

ADVANCES ON
INFORMATION
PROCESSING AND
MANAGEMENT

CONFERENCE ORGANIZERS INSTITUTES

The International Conference on Integrated Information is supported by the following Institutes:

Emerald Group Publishing Limited
Technological educational Institute of Athens, Greece
University of Peloponnese, Greece
National And Kapodistrian University of Athens, Greece
Mednet Hellas, The Greek Medical Network
2nd AMICUS Workshop

To learn more about I-DAS, including the Book Series, please visit the webpage
<http://www.i-das.org/>

INTEGRATED INFORMATION

International Conference on Integrated Information

Kos, Greece September, 29 – October, 3 2011

EDITORS

Georgios A. Giannakopoulos
Technological Educational Institute of Athens, Greece

Damianos P. Sakas
University of Peloponnese, Greece

All papers have been peer-reviewed



Piraeus, Greece, 2011

Editors

Georgios A. Giannakopoulos

Technological Educational Institute of Athens
Faculty of Management and Economics
Department of Library Science and Information Systems
Address: Aghiou Spyridonos Street, 12210, Egaleo
E-mail: gian@teiath.gr

Damianos P. Sakas

University of Peloponnese
Faculty of Science and Technology
Department of Computer Science and Technology
Address: End of Karaiskaki St., 22100, Tripolis, Greece
E-mail: D.Sakas@uop.gr

The copyrights will be owned by the authors under the Creative Commons Attribution-Non Commercial license (<http://creativecommons.org/licenses/by-nc/3.0/>), which permits unrestricted use, distribution, and reproduction in any non commercial medium, provided the original work is properly cited.

ISSN:

Printed in the Greece, EU

CONTENTS

PREFACE: Proceedings of the International Conference on Integrated Information (IC-INFO 2011)	1
Georgios A. Giannakopoulos, Damianos P. Sakas	
Conference Details	3
Keynote Speaker	5
SYMPOSIUM ON INFORMATION AND KNOWLEDGE MANAGEMENT	6
Prof. Christos Skourlas	
Towards the Preservation and Availability of Historical Books and Manuscripts: A Case Study	8
Eleni Galiotou	
An Extensive Experimental Study on the Cluster-based Reference set Reduction for Speeding-up the k-nn Classifier	12
Stefanos Ougiaroglou, Georgios Evangelidis and Dimitris A. Dervos	
Exploiting the Search Culture Modulated by the Documentation Retrieval Applications	16
Nikitas N. Karanikolas and Christos Skourlas	
Information and Knowledge Organization: The Case of the TEI of Athens	22
Anastasios Tsolakidis, Manolis Chalaris and Ioannis Chalaris	
Providing Access to Students with Disabilities and Learning Difficulties in Higher Education through a Secure Wireless framework	26
Catherine Marinagi and Christos Skourlas	
Improving Query Efficiency in High Dimensional Point Indexes	30
Evangelos Outsios and Georgios Evangelidis	
Text Segmentation Using Named Entity Recognition and co-Reference Resolution in Greek Texts	34
Pavlina Fragkou	
KINISIS, a Graphical XQuery Language	42
Euclid Keramopoulos, Achilleas Pliakas, Konstantinos Tsekos and Ignatios Deligiannis	
Dimensionality Curse, Concentration Phenomenon and the KDB-tree	46
Nikolaos Kouiroukidis and Georgios Evangelidi	

Applying Balanced Scorecard Strategic Management in Higher Education	50
Manolis Chalaris, Anastasios Tsolakidis and Ioannis Chalaris	
A Web Portal Model for NGOs' Knowledge Management	54
Zuhal Tanrikulu	
The Digital Archives System and Application Optimized for the Tradition Knowledge Archives	58
Jeon Hong. Chan, In Deok. Hwang, Jae Hak. Park, Hyeok. Sim, U won. Gwon and Soon Cheol. Park	
A Semi-automatic Emerging Technology Trend Classifier Using SCOPUS and PATSTAT	62
Seonho Kim, Woondong Yeo, Byong-Youl Coh, Waqas Rasheed, Jaewoo Kang	
Presenting a Framework for Knowledge Management within a Web Enabled Living Lab	66
Lizette de Jager and Albertus AK Buitendag and Potjie (JS) van der Walt	
4TH SYMPOSIUM ON BUSINESS AND MANAGEMENT AND DYNAMIC SIMULATION MODELS SUPPORTING MANAGEMENT STRATEGIES	71
Dr. Damianos Sakas	
New Political Communication Practices: No Budget Events Management. The New Challenge	73
Evangelia N. Markaki, Damianios P. Sakas and Theodore Chadjipantelis	
Free Software – Open Source Software. A Powerful Tool for Developing Creativity in the Hands of the Student	78
Nasiopoulos K. Dimitrios, Damianos P. Sakas, Konstantinos Masselos	
Open Source Web Applications. How it Spread Through the Internet and their Contribution to Education.	82
Nasiopoulos K. Dimitrios, Damianos P. Sakas, Konstantinos Masselos	
Culture in Modern Times in the Frame of Luhmann's System Theory	85
Anastasia J. Chournazidis	
Managing Scientific Journals: A Cultural Viewpoint	87
Marina C. Terzi, Damianos P. Sakas, and Ioannis Seimenis	
A Conceptual Framework for Analyzing Knowledge-based Entrepreneurship	92
Nikos S. Kanellos	

