Beyond the Cloud: Information…Innovation…Collaboration…

4th International Symposium on Information Management in a Changing World,
September 4-6, 2013, Limerick, Ireland

Abstracts

Ankara, 2013

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Editors:
Yaşar Tonta, Serap Kurbanoğlu, John N. Gathegi, Umut Al, Zehra Taşkın

Hacettepe University
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Preface

"Cloud computing" has transformed the ways in which both individuals and enterprises make use of IT services and network infrastructure within the last decade. Everything including infrastructure, platforms, applications, software, data, and communication is now seen "as a service". Information, the life-blood of scientific progress, economic growth and social development, is mostly produced, disseminated, used, shared and re-used in digital formats nowadays. Science, industry and business enterprises tend to become "information" enterprises in that even "money" as matter gets converted to "bits" so as to be stored digitally in computers and transmitted as "information" over the network. Enterprises have tended to spend well over 70% of their time and money to support the information technologies (IT) and network infrastructure. Now they embrace cloud-based services to manage information more efficiently and effectively. As information managers we must now look "Beyond the Cloud", collaborate in order to innovate and inspire while trying to predict what the future holds.

Using cloud-based services increases efficiency, provides cost savings, and enables "collective intelligence" to flourish. Not-for-profit memory instutions such as libraries, archives, and museums are also making use of cloud-based services. To name a few, OCLC's WorldCat, HathiTrust, OAISTER, and Europeana are providing web scale discovery services and aggregated data repositories accessible through the Net. Yet, information organizations and memory institutions should go beyond the cloud-based services to reap the full benefits of the digital age.

The "4th International Symposium on Information Management in a Changing World" (IMCW2013) co-organized by Hacettepe University Department of Information Management, Turkey and Limerick Institute of Technology, Ireland, took place in Limerick, Ireland, during September 4-6, 2013. The theme of the symposium was "Beyond the Cloud: Information…Innovation…Collaboration…". With this theme, the symposium aimed to to bring together information professionals, computer and information scientists, business people and engineers to discuss the implications of cloud computing on information management and to contemplate on how to design and develop innovative and collaborative information services beyond the cloud. More than 20 papers were submitted. In addition, 11 papers were submitted with three panel proposals, seven of which specifically deal with intellectual property issues and collaboration in the cloud. All papers, panel and workshop proposals were subjected to a double-blind reviewing process and 15 papers were selected for inclusion in this book of abstracts along with three short papers and three panel and workshop proposals each. Accepted contributions came from more than 15 different countries (Canada, China, France, Germany, Greece, Ireland, Italy, Japan, The Netherlands, Romania, South Africa, Spain, Sweden, Turkey, UK, USA, and Venezuela) and address a number of issues dealing with, among others, cloud computing, information retrieval, information literacy, scholarly communication, intellectual property rights in the cloud, information policy and information security, all in the context of information management.

We would like to take this opportunity to thank both Hacettepe University and Limerick Institute of Technology for their institutional support. It is a great pleasure to thank the symposium keynote speakers Clifford Lynch (Executive Director, Coalition for Networked Information), Christian Verstraete (Chief Technologist, Cloud Strategy Team, Hewlett-Packard), and Marshall Breeding (Independent Consultant); panel conveners; workshop tutors; authors and presenters of papers; and session chairs. We would also thank, and acknowledge the hard work of, the members of the international Organizing and Program Committees and the Local Committee who invested their time generously to make this event happen.

Yaşar Tonta, General Chair
Serap Kurbanoğlu, Program Chair

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Cloud Architectures and Cultural Memory

(Keynote 1)

Clifford Lynch

Executive Director, Coalition for Networked Information, 21 Dupont Circle, Washington, DC, 20036, USA. cliff@cni.org

Abstract: *The emergence of cloud-based architectures and information services are changing the nature and contents of our cultural record, and simultaneously altering the framework within which our memory organizations can manage and provide access to this record. Of course, many of these issues are not unique to memory organizations but are echoed across all types of government or corporate settings where substantial data and information resources are made available to the public.*

In this talk, I'll explore some of the challenges of provisioning various types of access and use of cultural materials in meaningful ways, and ways in which cloud storage and computational utilities interact with these challenges. Current debates about issues such as how to effectively implement emerging national policies about open access to data and publications resulting from government funding within the scholarly world offer an interesting case studies of some of these issues. I will look at some of the potential roles of storage clouds and cloud storage as infrastructure for memory organizations. These developments are coupled in ways that are more complex than generally recognized today: the patterns of connectivity and peering among underlying networks establish new borders and privileged pathways for the various groups who want to make use of computational intensive tools to analyze cultural materials. National consumer broadband policy and deployment is also a significant factor in access to these resources; telecommunications and networking market evolution and market failures may require libraries to take on new or expanded roles in facilitating access. I'll also briefly examine a few of the developments that are reshaping cultural memory and our ability to capture and preserve it, such as the recent attempt to migrate from desktop software to software as a cloud service in both consumer and commercial marketplaces, and the continued evolution of social media platforms.

Bio: *Dr. Clifford Lynch has been the Executive Director of the Coalition for Networked Information (CNI), a 200-member organization concerned with the use of information technology and networked information to enhance scholarship and intellectual productivity that is jointly sponsored by the Association of Research Libraries and EDUCAUSE, since July 1997. Prior to joining CNI, Dr. Lynch spent 18 years at the University of California Office of the President, the last ten as Director of Library Automation. Dr. Lynch, who holds a Ph.D. in Computer Science from the University of California, Berkeley, is an adjunct professor at Berkeley's School of Information. He is a past president of the American Society for Information Science and a fellow of the American Association for the Advancement of Science (AAAS) and the National Information Standards Organization (NISO).*

Dr. Lynch served on the National Digital Strategy Advisory Board of the Library of Congress, Microsoft's Technical Computing Science Advisory Board, the board of the New Media Consortium, and the Task Force on Sustainable Digital Preservation and Access; he was a member of the National Research Council (NRC) committees that published The Digital Dilemma: Intellectual Property in the Information Age and Broadband: Bringing Home the Bits, and served on the NRC's committee on digital archiving and the National Archives and Records Administration (NARA).

In 2011, he was appointed co-chair of the National Academies' Board on Research Data and Information (BRDI). His work has been recognized by the American Library Association's Lippincott Award, the EDUCAUSE Leadership Award in Public Policy and Practice, and the American Society for Engineering Education's Homer Bernhardt Award.

Dr. Lynch has several articles on various topics such as information technologies and higher education, cyberinfrastructure, digital rights management and copyright.

Cloud Computing, beyond the Hype, a Vehicle for Innovation

(Keynote 2)

Christian Verstraete

Chief Technologist, Cloud Strategy Team, Hewlett-Packard. Hermeslaan 1A B-1831 Diegem, Belgium. christian.verstraete@hp.com

Abstract: *In an ever more digital world, cloud computing has appeared as a new way of doing things for IT. But is it just that or is it a fundamental transformation of the role of IT in business? Isn't IT slowly becoming the way business is done? In his keynote, Christian will discuss how the combination of cloud computing, mobility, social media and big data is transforming fundamentally our lives and our way of doing business. Beyond just doing IT differently, it opens up new opportunities for business people and opens up brand new avenues of innovation. Using real examples, Christian will illustrate the tremendous opportunities technology provides today and in the near future.*

Bio: *Christian Verstraete, CTO for HP's Cloud Strategy Team Worldwide. His responsibilities include the definition of HP's Cloud functional and reference architectures and the coordination of cloud activities across HP. He is the linkage to the CTO community both inside HP and with our customers and partners.*

Prior to his current position, as CTO for the Manufacturing & Distribution industries, Verstraete was responsible for thought leadership and innovation – scanning industry and technology trends, assessing their mid/longer term effect on emerging MDI business opportunities and defining how to capitalize on these. Prior to that, he led the development of solutions, managed HP's global High-Tech Industry Group and its manufacturing industries Supply Chain go-to-market strategy where he was responsible for growing the company's $300 million consulting and system integration business.

After having participated in the planning of the HP/Compaq merger, he headed HP's manufacturing practice within the Consulting and Integration business unit from 2002 to 2004. The 1200 consultants he led created and delivered solutions in the areas of supply chain, procurement and sourcing, product lifecycle collaboration, demand chain and collaborative business integration in all segments of the Manufacturing Industry.

Prior to that, Verstraete served as the Global Lead in the Extended Manufacturing Practice and the Supply Chain Infrastructure and EAI. From his first HP job as a systems engineer through project, regional, district and global management, Verstraete has concentrated on developing, marketing and advancing infrastructure services.

Frequently published in periodicals, Verstraete is a featured speaker at global supply chain events and runs HP's Manufacturing-Distribution blog. He is one of the authors of "Connected Manufacturing, Thought-provoking essays from industry leaders" and of "Collaborative Sourcing, Strategic Value Creation through Collaborative Supplier Relationship Management". He is member of the board of the Supply Chain Council and a 2007 DCVelocity Rainmaker.

Verstraete holds a mechanical engineering degree from the Universite Catholique de Louvain in Belgium and a degree in industrial management from Katholieke Universiteit van Leuven, also in Belgium. He is based in Brussels, Belgium.

Cloud Computing: A New Generation of Technology Enables Deeper Collaboration

(Keynote 3)

Marshall Breeding

Independent Consultant. 2512 Essex Place, Nashville, TN 37212, USA. marshall.breeding@librarytechnology.org

Abstract: *In recent years cloud computing has taken hold as a new paradigm for computing and finds increased use in settings such as higher education and in libraries. Cloud and Web-based computing fits well with the strategic priorities of these institutions, allowing them to focus on more meaningful technology-based services rather than tending to lower-level hardware and software infrastructure. Further, cloud computing provides a foundation for business and information systems powered by shared knowledge bases or other operational data sets. Breeding will use examples from the academic library arena to illustrate the positive impact that cloud computing offers to information management.*

Bio: *Marshall Breeding is an independent consultant, speaker, and author. He is the creator and editor of Library Technology Guides and the lib-web-cats online directory of libraries on the Web. His monthly column Systems Librarian appears in Computers in Libraries; he is the Editor for Smart Libraries Newsletter published by the American Library Association, and has authored the annual Automation Marketplace feature published by Library Journal since 2002. He has authored nine issues of ALA's Library Technology Reports, and has written many other articles and book chapters. Marshall has edited or authored seven books, including Cloud Computing for Libraries published by in 2012 by Neal-Schuman, now part of ALA TechSource. He regularly teaches workshops and gives presentations at library conferences on a wide range of topics.*

He is a regular presenter at library conferences including Computers in Libraries and Internet Librarian conferences, has been a LITA Top Technology Trends panelist at ALA conferences has been an invited speaker for many library conferences and workshops throughout the United States and internationally. He has spoken in throughout the United States and in Korea, Taiwan, Thailand, China, Singapore, Australia, New Zealand, the Czech Republic, Austria, Germany, The Netherlands, Norway, Denmark, Sweden, Spain, the United Kingdom, Israel, Colombia, Chile, Mexico, and Argentina.

Marshall Breeding held a variety of positions for the Vanderbilt University Libraries in Nashville, TN from 1985 through May 2012, including as Director for Innovative Technologies and Research as the Executive Director the Vanderbilt Television News Archive.

Breeding was the 2010 recipient of the LITA LITA/Library Hi Tech Award for Outstanding Communication for Continuing Education in Library and Information Science.

Evaluation of Conditions Regarding Cloud Computing Applications in Turkey, EU and the USA

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Abstract: *Cloud computing is one of the services that are delivered over the Internet for transmission and access to user data at anytime from anywhere. In spite of numerous advantages provided with cloud computing, it is important to recognize the potential threats, including loss of user data, when disregarded. In scope of the study, it is aimed to raise public awareness on cloud computing by investigating security and privacy issues related to user data stored on remote servers in the current cloud computing systems and to review the relevant literature. The current law of the United States and all directives and agreements in the European Union are examined in order to draw attention to all legal risks and problems in the study. This study shows that there are no legal regulations relating to security and privacy issues of cloud computing in Turkey in scope of the current cloud computing service agreements and the legalities.*

Keywords: *Cloud computing, cloud computing risks, protection of private data, USA data security, EU data security, Turkey data security.*

Introduction

Although we do not have consensus on a clear definition of cloud computing, it can be defined as a service structure which enables applications run via a remote server on the Internet environment or user data be stored in a remote server which makes data accessible at any moment. While web interface makes information accessible everywhere and for everyone, cloud computing has made information processing usable everywhere and for everyone (European Commission, 2012a). However, users are worried about the use of cloud systems, where mobile communication and information transfer operations are frequent, as cloud systems are regarded as inadequate in providing information security in the era of informatics, in which information is deemed as the most important value. It is observed that risks of cloud computing and legal actions to be taken against are discussed extensively in the EU and the US (Paquette, Jaeger & Wilson, 2010). It is observed that utilization rate of cloud computing services is rapidly increasing in Turkey. However, there are no legal regulations protecting users against any possible damages. It means that the responsibility of all data transferred to a cloud system is taken by the user receiving cloud service.

Cloud computing is classified under four groups according to type of use. "Public Cloud" generating services (Google Apps, Amazon, Windows Azure) for the general use on the Internet and via web interface, "Private Cloud" composed of cloud services provided for a certain body or institution, "Hybrid Cloud" generating public and private cloud services together, and "Community Cloud" provided for a specific community or group. Cloud computing service providers use software, platform and infrastructure service models individually or in combination in providing cloud service. In this study, terms of services of free cloud service providers, globally outstanding in terms of widespread use of their e-mail and data storage services such as Google, Microsoft and Yahoo (Kaufman, 2009), are evaluated.

Cloud Computing: Problems and Risks

It is possible to access information anywhere and with any kind of information and communication device (PC, Mac, iPhone, Android or BlackBerry) thanks to cloud computing. Cloud computing brings advantages to the user at first glance: It does not present hardware problems; it provides a better accessibility with virtual computer operating faster than physical servers; and it is a flexible structure that does not require memory and disk change. Avoiding cloud computing altogether or insisting on alternative means does not always seem as a reasonable solution. However, risks of cloud computing are highly important to the extent that they cannot be ignored. Terms of services are prepared for

the benefit of the service provider only as they are not based on any legal regulation (Wyld, 2009). Main problems that cloud computing brings about are as follows:

- Web-based cloud services are designed to operate on broad-band Internet. Therefore, downloading and uploading speed of Internet connection are considerably important for using cloud services. Some 43.2% of the residences have broad-band Internet access in Turkey (TÜİK, 2012). Although Internet use and broad-band Internet access are on the rise in Turkey, it can be safely put forward that there still exists a quantitative gap in this regard compared to that of EU countries (DPT, 2011).
- There are also risks regarding protecting the privacy of user passwords and personal information at locations where users can have connection without even using a password (such as cafés, restaurants, buses, etc.). As in all services based on Internet technology, there are vulnerabilities of cloud computing services against typical Internet attacks (such as audio surveillance, unauthorized access, data modification, etc.) (Bisong & Rahman, 2011).
- Details on the location of data are among important issues and should be covered by the agreement to be signed by the user for the settlement of the legal problems in numerous countries including Turkey. Nonetheless, many service providers offering free cloud services do not present the users the option of amendment on the agreement. It is clearly stated in the online privacy statement of such cloud service providers that personal information of the user can be stored and processed anywhere in the world (see Microsoft Online Privacy Statement) (Microsoft, 2012).
- Turkey does not have a binding regulation with regard to standards to be met in order to provide cloud computing services. An environment where users can be aggrieved due to many reasons (termination of service, loss of data, privacy of personal data) emerges as there is no legal regulation and supervision in terms of the qualifications of the cloud computing service providers (adequate infrastructure, capital, qualified personnel etc.).
- There may be interruptions in the services of large-scaled companies including major cloud service providers such as Microsoft, Google, Yahoo, BlackBerry and Amazon (Perlin, 2012). However, cloud service providers do not bear any liability for the losses and return of information on the cloud system in the event of interruptions in services or termination of service by the provider without any reason (see Microsoft Online Privacy Statement) (Microsoft, 2012). There is no clarity in the agreements with regard to the duration for the system to be reactivated and to resume operating in the event of a disaster, either. As there are no legal regulations protecting user rights against terms of services, the risk of data loss transferred to cloud system should be of the nature to be taken by the user.
- It is stated in certain terms of services that service providers may use, change, adapt, record, recreate, distribute and monitor the content with the aim of improving their service quality (see Google Terms of Service or Microsoft Online Privacy Statement) (Google, 2012a; Microsoft, 2012). There is a statement stipulating that all licence rights (right of duplication, transfer, publication and storing) are permanently assigned to the service provider (to provide services) in certain end-user licence agreements (EULA) (Acer Inc., 2012). It is deduced that the scope of authorization obtained by the service providers in order to provide their services is far too broad (Svantesson & Clarke, 2010).
- During any investigation of digital evidences, data located in the same environment which is not related with the illegal act in question become accessible and files not related with any criminal offense are changed in structure, which lead to rise of new legal problems. Furthermore, although it is clearly stated that deleted information may not be deleted from the information environments simultaneously (see Google Privacy Policy, Google, 2012b), there is no information available regarding when the complete deleting process will be realized.

Legal Liabilities of Cloud Service Providers and New Legal Conditions: Evaluation of the USA, EU and Turkey as Examples

Legal Conditions Regarding Cloud Computing in the USA

It is observed that sensitive data has not been clearly defined yet and there is no comprehensive regulation protecting the privacy of personal information and limiting the transfer of data to other countries. However, data that can be classified as sensitive are indicated in the federal law and certain limitations are imposed for the need for privacy (King & Raja, 2012). Scopes where data classified as sensitive are present are as follows: Personal information collected from those under the age of 13, personal information collected by the financial institutions about their clients, healthcare information collected by the healthcare institutions about their patients and information collected by the credit bureaus regarding the credit history of the clients.

