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# INTEGRATED INFORMATION

International Conference on Integrated Information

Kos, Greece      September, 29 – October, 3 2011

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**All papers have been peer-reviewed**



**Piraeus, Greece, 2011**

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# **Preface: Proceedings of the International Conference on Integrated Information (IC-ININFO 2011)**

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## **Aims and Scope of the Conference**

The International Conference on Integrated Information 2011 took place in Kos Island, Greece, between September, 29 and October, 3, 2011. IC-ININFO is an international interdisciplinary conference covering research and development in the field of information management and integration.

The conference aims at creating a forum for further discussion for an Integrated Information Field incorporating a series of issues and/or related organizations that manage information in their everyday operations. Therefore, the call for papers is addressed to scholars and/ or professionals of the fields of Library and Archives Science (including digital libraries and electronic archives), Museum and Gallery Studies, Information Science, Documentation, Information Management, Records Management, Knowledge Management, Data management and Copyright experts the latter with an emphasis on Electronic Publications. Furthermore, papers focusing on issues of Cultural Heritage Management and Conservation Management are also be welcomed along with papers regarding the Management of Nonprofit Organizations such as libraries, archives and museums.

One of the primary objectives of the IC-ININFO will be the investigation of information-based managerial change in organizations. Driven by the fast-paced advances in the Information field, this change is characterized in terms of its impact on organizations that manage information in their everyday operations.

Grouping emerging technologies in the Information field together in a close examination of practices, problems and trends, IC-ININFO and its emphases on integration and management will present the state of the art in the field. Addressed jointly to the academic and practitioner, it will provide a forum for a number of perspectives based on either theoretical analyses or empirical case studies that will foster dialogue and exchange of ideas.

## **Topics of general Interest**

Library Science, Archives Science, Museum and Gallery Studies, Information Science, Documentation, Digital Libraries, Electronic Archives, Information Management, Records / Document Management, Knowledge Management, Data Management, Copyright, Electronic Publications, Cultural Heritage Management, Conservation Management, Management of Nonprofit Organizations, History of Information, History of Collections, Health Information

## **Symposia**

The Conference offered a number of sessions under its patronage, providing a concise overview of the most current issues and hands-on experience in information-related fields.

- Symposium on Integrated information: Theory, Policies, Tools
- 4th Symposium on Business and Management and Dynamic Simulation Models supporting management strategies

- Session on Open Access Repositories: Self-archiving, Metadata, Content policies, Usage
- Session on Evidence-Based Information in Clinical Practice
- Session on Business Management and Communication Strategies supporting Decision Making Process in Tourism Sector
- Session on Electronic Publishing: A Developing Landscape
- Session on Information and Knowledge Management
- Session on Information Content Preservation as Outcome of Conservation of Cultural Heritage: Ethics, Methodology and Tools
- Session on Advances Information for Strategic Management
- Session on Information History: Perspectives, Methods and Current Topics
- Session on Divergence and Convergence: Information Work in Digital Cultural Memory Institutions
- Session on Contemporary issues in Management: Organisational Behaviour, Information Technology, Education & Hospital leadership.

The wide range of aspects that the sessions covered, highlighted future trends in the Information Science.

### **Paper Peer Review**

More than 300 papers had been submitted for consideration in IC-ININFO 2011. From them, 91 were selected for presentation, after peer review in a double blind review process. The accepted papers were presented at IC-ININFO 2011.

### **Thanks**

We would like to thank all members that participated in any way in the IC-ININFO 2011 Conference and especially:

- The famous publishing house Emerald for its communication sponsorship.
- The co-organizing Universities and Institutes for their support and development of a high-quality Conference scientific level and profile.
- The members of the Scientific Committee that honored the Conference with their presence and provided a significant contribution to the review of papers as well as for their indications for the improvement of the Conference.
- All members of the Organizing Committee for their help, support and spirit participation before, during and after the Conference.
- The Session Organizers for their willing to organize sessions of high importance and for their editorial work, contributing in the development of valued services to the Conference.
- PhDC Marina Terzi for her excellent editorial work, contributing in the production of the Conference proceedings.