SESSION ON INFORMATION HISTORY: PERSPECTIVES, METHODS AND CURRENT TOPICS	96
Prof. Laszlo Karvalics	
Emerging Research Fields in Information History	98
Laszlo Z. Karvalics	
Information Management through Elementary Data Clusters: New Observations on Pridianum-Type Roman Statistical Documents	102
Gergő Gellérfi	
Information and Secrecy on the Silk Road. Methods of Encryption of Legal Documents in Inner Asia (3th-4th century)	106
Szabolcs Felföldi	
The Role of Information and Disinformation in the Establishment of the Mongolian Empire: A Re-examination of the 13th century Mongolian History from the Viewpoint of Information History	110
Márton Gergő Vér	
Early Warning Systems and the Hospitallers in the Eastern Mediterranean	114
Zsolt Hunyadi	
Information Management as Establishment Dutch Navigational Knowledge on Japan, 1608-1641	118
Gabor Szommer	
Files Everywhere - Register and Training of Men for Military and Civil Purpose in Prussia in the early 18th century	123
Marton Holczer	
SYMPOSIUM ON INTEGRATED INFORMATION: THEORY, POLICIES, TOOLS	126
Prof. Georgios Giannakopoulos	
Approaching Information as an Integrated Field: Educating Information Professionals	128
Georgios Giannakopoulos, Daphne Kyriaki Manesi and Stryidon Zervos	
Special Libraries as Knowledge Management Centers	132
Eva Semertzaki	
Digital Libraries' Developers and their Suitability: A Case Study	136
Maria Monopoli	

A Preliminary Study for the Creation of a Greek Citation index in the Humanities and the Social Sciences (GCI – H&SS)	140
Daphne Kyriaki-Manessi and Evi Sachini	
Archiving as an Information Science. Evidence from a Survey Carried out on a Sample of Greek Students	144
Georgios Giannakopoulos and Ioannis Koumantakis	
Transition Process of E-records Management and Archiving System in Universities: Ankara University	147
S. Özlem Bayram and Fahrettin Ozdemirci	
Government Information: Access and Greece's Efforts for Access	150
Aikaterini Yiannoukakou	
School Archives and their Potentials in Teaching: Aspects of Greek Reality	156
Sonia Geladaki and Panagiota Papadimitriou	
Research on School Libraries in Greece and Suggestions on its Further Development	160
Georgios D. Bikos	
Building Digital Collections for Archeological Sites: Metadata Requirements and CIDOC CRM Extension	164
Georgios S. Gkrous and Mara Nikolaidou	
Museological Claims to Autonomous Knowledge: Rethinking the Conceptual Mode of Display and its Claims to Knowledge	169
Assimina Kaniari and Georgios Giannakopoulos	
Use of Library Loan Records for Book Recommendation	172
Keita Tsuji, Erika Kuroo, Sho Sato, Ui Ikeuchi, Atsushi Ikeuchi, Fuyuki Yoshikane and Hiroshi Itsumura	
Developing a National Database on Librarianship and Information Science. The Case of E-VIVA, the Hellenic Fulltext Database	176
Filippos Ch. Tsimpoglou, Vasiliki V. Koukounidou and Eleni K. Sakka	
Integrated Access to Cultural Heritage Information Pieces in Iran Astan-Quds Razavi's Organization of Libraries, Museums and Documents Center: A Theory of Unionization Disparate Information Assets over Imam Reza's Zarih	181
Ms. Mitra Zarei and Ms. Maliheh Farrokhnia	
Attitudes of University Librarians and Information Scientists towards the Draft Code of	185