Personal information collected in these four domains is to be used in the respective domain only and not to be revealed by any means. There are also motions proposed defining sensitive data such as health records, ethnic information, religious beliefs, sexual preferences, geographical and location information, financial information, biometric data and social security number of the users in order to protect personal information (U.S.C., 2011). Federal regulations ask companies to abide by minimum security rules and they incentivize them in this respect. For instance, healthcare institutions are obliged to provide the security of personal healthcare information yet they do not have to store information encrypted. However, if the information is stored by encryption at an adequate level, institutions shall not be forced to declare it to the public in the event of an unauthorized access to information. Therefore, institutions will not be faced with unnecessary expenditures, customer attrition and loss of reputation. Thus, many healthcare institutions prefer data encryption. If the healthcare institution transfers information of the patients to a cloud system located in a different country and information security is violated on this system, then cloud service provider is not deemed liable as per the US law and the provider holds liability only in the framework of the agreement between the provider and the user (while the health institution is still liable). Furthermore, healthcare institution in question is obliged to declare the information security violation. Although there is no common legal regulation on this issue, every state entails companies within their borders to inform the users about security violations in the framework of the "data breach notification statutes" (King & Raja, 2012). There are also penal sanctions for not abiding by this act.

Legal Conditions Regarding Cloud Computing in EU and New Trends

EU has introduced legal regulations in various fields for the protection of personal data. Along with that, Directive 95/46/EC is of utmost importance as it is the data protection directive in effect and it lays the basis for the directive drafts prepared in accordance with the novel developments. Directive 95/46/EC clarifies the issues with regard to protection of fundamental rights of the users, limiting the companies for processing data (collecting, recording, using and disclosure of information), recording personal information at minimum and informing the user data processing procedures (European Council, 1995). The nature of cloud system entails user information to be located on the server (and maybe abroad, most of the times). However, Directive 95/46/EC prohibits the transfer of personal information outside the EU economic zone if data security is not maintained by the destination country. The case in which the company transferring the information is a party to "Safe Harbour Agreement" is regarded as an exemption: In order for a company to transfer information from the EU countries to US, the Decision 2000/520/EC of the European Commission dated 26 July 2000 is taken into account along with the Directive 95/46/EC (European Commission, 2004).

It is observed that the European Commission (EC) has been exerting much more effort in terms of reviewing the definition and the scope of EU data protection law and privacy of personal data since 2009, in particular. "Strategy on Protecting Personal Data" published on 4 November 2010 with a reference no IP/10/1462 and the memorandum with a reference no MEMO/10/542 are important documents in giving an idea about the reforms to be introduced in data protection law 95/46/EC. It is stated during the sessions organized by EC in January 2012 that the main obstacle in the path of the use of cloud computing are worries about the data protection arising from the data protection laws varying from country to country within EU and it is of importance that EU Council and Parliament work on a new regulation as soon as possible (within the year of 2013). The current data protection directive, 95/46/EC, falls short and/or bears uncertainties in terms of using and providing new Internet services (cloud computing, social networking web sites etc.) and this has led to the preparation of a new personal data protection draft with a reference no IP/12/46, which is a comprehensive reform in the data protection law, on the basis of the preliminary projects started in 2010 (European Commission, 2012b). New personal data protection draft with a reference no IP/12/46 submitted to the approval of the EU Council and Parliament on 25 January 2012, includes reforms regarding possible risks of cloud computing. Certain topics of the latter, which come to the forefront, are transfer of personal data between service providers, clarification of the conditions through which personal data can be obtained, "right to be forgotten" enabling the person manage her/his online data protection rights and being informed at every stage of data processing and about security violations during the process (European Commission, 2012c).

Legal Regulations Regarding Cloud Computing in Turkey

As there is no legal regulation regarding the privacy of personal information and data protection in cloud computing, the relationship between service providers and users is limited to terms of services and there is no legal basis that the user can stick to on the settlement of the disputes stemming from the service provider. It is observed that the issue of personal information privacy is addressed in Article 20 in the Constitution (with the Annex in 2010) (T.C. Anayasası, 1982) and Article 135 and 136 in the Turkish Penal Code (TPC) (Türk Ceza Kanunu, 2004) within Turkish legislation. However, it is evident that the regulations in the Constitution and TPC are not even at the protection

level of data protection law which has been in force within EU since 1998 and which is thought to be insufficient in the presence of new technologies. Authorizing a court outside the borders of Turkey in the terms of service means that an international and excessively costly legal struggle will be required in order to submit a claim in the event of a dispute. In the event that authorized court is not mentioned in the terms of service and servers of the service provider are located in a different country, Articles 12 and 13 of TPC (Türk Ceza Kanunu, 2004), to which individuals may think of referring, remain incapable in terms of cloud computing. The Article 12 of TPC, which is based on the principle of protection of the injured party in the event of criminal acts committed outside Turkey, stipulates that the offender, who commits the illegal act abroad, should be within the borders of Turkey. Other illegal acts committed aboard are mentioned in Article 13 of TPC. However, the Article 13 is far from being a settling article in terms of disputes about cloud as cybercrimes are not included in the catalogue crimes addressed in this Article.

Turkey is a party to important conventions established by the European Council in order to protect personal information and individual rights. None of them, however, has been taken into effect by harmonizing them with the domestic law. Passing the "Motion for Personal Data Protection", which will harmonize the Convention with the domestic law, is a must in order that the Convention no. 108 (the first regulation within the international law on data protection) signed by Turkey on 28 January 1981 be approved. Additional Protocol no 181 (Protocol regarding Supervisory Authorities and Transborder Data Flow), which is highly related with the cloud computing services, was signed by Turkey on 8 November 2001 but it has yet to be approved for domestic law. One of the most important legal documents prepared by the European Commission with regard to international cybercrimes is Convention on Cybercrime no 185 (European Commission, 2001). Prepared with the contributions of the USA and opened for signature on 23 November 2001, Convention on Cybercrime no 185, was signed by Turkey on 10 November 2010. However, Convention on Cybercrime could not be put into effect, either, with the required legal regulations in domestic law.

Conclusion

There exist numerous risks, about data protection, in particular, waiting for the users receiving service via cloud computing. While it is regarded as normal to experience certain problems in the launching period of a new technology, it is highly important to raise the awareness of the users at the optimum stage in order to minimize adverse effects. Cloud computing is regarded as the focal spot where information and computer technologies are heading towards, but on the other hand, problems of cloud computing have been scrutinized along with the benefits and, accordingly, a number of policies and projects with regard to data security have been introduced by EU and the USA. However, it is also observed that EU and the US laws on privacy and security have been reviewed in order to provide adequate protection for the sensitive data belonging to users.

Cloud computing is situated within an excessively broad scope of legal liability. The concept of personal data protection, which is being protected by the federal law in the USA and covered by a certain framework through the Convention no 108 of the European Council and the Additional Protocol no 181, is yet away from the attention and the agenda of Turkey in terms of its legal dimension. It is observed that legal infrastructure with regard to protection of data and personal information has not been established yet and users are left alone in taking the measures and having the responsibility for data security within the cyber environment. Although Turkey is a party to numerous missions and conventions initiated by EU (such as the Conventions no 108 and 185 etc.), these initiatives cannot be put into effect due to the lack of the required regulations in the domestic law. Required legal regulations are needed in order to apply articles with regard to data security, which are included in the terms of services of cloud computing yet covering merely the users of certain countries (such as USA, Australia, European Economic Area and Switzerland, etc.) for the users of the cloud services in Turkey.

References

Acer Inc. (2012). *AcerCloud son kullanıcı lisans sözleşmesi.* Retrieved November 01, 2012 from https://www.cloud.acer.com/ops/showEula

Bisong, A., & Rahman, S. (2011). An overview of the security concerns in enterprise cloud computing. *International Journal of Network Security & Its Applications (IJNSA), 3*(1), 30-45.

DPT. (2011). *Bilgi toplumu istatistikleri - 2011*. Ankara: T.C. Başbakanlık Devlet Planlama Teşkilatı.

European Commission. (2001). *Convention on cybercrime*. Retrieved November 27, 2012 from http://conventions.coe.int/treaty/en/treaties/html/185.htm

European Commission. (2004). *Commission staff working document.* Retrieved December 04, 2012 from http://ec.europa.eu/justice/policies/privacy/docs/adequacy/sec-2004-1323_en.pdf

European Commission. (2012a). *Unleashing the potential of cloud computing in Europe.* Retrieved December 11, 2012 from http://ec.europa.eu/information_society/activities/cloudcomputing/docs/com/com_cloud.pdf

European Commission. (2012b). *Commission proposes a comprehensive reform of the data protection rules*. Retrieved December 13, 2012 from http://ec.europa.eu/justice/newsroom/data-protection/news/120125_en.htm

European Commission. (2012c). *How does the data protection reform strengthen citizens' rights?* Retrieved December 13, 2012 from http://ec.europa.eu/justice/data-protection/document/review2012/factsheets/2_en.pdf

European Council. (1995). *Directive 95/46/EC of The European Parliament and of The Council.* Retrieved November 30, 2012 from http://idpc.gov.mt/dbfile.aspx/Directive%2095-46%20-%20Part%202.pdf

Google. (2012a). *Google hizmet şartları*. Retrieved November 12, 2012 from http://www.google.com/policies/terms/

Google. (2012b). *Gizlilik politikası*. Retrieved November 12, 2012 from http://www.google.com/policies/privacy/

Kaufman, L. (2009). Data security in the world of cloud computing. *IEEE Computer and Reliability Societies*, 7(4), 61-64.

King, N.J., & Raja, V. (2012). Protecting the privacy and security of sensitive customer data in the cloud. *Computer Law & Security Review*, 28(3), 308-319.

Microsoft. (2012). *Microsoft Online Privacy Statement*. Retrieved November 27, 2012 from http://privacy.microsoft.com/TR-TR/fullnotice.mspx

Paquette, S., Jaeger, P., & Wilson, S. (2010). Identifying the security risks associated with governmental use of cloud computing. *Government Information Quarterly*, 27(3), 245-253.

Perlin, M. (2012). *Downtime, outages and failures - understanding their true costs*. Retrieved November 25, 2012 from http://www.evolven.com/blog/downtime-outages-and-failures-understanding-their-true-costs.html

Svantesson, D., & Clarke, R. (2010). Privacy and consumer risks in cloud computing. *Computer Law and Security Review*, 391-397.

T.C. Anayasası. (1982). *Türkiye Cumhuriyeti Anayasası.* Retrieved December 13, 2012 from http://www.tbmm.gov.tr/anayasa/anayasa_2011.pdf

TÜİK. (2012). *Hanehalkı bilişim teknolojileri kullanım araştırması.* Ankara: Türkiye İstatistik Kurumu.

Türk Ceza Kanunu. (2004). *Türk Ceza Kanunu.* Retrieved December 13, 2012 from http://www.tbmm.gov.tr/kanunlar/k5237.html

U.S.C. (2011). *In The House of Representatives.* Retrieved November 19, 2012 from http://www.gpo.gov/fdsys/pkg/BILLS-112hr611ih/pdf/BILLS-112hr611ih.pdf

Wyld, D.C. (2009). *Moving to the cloud: An introduction to cloud computing in government.* Retrieved October 21, 2012 from http://faculty.cbpp.uaa.alaska.edu/afgjp/PADM601%20Fall%202010/Moving%20to%20the%20Cloud.pdf

Evaluation of Information Security Approaches: A Defense Industry Organization Case

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Abstract: *Information security systems are important to ensure the business continuity and protect organizations against the potential risks. In this context, organizations have to analyze their information system processes and they should develop their information systems according to the results of their analysis. This paper aimed to analyze information security approaches in a defense industry organization in Turkey via an assessment tool that is widely used by organizations for their information security analysis. The results obtained from the assessment tool provide an insight about the information security level and the current situation of information security processes and suggest approaches that are necessary to develop for the defense industry organization.*

Keywords: *Information security, knowledge management, information security assessment.*

Introduction

Organizations are one of the most efficient factors for the development of communities. They generally interact with their internal and external environments. As a result of this interaction, they can create not only services or a particular product required by the target group but also they create continual information and information resources especially in electronic environments. In this respect, it would not be wrong to say that knowledge management is a key point for organizational development with the convergence of new technologies. Besides, knowledge management provides management of information created for organizational goals, organizational effectiveness and productivity and competitive advantage.

Advancements in Internet and web technologies, new perspectives for competitive advantage and changes in administrative approaches increase the importance of knowledge management for organizations. Especially in the 1990s, with the use of information systems in modern sense, knowledge management and security issues have become a vital factor for organizational development and competitive advantage in a global world. Many standards, policies, regulations, information security assessment methodologies and assessment tools were developed for organizations. In this respect, organizations can implement information security approaches according to standards and revise their information security approaches in accordance with assessment tools and they can also take countermeasures against determined risks as well.

In the light of the information mentioned above, this study evaluates information security level of a defense industry organization where ISO 27001 Information Security Standard has been fully implemented and information security approaches are mainly used due to the nature of the organization.

Information Security and Developments in Turkey

Information security is one of the most important components for many organizations who achieve their organizational goals via information technologies and information systems. Blakley, McDermott & Geer (2001) express that the emergence of new risks dealing with technological developments has a huge effect on organizational approaches about information security. Authors also indicate that risk assessments for information systems should be carried out by organizations. As many researchers, governmental organizations and their reports have demonstrated, organizations principally should evaluate and assess their information security applications, approaches and determine organizational risks.

There are many definitions about information security in the field of organizational knowledge management and library and information science. One of these definitions emphasized that "information security is a collective efforts that are made for security of information processing, protection for unauthorized access, long term preservation, migration, emulation and storage of data/information in electronic environments" (Canbek & Sağıroğlu, 2006, p.168). Furthermore, it is inferred that information security is not only a term about technology but it is also about organizational identity. Studies in this topic asserted that information security is important for all work processes such as creation, processing and storage of information as well as information in information systems (Doğantimur, 2009, pp. 6-7; Vural & Sağıroğlu, 2008, p. 508).

The term "information security" was mentioned and described in Turkey for the first time in 2005 with the publication of "e-Transformation Turkey Project Principles of Interoperability Guide" (DPT, 2005). The Guide identifies the main aims of information security as protection of information processed via information life cycle (in capture, creation, usage, storage, transmission and destruction phases) within the organizations and providing the privacy, integrity and accessibility of information transmitted between the organizations. Security and privacy of personal information was also considered as one of the main themes in "Information Society Strategy Action Plan (2006-2010)" published by the Ministry of Development. Some important points covered in the plan are listed below:

- requirement for establishment of Information Systems Disaster Recovery Management Center,
- preservation of information related to national security in electronic environments,
- regulations about legal infrastructure for development of information security systems (DPT, 2006, pp. 26-29).

Some research projects on the information security approaches were also conducted in Turkey by private companies. According to one of these projects (Ernst & Young Company), 73% of organizations make investments for information security and 50% of organizations use information security standards and 30% of organizations do not have a connection between their risk management and information security units. Research results also revealed that the information security is perceived as a technological issue by Turkish companies (*Bilişim*, 2009).

Research Design

In light of increasing importance of information security approaches in organizations, this study focused on identifying the information security approaches of a defense industry organization in Turkey. Case study methodology was used to achieve research objectives. As quoted from Thomas (2011), the case study methodology comprises "analyses of persons, events, decisions, periods, projects, policies, institutions, or other systems that are studied holistically by one or more methods". In addition to Thomas's definition, Zainal (2007) alleges that a limited number of events, conditions and relationships of real-life phenomenon can be explored and investigated via case study methodology.

In this context, the research covered by this paper particularly demonstrates the current information security approaches and explores information security requirements in the defense industry organization according to the main objectives listed below:

- to provide an insight about information security standards and approaches that are widely used in recent years by several organizations in Turkey,
- to provide a sample assessment for information security approaches,
- to emphasize the importance of information security implementation within the organizations.

Data Collection and Research Instrument

Information security assessment is defined by the U.S. Department of Commerce, the National Institute of Standards and Technology (NIST) in 2008 in a publication entitled "Technical Guide to Information Security Testing and Assessment" (Scarfone, Souppaya, Cody & Orebaugh, 2008). NIST defines Information Security Assessment as: "the process of determining how effectively an entity being assessed (e.g., host, system, network, procedure, person - known as the assessment object) meets specific security objectives". NIST also directs organizations for the information security assessments by providing descriptions of the information security assessment methods. In this regard, three assessment methods -testing, examining and interviewing- can be used for information security assessments according to NIST (Scarfone, Souppaya, Cody & Orebaugh, 2008). In this respect, examining is defined by NIST as "the process of checking, inspecting, reviewing, observing, studying, or analyzing one or more assessment objects to facilitate understanding, achieve clarification, or obtain evidence" and interviewing methods were used to gather data about information security approaches in the defense industry organization.

In parallel with research design and objectives of the study, data gathered via an assessment tool and structured individual interviews with an information security specialist who works in the defense industry organization. In order

to get deep knowledge for the research objectives, assessment tools and information security standards, legal regulations were reviewed. As a result of the reviews, Information Security Assessment Tool for State Agencies, derived from Information Security Governance Assessment Tool for Higher Education developed by EDUCAUSE in 2004 to support U.S. National Cyber Security Partnership Corporate Governance Task Force Information Security Government recommendations, was chosen for analysis.

Information Security Assessment Tool for State Agencies was developed with the aim of evaluation of the people, process, and technology components of cyber security (*Risk Assessment Toolkit*, 2013). It is also expressed that this tool is a pointer for organizations in terms of the maturity of their information security programs. The sections in this tool can be divided into two main parts consisting of reliance on information technology and the maturity of information security governance.

Data Analysis

Qualitative and quantitative findings obtained via the assessment tool were analyzed according to scoring section of the tool. The data that were gathered via the tool created a score which demonstrates information security level of the organization about organizational reliance on information technology, people, risk management, processes and technology. Scores obtained in these sections were reported and evaluated to reflect current situation and needs of defense industry organization.

Results

Information security is an important factor for all types of organizations. Moreover, defense industry is one of the most important sectors for risk and information security management in changing technological conditions. Implementation and adaptation of the information security standards and policies are essential factors for organizations in the defense industry. Additionally, it can be said that measurements and analysis that reflect current situations are important and they are utility factors as well. In this context, the results generated from the tool provided a detailed insight for information security approaches of defense industry organization in terms of IT reliance, people, work processes, risk management and technology.

References

Bilişim. (2009). Retrieved January 12, 2013, from http://bilisim2023.org/index.php?option=com_content&view=article&id=189:tuerkyede-blg-guevenl-yatirimlari-artiyor&catid=7:goerueler&Itemid=18

Blakley, B., McDermott, E. & Geer, D. (2001). Information security is information risk management. In *Proceedings of the 2001 Workshop on New Security Paradigms* (pp.97-104). New York: ACM.