## CONFERENCE DETAILS

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Dimitris Kouis, Greek Ministry of Education, Lifelong Learning and Religious Affairs  
Dionysis Kokkinos, National Technical University of Athens

## KEYNOTE SPEAKER



Professor Amanda Spink

Professor Amanda Spink has published over 340 scholarly journal articles, refereed conference papers and book chapters, and 6 books. Many of her journal articles are published in the Journal of the American Society for Information Science and Technology, Information Processing and Management, and the Journal of Documentation. She is Editor of the Emerald journal Aslib Proceedings. Amanda's research has been published at many conferences including ASIST, IEEE ITCC, CAIS, Internet Computing, ACM SIGIR, and ISIC Conferences. Her recent books include Information Behavior: An Evolutionary Instinct and Web Search: Multidisciplinary Perspectives, both published by Springer. Amanda's research focuses on theoretical and empirical studies of information behavior, including the evolutionary and developmental foundations. The National Science Foundation, the American Library Association, Andrew R. Mellon Foundation, Amazon.com, Vivisimo. Com, Infospace.com, NEC, IBM, Excite.com, AlltheWeb.com, AltaVista.com, FAST, and Lockheed Martin have sponsored her research. In 2008 Professor Spink had the second highest H-index citation score in her field from 1998 to 2008 [Norris, M. (2008)]. Ranking Fellow Scholars and their H-Index: Preliminary Survey Results. Loughborough University, Dept of Information Science Report].

# Free Software – Open Source Software. A Powerful Tool for Developing Creativity in the Hands of the Student.

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**Abstract:** *Free Software / Open Source Software (FS/OSS) is a tool for the entire academic community. Its role can often prove to be indispensable in the field of Education. May be the perfect example of how research leads to the final tool for use, which is one of the key purposes of Universities.*

*For students, it doesn't just create users, but develops their programming skills. In the academic community, it promotes and contributes to research and last but not least, the free distribution of the source code[1] helps to improve the final product of the companies which active in the field of IT, and the visibility of the manufacturer.*

*The business community can find the scientists of future generations that seeks, create research and make educated professionals, through the field of University and education of free software[2]. Furthermore, there are major economic benefits, due to the lack of need to spend financial resources for purchase of software to Universities.*

**Keywords:** *Dynamic simulation models, Free software / Open source software, Education.*

## I. INTRODUCTION

This research indicates that the freely available software is necessary, if the final aim is the creation of scientists who have gained knowledge through testing processes. Editorial research[3] has showed that knowledge that somebody earns, when there are no limits to the "tools" used, is qualitatively improved.

Students develop a critical mind, they are prompt to "search" tools, to share their knowledge through the World Wide Web[4] and eventually reach the level of the product designer, which is the ultimate goal. It is of great significance in the whole process, the publication of the findings of any programmer on the Internet[5].

In this way the student gains recognition. This is one of the strongest motivations for the student and it contributes, in a very effective way, to the continual reinforcement of his efforts for improvement. Alongside, this is the trigger for his colleagues to redouble their efforts towards the same direction.

Finally, FS/OSS programs develop students' knowledge, creating networking conditions in a globalized environment. By using the newsgroup (forum)[6] via the World Wide Web, the student expands its horizons beyond the boundaries of his country and becomes an active member to the expansion

of a worldwide knowledge[7]. The student incorporates himself and his developing skills in a global group which has a common goal: the use and development of common tools.

To see whether in fact the field of higher education knows uses and develops FS/OSS programs, we conducted a qualitative and quantitative research[8] to students and professors of Faculty of Sciences. The questions were, whether the students know, use and develop their products of FS/OSS, whether professors use and promote products of FS/OSS and whether Universities have the resources to develop and promote products of FS/OSS.