Library Ethics to Present a Model for Final Library Ethical Codes	
Mahsoomeh Latifi, Fatemeh Zandian and Hasan Siamian	
SESSION ON OPEN ACCESS REPOSITORIES: SELF-ARCHIVING, METADATA, CONTENT POLICIES, USAGE	188
Dr. Alexandros Koulouris	
Geographical Collections in Greek Academic Libraries: Current Situation and Perspectives	189
Ifigenia Vardakosta and Sarantos Kapidakis	
Information Seeking Behavior: Factors that Affect the Behavior of Greek Astronomers	194
Hara Brindesi and Sarantos Kapidakis	
Aggregating Metadata for Europeana: The Greek Paradigm	198
Alexandros Koulouris, Vangelis Banos and Emmanouel Garoufallou	
Integrating a Repository with Research Output and Publications: The Case of the National Technical University of Athens	202
Dionysis Kokkinos	
Implementation of Workflows as Finite State Machines in a National Doctoral Dissertations Archive	205
Nikos Houssos, Dimitris Zavaliadis, Kostas Stamatis and Panagiotis Stathopoulos	
Practices of “Local” Repositories of Legally Protected Immovable Monuments. A Global Scheme for ‘Designation – Significance’ Information	209
Michail Agathos and Sarantos Kapidakis	
Integration of Metadata in BWMETA-2.0.0 Format	213
Katarzyna Zamlynska, Jakub Jurkiewicz and Lukasz Bolikowski	
SESSION ON EVIDENCE-BASED INFORMATION IN CLINICAL PRACTICE	216
Dr. Evangelia Lappa	
Applicability of Data Mining Algorithms on Clinical Datasets	218
Wilfred, Bonney	
Changing Roles of Health Librarians with Open Access Repositories	221
Christine Urquhar and Assimina Vlachaki	
From Medical Records to Health Knowledge Management Systems: The Coding to Health Sector	225
Evangelia C. Lappa and Georgios A. Giannakopoulos	

The Survey of Skill, Attitude and Use of Computer and Internet among Faculty Members	229
Hasan Siamian, Azita Bala Ghafari, Kobra Aligolbandi, Mohammad Vahedi and Gholam Ali Golafshani Jooybari	
Trends in Scholarly Communication among Biomedical Scientists in Greece	232
Assimina Vlachaki and Christine Urquhart	
SESSION ON ELECTRONIC PUBLISHING: A DEVELOPING LANDSCAPE	236
Dr. Dimitris Kouis	
E-Journal and Open Access Journal Publishing in the Humanities: Preliminary Results from a Survey among Byzantine Studies Scholars	238
Victoria Tsoukala and Evi Sachini	
Preliminary Results on a Printed VS Electronic Text Books Assessment Through Questionnaire	242
Dimitrios A. Kouis and Kanella Pouli	
An Interpretation of Aristotelian Logic According to George Boole	246
Markos N. Dendrinis	
SESSION ON INFORMATION CONTENT PRESERVATION AS OUTCOME OF CONSERVATION OF CULTURAL HERITAGE: ETHICS, METHODOLOGY AND TOOLS	251
Prof. George Panagiaris and Dr. Spiros Zervos	
Intrinsic Data Obfuscation as the Result of Book and Paper Conservation Interventions	254
Spiros Zervos, Alexandros Koulouris and Georgios Giannakopoulos	
Mass Deacidification: Preserving More than Written Information	258
Michael Ramin, Evelyn Eisenhauer and Markus Reist	
Information Literacy of Library Users: A Case Study of Mazandaran Public Library Users, Iran	260
Hussein Mahdizadeh and Hasan Siamian	
The Narratives of Paper in The Archives of the New Independent Greek State (Mid 19th c.)	264
Ourania Kanakari and Maria Giannikou	
From Macro to Micro and from Micro to Nano: The Evolution of the Information Content Preservation of Biological Wet Specimen Collections	268
Nikolaos Maniatis and Georgios Panagiaris	

Digital images: A valuable scholar's tool or misleading material?	272
Patricia Engel	
Attitudes of University Librarians and Information Scientists Towards the Draft Code of Library Ethics to Present a Model for Final Library Ethical Codes	277
Mahsoomeh Latifi, Fatemeh Zandianand and Hasan Siamian	
Investigation of the Degradation Mechanisms of Organic Materials: From Accelerated Ageing to Chemometric Studies	280
Ekaterini Malea, Effie Papageorgiou and Georgios Panagiaris	
SESSION ON DIVERGENCE AND CONVERGENCE: INFORMATION WORK IN DIGITAL CULTURAL MEMORY INSTITUTIONS	285
Dr. Susan Myburgh	
Extending Convergence and Divergence in Cultural Memory Institutions: The Old Slave Lodge in the New South Africa	287
Archie L Dick	
The Transfer of Knowledge from Large Organizations to Small: Experiences from a Research Project on Digitization in Wales	289
Clare Wood-Fisher, Richard Gough, Sarah Higgins, Menna Morgan, Amy Staniforth and Lucy Tedd	
The Usage of Reference Management Software (Rms) in an Academic Environment : A Survey at Tallinn University	293
Enrico Francese	
Varialog : How to Locate Words in a French Renaissance Virtual Library	297
Marie-Hélène Lay	
The Urge to Merge: A Theoretical Approach	301
Susan Myburgh	
SYMPOSIUM ON ADVANCES INFORMATION FOR STRATEGIC MANAGEMENT	304
Professor Nikolaos Konstantopoulos	
Empowerment in the Tax Office of Greece	306
Antonios E. Giokas and Nikolaos P. Antonakas	
Building Absorptive Capacity Through Internal Corporate Venturing	310
Ioannis M. Sotiriou and Alexandros I. Alexandrakis	