Canbek, G. & Sağıroğlu, Ş. (2006). Bilgi, bilgi güvenliği ve süreçleri üzerine bir inceleme [An Evaluation on information, information security and processes]. *Politeknik Dergisi, 9*(3), 165-174.

DPT. (2005). *e-Dönüşüm Türkiye Projesi birlikte çalışabilirlik esasları rehberi [e-Transformation Turkey Project principles of interoperability guide]*. Ankara: Devlet Planlama Teşkilatı.

DPT. (2006). *Bilgi Toplumu Stratejisi Eylem Planı (2006-2010) [Information Society Strategy Action Plan (2006- 2010)]*. Ankara: Devlet Planlama Teşkilatı.

Doğantimur, F. (2009). *ISO 27001 çerçevesinde kurumsal bilgi güvenliği [Organizational information security within the framework of ISO 27001]*. Unpublished thesis of professional competence, Ministry of Finance, Ankara.

Risk Assessment Toolkit. (2013). Retrieved February 12, 2013 from http://www.cio.ca.gov/OIS/government/risk/toolkit.asp

Scarfone, K., Souppaya, M., Cody, A. & Orebaugh, A. (2008). *Technical guide to information security testing and assessment: Recommendations of the National Institute of Standards and Technology.* Gaithersburg: U.S. Department of Commerce.

Thomas, G. (2011). A typology for the case study in social science following a review of definition, discourse and structure. *Qualitative Inquiry, 17*(6), 511-521

Vural, Y. & Sağıroğlu, Ş. (2008). Kurumsal bilgi güvenliği ve standartları üzerine bir inceleme [A review on organizational information security and standards]. *Gazi Üniversitesi Mühendislik ve Mimarlık Fakültesi Dergisi, 23*(2), 507-522.

Zainal, Z. (2007). Case study as a research method. *Jurnal Kemanusiaan Bil, 9*, 1-5.

A Proposed Virtualization Security Model: A Way to a Secured Cloud Environment

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Abstract: *In an era where the availability and information communication channel has become essential for the continuous operations and survival of operations are deploying virtualization technologies as means of enhancing performance and reducing costs. However, while this emerging technology may demonstrate productivity gains for both private and public sectors, it is also true that they introduce platforms whose impact on security is poorly understood. Therefore, some fundamental questions need to be tackled: What is the place of virtualized system components in security models as they are currently understood? How should the implementation of virtualization be expected to affect security planning under such models? This paper endeavors to answer such questions with the aim to provide an understanding about related security concerns associated through a virtualized environment. It concludes with proposed integrated model of system security highlighting the effects of virtualization and present further research to formalize security in systems incorporating virtualization.*

Keywords: *Virtualization, security-model, platforms.*

Introduction and Background

This emerging technology has enormous effect in today's IT world and it has brought about a revolutionary change in the way enterprise applications are deployed thus we have cloud virtualized infrastructures. Cloud has entirely virtual infrastructure which is invisible to the user and according to Paula and Mariana (2011) virtualized cloud infrastructure provides the abstraction necessary to ensure that an application or business service is not directly tied to the underlying hardware infrastructure such as servers, storage or networks. This normally allows business services to move dynamically across virtualized infrastructure resources in a very efficient manner. Virtualization is the technology that adds layer of abstraction on top of physical system resources and make them appear as pool of virtual resources and allowing multiple Operating Systems (OS) to run on the same hardware simultaneously (Ormandy, 2009). This technology has its roots partitioning thus dividing a single physical server into multiple servers, once the physical server is divided, each then a logical server, can run an operating system and application independently. In non-virtual environment, the applications running on the machine can see each other and in some instances they can share or communicate to each other, whereas in a virtualized platform, the program running in one quest machine are isolated from programs running in another machine (Jenni, 2010). Cloud computing moves the application software and database to the large data centers where the management of the data and services are not trustworthy, thus this unique attribute poses many security challenges. For any organization to move to a cloud infrastructure implementation, the point of departure is based on virtualized implementation platform and, according to Jenni (2010), the virtualized environment is vulnerable to the traditional attacks and exploits that are common to the normal environment. Though cloud computing is targeted to provide better utilization of resources using virtualization techniques and to take up much of the work load from the client, it is still its mandate to consider best security implementation approach. This paper describes the various security issues of cloud computing and virtualization with the aim to implement a virtualization security model for future and this model can be utilized by both private and public sectors.

Overview and Literature

This paper is a literature study that analyzes various issues concerning security concerns in virtualized and cloud environment. The study provides an overview of security awareness that arises in virtualized and cloud infrastructures. However it does not provide one perfect solution for all the described threats, but it provides an understanding of how those threats can be avoided. Security risks are addressed and controls are proposed in this paper for mitigation of security threats in virtualized platforms and this is regarded as an essential step to safeguard cloud computing infrastructures (Shroff & Reddy, 2009). A qualitative research approach will be utilized to gather the data from the Department of Correctional Services and State Information Technology Agency with extensive resources in order to address the security concerns, suggested solutions and suitable security approach to use when planning to deploy or implement cloud computing infrastructures. This is preliminary research hence the proposed work is based on the literature and professionals testimony related to models of information security and to virtualization technologies. The model presented is not directly validated by empirical evidence; having this in mind part of our future work will empirically assess the validity of the model by introducing a quantitative approach whereby the model can be tested using a real or simulated data and then consider the behavioral elements that would influence the success of the process.

According to Filip (2010), IT landscape has evolved from physical to virtual then to cloud through the enablement of various technologies such as Internet, Service Oriented Architecture, Virtual Private Networks and Web2.0. Through this technology, multiple Virtual Machine (VMs) run concurrently on a single host OS situated on a single physical machine. A virtualization layer or Hypervisor runs between physical hardware and virtual machine as it is responsible for managing and hosting the VMs (Gurav & Shaikh, 2010). Virtualization makes it possible for different application version and operating systems to run simultaneously on a single physical machine, resulting in increased server utilization and optimization. This functionality, coupled with the automated provisioning or de-provisioning and dynamic allocation of resources, enables cloud computing to be extremely efficient and flexible (Aaraj & Raghunathan, 2010). According to Mirzoev and Yang (2010), within the cloud environment, virtualization allows users to access power beyond their own physical IT environment and consequently leads to many risks, it is therefore regarded that virtualization is a core component in the cloud computing. Recent surveys from 531 IT professionals, concerns about security was considered one of the top issues in adopting virtual technology (43%) and the main reason that organizations were slow in the deployment of virtualization (55%) (IBM Academy, 2010).

Security Concerns/Issues: Virtualized Infrastructure vs. Cloud Computing Infrastructure

Security Issues in Virtual Infrastructure and Network Threats

According to the research case study of Mirzoev & Yang (2010), it is common misconception that the security risks of virtual machine are much higher than those of physical computers, virtual machines have the same, if not fewer, levels of security risks as their physical-computer counterparts. The main reason is the physical connectivity; software updates and networking employ the same logical infrastructure. The key difference lies in the fact that Virtual Machines (VMs) are running on top of a virtualization layer instead of the actual hardware. Virtual machines should be protected by antivirus software and should be patched on regular basis just like any physical computer. However, there are several virtualization-specific threats that Mirzoev & Yang (2010) observed and this requires the attention of data center administrators. Virtual Infrastructure with clusters of hypervisor is highly sensitive to internal attacks. Frequently, the response to internal threats is such that “nothing can be done”. It is exactly the reason of the existence of internal attacks. If there are no preventive measures and policies that are taken towards internal threats, then internal attacks should be expected. From a design point of view, there are no essential differences between virtual and physical networking. If network administrators have proven skills in dealing with physical networks, there should be no problem in designing virtual networking for VMs and hypervisors. The major challenges are capabilities of security tools and sound design of network configuration thus Single Point of Control, Physical Access, Licensing Server, Security Tools and Configuration Tools (Aaraj & Raghunathan, 2010).

Security Issues in SaaS, PaaS and IaaS

In this delivery model, client has to depend on the provider for proper security measures, the provider has to keep multiple users from seeing each other’s data. This becomes difficult to the user to ensure that right security measures are in place and also difficult to get assurance that the application will be available when needed (Choudhary, 2007). The following key security elements should be considered in the Software-as-a-Service (SaaS) application development and deployment process: Data security, Network security, Data locality, Data integrity, Data segregation, Data access, Authentication and authorization. The provider might give some control to the people to build applications on top of the platform, any security below the application level such as host and network intrusion prevention will still be in the scope of the provider and the provider has to offer strong assurances that the data remains inaccessible between applications (Subashini, 2011). Developer has better control over the security as a long

as there is no security hole in the virtualization manager (Subashini, 2011). Though in theory virtual machines might be able to address these issues but in practice there are plenty of security problems (Gajek, Liao & Schenk, 2007). Another challenge is the reliability of the data that is stored within the provider's hardware, because of growing virtualization of everything in information society, retaining the ultimate control over data to the owner of data regardless of its physical location will become a topic of utmost importance (Subashini, 2011). As reflected from Table 1 are part of results that were conducted by comparable researchers with aim to address IT security measures in a virtualized technology context.

Table 1. IT security measures in a Virtualization Technology Context

Security Measure	Description	Reference	Strong/ Weak
Detection	VM can be detected by cutting-edge malware, like a rootkit. The malware modifies its behavior, gets unidentified by security analysts, leaving the computer systems highly vulnerable.	Saydjari, 2007, Potter, 2007	W
Threat Analysis	Monitoring the host OS and virtual network is limited if architecture is poorly designed. This means finding vulnerabilities and assessing correct configuration may not be reliable.	DeCarlo, 2007, Gold, 2007	W
Authentication	In some cases, if an unauthorized user access a VM, he/she may modify the authorization application so that it does not check for authentication correctly and it will allow compromised code to execute, thus skipping the authentication step by step process.	Shimzu, 2007	W
Access Control	Unless there is a hypervisor-based mandatory access control (MAC) that provides proper distribution workload isolation, the hypervisor-based platforms cannot currently enforce restrictions on the sharing of resources between multiple VMs	Valdez, 2007, Payne, 2007	W
Non-repudiation	This can be achieved only through secure communication and cryptography.	Gold, 2007,	W
Confidentiality	A buffer overflow attack can allow for the extraction of useful information from a VM.	Smith. 2007	
Isolation	Malware, new security software, susceptible programs and new websites for example, it can be a sandboxed VM without the fear of adversely harming other VMs.	Shimzu,2007	S
Disaster Recovery	Virtualization helps in making the IT environment more portable. Also, since the operating systems are run on the same server, the operations cannot be all down when malware targets a VM	Greenemeier, 2007	S

Source: Yunis, et al., 2008.

Proposed Virtualization Security Model

The proposed model in this study is an attempt to incorporate virtualization into security model and this framework/model still needs to be implemented in the real life environment. It is built upon several information security models, for instance, Ciampa's Threat Model, Saunders Risk Analysis Model and Oppliger's IT Security Model (Figure. 1). This will build an overview of virtualization literature in order to analyze the security features of this technology in terms of strength and weaknesses. Following is a summary description of the model components (Figure 2). It starts with threat and risk assessment and analysis. On the left side, threats to information assets are created by a threat source (threat agents with their resources), and realized by a specific threat technique (exploits & methods of attack). A threat analysis based on these first two components will identify the quantity and nature of potential threats, whereas risk analysis will assess the risk level of these threats in terms of their impact on the organizational information assets and resources. In a virtualized environment, these threats may have diverse effects on IT corporate security, which may be weakened or enhanced through the features of the virtualized technology.

Consequently, a virtualization security strategy should take into consideration the nature of corporate computing environment, as well as the results of the threat and risk analysis stage. Based on this, identifying the features of hypervisor-based virtualization technologies can make the process of designing, developing, implementing and enforcing a security policy and strategy more systematic, feasible and effective. The features of virtualization

component (Scaling, Transience, Software Lifecycle, Diversity, Mobility, Identity and Data Lifetime) can incorporate information environment and they can be regarded as security problems (Florin & Severin, 2010). In addition, we incorporate in the expanded virtualization component of Strength Weakness Analysis (SWA) method of hypervisor-based virtualization technology, based on the security dimensions proposed by various researchers. On the top right of the model, the effect on information resources can be any of the possible outcomes component in the model. These outcomes are adopted by Aaraj and Raghunathan (2010). To mitigate the effect of these adversarial outcomes or prevent them from taking place, then a Security Management Process -based on Filip (2010)- should be in place. With this process, a security policy or strategy should be designed, implemented and periodically tested through a combination of elements that work as an integrated system: namely organizations people, technology and operations processes. This policy or strategy should be continuously updated since there will always be changes or advancements in technology, expertise and process reengineering outcomes. The synergic management process can allow for a dynamic rather than a static approach to be followed in dealing with virtualization security challenges (Williams & Swanson, 2010).

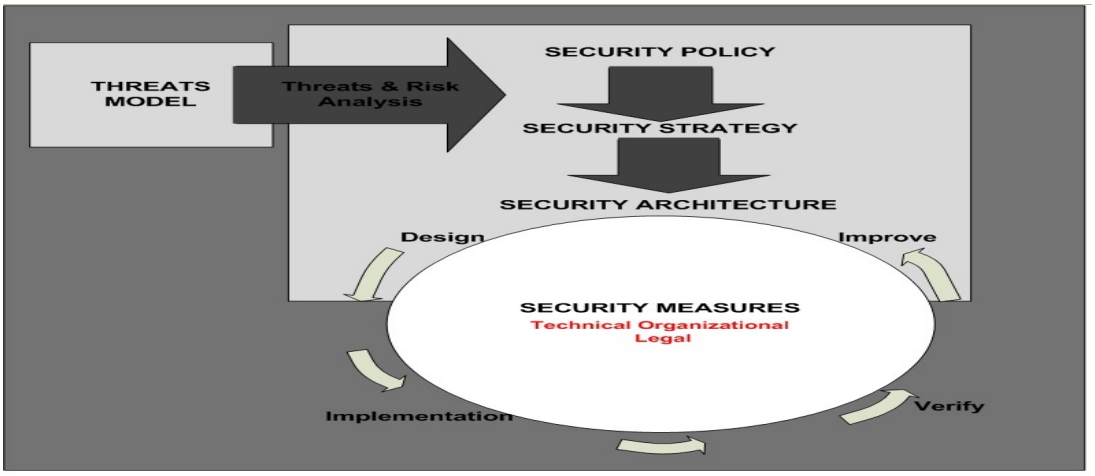

Figure 1. IT general security framework

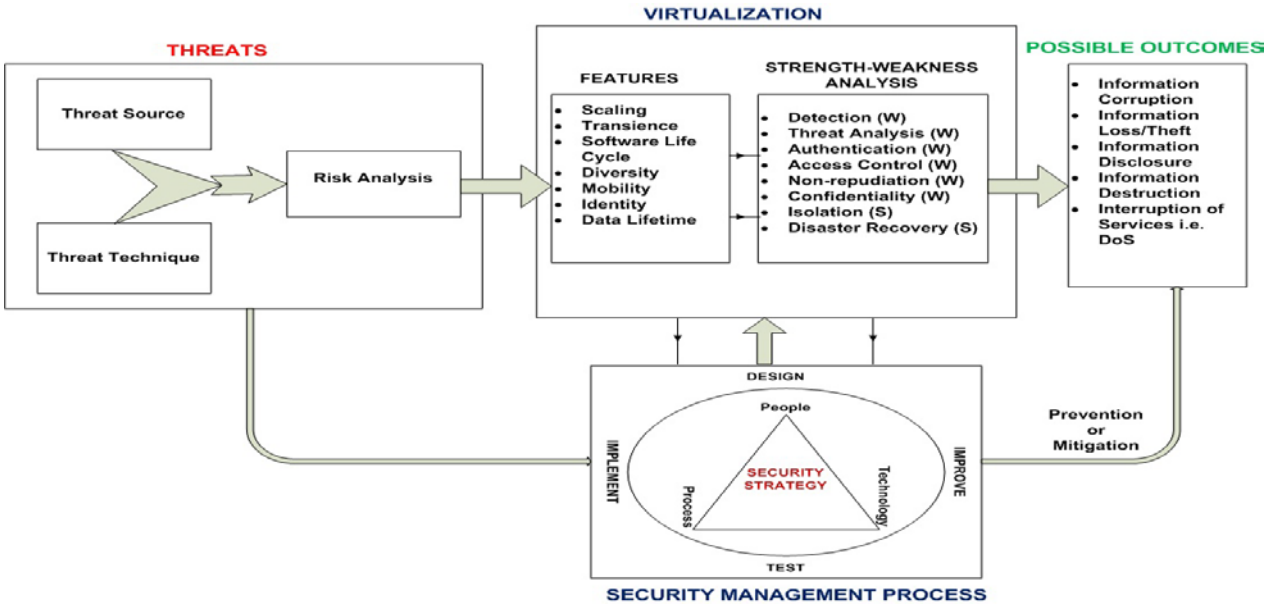

Figure 2. Proposed virtualization security model

Conclusion

Virtualization is the key feature of the current cloud computing architecture (IBM Academy, 2010). It forms the basis for sharing of software and hardware for multiple cloud users. Here, types of virtualization and various security issues in virtualization, control measures for security issues in virtual virtualization, risk prevention in virtualized

environment were discussed. The corporations are now starting to use technologies to better protect and preserve their most significant asset like the data contained within servers and also driving down hardware together with software licensing costs, reduced utility bills, simplifying and rationalizing management processes, minimizing downtime and improved security of IT systems. The authors believe that incorporating virtualization security hazards into a comprehensive information security framework can help government sectors and IT managers in South Africa to systematically plan and enforce security policies when they need to implement cloud computing as an emerging technology. These policies should include people, procedures and technology dimensions in order to make use of the benefits of this technology and to eliminate or mitigate its security hazards. Our proposed model of virtualization security model is still in progress for examination. This will allow IT managers to view information security from a holistic perspective rather than a technology-based perspective. Another implication is for hardware, hypervisor and security vendors to work together to include sufficient security mechanisms that are optimal to the client organizations' security strategy and objectives.