Based to the survey findings, we concluded that open source programs are quite widespread in the University community. Students know that the programs of FS/OSS are quite easy to use and can use them in everyday work. Some of the students use those programs, without knowing that they belong to the category of free software and some do not know that the programs of FS/OSS may have been initiated and developed by students.

Professors use the programs of FS/OSS during the course and realize that there is quite a strong response from students. Their interest is very satisfying as well in developing and promoting programs of FS/OSS.

Universities from their side, see the interest that exists from professors and students to use programs of FS/OSS. Every day, working groups[9] are created in their field, with common goal to develop open source programs. On the other hand, the survey we conducted shows that the movements made by the side of the University community to promote open source programs do not satisfy the entire academic community.

Considering all these, we come to the conclusion that Universities and professors should undertake the role of promoting programs of FS/OSS, through the courses, in a way that more and more programs are at the disposal of students.

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

## II. METHODS

### A. Dynamic Simulation Model

The conjunction between the products of FS/OSS, the academics, the students and the companies involved in manufacturing of open source programs, is dynamic. There was a qualitative and quantitative research in

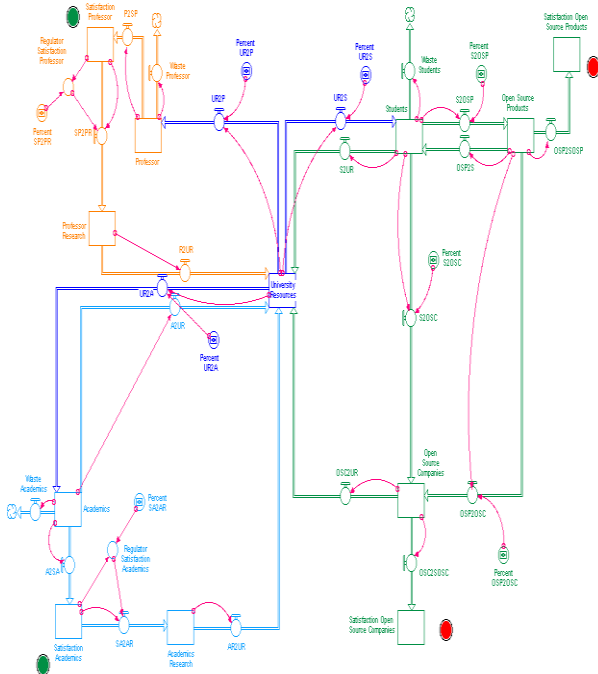
1000 students and 100 professors of Faculties of Sciences.

As shown by the dynamic simulation model, the results change when a factor is altered. Depending on the sources that the University provides, involving money, personnel, personnel training and classrooms, the percentage of students who know and develop open source products changes. In result, the development of professional skills of the student is improved both in a qualitative and quantitative way.

**A.1. Reasons to create the simulation model**  
 In order to highlight in the best way we can, the problem among students, Universities and products of FS/OSS, we created the Dynamic Simulation Model. The main reasons are listed below.

1. Comparison between closed and open source software.
2. Savings for the University.
3. Developing students' skills.
4. Benefits for companies of the field of IT and for the products via the freely available source code.
5. Development of products of FS/OSS in the Academic Community and Education.
6. Development of research in Universities.

Dynamic Simulation Model



**A.2. Handling and Analysis of Dynamic Simulation**

**Model**

In the Dynamic Simulation Model that we built, it is indicated the relation between the resources available in a University which are used to promote an open source product, the development of students' knowledge, the level of research that is conducted and level of improvement of FS/OSS products.

The Dynamic Simulation Model functions through the control of interfaces, which control all avenues of resource allocation that the University affords.

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 products. Moreover, we will meet the needs of companies in the field of IT to find people to fill their needs in trained personnel. These companies, on their turn, will assist the Universities with funds, through a donation of software, for example. The research that academics conduct will increase, better products will be created, more projects will come out and of course, there will be a quite considerable return of resources to the University.