The Monitoring Information System (M.I.S.) - An information and Management System for Projects Co-financed Under the National Strategic Reference Framework (NSRF) and the Community support framework (CSF)	314
Catherina G. Siampou, Eleni G. Fassou and Athanassios P. Panagiotopoulos	
Corruption in Tax Administration: The Entrepreneurs View Point	318
Nikolaos P. Antonakas, Antonios E. Giokas and Nikolaos Konstantopoulos	
Conflicts between the IT Manager and the Software House after the Strategic Choice of Outsourcing of the Information Processes in Maritime Companies.	322
Anthi Z. Vaxevanou, Nikolaos Konstantopoulos, Damianos P. Sakas	
Contemporary Forms of Ordering Between the Supply Department and Ship Chandler Companies in the Shipping Industry	325
Anthi Z. Vaxevanou, Nikolaos Konstantopoulos, Damianos P. Sakas	
Strategies Implemented and Sources Used for the Acquisition of Information on Foreign Markets	329
Myropi Garri, Nikolaos Konstantopoulos and Michail G. Bekiaris	
The Effect of High Performance Working Systems on Informative Technology in Enterprises after Organisation Changes such as Mergers & Acquisitions	333
Nikolaos Konstantopoulos and Yiannis Triantafyllopoulos	
Personnel's Absorptive Capacity as a Guiding Concept for Effective Performance in Informative Technology	337
Nikolaos Konstantopoulos and Yiannis Triantafyllopoulos	
SESSION ON CONTEMPORARY ISSUES IN MANAGEMENT: ORGANISATIONAL BEHAVIOUR, INFORMATION TECHNOLOG, EDUCATION & HOSPITAL LEADERSHIP	341
Dr. Panagiotis Trivellas	
Investigating the Importance of Sustainable Development for Hotel SMES	343
Panagiotis Reklitis and Anestis Fotiadis	
Strategic Alignment of ERP, CRM and E-business: A Value Creation	347
Catherine C. Marinagi and Christos K. Akrivos	
The Impact of Occupational Stress on Performance in Health Care	351
Panagiotis Trivellas Panagiotis Reklitis and Charalambos Platis	

The Impact of Emotional Intelligence on Job Outcomes and Turnover Intention in Health Care	356
Panagiotis Trivellas Vassilis Gerogiannis and Sofia Svarna	
SYMPOSIUM ON BUSINESS MANAGEMENT AND COMMUNICATION STRATEGIES SUPPORTING DECISION MAKING PROCESS IN TOURISM SECTOR	360
Dr. Panagiota Dionysopoulou	
The Human Factor as a Mediator to the Total Quality in the Tourism Companies. The impact of Employees' Motivation to Quality Improvements	362
Christos K. Akrivos and Panagiotis Reklitis	
Tourist Destination Marketing and Management Using Advanced ICTS Technologies	365
Anastasia Argyropoulou, Panagiota Dionyssopoulou, Georgios Miaoulis	
G.N.T.O. (Greek National Tourism Organization) Communication Strategy in Advertising Campaigns 1991-2006	370
George Stafylakis and Panagiota Dionyssopoulou	
GENERAL PAPERS	375
The role of Environmental Education within the Framework of the Environmental Policy of a Regional Municipality	376
Vassiliki Delitheou and Dimitra Thanasia	
Issues of Social Cohesion: A case study from the Greek Urban Scenery	380
Evgenia Tousi	
Merging Activity and Employee Performance: The Greek Banking System	384
Panagiotis Liargovas and Spyridon Repousis	
Sustainable Development and Corporate Social Responsibility in Higher Education: Some Evidence from Greece	387
Anastasios Sepetis and Fotios Rizos	
Exploring the Effects of Organizational Culture on Collaborative vs. Competitive Knowledge Sharing Behaviors	395
Hanan Abdulla Mohammed Al Mehairi and Norhayati Zakaria	

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

GEORGIOS A. GIANNAKOPOULOS

Department of Library Science and Information Systems, Technological Educational Institute of Athens, Aghiou Spyridonos, Egaleo, 12210, Greece

DAMIANOS P. SAKAS

Department of Computer and Technology Science, University of Peloponnese, Praxitelous 89-91, Piraeus, 18532, Greece

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

Chairs

Georgios A. Giannakopoulos, Technological Educational Institute of Athens, Greece
Damianos P. Sakas, University of Peloponnese, Greece

Co-Chairs

Daphne Kyriaki – Manesi, Technological Educational Institute of Athens, Greece
Dimitrios Vlachos, University of Peloponnese, Greece