References

Aaraj, N. & Raghunathan, A. (2010). Virtualization-assisted framework for prevention of software vulnerabilites based security attacks: a survey on virtual machine security. *TKK-T110.5290 Seminar on Network Security*, vol. 3, pp. 45-80, May.

Choudhary, V. (2007). Software as a service: Implications for investment in software development. In *International Conference on System Sciences*, 2007, (p. 209).

Gurav, U, & Shaikh, R. (2010). Virtualization-a key feature of cloud computing. In *International Conference and Workshop on Emerging Trends in Technology*. Mumbai, India, vol. 2, (pp. 227-229), April.

IBM Academy of Technology. (2010). Cloud computing insights from 110 implemented projects. *IBM Academy of Technology Survey through leadership*, White Paper, October.

Jenni, S. (2010). A survey on virtual machine security. *TKK-T110.5290 Seminar on Network Security*, vol. 2, (pp. 45-80), May.

Mirzoev, T & Yang, B. (2010). Securing virtualized datacenters. *International Journal of Engineering Research & Innovation*, 2, 23-29.

Paula, S. & Mariana, T. (2011). Secure virtualization. In *International Conference on Cloud Computing and Service Science, France, Paris*. vol. 2, (pp. 15-23), March.

Shroff, S. & Reddy, D. (2009). Virtualization imperatives and performance. *Journal of Engineering Research & Innovation*, 7, 23-29.

Subashini, S. (2011). A survey on security issues in service delivery models of cloud computing. *Journal of Network and Computer Applications*, 34, 1-11.

Williams, B. & Swanson, I. (2010). Virtual environments support inside security violations. *ACM: Secondring Research Centred*, 2, 67-159.

The Digital Divide: A Case Study of the Impact of Low (or no) Broadband in Rural Areas

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Abstract: *For several people in the United States, the library is the only place in their communities where they can have access to free public internet computers. As computer usage in libraries continues to increase and internet functions require more bandwidth, libraries in rural areas are finding that their speeds online are slowing significantly. This comes at the same time as ILS software is moving into the cloud, which could create additional slowdowns with many of the library's daily functions. This small case study looks at the impact of these factors on a library's daily procedures, and how this affects policy and advocacy in the long term.*

Keywords: *Broadband, rural, bandwidth, libraries.*

Background

Between 2001-2004, the global rankings of broadband usage in the US have dropped from 4th to 13th. Americans experience slower connection speeds and slower advancement in broadband technologies in comparison to residents in Japan, Finland and China. Americans also pay more per megabit of bandwidth. These other nations also considered broadband to be an essential infrastructure, while for the most part, Americans do not consider this to be so. The U.S. government has historically relied on competition and government encouragement to foster broadband growth (Mandel, Bishop, McClure, Bertot, & Jaeger, 2010).

It is the belief of several scholars that this will create negative consequences for our global competitiveness and educational capacity. However, within the United States there are significant disparities to access to the internet both geographically and with levels of connectivity. This is especially true in rural libraries where there is less access to workstations, high speed connectivity and wireless internet for patrons who own computers. There are large differences between access in rural libraries vs. non-rural libraries, with the rural libraries more likely to have lower levels of broadband connectivity than their urban or suburban counterparts. Along with broadband issues, some public libraries are running out of space to provide additional public access workstations. These same libraries also struggle with resources to maintain and upgrade work stations that are already in existence. As Jaeger, Bertot, McClure, & Langa (2006, p. 137) state, "the more bandwidth intensive internet applications become, the more workstations public libraries add, the more wireless access points public libraries install, the more digital library resources public libraries provide, and the more users rely on public libraries to access a wide range of e-government services and resources, the more bandwidth public libraries will need." Vollmer, Clark and Davis (2009, p. 32) echo this sentiment in their paper, stating that even when libraries were offered a grant to obtain a high speed broadband connection, some will decline it because of the inability to pay for ongoing costs or equipment upgrades. They say: "Some communities will likely never have adequate access to broadband. Others may have access to broadband but may not be able to afford it..the fact that internet bandwidth may eventually be negatively affected by insufficient funding raises very serious questions about priorities in public policy."

Purpose

For several people in the United States, the library is the only place in their communities where they can have access to free public internet computers. As computer usage in libraries continues to increase and internet functions require more bandwidth, libraries in rural areas are finding that their speeds online are slowing significantly. This comes at the same time as ILS software is moving into the cloud, which could create additional slowdowns with many of the library's daily functions. This small case study looks at the impact of these factors on a library's daily procedures, and how this affects policy and advocacy in the long term.

Methods

This qualitative case study first takes a look at some background documentation of library board minutes, library consortia meeting minutes and state annual report data and examines the issue of compromised connection speeds, focusing particularly on the more rural areas. These examination will look on dialog as it pertains to network segmentation and other tools used to impact connection speeds behind the scenes, as well as things that occur day to day on the ground when librarians experience compromised broadband speeds. There will also be some discussion on the ILS used, and the migration to the cloud, and the potential issues that arise in relation to that.

To complement some of this documentation, surveys were sent out and filled out by library directors in the area. Questions included: 1. Have you had broadband increases in any of the branches this year? If so, has this helped with slowdowns and other issues? 2. Are there particular times that you experience computer slowdowns? Do you modify your procedures or routines during these slow times? 3. Have you implemented any procedures to combat issues due to broadband limitations? 4. Has adding more public use PCs influenced connection speeds at your library? 5. Have broadband issues influenced your decision to purchase more PCs for the library? 6. Have you ever experienced staff PC slowdowns due to heavy use of the public PCs? 7. Are there certain branches that you find have worse problems due to limited bandwidth than others? These surveys were followed up with some qualitative discussion and elaboration about how low bandwidth can impact the library.

Findings

There were four initial surveys sent out to directors of both standalone libraries, and consolidated library systems in Northeast Wisconsin, a largely rural area. Some of the librarians surveyed were system librarians. Therefore, a total of sixteen out of seventeen individual libraries were represented in the study. One survey was not returned. In addition to this, one of the system administrators in the consortia was interviewed to get his perspective on the network segmentation happening behind the scenes in relationship to these 17 libraries that shared consortia. The survey results noted several inconsistencies with connection speeds that were noteworthy not only due to their status as a rural or urban library, but also was consistent with the general wealth of the area, and the equipment and maintenance of their equipment and software.

Surveys yielded interesting findings, including one library director who stated "Computers in general slow down about 3pm; there is some relief after about 6:30 or 7pm. We deal and move through the slowness. Options for modifying procedures that would help with the slowness would be to stop checking out materials or eliminate internet access- both of which are our primary services at a public library." She goes on to talk about the fact that her library does as many updates as possible at night. For the updates that need staff on hand, they are done between 8-9am before the connections slow down. Computer classes at the library are done either during this time, or at 6pm or afterwards when the internet is faster. She did also mention that adding more public use PCs did influence the connection speeds at the library until earlier this year. However, now that it has eased she stated : "We generally take any and every computer we can afford since they are in such high demand. Although in recent years, we've only expanded by 1-2 computers at each location; other computers purchased have been used as replacements." She did also mention that PC slowness has occurred most often in her rural branches, with the main library being spared.

On the network administration side it was interesting to note what was going on behind the scenes, addressing issues that librarians may or may not have noticed on the ground. Large amounts of time were spent creating programs that would minimize bandwidth use for computer upgrades and other downloads. These programs allowed computers to do updates at night, with one computer caching all the files during daylight hours. When the library closes, this one computer communicates to a few computers at a time, allowing the updates to happen within the library during times when the public is not using the PCs. It is in this way that the library is relying on the internal network to update the computers, instead of attempting to do them all over the connection which slows the speed and crashes the system Along with the tiered updates at night, the administrators worked with a third party to attempt to segment the network, giving the staff computers priority when bandwidth problems cause the system to get blocked up. Prior to this segmentation, all of the libraries were vulnerable to large bandwidth patron usage.

It was clear from surveys and interviews, that every library was impacted by low connectivity, whether they were aware of it or not. The techniques used to maximize this connectivity varied, but were consistent behind the scenes.

Discussion

I found it interesting that so many librarians talked about the importance of access, however did not mention a policy or plan for the future of access. Even the technology coordinator seemed resigned to the fact that broadband issues would perpetually be a problem as websites become bigger, and an increasing amount of people rely on libraries for their technology needs. This to me, was very concerning because the majority of these issues will continue to be a

problem. It is easy to see that the underfunded and busy nature of libraries is not exactly conducive to long term planning. However, this is key to the survival of libraries. The lack of formal policies in these areas may come as a byproduct of libraries' identity crisis. It is easy to forget the role of libraries, as providers of internet access has only been the case for fifteen or so years. Many libraries likely feel torn about their role, as a quiet study and reading/reflection institution, or more of a community center and technology learning commons. This lack of identity may impact advocacy in this area.

Another issue which I think impacts the advocacy level is the complicated and technical nature of broadband infrastructure information. When librarians received the additional broadband in the beginning of the year, they noticed that many of their prior problems with connectivity were minimized.

When speaking with network administration, it became obvious that the broadband issue is only half of the problem that some of the rural libraries are facing. If broadband is upgraded, they will also need new equipment to be able to utilize a faster connection speed.

The last big issue that I think underlies this problem is a belief that some forms of information access are more important than others, and that those using the bandwidth for video or music downloading may be creating the majority of the bandwidth problem. Compounding this problem is the fact that the biggest issues with connectivity occur between the hours of 2pm and 6pm, around the same time that kids get out of school. With limited bandwidth speeds during this time frame, the inclination might be to block certain sites or activities that slow down the system. Librarians may feel that this information seeking is secondary to "legitimate" internet usage, whatever that may be. This came across in a few surveys and interviews, where individuals questioned the fact that bandwidth will always be used up even if more is provided, by those who use the computers for these types of things. As much as librarians attempt to remain neutral to information seeking and using behaviors, like collection development decisions, it is clear that they have their own personal biases about what is important. This could also erode advocacy campaigns by those impacted by bandwidth shortages.

Conclusion

There are several things that libraries can do to participate in this process and advocate for this type of funding and development. Libraries as a whole have been doing a poor job in consistently advocating for this infrastructure, despite the fact that there have been noted issues with access to information in the ground level. How can we get some of these citizen/personal definitions of accessibility that Mandel, Bishop, McClure, Bertot, and Jaeger (2010) discuss as important? One way is to step back from the numbers, and take a look at how librarians are dealing with bandwidth issues in their daily activities. This qualitative information could give a picture of the accessibility needs outside of broadband maps and institutional definitions of broadband quality. Public libraries do need to justify their value to governing bodies, and they need to track data that reflects the impact of access especially when it comes to library technology training, e-Government and disaster services. Mandel et al. (2010) discuss the fact that future research really needs to look at longitudinal measures post-PLFTAS survey data. This type of research could help public libraries justify the need for more workstations and bandwidth, while at the same time, determining benchmarks regarding sufficient public library internet access.

Long term it is also important that we track the impact of high capacity broadband on either economy, society, and library services, especially focusing on underserved populations. In the day to day life of a librarian, this isn't always something that has been given any type of prioritization or tracking. My recommendation would be to take a look at the state-wide annual report and attempt to incorporate some of this tracking into documentation that the state holds on record. This has already been done in Wisconsin for 2012, and other states should follow in this practice (Mandel, Bishop, McClure, Bertot, & Jaeger, 2010).

Finally, we need to define what quality connection speeds and access actually are. Once we come up with a solid definition, we can use it as an end goal when advocating for funding and infrastructure. This is the key issue that does not have a simple answer. It will likely require input and collaboration between several information professionals sharing their experience and work flow. It is only when we can organize and collaborate that we can reach the end goal of information access through internet connectivity.

References

Jaeger, P., Bertot, J., McClure, C., & Langa, L. (2006). The policy implications of internet connectivity in public libraries. *Government Information Quarterly, 23(1),* 123-141.

Mandel, L., Bishop, B , McClure, C. , Bertot, J., & Jaeger, P. (2010). Broadband for public libraries: Importance, issues, and research needs. *Government Information Quarterly*, *27*(3), 280-291.

Vollmer, T., Clark, L., & Davis, D. (2009). On-the-ground lessons from OITP's public library connectivity study. *Library Technology Reports*, *45*(1), 31-34.

Altmetrics: A Case Analysis of PLoS Article Level Metrics (ALM)

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Abstract: *The possibility of creating and easily distributing something via a digital platform creates an enormous material volume. With the increase of scientific publications it becomes harder for academicians to choose the most related and significant resources from the others (Henning & Gunn, 2012). Bibliometrics measures the impact of academicians' works through citations in the scholarly literature, but the impact is not limited by this. Altmetrics measures the impact of articles on the web, alongside bibliometric data. The aim of this study is to investigate the probable relationships between traditional metrics and altmetrics by analysing the PLoS Article-Level Metrics (ALM) dataset.*

Keywords*: Bibliometrics, altmetrics, Article Level Metrics (ALM).*

Introduction

The number of papers published in scientific journals is gradually increasing in parallel with developments in science and technology. Scientists engaged in research need to follow more journals and papers every day. A web environment which is globally accessible to everyone leads to benefits from a shared intelligence obtained through the contributions of users. In this environment, in which users gradually become participants, the media allows a more flexible and open system for cooperation and sharing instead of focusing only on the call to consume (O'Reilly, 2005; Shirky, 2008). At some point, mass amateurisation will cause a filtration problem which is bigger than that found in traditional environments. Therefore, solutions used before might be inadequate (Shirky, 2002). Academicians are making use of filtration to follow academic literature. However, traditional filtration methods are becoming gradually more dysfunctional as the environment continues to diversify. Traditional performance measurement systems are desirably adequate in comparison with current technology. Now, other ways of handling this problem should be focused and a number of different sources should be taken into account. The recent increase in online academic indexing systems has enabled new filtration opportunities. The introduction of altmetrics is significant, as it could rapidly impact on academic filtration within the digital ecosystem.

Academicians carry out their daily tasks on Web. According to some studies, there are more than 40 million papers listed on some online reference managers like Zotero and Mendeley (more universal than PubMed). Today, conversations about an invention are pondered and discussed on blogs and within social media (Mollett, Moran & Dunleavy, 2011). Nearly one third of academicians are also Twitter users (Priem & Costello, 2010). Besides, the number of scientific citations attributed to articles on Twitter is more than 58,000. Researchers are following other researchers whom they think to be important opinion leaders via Twitter instead of reading a bulk of pages by various authors in a peer-reviewed journal.

All these interactions are reflected in scientific communication processes. Articles which are dog-eared and have not been quoted can be found and recounted in some online environments like Mendeley, Zotero and CiteULike (Howard, 2012).

Individuals have an opportunity to get access to all kinds of online environments in which they can share a variety of articles, images, videos and so on. They can make use of such opportunities for research and cooperation. Thus, these environments may provide a useful measure of the impact of scientific research or performance.

Scientific communication has developed along with digital technologies. As communications have moved to an electronic environment, not only articles but also a number of new structures (data sets, analysis, reference managers, blogs, social networks, social marking, discussion lists and so on) have begun to appear. Hence, the homogeneity of channels has decreased while the diversification of channels has increased. Informal communication sparks significant debates in scientific communication. Researchers share their own studies with each other within online environments, potentially changing the direction of the research. More diverse environments mean more debates and discussions. If there are many ideas, then there are many individuals who discuss these with each other. Informal systems, which have been at the centre of research communications in the past, have now migrated to and are being followed online.

There are a great many more amateurs than professionals, as consumers also become producers who can easily communicate with each other in online environments (Surowiecki, 2004). This activity could be utilized to measure the impact of scientific research or performance.

This study will focus on correlations between altmetrics and traditional metrics. It will also discuss how altmetrics could affect traditional filters and whether it could be employed for forecasting.

Literature Review

As a result of the increasing opportunities provided by digital environments, researchers have begun to make use of different methods to measure scientific impact. One of the most significant of these methods is webometrics. Webometrics, first put forward by Almind and Ingwersen, applies infometric methods on the World Wide Web (Almind & Ingwersen, 1997, p. 404). There have been a number of studies about webometrics usage and usage records of online article access (Bollen, Van de Sompel, Hagberg, & Chute, 2009). However, webometric data are only manually collected periodically, as they are limited by automatic mining. This method is not functional to a large extent because publishers are not willing to open their sources for an extensive usage (Haustein & Siebenlist, 2011). Therefore, usage metrics are only automatically collected on a very small scale.

According to the studies of Procter and others, 80% of academicians are estimated to have social media user accounts (Procter et al., 2010). There are also some studies about how much altmetrics data we have and how they are distributed (Priem & Hemminger, 2010). In studies in which comment systems based on journals and "rapid impacts" are focused, there are many asymmetric distributions. In a study of Schriger and others, prepress articles in the repository and rates of being tweeted are compared. According to the results of this study, it has been revealed that sample articles from the arXiv preprint repository were tweeted at the rate of 95% (Schriger, Chehrazi, Merchant, & Altman, 2011). Wardle points out that citations in Wikipedia do not coincide with the Journal Citation Reports, although there are a few more citations in more effective journals (Wardle, 2010).

Few studies have been found which examine how altmetric data analysis will affect traditional filters and whether it can be used for the purpose of forecasting.

Method

The objective of this study is to seek any correlations between traditional and altmetric metrics by analysing PLoS Article-Level Metric (ALM) data sets. This study also aims to test whether there are statistically significant correlations among the frequency of use of articles and their impact factors, total citation numbers and half-lives.

This paper addresses the following research questions:

- Is the impact of an article on the Internet sensitive enough to forecast an increase in citations?
- Do journals with high impact factors and total citation numbers (i.e., publishing high impact articles) also have higher altmetrics impact values?
- Do 18 metric statistics designating the altmetrics values of the articles show changes over the years?

Essential data sets were downloaded from the PLoS Article-Level Metric (ALM) web page (http://article-level-metrics.plos.org/plos-alm-data/) on January 2013. Data sets included 78,386 articles published in eight PLoS journals (PLOSBiology, PLOSClinicalTrials, PLOS Computational Biology, PLOSGenetics, PLOSMedicine, PLOS Neglected Tropical Diseases, PLOS ONE ve PLOSPathogens) between 2003 and 2013. Citation numbers were manually extracted from Web of Science (WoS) for all articles matching the journal "PLoS *". The detailed Web of Science (WoS) citation information was exported for the 22,000 PLoS articles, 500 articles at a time (maximum permitted by ISI website). For the impact factor, JCR (Journal Citation Reports) data sets were merged and transferred to Numbers, SPSS and Tableau programs to evaluate them after making necessary arrangements.

