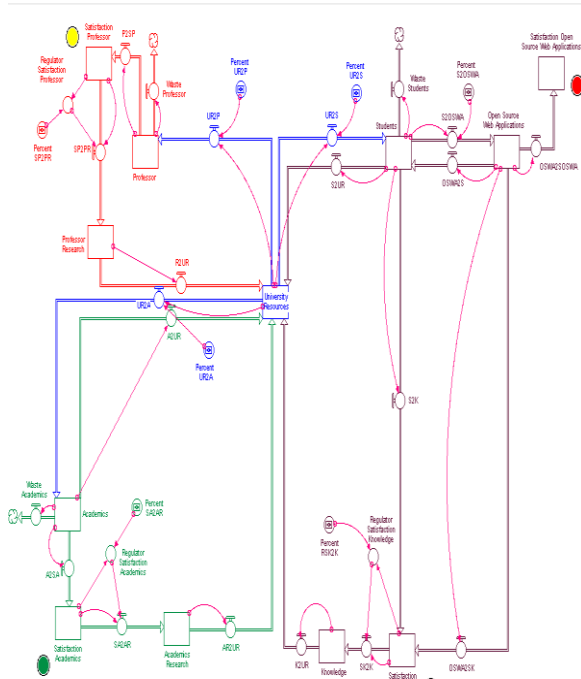
The conjunction between Open Source Web Applications, professors, students and knowledge gained by students who know and develop such applications, is dynamic. There has been conducted a qualitative and quantitative research in 1000 students and 100 professors of Faculties of Sciences.

As shown by the dynamic simulation model, the results change, every time we modify the provision of the existed resources to the factors. Depending on the resources that are provided by the University, involving money, personnel, personnel training and classrooms, the percentage of students who know and develop open source applications changes qualitatively, as much as quantitatively.

**A.1. Reasons to create the simulation model**  
In order to highlight, in the best way we can, the problem among students, Universities and Open Source Web Applications, we created the Dynamic Simulation Model. The main reasons are listed below.

1. Comparison between Web Applications and Web Open Source Applications.
2. Savings for the University.
3. Developing students' skills and knowledge.
4. Benefits for the finished products, **due** to the free availability of the source code.

5. Development of Open Source Web Applications in the Academic Community and Education.
6. Promotion of research in Universities.



Dynamic Simulation Model

### A.2. Handling and Analysis of Dynamic Simulation Model

In the problem we try to highlight through the Dynamic Simulation Model that we built, it is revealed the relation between the resources available that exist in the University in order to promote Open Source Web Application, the development of students' knowledge, the research promoted and the development of social software applications.

The Dynamic Simulation Model functions through the control of interfaces, which control all avenues of resource allocation that the University has at its disposal.

Depending on the allocation of resources that we put through these interfaces, we will satisfy the need of more students to deal with open source applications. Moreover, we will satisfy the desire of students for knowledge, use and development of those applications. The research that academics conduct will increase, better products will be created, more projects will come out and finally, there will be a great return of resources to the University.

The results change as we allow more or less outflow from the University to students and academics. The whole process works in chain. The expected result is that some of the money spent by the Universities, in order to develop Open Source Web Applications, will return to them, completing in that way the supply and demand circle.

### B. Dynamic Simulation Model Results

The results of the Dynamic simulation model are shown in tables and graphics below.

Months	Students	Persect S2DSWA	S2DSWA	Open Source Web Appli	Satisfaction Knowledge
1	2500	3.00	0.80	0.75	0.35
2	15.34	3.00	0.80	0.28	11.61
3	13.38	3.00	0.82	0.20	21.40
4	12.05	3.00	0.35	0.18	29.17
5	11.07	3.00	0.35	0.16	31.94
6	10.51	3.00	0.32	0.15	31.02
7	10.18	3.00	0.31	0.15	30.22
8	9.95	3.00	0.30	0.14	29.29
9	9.89	3.00	0.30	0.14	30.73
10	9.57	3.00	0.29	0.14	29.45
11	9.48	3.00	0.29	0.14	30.40
12	9.29	3.00	0.28	0.13	31.41
13	9.28	3.00	0.28	0.13	29.93

Table 1 : Students in conjunction with the Open Source web applications.