Scientific Committee

Amanda Spink, Queensland University of Technology
Andreas Bagias, European Court
Andreas Rauber, Vienna University of Technology
Astrid van Wesenbeeck, SPARC Europe
Christine Urquhart, Aberystwyth University
Christos Schizas, University of Cyprus
Christos Skourlas, Technological Educational Institute of Athens
Claire Farago, University of Colorado at Boulder
Claus-Peter Klas, FernUniversität in Hagen
Costas Vassilakis, University of Peloponnese,
Dimitris Dervos, Technological Educational Institute of Thessaloniki
Eelco Ferwerda, OAPEN
Elena Garcia Barriocanal, University of Alcalá
Emmanuel Garoufallou, Technological Educational Institute of Thessaloniki
Filippos Tsimpoglou, University of Cyprus
Fillia Makedon, University of Texas at Arlington
George Korres, University of Newcastle
Georgios Evangelidis, University of Macedonia
Georgios Panagiaris, Technological Educational Institute of Athens
Johan Oomen, Netherlands Institute for Sound and Vision
José Aldana, University of Malaga
Konstantinos Masselos, University of Peloponnese
Luciana Duranti, The University of British Columbia
Markos N. Dendrinis, Technological Institute of Athens
Milena Dobрева, University of Strathclyde
Prodromos Tsiavos, London School of Economics and Political Science
Sándor Darányi, University of Borås
Sarantos Kapidakis, Ionian University
Sirje Virkus, Tallinn University
Spiros Zervos, Technological Educational Institute of Athens
Susan Myburgh, University of South Australia
Theodoros Pitsios, University of Athens, Faculty of Medicine

Organizing Committee

Alexandros Koulouris (Chair), Technological Educational Institute of Athens
Christos Christopoulos, SCEV Scientific Events Ltd
Marina Terzi, University of the Aegean, Greece
Evangelia Markaki, Aristotle University of Thessaloniki

Assimina Kaniari, Athens School of Fine Arts
Evangelia Lappa, General Hospital Attikis K.A.T.
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].

Trends in Scholarly Communication Among Biomedical Scientists in Greece

Assimina Vlachaki[†] Christine Urquhart[‡]

[†]Department of Information Studies, Aberystwyth University, Aberystwyth, UK and
National and Kapodistrian University of Athens, Library of Health Sciences, 11527, Athens, Greece,
Pate09(at)excite.com

[‡]Department of Information Studies, Aberystwyth University, Aberystwyth, UK

Abstract: *The aim and objectives are to examine the main changes in scholarly communication among Greek biomedical scientists (2007-2011). The methods include a bibliographic survey (two phases), and a questionnaire survey (three phases). Results indicate that awareness of open access publishing has increased since 2010, but that biomedical scientists in Greece are not very aware of the operations of open access journals.*

Keywords: *Open access, Scholarly communication, Biomedical publishing*

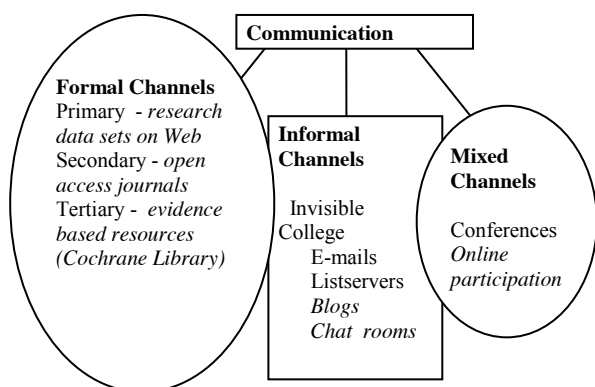
I. INTRODUCTION

In this paper we discuss the background to the changes in scholarly communication, and investigate the attitudes of Greek biomedical scientists to the support and promotion of the scholarly communication, in particular the factors that may influence in the choice of journal, or the use of other means of information dissemination such as institutional and subject repositories.

II. FORMS OF SCHOLARLY COMMUNICATION

The diagram (Fig. 1) illustrates some of the recent developments in *italics*.

Figure 1. Scholarly communication



The **formal channels**, are still considered authoritative sources, but a serious disadvantage of the traditional print format for publication is the time required for

publication processes, which may mean that some information in the textbook is not the most current advice. Nowadays, this obstacle is partly overcome through online updates (e.g. for the Oxford Textbook of Medicine, the online version offers updates), but the process of peer review still takes time for the Oxford Textbook or for any journal published (in print or electronically).

The **informal channels** are influenced by some of the Web 2.0 developments and relationships with formal channels are changing. The BMJ group, as well as publishing a range of medical (general and specialist) journals, also hosts some blogs on the BMJ group website. Some journals, such as the leading medical journal *The Lancet* has moved into policy work, for example by commissioning *The Lancet Series* to highlight clinically important, but overlooked areas of health and medicine. *The Lancet* outputs include podcasts, videos, and the journal sponsors conferences.

The **mixed channels** are perhaps therefore increasing. The important part of the conference for many participants is the opportunity to network with others, and learn informally.