Citation numbers of the articles have been gained from Web of Science (WoS) database published by Institute for Scientific Information in USA. Journal Citation Reports (JCR) published by ISI has been used to find out impact factors of the articles along with citation numbers, self-citation rates and so on.

References

Almind, T. & Ingwersen, P. (1997). Informetric analysis on the World Wide Web: Methodological approaches to 'webometrics'. *Journal of Documentation*, 53(4), 404-426. Retrieved March 14, 2013 from http://comminfo.rutgers.edu/~muresan/IR/Docs/Articles/jdocAlmind1997.pdf

Bollen, J., Van de Sompel, H., Hagberg, A. & Chute, R. (2009). A principal component analysis of 39 scientific impact measures. *PLoS ONE* 4. doi:10.1371/journal.pone.0006022. Retrieved March 14, 2013 from http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0006022

Haustein, S. & Siebenlist, T. (2011). Applying social bookmarking data to evaluate journal usage, *Journal of Informetrics*, 5(3), 446-457, 10.1016/j.joi.2011.04.002. Retrieved March 14, 2013 from http://www.sciencedirect.com/science/article/pii/S1751157711000393

Henning, V. & Gunn, W. (2012). *Impact factor: Researchers should define the metrics that matter to them*. Retrieved March 12, 2013 from http://www.guardian.co.uk/higher-education-network/blog/2012/sep/06/mendeley-altmetricss-open-access-publishing

Howard, J. (March 12, 2012). *Tracking scholarly influence beyond the impact factor*. *Chronicle of Higher Education*, Retrieved March 12, 2013 from http://chronicle.com/blogs/wiredcampus/tracking-scholarly-influence-beyond-the-impact-factor/35565

Mollett, A., Moran, D. & Dunleavy, P. (2011). *Using Twitter in university research, teaching and impact activities: A guide for academics and researchers*. Retrieved March 12, 2013 from http://blogs.lse.ac.uk/impactofsocialsciences/files/2011/11/Published-Twitter_Guide_Sept_2011.pdf

O'Reilly, T. (2005). *What is Web 2.0: Design patterns and business models for the next generation of software*. Retrieved March 12, 2013 from http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html?page=1.

Priem, J. & Costello, K (2010). *How and why scholars cite on twittter?*. Retrieved March 14, 2013 from https://docs.google.com/presentation/d/15J41q9EzK3CiMMoIPKY545ACndORpa6Wtj75v1YjrzQ/present?pli=1&ueb=true#slide=id.i0.

Priem, J. & Hemminger, B. (2010). Scientometrics 2.0: Toward new metrics of scholarly impact on the social Web. *First Monday* 15. Retrieved March 14, 2013 from http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/2874/2570.

Procter, R., Williams, R., Stewart, J., Poschen, M., Snee, H., Voss, A. & Asgari-Targhi, M. (2010). Adoption and use of Web 2.0 in scholarly communications. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences* 368, 4039-4056. doi:10.1098/rsta.2010.0155. Retrieved March 14, 2013 from http://rsta.royalsocietypublishing.org/content/368/1926/4039.short#cited-by

Schriger, D., Chehrazi, A., Merchant, R., & Altman, D. (2011). Use of the Internet by print medical journals in 2003 to 2009: A longitudinal observational study. *Annals of Emergency Medicine*, Retrieved March 14, 2013 from http://www.sciencedirect.com.libproxy.lib.unc.edu/science/article/B6WB0-51S6FN7-1/2/2edccd79138b204deee17536d13a2eae

Shirky, C. (2002). *Weblogs and the mass amateurization of publishing*. Retrieved March 12, 2013 from http://www.shirky.com/writings/herecomeseverybody/weblogs_publishing.html

Shirky, C. (2008). *Here comes everybody, the power of organizing without organizations*. New York, NY: Penguin Group USA.

Surowiecki, J. (2004). *The wisdom of crowds: Why the many are smarter than the few*. Retrieved March 14, 2013 from http://www.diplomacy.edu/resources/books/reviews/wisdom-crowds-why-many-are-smarter-few

Wardle, D. (2010). Do "Faculty of 1000" (F1000) ratings of ecological publications serve as reasonable predictors of their future impact? *Ideas in Ecology and Evolution*, 3, 11-15. Retrieved March 14, 2013 from http://library.queensu.ca/ojs/index.php/IEE/article/view/2379

Information-Seeking Behavior of Undergraduate, Graduate and Doctoral Students: A Survey of the University of Istanbul, Turkey[1]

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Abstract: *The main purpose of this study is to examine the research habits of undergraduates, graduate students, and doctorates in the University of Istanbul. Specifically, the study tries to develop a deeper understanding of the changing nature of the general research process of the participants and the patterns of their information-seeking behaviors. Moreover, the study investigates whether age and gender have an influence on information seeking behavior of the participants. Based on the survey findings, the researcher makes recommendations for improving library services and technologies to better meet the needs of users.*

Keywords: *Information-seeking behavior, digital age, Turkey.*

Introduction

Over the past decades, many researcheres have developed a number of important studies discussing the changing behaviors of students in using digital content. Of particular note is the work done by JISC (2007-2010) in the United Kingdom and Project Information Literacy (2007-) out of University of Washington's Information School. According to the latter study, for many of today's undergraduates, the idea of being able to conduct an exhaustive search is inconceivable. Information seems to be as limitless as the universe. And research is one of the most difficult challenges facing students in the digital age (Head & Eisenberg, 2010). Therefore, knowledge of the information needs and information-seeking behavior of users is vital for developing strategies and practices to support students undertaking and understanding the nature of research.

The main purpose of this study is to examine the research habits of undergraduates, graduate students, and doctorates in the University of Istanbul. Specifically, the study tries to develop a deeper understanding of the changing nature of the general research process of the participants and the patterns of their information-seeking behaviors. In order to achieve this purpose, following six research questions will be answered:

1. How do undergraduates, graduate students and doctorates seek and obtain information they need for research?
2. What difficulties are involved in information seeking?
3. What are the main types of information resources they use for their research?
4. How do they judge the quality of information resources they find?
5. Where do they find relevant information for their research or research assignments?
6. Who is their best resource for help in the research process?

A review of the literature reveals that no study on the information-seeking behavior of students at the University of Istanbul has been conducted before but there is a large body of international literature on the topic. This allows author to compare the results to other important research, such as that of Project Information Literacy (PIL).

Background and Methodology

Istanbul University is an education, research, and service center with twenty faculties (two research hospitals belong to the Faculty of Medicine) located on eleven campuses, thirteen vocational high schools, and fifteen institutes. In order to look at the research habits of undergraduates, graduate students as well as doctorates and determine how they conduct their research, a descriptive survey method using a self-developed questionnaire will be used. The collected data is going to be coded and analyzed by the support of a statistician using SPSS version 11.5 for Windows.

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References

Head, A.J. & Eisenberg, M.B. (2010). Truth be told: how college students evaluate and use information in the digital age, Project Information Literacy Progress Report, University of Washington's Information School. Retrieved February 27, 2013 from http://projectinfolit.org/pdfs/PIL_Fall2010_Survey_FullReport1.pdf

JISC national e-books observatory project: 2007-2010. Retrieved February 27, 2013 from http://observatory.jiscebooks.org/

Project information literacy. (2007-). Retrieved February 27, 2013 from http://projectinfolit.org/publications/

Students Readiness for E-Learning: An Assessment on Hacettepe University Department of Information Management

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Abstract*: Students are one of the key elements during the implementation of e-learning systems within the universities. It is important to know the level of readiness of students in order to build solid and effective e-learning systems. In this paper e-learning readiness of students who study at the Department of Information Management of Hacettepe University will be investigated. An e-learning readiness questionnaire that was tested in previous studies will be used for obtaining the data. Findings of this study will help to conduct a larger study throughout Turkey in order to determine a model for course of action for transition to an e-learning system.*

Keywords*: E-Learning readiness, higher education, students' readiness.*

Introduction

The concept of e-learning has been discussed in recent years by many institutions and researchers under the topics of "online learning", "distance learning", "distance education", "virtual learning", etc. in Turkey (Baltacı-Göktalay & Ocak, 2006; Koçer, 2001; Soydal, Alır & Ünal, 2011). Although practically there are some attempts in the universities to develop e-learning programs, the acceptance or readiness of the counterparts (such as faculty and students) has not been investigated much. It is important to understand the agents that affect e-learning eco-system in order to create solid e-learning environments.

This study will be based on our previous research (Soydal, Alır & Ünal, 2011) and we aim to reveal the readiness levels of the Department of Information Management (DIM) students. Hacettepe University's DIM is one of the largest departments in the Faculty of Letters, with its 304 undergraduate students. According to the results of our former study, the academic staff of the DIM performed the highest scores among other departments in the Faculty, in terms of e-learning readiness.

E-learning programs are particularly important for information science programs at the universities, since the discipline evolves rapidly and this change affects its education as well as the practice (Roknuzzaman & Umemoto, 2009).

Literature Review

The readiness of teachers and learners for e-learning had been discussed in some studies in the last decade (Hegarty & Perman, 2005; Bonanno, 2011; Soydal, Alır & Ünal, 2011; Akaslan & Law, 2010; Tezer & Bicen, 2008; So, 2005; Kaur & Abas, 2004; Akaslan & Law, 2011; Tubaishat & Lansari, 2011; Hung, Chou, Chen & Own, 2010; Park, 2009; Jahng, Krug & Zhang, 2007; Smith, Murphy & Mahoney, 2003). The studies showed that results related to the different aspects of e-learning readiness can vary over time, among institutions or instruments that were used for the assessment.

Findings of e-learning readiness assessment tests applied to the academic staff in Turkish higher education system tend to differ by disciplines or institutions. This is in line with the findings reported in the international literature. For example, teachers working in the higher education institutes associated with the science of electricity in Turkey have confidence in and positive attitudes towards e-learning (Akaslan & Law, 2011) whereas the assessment carried out on the academic members of Hacettepe University's Faculty of Letters reveals that the majority were not ready

for e-learning except the academic members of DIM (Soydal, Alır & Ünal, 2011). These results refer to the necessity of assessment studies in different disciplines and show that the readiness level varies from institution to institution.

According to the related literature, readiness levels of students can also vary from their grades to the attitudes of teachers who develop and deliver online courses. For example, Hung, et.al's study (2010) showed that higher grade college students were significantly more ready than the lower grade students and emphasized the teachers' roles in helping to develop self-directed learning and learner-control skills and attitudes for the students. Stressing the effect of teachers in supporting students to adapt to e-learning systems, Park (2009) presents the impact of some constructs of Technology Acceptance Model (such as perceived usefulness, perceived ease of use) on students' attitudes which affected their intention to use e-learning systems.

Akaslan and Law (2011) conducted one of the most comprehensive studies on e-learning readiness of university students in Turkey, targeting a specific group studying in electricity-related disciplines. Their model (Figure 1) was based on their previous study in which they assessed the teachers and students of several Turkish Universities working in the above mentioned discipline (Akaslan & Law, 2010). Their assessment conducted with a 78-item questionnaire was based on three main factors: Readiness, Acceptance and Training. The results showed that students were "sufficiently ready" for e-learning.

Recent studies conducted on students mostly revealed positive results, which means they generally see themselves almost ready for e-learning (Akaslan & Law, 2011; Tubaishat & Lansari, 2011).

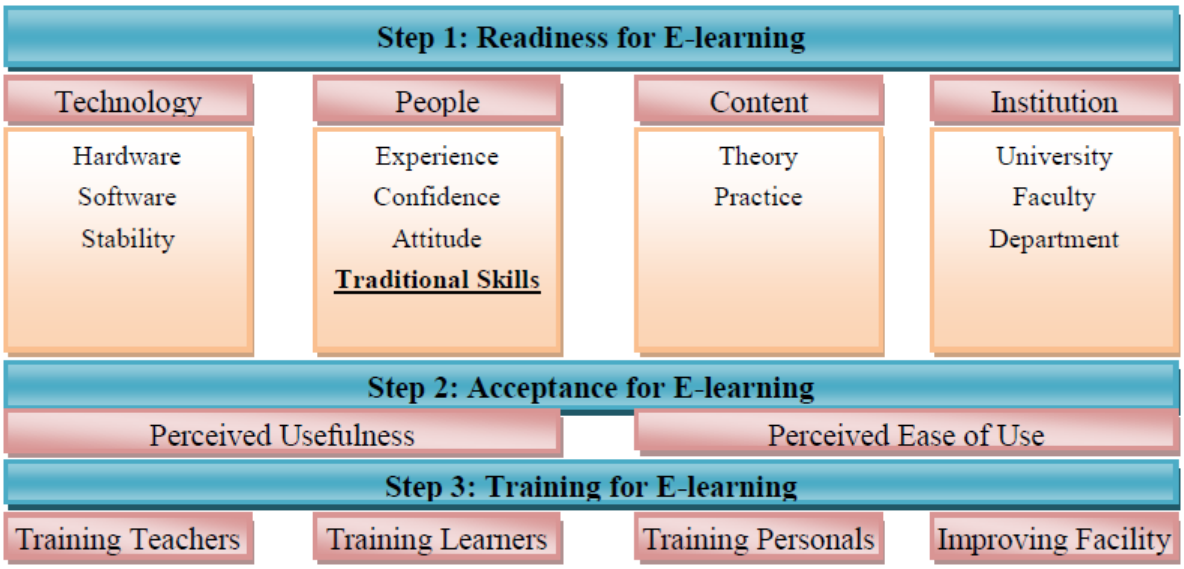

Figure 1. Akaslan and Law's (2011) model for measuring students' readiness for e-learning

Research Methodology

Our previous study (Soydal, Alır & Ünal, 2011) revealed that among 16 departments of Hacettepe University Faculty of Letters, the Department of Information Management (DIM) was the only one whose academic staff was almost ready for e-learning. We wondered if this is also the case for DIM's students. The aim of this study is to assess the readiness of 304 students who are currently enrolled in DIM's undergraduate program.

Our paper addresses the following research questions:

- Are the students of DIM ready for e-learning?
- What is the students' tendency for accepting e-learning?
- Are there any differences among the students regarding their grades and genders in terms of accepting/rejecting e-learning?
- Do students need training for e-learning?

To determine the readiness level, a paper-pen questionnaire will be applied to the 304 DIM students. Participants were asked to report their perceptions on readiness for e-learning. The questionnaire was developed and tested by Akaslan & Law (2011) and based on a conceptual model of the readiness for e-learning which assesses the perceived readiness in three phases; namely, readiness, acceptance and training (see Figure 1). The original questionnaire has 78 items with binary or a five-point Likert scales, along with some free text boxes for the participants to explain their scores or choices (Akaslan & Law, 2011). However, in order to understand the basic similarities and differences in

the perception of DIM's academic staff and students regarding their e-learning readiness levels, we will use the items that can be answered with the Likert scale only.

Students will report their perceptions on some e-learning related items belonging to the three main factors of e-learning readiness (readiness, acceptance and training) using a five-point Likert-scale where 1 being "strongly disagree" and 5 being "strongly agree". We will use the mean score of 3.40 as the "expected readiness" level for e-learning (as suggested by Aydın and Taşçı, 2005) and interpret the findings accordingly (Figure 2) (see also Akaslan and Law, 2010, 2011; Soydal, Alır & Ünal, 2011).

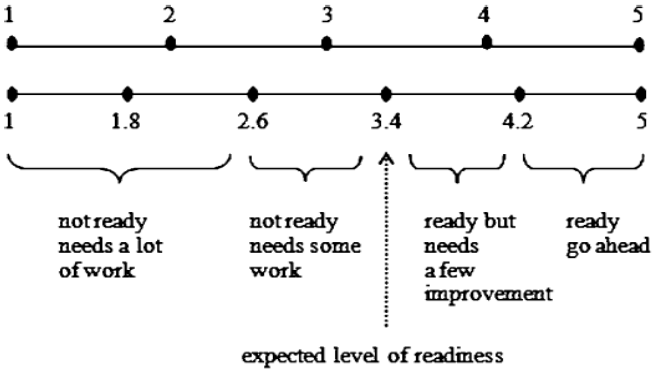

Figure 2. E-learning readiness assessment model (Source: Aydın & Taşçı, 2005)

References

Akaslan, D. & Law, E.L.-C. (2011). Measuring student e-learning readiness: A case about the subject of electricity in higher education institutions in Turkey. In *Proceedings of the 10th International Conference on Advances in Web Based Learning (ICWL) Hong Kong, China, LNCS, 7048* (pp. 209-218). Berlin: Springer.

Akaslan, D. & Law, E.L.-C. (2010). Measuring teachers' readiness for e-learning in higher education institutions associated with the subject of electricity in Turkey. In *Proceedings of 2011 IEEE Global Engineering Education Conference (EDUCON)-Learning Environments and Ecosystems in Engineering Education* (pp. 481-490). Amman, Jordan.

Aydın, C.H. & Taşçı, D. (2005). Measuring readiness for e-learning: Reflections from an emerging country. *Educational Technology and Society*, 8, 244-257.

Baltacı-Goktalay, S. & Ocak, M.A. (2006). Faculty adoption of online technology in higher education. *The Turkish Online Journal of Educational Technology*, 5, 37-43.

Bonanno, P. (2011). Developing an instrument to assess teachers' readiness for technology-enhanced learning. *14th International Conference on Interactive Collaborative Learning (ICL2011), 21–23 September 2011, Piešťany, Slovakia*.

Hegarty, B. & Perman, M. (2005). *Approaches and implications of eLearning adoption in relation to academic staff efficacy and working practice final report, Universal College of Learning*. Retrieved January 11, 2012 from http://cms.steo.govt.nz/NR/rdonlyres/8C221A73-CF28-4CC9-83E8-B8FD7D9C1164/0/ALETfinalReport251006.pdf.

Hung, M.L., Chou, C., Chen, C.H. & Own, Z.Y. (2010). Learner readiness for online learning: Scale development and student perceptions. *Computers & Education*, 55, 1080-1090.