Months	Satisfaction Academic	Satisfaction Knowledge	Satisfaction Open Source Web Appli	Satisfaction Professor
1	18.00	0.38	0.45	15.00
2	28.08	12.83	0.78	31.45
3	36.27	21.40	0.90	49.96
4	41.86	29.17	1.02	65.5
5	50.30	31.94	1.12	72.86
6	58.31	31.02	1.22	81.35
7	62.52	30.22	1.31	88.54
8	68.34	29.29	1.40	89.48
9	68.42	30.73	1.48	70.95
10	64.51	29.45	1.56	72.86
11	70.00	30.40	1.65	81.47
12	80.10	31.41	1.73	83.57
13	89.86	29.93	1.81	85.30

Table 2 : The Open Source web application in conjunction with Academics and Knowledge.

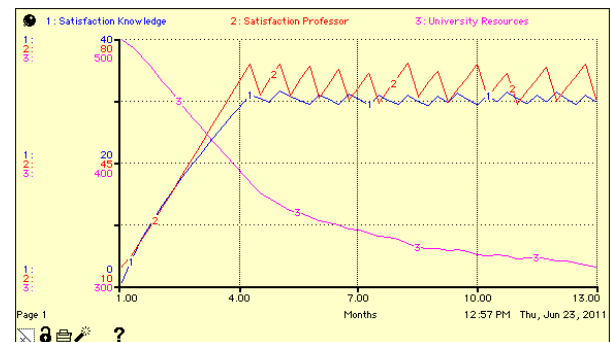


Figure 1 : The resources of the Universities in conjunction with the Professors and Knowledge.

### A.3. Proposals to promote social software

To promote the use of social software in Information Systems[8], existing or new, we should take a series of initiatives in highlighting the benefits that come out of the use of social software and in sensitizing the organizations or to the risks that are associated with the use of closed systems. In particular, it is suggested:

- Possibility of adopting a framework of minimum support or dynamic support. Minimum support framework: allocation of time and resources. Dynamic support framework: establishment of a legislative framework that will show preference in solutions of social software, wherever it's technically possible and direct or indirect financing of alternatives in social software, in cases of strategic, social or economic feasibility.
- Reinforcement of projects relative to the documentation, translation and localization of Open Source Web Applications.
- Development of partnerships for the realization of

projects of public interest.

- Information and gradual promotion of the use of social software in order to encounter specific needs in different fields of the public sector.
- Provision of information to companies on the benefits of the use or transition to social software.
- Encouragement of the development of Open Source Web Applications by the academic community itself.
- Technical support and pedagogical guidance during the development and adaptation of educational software[9], as well as evaluation of products and services.
- Training of the academics and professors[10] in the pedagogical reclamation of the educational material that is produced (software, activities, etc.) and installation and management of social software.
- Promotion of the production of social software in Universities in team work.
- Creation of courses that are based on the use of multimedia software[11] for education.

### III. CONCLUSIONS

Learning and using the Open Source Internet based Apps, gives the students qualities and skills that can be a sustainable competitive advantage in the labor arena.

At the same time, that makes them aware of a technology that will be of fundamental importance for the future communication.

These conclusions arise, despite the fact that throughout the course of our investigation, we examined a small sample of the new technologies and internet sites that encourage users to create and share content.

The use of social tools of communication that enables the common and real-time collaboration is a constantly growing tendency. An example is the use of video conference[12] that enables a new telecommunication with electronic display of participants. It also enables online real-time communication (video-call), such as Skype[13], as well as the exchange of personal views, such as Facebook[14], where, additional to the communication, people can exchange files and games. A good example of real-time online work is the combination of business oriented Gmail with the video-call of Gtalk.

Eventually, the use of Open Source Web Applications, also contributes to the economy of a country. Many studies have demonstrated the positive contribution of open source products to economy, especially in countries with smaller production sizes[15].

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