There are many challenges to biomedical publishing (Hersh and Rindfleisch, 2000). Open access publishing has been proposed as a solution to the dominance of a few biomedical publishers, and the increase in subscription costs, but there are some intellectual property difficulties (Jacobson, 2000; Markovitz, 2000). In addition the peer review processes (unpaid) still have to be managed, the hosting costs of the journal and the editorial processes need to be considered as well. Some open access journals may rely on the voluntary efforts of editors and reviewers, and support from other organisations. Other open access journals use author charges (or organisational subscription) to pay for the management costs. The standard model of subscription costs still works for many individual (personal or organisational) journal subscriptions, but increasingly publishers (and other aggregators) are offering bundles of journals to institutions, with (possibly) some flexibility to add some additional titles. It is complex (Campbell, Willinsky, and Anderson, 2010) although open access in medicine in Greece may be more advanced than in other disciplines (Georgiou and Papadatou, 2010). For learned societies, dependent on subscription income from journals, the threat may be greater (Armbruster, 2007) although there may be publishing solutions for some of these societies through

the open access publisher Biomed Central (Cooney-McQuat, Busch and Kahn, 2010).

Another recent development is the growth of subject-based and institutional repositories. PubMed Central is the best example of a subject-based repository in the biomedical field. The institutional repositories contain the academic and research output of a specific organisation. Rodríguez – Armentia and Amat (2010) examined how open access worked for Spanish authors among different disciplines, and for clinical medicine, the publishers' website was the most important, followed by the subject-based repositories. Similar surveys mentioned in the above article, conducted by Matsubayashi et al. (2009) and Bjork et al. (2008) showed that homepage posting and institutional repositories are the least used methods. However, for organisations, their institutional repository can demonstrate the extent of their research activity.

III. BIOMEDICAL JOURNALS IN GREECE

In Greece, the first medical journal was published with the title "Asclepius" by the Medical Company of Athens in 1836. The biomedical journals in Greece (and for Greece) may be divided in four categories: Greek – language journals, English-language journals generally available in Greece, Greek – language journals published simultaneously in English language mostly by Greek scientific companies or universities, and English – language journals published in Greece by international organizations. Several Greek journals are not always included in database collections and so are not easily detected. However some of these (Iatriki, Archives of Hellenic Medicine and Galen) are well known within Greece, and accessible via the Internet (although two of these only for abstracts). Infolibraries.gr provides free access to electronic Greek journals such as Haema, Pneumon, Acta Orthopaedica et Traumatologica Hellenica.

IV. METHODS

This section outlines the methods used to analyse the trends in scholarly communication in biomedicine in Greece. The first method involved bibliographic surveys, the second, questionnaire surveys of biomedical researchers.

IVA. BIBLIOGRAPHIC SURVEYS

We tried to detect Greek biomedical journals in five worldwide sources, PubMed, SCI (Science Citation Index), BioMed Central, DOAJ (Directory of Open Access Journals), Google. The first phase took place during October of 2006 except for SCI where the research was continued at the beginning of January in 2007. The second phase was conducted from April to May of 2011. In both phases there were no year limits. Details for the first phase are given in a previous paper (Vlachaki & Urquhart, 2010). However, it is important to emphasize that in phase two, the procedures had to differ because of changes made by the publisher of PubMed, the National Library of Medicine (NLM) in

the USA, to the structure of their publications. However, we were able to use a subset of the NLM catalog, the "journals referenced in the NCBI databases". So, although the same keywords were used, this time we used limits and specifically the limits "only PubMed Journals".

IVB. QUESTIONNAIRE SURVEYS OF BIOMEDICAL RESEARCHERS

A questionnaire survey conducted in three different periods in hospitals in Athens. A convenience sample was used, and the questions were the same as those used in a Spanish survey (Hernandes-Borges et al., 2006), with minor adaptations. The questionnaire (translated into Greek) asked about publishing activity, awareness of open access publishing, attitudes towards open access sources and sources of information about open access. Questionnaire data were entered into SPSS for further analysis. The first phase in early 2007 had a response rate of 59/70, the second phase, with minor modifications to the wording of a few questions, in early 2010, with a different sample, had coincidentally the same response rate (59/70), and the third phase (September 2010 – May 2011) had a response rate of 81/92.

V. RESULTS

The bibliographic survey shows that the number of NLM currently indexed journals has increased, but also, surprisingly more "historic" non-currently indexed journals, resulting from changes in the inclusion criteria by the NLM catalogue to cover non-biomedical journals (Fig. 2). Seven journals of Greek publishers were listed in the Directory of Open Access Journals (DOAJ) in 2006, increasing to 11 journals in 2011. However, there are more open access Greek biomedical journals not listed. In the 2011 survey of BioMed Central, a large open access publisher (now part of Springer), three journal titles had a Greek editorial board, based in Greece.