The results vary as we allow more or less outflow from the University to students and academics. The whole process works in chain. The result we anticipate is that some of the resources spent by Universities in order to develop and promote products of FS/OSS return to them, so as to complete 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	Person S2OSP	S2OSP	Open Source Products	Open Source Companies
Initial	25.00	3.00		0.75	0.07
1	22.51	3.00		0.71	0.46
2	20.41	3.00		0.64	0.44
3	18.93	3.00		0.60	0.41
4	17.85	3.00		0.55	0.38
5	16.77	3.00		0.52	0.36
6	16.16	3.00		0.50	0.34
7	15.70	3.00		0.48	0.33
8	15.33	3.00		0.47	0.32
9	15.07	3.00		0.46	0.32
10	14.85	3.00		0.45	0.31
11	14.64	3.00		0.44	0.31
12	14.47	3.00		0.44	0.30

Table 1 : Students in conjunction with the products of FS / OSS.

Months	Satisfaction Academics	Satisfaction Open Source Compn	Satisfaction Open Source Prodnc	Satisfaction Professrs
Initial	18.00	0.07	0.45	15.00
1	20.06	0.37	0.81	17.45
2	21.23	0.81	1.06	20.04
3	43.83	1.26	1.29	68.58
4	50.79	1.86	1.49	73.82
5	57.35	2.03	1.63	84.10
6	63.86	2.35	1.86	87.85
7	69.79	2.72	2.04	70.91
8	68.14	3.05	2.20	81.89
9	66.43	3.37	2.37	63.57
10	64.70	3.68	2.51	65.90
11	70.40	3.99	2.69	67.30
12	68.59	4.30	2.84	69.16

Table 2 : Products FS / OSS in conjunction with the Academic Community and Companies in the area.

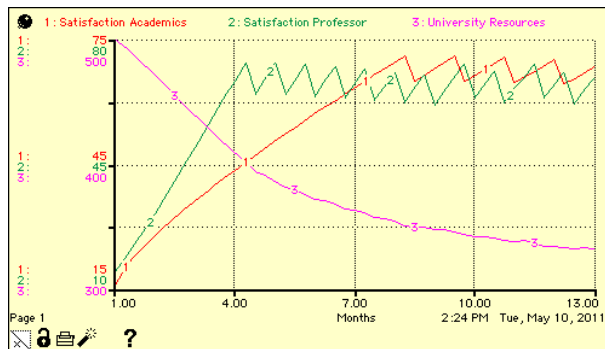


Figure 1 : The resources of the University in conjunction with the Professors and the Academic Community.

### B.1. Suggestions for Promotion of open architecture

To promote the use of open architecture in Information Systems[10], existing or new, it should be taken a series of initiatives in highlighting the benefits that come out of using the programs of open architecture and in sensitizing the organizations or institutions to the risks that are associated with the use of closed systems. In particular, it is suggested:

In the stage that new projects are announced, it is sensible to pay special attention to the compliance of the procured systems with the existing international standards[11] at every level, from the requirements of interoperability between systems, up to the followed standard of creating, handling and storing all kinds of documents and data files. Thus, it will be ensured the unceasing cooperation between the systems implemented and the future multi-use of their potentials.

The development of a reliable IT system, should be based on the functional specifications and operational requirements of the Organization or Entity[12], and not on exhaustive technical details as crucial data for the success of the project. In this way, the insistence to specific minor technical characteristics, something that is not always innocent, will be reduced.

In cases of existing IT systems, it should be pursued the phased conversion of those systems to open architecture systems, by selecting the most appropriate way each time, depending on the seniority of the system that is replaced or upgraded and the desired functionality. The general direction to achieve this, is the reduction of the degree of dependence on closed architecture systems.

Establish an information and coordination center, specialized on open architecture systems (this should be given better treatment to prevent additional phenomena of centralization and bureaucracy), which will aim at increasing the penetration of open architecture systems, in both the private and public sector through:

- Counseling during the procedure of selection of systems and software[13]. The provided assistance, beyond the benchmarking of the available options, should be extended as well to the stage of implementation of the systems, in order not to void the

efforts done, aiming to use standards and services.