Jahng, N., Krug, D. & Zhang, Z. (2007). Student achievement in online distance education compared to face-to-face education. *European Journal of Open, Distance and E-Learning*. Retrieved January 10, 2013 from http://www.eurodl.org/materials/contrib/2007/Jahng_Krug_Zhang.htm

Kaur, K. & Abas, Z.W. (2004). An assessment of e-learning readiness at Open University Malaysia. In *Proceedings of the International Conference on Computers in Education (ICCE), Nov 30-Dec 4, Melbourne, Australia, 2004*.

Koçer, H.E. (2001). *Web tabanlı uzaktan eğitim*. Unpublished Master's Thesis, Selçuk University, Konya.

Park, S. Y. (2009). An analysis of the technology acceptance model in understanding university students' behavioral intention to use e-learning. *Educational Technology & Society*, 12, 150-162.

Roknuzzaman, M. D. & Umemoto, K. (2009). Knowledge management education in library and information science schools: An exploratory study. *Asia-Pacific Conference on Library & Information Education & Practice, Preparing Information Professionals for International Collaboration, 6-8 March 2009, Tsukuba, Japan.*

Smith, P.J., Murphy, K.L. & Mahoney, S.E. (2003). Towards identifying factors underlying readiness for online learning: An exploratory study. *Distance Education*, 24, 57-67.

So, K.K.T. (2005). The e-learning readiness of teachers in Hong Kong. In *Proceedings of the Fifth IEEE International Conference on Advanced Learning Technologies (ICALT '05)* (pp. 806-808). Washington: IEEE Computer Society.

Soydal, İ., Alır, G. & Ünal, Y. (2011). Are Turkish universities ready for e-learning: A case of Hacettepe University Faculty of Letters. *Information Services & Use*, 31, 281–291.

Tezer, M. & Bicen, H. (2008). Üniversite öğretim elemanlarının e-eğitim sistemlerine yönelik hazır bulunuşluğu. *International Educational Technology Conference*, Anadolu University, Turkey.

Tubaishat, A. & Lansari, A. (2011). Are students ready to adopt e-learning? A preliminary e-readiness study of a university in the Gulf Region. *International Journal of Information and Communication Technology Research*, 1, 210-215.

Evaluation of Scientific Disciplines for Turkey: A Citation Analysis Study

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Abstract: *This study focuses on Turkish scholars' information use. It analyzes 197,687 Turkey-addressed publications in Web of Science (1928-2009) for four main scientific disciplines (pure sciences, engineering, social sciences and art & humanities) using citation analysis. Differences between these disciplines and between their sub-disciplines in terms of average number of authors, multiple authorship patterns, half-life, publication types, journals characteristics were studied. Findings of this study can be helpful for national-level policy making on scientific productivity and increasing it to that of international level.*

Keywords: *Information behavior, Turkish scholars, scientific disciplines, pure sciences, social sciences, engineering, arts and humanities.*

Introduction

Each individual from any working area or academic discipline retrieves, commentates and synthesizes information in different ways. Consequently, it is important to understand information behaviors of individuals, groups or disciplines. Information behaviors can not only be identified by using surveys, but also it is possible to evaluate publications and citations for the aim of revealing behaviors.

Information behaviors for disciplines are the subject of many studies in the literature. These studies concentrated on pure scientists and engineers at the beginning. After the Second World War, controlling produced materials by scientists and engineers became vital for countries (Price, 1963). Concordantly, the first information behavior studies have written in these years for scientists and engineers. Even Wilson claimed that "the study of information-seeking behavior can be said to be the study of *scientists'* information-seeking behavior" in that period (Wilson, 1984). Studies on social scientists began with INFROSS project in 1967 at Bath University (Line, 1971). Lastly, the studies focused on the people working in arts and humanities fields. Therefore, it is possible to say that understanding people's information needs and behaviors has become important to customize information services according to people's needs.

The main aim of this study is to evaluate scientific disciplines which are pure sciences, engineering, social sciences and arts and humanities in Turkey by using citation analysis. It is also aimed to reveal differences in scientific disciplines and sub-disciplines. To achieve these aims, Turkey-addressed publications placed in *Web of Science* analyzed deeply.

Research Questions and Methodology

This paper seeks answers for the following research questions:

- Are there any differences between disciplines and sub-disciplines in terms of average number of authors for each publication?
- Are there any differences between disciplines and sub-disciplines from the point of single/multiple authorship?
- What is the citation half-life of publications in terms of their disciplines? Are there any differences among disciplines and sub-disciplines?
- Do the publication types differ for each discipline?
- Which journals do the authors choose to publish their papers? Are the authors inclined to choose high-impact journals?
- What are the most frequently cited journals and their impacts in each discipline? Is it possible to draw a parallel between selected journals for publication and most frequently cited journals?

To answer these questions, 197,687 Turkey-addressed publications indexed in Web of Science between 1928 and 2009 were gathered. Data about authors, journals, affiliations and countries were unified for the aim of accessing accurate data. Then, data is divided into disciplines and sub-disciplines. Four different disciplines were determined for general comparisons: pure sciences, social sciences, engineering and arts & humanities, along with sub-disciplines: physics, chemistry, biology and mathematics for pure sciences; history, economy, library and information science and education for social sciences; chemical engineering, computer engineering, electrical and electronic engineering for engineering; and art, philosophy and humanities for arts and humanities. Some 54,242 publications in pure sciences, 2,846 in social sciences, 11,042 in engineering and 316 in arts and humanities were evaluated deeply to find out differences between these disciplines.

As the figures suggest, the number of papers is not equally distributed under different disciplines. For instance, arts and humanities journals are underrepresented in Web of Science. In addition, the dominant publication type is articles. Some 77.2% of the contributions from Turkey between 1928 and 2009 are articles (Al, Sezen & Soydal, 2012, p. 22). The main limitation for this study is quantitative differences between disciplines and the content of Web of Science. To avoid the limitations, each discipline was evaluated in and of itself and percentages were emphasized. And also, different types of publications instead of articles are also considered to compare publication types for disciplines.

Findings of this study can be used to identify Turkish scholars' information behaviors and needs by disciplines. It is also important to show connections between different scientific disciplines for Turkey.

References

Al, U., Sezen, U., & Soydal, İ. (2012). *Türkiye'nin bilimsel yayınlarının sosyal ağ analizi yöntemiyle değerlendirilmesi [The evaluation of scientific publications of Turkey using social network analysis method]*. (TÜBİTAK Social Sciences and Humanities Research Group - Project No: SOBAG 110K044). Ankara, 2012. (viii, 57 p.).

Line, M. (1971). The information uses and needs of social scientists: an overview of INFROSS. *Aslib Proceedings*, 23(8), 412-434.

Price, D.D.S. (1963). *Little Science, Big Science*. New York: Columbia University Press.

Wilson, T.D. (1984). The cognitive approach to information-seeking behaviour and information use. *Social Science Information Studies*, 4(2-3), 197-204.

Information Management, Innovation and Cooperation on a Territory as a Lever for Change in the French Healthcare System: The Case of New Networked Interface Organizations

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Abstract: *In the health sector, new interface organizations positioned between the primary care and the hospital sector can provide spaces for setting up new approaches to quality including assessment with a view of continuous improvement. These new approaches are based on new information uses around new ICT (information and communication technologies) devices and communication practices to promote convergence of representations and the construction of shared meaning around new areas of practices. It is also going to co-produce knowledge integration services to all stakeholders including patients and their families.*

Keywords: *Information issues, healthcare interface organizations, networks, collective intelligence, communication.*

Research Problem

In all developed countries, Healthcare Systems are in crisis. In France, the “divisions”, according to H. Mintzberg (2001) the “walls”, for example between the Ministry of Health and Health Insurance, between primary care and hospitals, between public hospitals and private clinics, between professions (for example between doctors and nurses) ... accentuate the difficulties.

Solutions were sought around new uses of information to improve the efficiency of the whole system (focus on quality and evaluation) and quality of care around traceability of patient pathways (sharing of computerized patient records).

We discuss the issue from New Networked Interface Organizations (Healthcare Networks, Hospital at Home - HAD, Pluriprofessions Houses, MAIA (Houses for Autonomy and Integration for Alzheimer's patients) ... as spaces for experimentation and innovation, studying how new uses of information can help to promote new forms of cooperation and how a new culture of information can contribute to innovative solutions as lever for change in the whole French Healthcare System.

We will highlight the importance of innovation in these spaces corresponding to organizational boundaries as experimental and crossed fertilization areas.

The main content is analyzing the development of new approaches of cooperation and evaluation as improvement in new interface areas around new uses of information (ITC devices) and communication creating shared representations and meanings.

Positioning and Methods

We position at the junction of issues of information and communication, emphasizing their complementarity for a holistic and systemic understanding of the complexity (Morin & Le Moigne, 2003) where the organization is considered as built by the interactions or transactions between all the actors: information as creation of an organizational form. In a process of research action, we focus on analysis of relations (interactions or cooperative transactions between all the stakeholders in the search for the meaning of their actions including the construction of shared knowledge.

Our work is based on observations, interviews, participation in meetings, seminars, student dissertations around a Master’s degree and also during assessment work on Healthcare Networks or on Hospital at Home (HAD). In the approach proposed by N. Heinich (2006), our position is that of "committed neutrality", highlighting the tensions and games of all the actors.

We particularly study the notion of “situation” and its “context”, and in particular the situation of information (Guyot, 2006), with the dimension of situational intelligence (Autissier, 2009).

New uses of information in these new interface organizations correspond to new information practices. We focus on a logic of “sustainable information” (Bourret, Cacaly, & Chambaud, 2008) assuming more sharing, fairness, responsibility and innovation, with the specificity of health data and the need to develop a culture of sharing data in healthcare sector (Fieschi, 2003).

The issue of information literacy is also an essential one with the passage from individual skills to collective skills (Le Boterf, 2004): from the individual dimension of the production of information to information sharing and then to its collective production by integrating as much as possible knowledge of all stakeholders, including patients in a perspective of services co-production.

Results

We will highlight different “situations of information” (orientation of a patient, including information of a folder computerized traceability of care pathways, assessment data ...), corresponding to different levels of information use (micro, meso, macro), incorporating the importance of context (local characteristics).

We analyze the notion of “cooperation”: coordination by tools and procedures for the integration of actors and practices in an area. These changes correspond to the use of ICT tools within. Shared medical records or patients call centres have gradually integrated into broader information systems (transition from hospital information systems to health information systems) at the regional level, progressively integrating platforms in and around new services involving and empowering users (co-production services).

We show the transfer of territorial practices (often individual customer area for a private doctor) to become part of digital territories. These new uses of information and these new “digital territories practices” lead us to approach the concept of territorial intelligence understood as collective intelligence in an area around shared knowledge and built as much as possible in common.

These developments contribute to the affirmation of new skills, new features or new professions in health organizations interface with strong informational dimension and/or communicative: coordinators, case managers, information systems managers, appraisers, ... which brings us back to the notion of location information central to our work.

We assemble an approach in which information and knowledge is essential in an economy now become service-oriented. Building on the concept of “sustainable information”, we propose a new approach to evaluation in a participatory approach involving all the possible players: evaluation, improvement and not fussy control and sanction. Quality is perceived as “organizational intelligence” by trying to overcome the tensions between different logics with full dimension information intelligence as well as communication (negotiation, conflict management, production of shared knowledge in an area). We also insist on the trust dimension and the FaCT Mirror Method (Le Cardinal et al., 2001): in other partners, but also in the relevant ICT tools and e-health.

Prospects

We view “culture of information” or “informational intelligence” as a lever for change in the French health system, particularly through the role of new organizations in a cooperative approach to interface dynamics surrounding the system.

ICT contributing to the construction of new territories practices now have a digital dimension (evolution of the concept of territory).

The role of service platforms is essential “not because they control access and storage of information, but because they have become, through the activities of users ... points of convergence between information, communication, knowledge and sociability” (Doueihi, 2011).

These new tools support the assertion of “new” patients, better informed and more protest. Interface Organizations studied constitute experimental spaces around new uses of information, indivisible new communication practices, can help promote the “health democracy” proclaimed in 2002, but is yet to be built.

Areas of innovation and the new interface can help organizations to help “rethink the Welfare State” in a local approach (Rosanvallon, 1998) to give new meaning and dimension to “collective solidarity” on a territory.

References

Autissier, D. (2009). *L'intelligence de situation: savoir exploiter toutes les situations*. Paris: Ed. Eyrolles.

Bourret C., Cacaly S., & Chambaud S. (2008). Capital immatériel et information professionnelle. L'émergence d'un concept nouveau: l'information durable. *Documentaliste - Sciences de l'Information*, 45(4), 4-11.

Doueihi, M. (2011). *Pour un humanisme numérique*. Paris: Seuil – La Librairie du XXI^{ème} siècle.

Fieschi, M. (dir). (2003). Les données du patient partagées: la culture du partage et de la qualité des informations pour améliorer la qualité des soins. *Rapport remis au ministre de la santé*, available at: http://www.asipsante.fr/docs/Rapport_fieschi.pdf

Guyot, B. (2006). *Dynamiques informationnelles dans les organisations*. Paris: Hermès- Lavoisier.

Heinich, N. (2006). Pour une neutralité engagée. *Questions de communication*, Actes 3, 83-96.

Le Boterf, G. (2004). *Travailler en réseau. Partager et capitaliser les pratiques professionnelles*. Paris: Ed. d'Organisation.

Le Cardinal, G., Guyonnet, J.-F., Pouzoullic, B., & Rigby J. (2001). Intervention methodology for complex problems: The FAcT-Mirror method. *European Journal of Operational Research*, 132(3), 694-702.

Mintzberg H. (2001). *Le Management. Voyage au centre des organisations*. Paris: Ed. d'Organisation.

Morin E. & Le Moigne J.-L. (2003). *L'intelligence de la complexité*. Paris: L'Harmattan.

Rosanvallon P. (1998). *La nouvelle question sociale. Repenser l'Etat-providence*. Le Seuil.

Configuration of Development Planning Business Process within the Scope of Turkish National Geographic Information System (TNGIS) for Turkey

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Abstract: *The necessity of participatory, transparent, auditable and accountable public administration and developments in information technologies caused the concept e-Government to occur. In order to use the sources best way possible and to serve the citizens in an effective, fast and reliable way, by ensuring interinstitutional coordination in public administration, vital studies were also conducted in configuring of e-Government in Turkey. In this context, the need for spatial data that was created in accordance with the current truth and standards necessary for realizing a number of public services and problems that occurred in the procurement of the data, triggered the start of the Turkish National Geographic Information System (TNGIS) project which, in itself, is an e-Government procedure. The concept of e-Government necessitates not just the digitization of the present systems, but also the forming of the business processes in public services in a shorter and more functional way based on information technologies, elimination of the interprocess discrepancies and configuration of the processes in a manner so that they would complete one another. In this study, a development plan business process model based on TNGIS was suggested as a standard to all the institutions in Turkey that make such plans.*

Keywords: *e-Government, Turkish National Geographic Information System, business process modeling, development planning.*

Introduction

The rapid and versatile change occurring in the world brought a radical reconstructing in especially the sense of management and in classic bureaucratic structures into prominence (Yılmaz, 2007). Along with the developments in information and communication technologies, it clarified the aims and principals which increase the participation and are sensitive to demands; an accountable, transparent and more effective public administration has become the main principal of the information age nations in our day (TBD, 2005; Yılmaz, 2007).

Basically, an effective public administration exhibits the following characteristics: a manner of governance in which bureaucratic transactions are of lowest level; demands of the citizens are paid attention to in the process of management and service production; services are wide and accessible; existent sources are used best way possible and services are given with the lowest of cost and best way possible; and an equal and impartial service that is in a fast and correct interaction with other institutions is presented to everyone (TBD, 2005).

The sense of public administration is changing throughout the world and developments taking place in information technologies put forward the fact known as e-Government. In Turkey, a high quality service in public administration is desired to be given to the society with TNGIS, a part of e-Government, and with other e-Government projects.

In this context, in accordance with the necessity of a transparent and rapid service to be given in public institutions, taking stock of the business processes of public institutions, their configuration pursuant to information technologies and elimination of internal and interinstitutional discrepancies are a must.

Varying practices based on personal drive can be hindered by studies conducted on business process models that have been introduced to public well, unnecessary bureaucracy can be stopped by creating an organization structure independent from people, varying service quality related to time, place and branch office can be prevented. (Aysolmaz, et al., 2011).

In this context, development planning which very much concerns the society must be realized as an e-Government procedure. Development planning is a study regarding space and most of the data to be used during the planning process is spatial. And the structure to provide the production and sharing of the spatial data that is necessary during

the planning process is TNGIS, a geographical information system infrastructure on a national scale aiming to produce and update the spatial data based on information technologies on a scale and standards by whose help all the responsible institution and establishments will answer the needs of all user sectors and to present it to users via a geoportal.

So, to create a solution to the problems occurring in development planning in Turkey integrated with e-Government and information technologies, creating a development planning business process based on TNGIS is very important in public administration.

From this point, development planning business process model for Turkey based on TNGIS was suggested. The suggested model was reconstructed with a mindset of creating a plan based on an efficient and transparent public administration, protection and usage balance, by giving responsibility to and ensuring the active participation of all the institutions and establishments that create all the data, and, at the same time, by including the non-governmental organizations (NGOs), professional chambers and citizens into the development planning process.

Configuration of Development Planning Business Process within the Scope of TNGIS

Today, alongside with the developments in the field of science and technology, important progresses are made in the data production, access and sharing. Academic and technical research carried out in Turkey in parallel with these studies and the European Union's (EU) INSPIRE initiative caused a huge awareness on the need of forming a geographical information system on a national scale for production and sharing of spatial data in Turkey.

Struggles to form TNGIS in Turkey was handled within the scope of e-Turkey Project Short-term Action Plan published by the Prime Ministry in 2003 and went into effect through Circular no. 2003/48). Action no. 47 of the Plan advised carrying out a preliminary study to set up the Turkish National Geographical Information System (TNGIS), the outcome of which was ratified by the Supreme Planning Council (Decision no. 2005/5). Furthermore, Action no. 36 advised a preparatory infrastructure study to set up TNGIS with regards to Turkish National Geographic Data Infrastructure Installation within the scope of e-Turkey project 2005 Action Plan.