The questionnaire surveys showed that awareness of open access publishing had changed only by the third survey phase in 2011, but was still not high (change from 42.4% aware of open access publishing, to 56.8% aware of open access publishing). There is still some lack of awareness around open access journals, as even in the third phase in 2011, around half the respondents were not familiar with open access journals. There is some uncertainty about the prestige of open access journals, but this is possibly changing (Fig. 3). The views on author charges as a deterrent to publishing in some open access journals show some changes, but the "no opinion" category is perhaps as interesting as the "yes" and "no" categories (Fig.4). Most respondents across all three phases either did not know about the existence of an institutional repository for them, or had no opinion on the subject (Fig. 5).

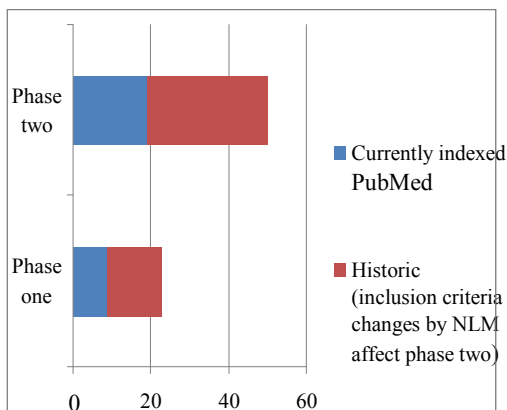


Figure 2. Greek biomedical journal inclusion in PubMed

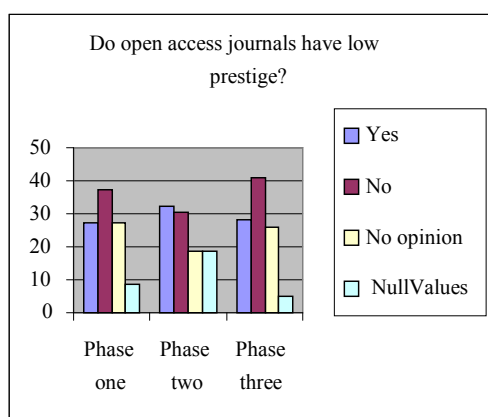


Figure 3. Views on the prestige of open access journals

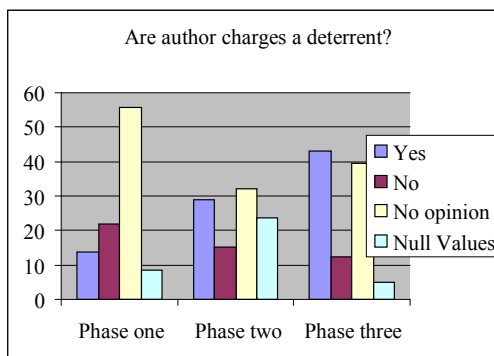


Figure 4. Views on author charges for publishing

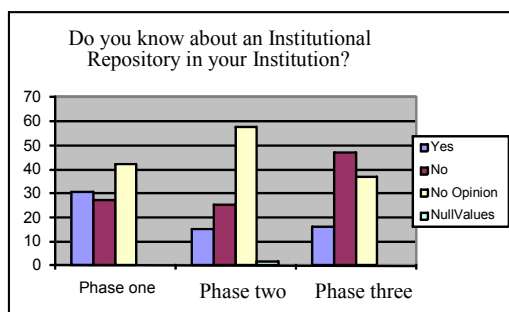


Figure 5. Awareness of an institutional repository

VI. DISCUSSION

The bibliographic survey indicated that more Greek journals are being indexed by NLM now than in the past. This does not necessarily mean that Greek journals have gained greater recognition as it appears that the NLM are more generous with their coverage. The PubMed Central website states that “PubMed Central will accept material from any life sciences journal that meets NLM's standards for the archive”.

There are other open access Greek biomedical journals that do not appear in PubMed Central, and some of these do not appear in the DOAJ either (a problem noted by Georgiou and Papadatou, 2010). Librarians need to be aware of the changes in the NLM collection policy and the requirements for inclusion in PubMed Central.

Certainly the findings of the questionnaire survey suggest that biomedical scientists in Greece are still confused about some of the differences with open access publishing. The earlier survey of Spanish biomedical researchers, conducted in 2004, found lower levels of awareness (22% aware of open access publishing) and around one third of the Spanish respondents believed the author charges were a barrier (Hernández-Borges et al. 2006). The Greek survey findings suggest that awareness is growing slowly, but the more recent increase could be due to the greater push for open access by the NLM, and the policies to promote open access to the biomedical literature.