- Creating a forum for the dissemination of the best practices of open architecture systems use and exchange of the know-how gained from the use of such systems.
- Providing information, in relation to the problems that arise from the use of closed architecture systems, which suppress the long-term growth, and are an increasing economic burden for the user in order to maintain and operate them.

### III. CONCLUSIONS

The open source products can be an important tool in the hands of the students, as they can use them for their own purposes, as well as contribute to the development and evolution[14] of those systems. The students become members of a global team, develop their knowledge and abilities.

Eventually, the products of FS/OSS also contribute to the economy of a country. Many studies have demonstrated the positive contribution of open source products to economy, particularly in countries with smaller production sizes[15].

### REFERENCES

- [Ms. Kaisa Hypén, Mr. Antti Impivaara, \(2010\) "Read, describe and share! Building an interactive literary web service", Collection Building, Vol. 30 Iss: 1](#)
- [R A Spinello, \(2003\) "The future of open source software: Let the market decide", Journal of Information, Communication and Ethics in Society, Vol. 1 Iss: 4, pp.217 – 233](#)
- [Lee D. Parker, James Guthrie, Simon Linacre, \(2011\) "The relationship between academic accounting research and professional practice", Accounting, Auditing & Accountability Journal, Vol. 24 Iss: 1, pp.5 - 14](#)
- [Tamar Sadeh, \(2010\) "Open products, open interfaces, and Ex Libris open-platform strategy", Library Review, Vol. 59 Iss: 9, pp.677 – 689](#)
- [Stephen Todd, \(1999\) "A guide to the Internet and World Wide Web", Structural Survey, Vol. 17 Iss: 1, pp.36 – 41](#)
- [Brian McKenna, \(1998\) "FORUM", Online Information Review, Vol. 22 Iss: 4, pp.281 – 283](#)
- [Joseph G. Davis, Eswaran Subrahmanian, Arthur W. Westerberg, \(2005\) "The "global" and the "local" in knowledge management", Journal of Knowledge Management, Vol. 9 Iss: 1, pp.101 – 112](#)
- [Mary A. Malina, Hanne S.O. Nørreklit, Frank H. Selto, \(2011\) "Lessons learned: advantages and disadvantages of mixed method research", Qualitative Research in Accounting & Management, Vol. 8 Iss: 1, pp.59 – 71](#)
- [Angela Bowey, Roy Connolly, \(1975\) "Application of the Concept of Working in Groups", Management Decision, Vol. 13 Iss: 3, pp.181 – 192](#)

- [Jan Terje Karlsen, Line Hagman, Thomas Pedersen, \(2011\) "Intra-project transfer of knowledge in information systems development firms", Journal of Systems and Information Technology, Vol. 13 Iss: 1, pp.66 – 80](#)
- [Lee D. Parker, James Guthrie, Simon Linacre, \(2011\) "The relationship between academic accounting research and professional practice", Accounting, Auditing & Accountability Journal, Vol. 24 Iss: 1, pp.5 – 14](#)
- [Christopher Bull, Alison Adam, \(2010\) "Customer relationship management information systems \(CRM-IS\) and the realisation of moral agency", Journal of Information, Communication and Ethics in Society, Vol. 8 Iss: 2, pp.164 – 177](#)
- [Tristan Müller, \(2011\) "How to choose a free and open source integrated library system", OCLC Systems & Services, Vol. 27 Iss: 1, pp.57 – 78](#)
- [Enrique Rueda-Sabater, Don Derosby, \(2011\) "The evolving Internet in 2025: four scenarios", Strategy & Leadership, Vol. 39 Iss: 1, pp.32 - 38](#)
- [Dr. Maria Burke, \(2010\) "Knowledge Sharing in Emerging Economies", Library Review, Vol. 60 Iss: 1](#)