First studies on this topic were initiated with the project named as "Geographical Information System Infrastructure" of Modernization of Public Administration – no. 75 (MPA – 75) in 2007-2008. The GIS Infrastructure Installation Feasibility Study Report was completed in December 2010 within the context of this project. The GIS General Directorate of the Ministry of Environment and Urbanization carries out the work to set up TNGIS.

Though, at first glance, all the e-Government regulations, TNGIS included, "are thought to be transmission of existent business and service processes into electronic media, transmission of existent forms of operation and data into electronic media won't be beneficial without a reconstruction in business processes and institutional structures, even to the extent that doing such a transmission will do no good and will cause the existent structure to become more complex and fruitless" (Özdemir, 2011). Thus, the redefining all the service and business processes in configuration of e-Government and doing the necessary institutional and judicial regulations are required (TBD, 2005; Özdemir, 2011).

Development plan, one of the most important services in the field of public administration, is the action of making estimations regarding the future tendencies and of realizing the urban services as accordance with these estimations by determining a city's physical, social and economic features such as its manner of settlement, population, transportation, sheltering along with all the conditions surrounding the area that will be planned (Tazegül, 2010). Development plans concern all the society, initially the local folks. Therefore, development plans need to be shaped with the active participation of interinstitutional cooperation and NGOs, professional chambers and citizens in accordance with the sense of modern management in our present day.

Aside from this, right decision strategies should be improved in order to make the best use from natural resources and ensure social and economic development by shaping environmental policies. And taking the right decision is possible through determining future projections by analyzing the present situation flawlessly and in a detailed manner. Decision making process is based upon data and information. Making the right decision with imperfect and flawed data and information is not possible. Wrong decisions induce resource consumption, unhealthy environment conditions and important losses both in economic and social aspects from which there can often be no recovery. For this, using the present resources in best possible way, preserving the environment and ensuring development are the most vital topics in Turkey as in the world. In terms of success of planning and decision making processes, fast accessibility to the right data is a major requirement.

Fundamental principles, concepts and authorities regarding the preparation of development plans in Turkey are introduced in Zoning Law no. 3194. According to the Zoning Law, clause no. 8, local governments (Municipalities, Governorates) have the authority of carrying out and approving regulatory and implementation development plans.

Yet, a few central institutions and establishments aside from local governments are given the authority to make a decision, approve a plan and implement it during zoning, land use and site selection process in accordance with the Zoning Law, clause no. 9 and clause no. 4 that introduce the exceptions along with their establishment laws (AİGM, 2006; Kılınç, 2006; BİB, 2009). This multi-headed and fragmented approach in planning bears the outcome of doing of plans with the quality standards changing from one institution to another alongside with its standard lacking in planning strategies.

In this study, by taking stock of existent problems and needs, development plan business process in Turkey has been reconstructed based on TNGIS. In modelling the business process, UML Activity Diagram was used (Figure 1).

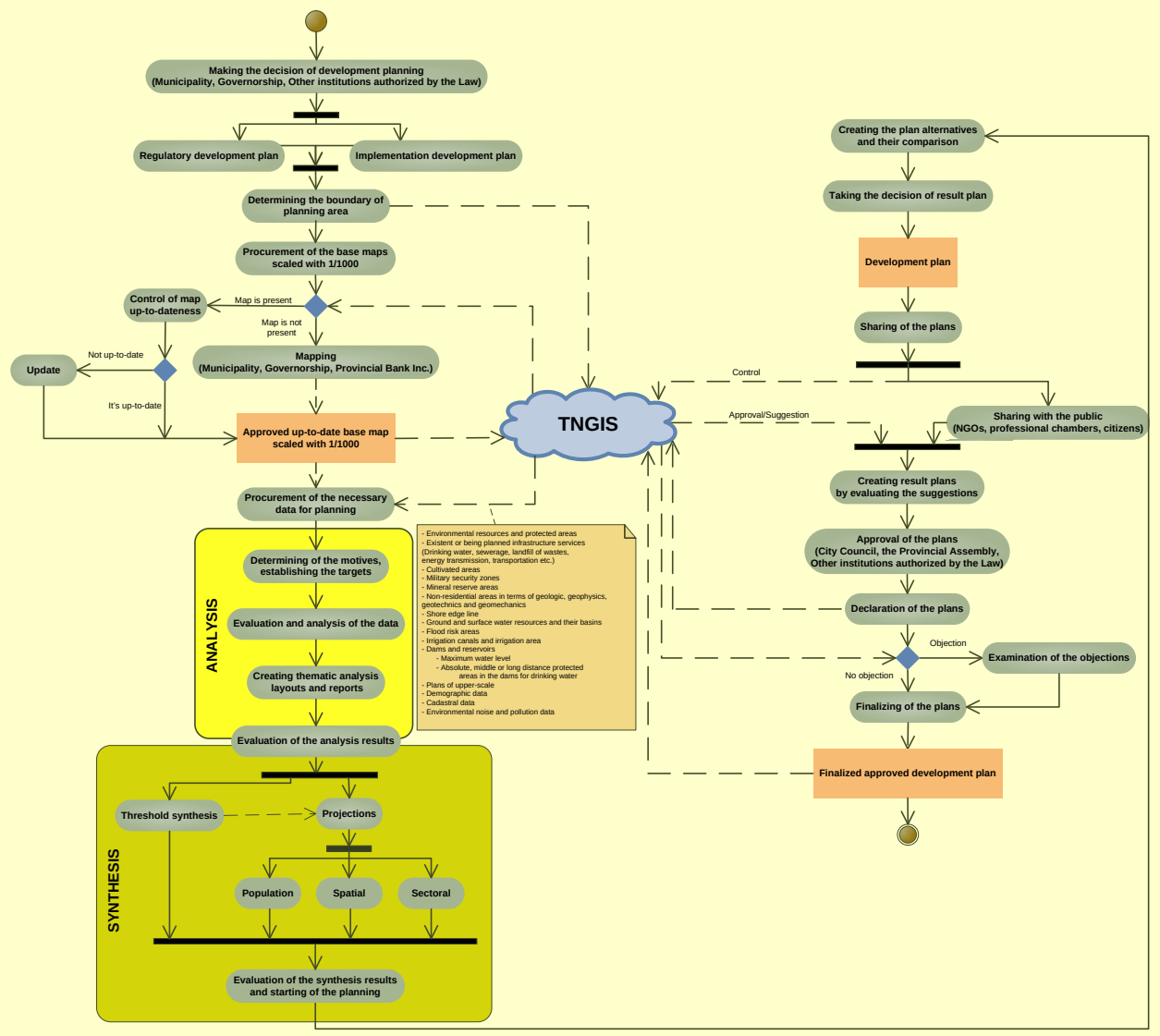

Figure 1. Development planning business process model based upon TNGIS – UML Activity diagram

According to the development plan business process based on TNGIS, all spatial data that was used in the planning process and, ultimately, in development plans need to be shared with TNGIS, including the planning boundaries determined by taking the decision of preparation of regulatory and implementation development plans.

Interinstitutional communication and correspondence necessary during these studies should again be realized within the context of e-Government. Electronic documents provided a rather vital step in enabling the correspondences that public institutions and establishments carry out between each other and/or with natural or legal persons in digital media. In light of these developments, the necessity of realizing the interinstitutional document transfer and sharing processes by taking into account of the basis of interoperability in public sector was born, as in the processes regarding services given by public institutions and establishments (DPT, 2010). The project named as e-

correspondence which was initiated in February 2011 needs to be able to function with TNGIS in shaping the preparation of development plans as an e-Government implementation.

According to the suggested model, institutions and establishments that conduct the plan should declare the planning decision to other parties with e-correspondence after determining the planning boundaries and sharing the determined boundaries with TNGIS. Thus, planning field will be examined by other relevant institutions and establishments which will create the data they are responsible for. This will eliminate the discrepancies and conflicts among different institutions and establishments which might have taken differing utilization decisions regarding the same space.

Institutions and establishments doing the plan will be able to access the base maps with TNGIS and update non-current maps by creating the map of the field in question that lacks its own map. They will also create currently approved base maps scaled with 1/1000 and share it with public again with TNGIS. Therefore, unnecessary data repetition will be prevented and economic profit will be derived at the same time.

Institutions and establishments doing the plan will access projected data such as river channels, irrigation canals, highway plans, and energy transmission lines which were created with TNGIS based on the maps scaled with 1/1000 and other data such as the upper-scaled plans, cadastral maps, and meteorological data. Having used, analyzed and synthesized the data, they will share the finalized development plans through TNGIS. Therefore, it would be possible for other institutions to check if the boundaries they had determined earlier regarding their own responsibility areas were paid attention to. While the prepared plans are shared through TNGIS, institutions that prepare the plan will make announcement to gather public suggestions in their own web site and bulletin board. Thus, in accordance with transparent and participation principles, the opportunity will be given to all the institutions and establishments, NGOs, professional chambers and citizens to examine the development plans before planning and their advices will subsequently be taken. After the reshaping of the development plans pursuant to the controls conducted by establishments and institutions/public suggestions, development plans of the institution will receive approval by related organs and approved development plans will be declared. Approved development plans will at the same time be shared with TNGIS so that other institutions can examine the approved development plans and use this information in their planning and project designing studies.

Conclusion and Suggestions

Developments in information technologies increase the possibilities of providing faster service with quality in public administration. Creating business processes based on information technologies in public institutions gains importance within the frame of governance principles that occur along with the sense of new public administration. With the reconstruction of business processes based on information technologies and the creation of standard processes, increase in the efficacy and productivity in the institutional operation, management and decision making processes is made possible and service quality changing from one institution to another can be prevented.

In this study, by taking stock of the existent problems and within the frame of necessities, development plan business process in Turkey was reconstructed based on TNGIS infrastructure. Using the model suggested in the study, we created a development plan business process based on information technologies within the frame of governance principles.

Success in institutional services increases if a more efficient use is made of information technologies. As such, for a contemporary public administration, institutions must keep up with information technologies and put up a constant change to improve their institutional activities (Elibol, 2005).

For this, creating business process models based on TNGIS and other e-Government implementations in terms of public services is the fundamental step for ensuring an efficient public administration in real terms. By realizing the TNGIS project, which is of big importance for Turkey, business processes of all the institutions and establishments that create spatial data and make use of it should be analyzed diligently and their business processes should receive reconstruction. In accordance with this, organizational structure, law and regulations should be re-regulated.

References

AİGM. (2006). *Yerbilimsel verilerin planlamaya entegrasyonu*. Ankara.

Aysolmaz, B., Coşkunçay, A., Demirörs, O., & Yıldız, A., (2011). Kamuda iş süreçleri modelleme: Gereği ve yararları. *5. Ulusal Yazılım Mühendisliği Sempozyumu*, 26-28 Eylül 2011, ODTÜ Kültür ve Kongre Merkezi, Ankara.

BİB. (2009). *Kentleşme Şûrası-Afetlere Hazırlık ve Kentsel Risk Yönetimi Komisyonu Raporu*. Ankara.

DPT. (2010). *Kurumlar Arası e-Yazışma Çalışma Raporu*. Ankara.

Elibol, H. (2005). Bilişim teknolojileri kullanımının işletmelerin organizasyon yapıları üzerinde etkileri. *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 13, 155-162.

Kılınç, N. (2006). *İmar planlama, mevzuat, belediyeler ve İller Bankası ilişkisi*. Ankara: İller Bankası Gn. Md. İmar Planlama Dairesi Başkanlığı.

Özdemir, F. (2011). *İletişim teknolojileri ve toplum, ders notları*. Ankara Üniversitesi. Retrieved August 21, 2012 from http://acikders.ankara.edu.tr/mod/resource/view.php?id=249

TBD. (2005). *Etkin kamu Yönetiminde ve işleyişinde bilişimin rolü ve öncelikler*. Ankara.

Tazegül, İ. (2010). Kent ölçekli planlama ve uygulamada karşılaşılan sorunlar, *Adalet Dergisi*, 36, 122-123.

Yılmaz, A. (2007). AB'ye uyum sürecinde Türk kamu yönetiminin dönüşümü üzerine notlar. *DPÜ Sosyal Bilimler Enstitüsü Dergisi*, 17, 215-240.

Terrestrial Laser Scanning for 3D Documentation of Historical and Cultural Artifacts

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Abstract: *Documentation of historical and cultural artifacts is highly important for the purpose of restoring them in accordance with their original forms when needed. The developments in science and technology provide significant expansions in documentation of historical and cultural artifacts, and these assets can be modeled quickly and accurately with the possibilities of the modern technology. Although there are several techniques available for 3D documentation of historical and cultural artifacts, the one to be used among them primarily depends on the purpose of the study to be carried out and the targeted level of accuracy. The present study focuses on terrestrial laser scanners, categorizes terrestrial laser scanners according to their scanning principles and explains the characteristics and accuracy levels of each scanning system and the historical and cultural artifact documentation applications in which they can be used.*

Keywords: *Terrestrial laser scanning, historical and cultural artifact, 3D documentation.*

Introduction

Historical and cultural artifacts are among the most significant links between the past and the future of civilizations. Therefore, it is highly important to perform the tasks necessary to preserve and to hand down these heritages of irreplaceable value to the future generations (Lee & Xu, 2009; Karabörk et al., 2009).

In time, historical and cultural artifacts will suffer inevitable damages due to several reasons. In order to be able to restore these artifacts in accordance with their originals when needed, performance of documentation works is essential (Pires & Borg, 2008; Karabörk et al., 2009).

Today, 3D modeling has become the standard tool for preserving and managing historical and cultural heritage through documentation (Paelke et al., 2010). A 3D model is the mathematical representation of the 3D surface of a given object (Koyuncu, 2010). Although there are several techniques and tools available for 3D documentation of historical and cultural artifacts, the one to be used among them depends on the purpose of the study to be carried out, the magnitude of the object and the expected accuracy (Fröhlich & Mettenleiter, 2004; Pavlidis et al., 2007; English Heritage, 2011).

Laser scanning techniques are widely used in 3D documentation of historical and cultural artifacts. By means of this rapidly developing and evolving technology, 3D models can be obtained faster and more accurately with each passing day.

With the broadest definition, laser scanning is the collection of 3D data of an object by emitting laser pulses towards the targeted object and measuring the returning signals (Pfeifle, 2012). By means of laser scanning, large amounts of 3D measurement data can be collected in short periods. These collected 3D data are referred to as point cloud. Additional information such as RGB data are obtained via either internal or external digital cameras (Lerma et al., 2010).

The laser scanners used today are airborne, terrestrial, mobile and handheld laser scanners. The present study focuses solely on terrestrial laser scanners, categorizes them according to their scanning principles and describes their accuracy levels and the historical and cultural artifact documentation applications in which they can be used.

Terrestrial Laser Scanning (TLS)

Terrestrial laser scanning (Fig. 1) is a laser scanning application carried out from a static point on earth (California Department of Transportation, 2011). Terrestrial laser scanners collect no-contact 3D data of a given object or surface by using laser beams deflected in millions of directions. The beams for each direction are intercepted and reflected by the target. The light returning to the scanner is then analyzed in order to obtain the 3D coordinates of each measured point (Dassot et al., 2012).

Since terrestrial laser scanning provides high spatial resolution, high levels of accuracy and fast data collection possibilities, documentation of historical and cultural artifacts constitutes the primary field of application of this technique (Lichti & Gordon, 2004; Doneus et al., 2009). Particularly, hybrid systems that utilize laser scanning and digital photogrammetry together have become highly valuable tools in documenting historical and cultural heritage (Doneus et al., 2009).

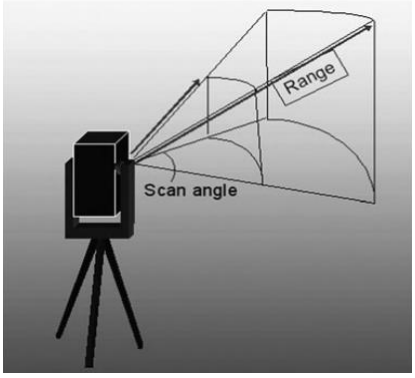

Figure 1. Principle of Terrestrial Laser Scanning; from measured range and scan angle combined with position and orientation of the scanner the three-dimensional coordinates of the points hit by laser beams can be computed, resulting in a point cloud of 3D coordinates (from Lemmens, 2011).

However, a universal scanner suitable for all applications does not exist. While some scanners are more suitable for indoor uses with medium ranges (up to 100 meters), some are more suitable for outdoor uses and long ranges (up to some hundred meters) and some are for close range (a few meters) applications that require high level of sensitivity (Fröhlich & Mettenleiter, 2004). Due to this reason, the selection of the suitable laser scanner essentially depends on the application to be carried out (Fröhlich & Mettenleiter, 2004; Karabörk et al., 2009).

Terrestrial laser scanners can be categorized according to their distance measuring principles. Distance measurement system is directly related with both the range and the level of accuracy of the result to be obtained (Fröhlich & Mettenleiter, 2004).

According to their measurement principles, terrestrial laser scanners are categorized as "time-of-flight", "phase based", "triangulation based" and "waveform processing" laser scanners (Fröhlich & Mettenleiter, 2004; California Department of Transportation, 2011). In order to effectively plan the projects within the expected criteria, knowing the differences between different types of scanners and the advantages and limitations of each technique is vital.

Time-of-flight (Pulse Based) Laser Scanners

With the laser scanners working on the basis of the time-of-flight principle, a laser pulse is sent to the target and the distance to the object is measured from the time that passes between sending and receiving the pulse (time of flight) (Fig. 2) (Karabörk et al., 2009).

Time-of-flight scanners measure the distance to the target surface by measuring the time in which the light reaches the surface and returns back to the scanner. The travel time (t) from the point when a laser beam is activated to the point when it is detected back by the sensor is measured. Since the speed of light (c) is a known constant, the travel time (t) allows the calculation of the distance the light travels (two times the distance between the scanner and the surface) (Koyuncu, 2010).

Time-of-flight scanners have a considerably long range (typically 125-1,000 meters) and collect data of approximately 50,000 points in a second (California Department of Transportation, 2011; Pfeifle, 2012).