There is still some uncertainty among the Greek biomedical researchers, as the survey results indicate, but this is hardly surprising as the situation is complex (Campbell, Willinsky and Anderson, 2010). For relatively new biomedical journals, one route to enhancing the visibility and reach of the journal would be to ensure that the journal met the PubMed Central inclusion criteria. If librarians wish to promote open access, then they could work with the learned societies to ensure that they understand the new criteria, and can explain to their authors what the benefits might be. Research on copyright information to authors supplied by Greek biomedical publishers suggests that the information provided is usually very limited (Vlachaki and Urquhart, 2011). The publishers generally wanted the authors to inform them if they wished to put the article into a repository or post it on a homepage, but the rights for authors were not obvious in the journal instructions to authors.

The views on the prestige of open access journals may be changing, and authors may be more willing to publish in open access journals. The survey of open access in Greece among all disciplines indicated that most open access journals in medicine are peer-reviewed (Georgiou and Papadatou, 2010). The problem of author charges seems to pose a barrier. The survey findings suggest that as awareness has increased, the proportion of researchers who believe author charges are a deterrent has also increased, although a high

proportion of researchers also have no opinion on the subject. Librarians need to explain how author charges work for open access journals and some of the variations in business model used for open access publishing. The survey results also suggest that awareness of institutional repositories is also very low. To some extent, the way PubMed Central works with biomedical publishers, some of the work is done for authors now, as the publishers work with PubMed Central to ensure the articles are available freely after any publication embargo period has expired. Biomedical researchers may be unwilling to put any effort into populating an institutional repository, and the survey of Spanish researchers suggests that publishers' websites were the places that searchers might expect to find open access material (Rodríguez-Armentia and Amat, 2010).

VII. CONCLUSIONS

Open access biomedical publishing in Greece is developing, but it is hard to track all the developments, particularly when there is no single source of information on Greek open access journals in biomedicine. The changes in NLM inclusion criteria for PubMed Central also complicated analysis of trends.

The survey findings suggest awareness is developing but the sample was a convenience sample, and the confidence limits associated with the sample size are quite large (around plus or minus 10%). The findings also suggest that Greek biomedical researchers seem rather unconcerned by open access with a high proportion of respondents offering 'no opinion' for many questions. Librarians could perhaps provide more of the information that is required, about impact factors, author charges, and PubMed Central inclusion.

REFERENCES

- [Armbruster, Chris](#), "Moving out of Oldenbourg's long shadow: what is the future for society publishing." *Learned Publishing*, **20**, 259-266 (2007).
- [Björk, Bo-Christer, Annikki Roos and Mari Lauri](#), "Global Annual Volume of Peer reviewed scholarly articles and the share available via different open access options." *Proceedings ELPUB 2008 Conference on Electronic Publishing, Toronto, Canada*, 178-186 (2008).
- [Campbell, Bob, John Willinsky, and Rick Anderson](#), "Scholarly publishing roundtable – three view - points." *Learned Publishing*, **23**, 264-271 (2010).
- [Cooney-McQuat, Sarah, Stefan Busch and Deborah Kahn](#), "Open access publishing: a viable solution for society publishers." *Learned Publishing*, **23**, 101-105 (2010).
- [Georgiou, Panos and Fiori Papadatou](#), "Open access in Greece". In: *Open access in Southern European countries*. Lluís Anglada, Ernest Abadal (eds). Madrid: FECYT, p. 39-62 (2010).
- [Hernández-Borges, A. A., Cabrera;Rodríguez, R., Montesdeoca-Melián, A., Martínez-Pineda, B., Torres-Álvarez de Arcaya, M. L. and Jiménez-Sosa, A.](#), "Awareness and attitude of Spanish medical authors to open access publishing and the "author pays" model." *Journal of the Medical Library Association*, **94**, 449-451 (2006).
- [Hersh, William R. and Thomas C. Rindfleisch](#), "Electronic publishing of scholarly communication in the biomedical sciences." *JAMIA*, **7**, 324-325 (2000).
- [Jacobson, Michael W.](#), "Biomedical publishing and the internet: evolution or revolution?" *JAMIA*, **7**, 230-233 (2000).
- [Markovitz, Barry P.](#), "Biomedicine's electronic publishing paradigm shift: copyright publishing and PubMed Central." *JAMIA*, **7**, 222-229 (2000).
- [Matsubayashi, Mamiko et al.](#), "Status of open access in the biomedical field in 2005." *J Med Libr Assoc.*, **97**, 4-11 (2009).
- [Rodríguez – Armentia, Nerea and Carlos B. Amat](#), "Is it worth establishing institutional repositories? The strategies for open access to Spanish peer-reviewed articles." *Learned Publishing*, **23**, 193-210 (2010).
- [Vlachaki, Assimina and Christine Urquhart](#), "Use of open access journals in biomedicine in Greece." *Library Management*, **31**, 19-26 (2010).
- [Vlachaki, Assimina and Christine Urquhart](#), "Copyright and open access journals in Greece," in Katsirikou, Anthi (ed.), *Open Access STM Information: Trends, Models and Strategies for Libraries*, Berlin, Boston (DE GRUYTER SAUR), 137-144 (2011).