Phase Based Laser Scanners

Phase based laser scanners measure the distance between the sender and the object from the phase difference of the sent and received signals (Fig. 2). In comparison to time-of-flight laser scanners, phase based laser scanners have shorter ranges (typically 25-100 meters) (Karabörk et al., 2009; California Department of Transportation, 2011) yet are faster than the scanners running on the time-of-flight principles. Phase based scanners are capable of collecting data of a million points in a second (California Department of Transportation, 2011; Pfeifle, 2012).

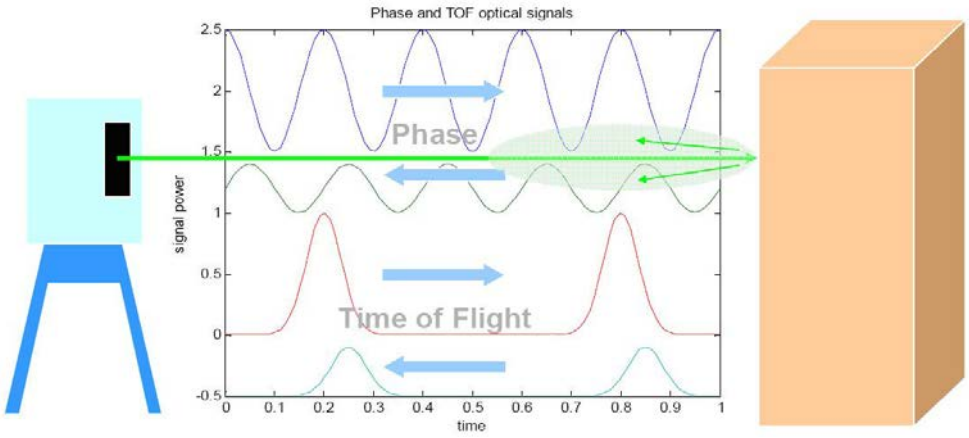

Figure 2. Working principle of phase based and time-of-flight laser scanners (from California Department of Transportation, 2011)

Triangulation Based Laser Scanners

Triangulation based scanners emit the light to the object to be scanned and detects the position of the point where the light contacts the object with a separate sensor. The scanners operating with this method are referred to as triangulation based scanners since the laser point, the camera and the laser emitter form a triangle (Fig. 3) (Lee & Xu, 2009; Koyuncu, 2010).

Although having a seriously limited range in comparison to time-of-flight and phase-based scanners, the sensitivity of triangulation based scanners is higher in short-range scans (Koyuncu, 2010). Therefore, triangulation based scanners are mostly used in applications for scanning close-range and small objects (Lemmens, 2011). The maximum range of triangulation based laser scanners is 25 meters (Karabörk et al., 2009; English Heritage, 2011).

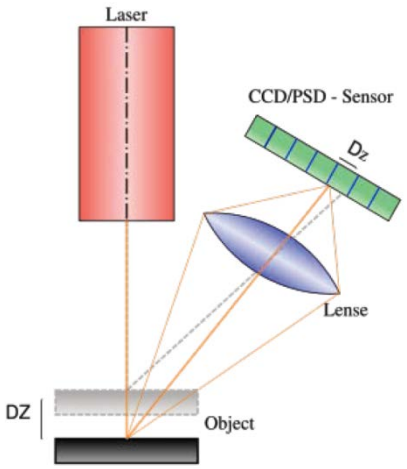

Figure 3. Working principle of triangulation based laser scanners (from Lee & Xu, 2009)

Waveform Processing (Echo Digitization) Laser Scanners

In the case that it is needed to document cultural heritage in woodlands or in areas with dense vegetation cover, the vegetation surrounding and covering the point of interest may constitute a challenge. It is disadvantageous to use conventional terrestrial laser scanners under such conditions. Because, conventional laser scanners only record single range measurements, which usually represent the objects closest to the scanning position and, accordingly, this can cause negative effects on the documentation (Doneus et al., 2009).

New generation scanners based on pulsed time-of-flight technology and referred to as waveform processing (echo digitization) laser scanners (Fig. 4), provide significantly successful results in documenting historical and cultural artifacts surrounded by vegetation cover (Doneus et al., 2009; California Department of Transportation, 2011). Waveform processing scanners have a maximum effective range similar to that of time-of-flight scanners and can collect data on 1.5 million points in a second (California Department of Transportation, 2011).

The principle of waveform processing is being used ever since 2004 in airborne laser scanners and since 2008 in terrestrial laser scanners (Ullrich & Pfennigbuer, 2011). In airborne laser scanners, echo signals are stored during the

flight and analyzed later on. Since this technique that is referred to as full waveform analysis is not suitable for terrestrial applications, in terrestrial laser scanners the received signals are instantly analyzed with online waveform processing. In online waveform processing, the waveform is processed and multiple echoes are discriminated while the scanning operation continues. Due to this reason, detection of various objects along the laser beam path is possible. This technology provides facility to have better and more detailed information on the targeted artifacts by means of using the last echo and distinguishing between the solid objects to be scanned and the vegetation cover (Doneus et al., 2009)

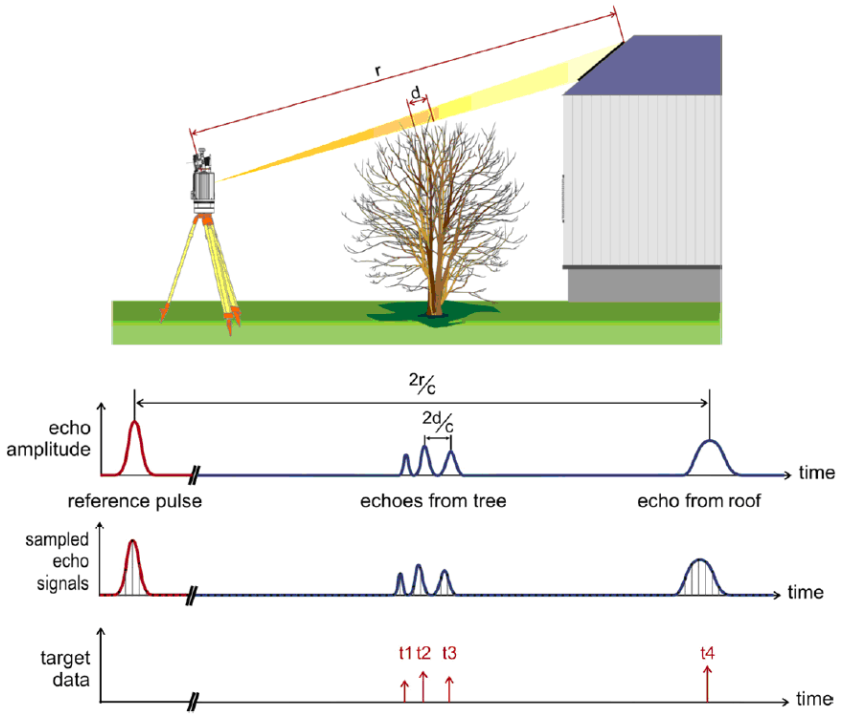

Figure 4. Working principle of waveform processing laser scanners (from Ullrich & Pfennigbuer, 2011)

Use of Terrestrial Laser Scanning Techniques for 3D Documentation of Historical and Cultural Artifacts

The different measurement principles used in terrestrial laser scanning are directly related with the range, the number of points collected in a second and the level of accuracy. Due to this reason, each application has to be evaluated individually and the scanner most suitable for the purpose of the application needs to be selected. Based on their scanning systems, the accuracy levels of terrestrial laser scanners and the documentation of historical and cultural artifacts in which they can be utilized are presented in Table 1.

Table 1. Terrestrial laser scanning techniques used in 3D digitizing of historic and cultural heritage (Doneus et al., 2009; English Heritage, 2011; California Department of Transportation, 2011)

Scanning system	***Use***	***Typical accuracy/operating range***
Time-of-flight (pulse based) laser scanners	- to survey building façades and interiors, resulting in line drawings (with supporting data) and surface models	3-6mm at ranges up to several hundred meters
Phase based laser scanners	- to survey building façades and interiors, resulting in line drawings (with supporting data) and surface models - particularly where rapid data acquisition and high point density are required	5mm at ranges up to 100m
Triangulation based laser scanners	- scanning small objects and surfaces - can be used to produce a replica	sub mm at ranges up to 25m
Waveform processing (echo digitization) laser scanners	- documentation of historical and cultural artifacts under cover of vegetation	5mm at ranges up to several hundred meters (for RIEGL VZ 400)

Conclusion and Suggestions

Providing high levels of accuracy and fast data collection, terrestrial laser scanning is widely used in 3D documentation of historical and cultural artifacts. However, a single type of laser scanner suitable for all applications and all purposes in documenting historical and cultural artifacts does not exist. Due to this reason, the scanner to be used varies according to the purpose of the application to be carried out, the features of the object to be scanned and the expected accuracy and speed. In the present study terrestrial laser scanners were categorized according to their measurement principles and the basic principles of each type of scanners, and their relative strengths and weaknesses were set forth. The measurement principles used in terrestrial laser scanners are directly related with the range, accuracy, number of points collected in a second, and their suitability to be used in given applications. Due to this reason, while selecting a terrestrial laser scanner fit for the purpose of documenting historical and cultural artifacts, the measurement principles of the scanners is a factor that needs to be taken into consideration.

References

California Department of Transportation (2011). *Terrestrial laser scanning specifications*. Retrieved January 5, 2013 from http://www.dot.ca.gov/hq/row/landsurveys/SurveysManual/15_Surveys.pdf

Dassot, M., Colin, A., Santenoise, P., Fournier, M., & Constant, T. (2012). Terrestrial laser scanning for measuring the solid wood volume, including branches, of adult standing trees in forest environment. *Computers and Electronics in Agriculture*, *89*, 86-93.

Doneus, M., Pfennigbauer, M., Studnicka, N., & Ullrich, A. (2009). Terrestrial waveform laser scanning for documentation of cultural heritage. *XXII CIPA Symposium*, October 11- 15, 2009, Kyoto,

English Heritage (2011). *3D laser scanning for heritage: Advice and guidance to users on laser scanning in archaeology and architecture* (Second Edition). English Heritage Publishing.

Fröhlich, C., & Mettenleiter, M. (2004). Terrestrial laser scanning-new perspectives in 3D surveying. *International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences, 36-8/W2*, 7-13.

Karabörk, H., Göktepe, A., Yılmaz, H.M., Mutluoğlu, Ö., Yıldız, F., & Yakar, M. (2009). Tarihi ve kültürel varlıkların lazer tarama ve lazer nokta ölçme teknolojileri ile 3B modellenmesinde duyarlılık araştırması ve uygulama modelinin belirlenmesi. *12. Türkiye Harita Bilimsel ve Teknik Kurultayı*, 11-15 Mayıs, 2009, Ankara.

Koyuncu, B. (2010). *Üç boyutlu lazer tarayıcı ve bilgisayar teknikleri ile cisimlerin sanal ortama aktarılması*. Ankara Üniversitesi Bilimsel Araştırma Projesi Kesin Raporu, Ankara.

Lee, K. & Xu, X.W. (2009). 3-D digitization methodologies for cultural artifacts. In M. Khosrow-Pour (Ed.), *Encyclopedia of Information Science and Technology,* (pp. 3750-3756). Hershey: IGI Global.

Lemmens, M. (2011). Terrestrial laser scanning. In *Geo-information: Technologies, applications and the environment (Chapter 6)*. Dordrecht: Springer.

Lerma, J.L., Navarro, S., Cabrelles, M., & Villaverde, V. (2010). Terrestrial laser scanning and close range photogrammetry for 3D archaeological documentation: the upper palaeolithic cave of Parpalló as a case study. *Journal of Archaeological Science*, 37(3), 499-507.

Lichti, D.D., & Gordon, S.J. (2004). Error propagation in directly georeferenced terrestrial laser scanner point clouds for cultural heritage recording. *FIG Working Week 2004*, May 22-27, 2004, Athens, Greece.

Paelke, V., Filin, S., Eggert, D., & Barnea, S. (2010). Adaptive LIDAR scanning of historic buildings supported by augmented reality user interfaces. *EuroMed2010, The 3rd Bi-annual International Conference on Digital Heritage*, November 8-13, 2010, Limassol, Cyprus.

Pavlidis, G., Koutsoudis, A., Arnaoutoglou, F., Tsioukas, V., & Chamzas, C. (2007). Methods for 3D digitization of cultural heritage. *Journal of Cultural Heritage*, 8, 93-98.

Pfeifle, S. (Ed.) (2012). *What is 3D data capture?* SPAR Point Group.

Pires, M., & Borg, C. (2008). 3D laser scanning of architectural sites. In Eds. (M. Schreiner & M. Strlič), *Handbook on the use of lasers in conservation and conservation science* (Chapter 3.1), COST Office.

Ullrich, A., & Pfennigbuer, M. (2011). Echo digitization and waveform analysis in airborne and terrestrial laser scanning. *53rd Photogrammetric Week*, September 2011, Stuttgart.

Computerized Systems - Open Sources Used in Risk Management for Healthcare

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Abstract: *The paper presents the importance and benefits of open sources especially those regarding healthcare. The risk management process includes different methods of decision making considering the predictable and unpredictable risk situations. The basic principles of risk management are analyzed. Authors start from the assessment of risk management implementation need in the Romanian healthcare system. A quality marketing research based upon a previous documentation from specialized literature is performed. We use a SurveyMonkey online questionnaire and present the research results.*

Keywords*: Computerized systems, open sources, risk management, sanitary system, Romania.*

Introduction

The management of information within the healthcare system has developed in various directions. Medical information and documentation centers put at the disposal of the interested medical parties various possibilities for storing, archiving and accessing information. Referring to risk management, the situation is still at an individual level, there are no information instruments or procedures distributed or shared between different institutions of the healthcare system.

Methodology

The authors have developed a qualitative marketing research study regarding the implementation level of the risk management system in the healthcare system. The research relied on an online questionnaire, SurveyMonkey. The questionnaire was sent to the health care institutions in Iasi, Romania, a university centre with an old university tradition where there is also one of the oldest universities of medicine. The survey was conducted from January – March 2013. The aim of survey was on the development degree within the healthcare organizations – university, hospitals, support institutions – of the structures specialized in risk management.

Results

At question no. 1 ”Within your organization is there a structure supporting the process of risk management?” there have been recorded 47 answers and 0 cases without answer, 97.87% of which answered ”yes” (46 answers), 0% answered ”no”, and 2.13% answered “there are attempts” (1 answer).

At question no. 2 “Do you have system and/or operational system procedures that regulate the activity of identification, measuring, hierarchization, treating, monitoring and documenting the risks that can affect the organization?” there have been recorded 47 answers and 0 cases without answers, out of which 95.74% answered “yes” (45 answers), 2.13% answered “no” (1 answer) and 2.13% answered “there are initiatives” (1 answer).

At question no. 3 “Do you assess and document the risk when you take important decisions (initiating projects, drawing up strategic plans etc.)?” there have been recorded 47 answers and 0 cases without answers, out of which 95.74% answered “yes” (45 answers), 4.26% answered “no” (2 answer).

At question no. 4 “Is any type of professional training method used to facilitate to develop the amount of information referring to risks?” there have been recorded 47 answers and 0 cases without answers, out of which 95.74% answered “yes” (45 answers), 4.26% answered “no” (2 answer).

At question no. 5 “Are there plans for emergency situations that correspond to unlikely situations, but with major consequences, which can block the organization’s activity?” there have been recorded 47 answers and 0 cases without answers, out of which 80.85% answered “yes” (38 answers), 0% answered “no” (0 answers) and 19.15% answered “there are intentions of drawing them up” (9 answer).

At question no. 6 “Does the organization use risk transfer or sharing instruments with other organizations (eg. Insurance companies)?” there have been recorded 45 answers and 2 cases with no answer, out of which 48.89% answered “yes” (22 answers), 31.11% answered “no” (14 answers) and 20% answered “there are intentions” (9 answers).

At question no. 7 “Is there a risk reassessment process after the implementation of the measures meant to diminish/counteract the risk identified?” there have been recorded 47 answers and 0 cases without answers, out of which 70.21% answered “yes” (33 answers), 6.38% answered “no” (3 answers) and 23.40% answered “there are intentions” (11 answers).

At question no. 8 “What are the limitations preventing you to implement the plans on diminishing risks?” there have been 18 answers and 29 cases without answer; the following reasons have been mentioned: lack of funds (1 answer), legislative limitations (8 answers), the respondent’s lack of decisional power (1 answer), absence of trained staff in this field (1 answer), the risk management information is unclear and undifferentiated on fields of activity, (1 answer), don’t know (1 answer), there are no limitations (2 answers).

At question no. 9 “What do you think is the main risk for your organization?” there have been 20 answers and 27 cases with no answers; the following major risks have been stated: insufficient financing (10 answers), reduced activity due to the decreased number of students and employees (1 answer), measures which lead to the unfulfillment of the objective (2 answers), measures taken against the organization’s interests (1 answer), routine (1 answer), lack of interest in becoming familiar with the legislative field (1 answer), unknown external factors (1 answer), don’t know (1 answer), there are no risks (1 answer).

At question no. 10 “The city you work in” there have been 47 answers and 0 cases without answer, out of which 97.87% from Iaşi (46 answers), and 2.13% from Sibiu (1 answer).

At question no. 11 “Your gender” there have been 47 answers and 1 case with no answer, out of which 80.43% have been females (37 persons) and 19.57% males (9 persons).

At question no. 12 “Your institution” there have been 46 answers and 1 case with no answer, the following institutions being represented: public or state institutions (21 answers), “Gr.T. Popa” University of Medicine and Pharmacy Iasi (12 answers), university (7 answers), hospital (3 answers), Department of public health (2 answers), Forensic Medicine Institute of Iasi (1 answer).

Conclusions

The findings of the research study indicated that the institutions have system procedures and the culture of risk assessment exists when important decisions have to be taken. The universities include in their curriculum courses of risk management but there are no training courses, towards which people showed great interest. There are also plans for emergency situations at most institutions.

It was noticed that the obstacles preventing the implementation of risk management plans can be overcome by creating a joint source for documentation, information centers regarding the legislation in force, implementation methods and practices, the existent procedures.

Following this analysis of needs, documents and procedures included in risk management, we implement Mirth Connect, open source software for information management, used to integrate procedures and risk analysis. This portal would represent a collaboration instrument and it would be useful in sharing their experiences.

Supervised News Classification Based on a Large-Scale News Corpus

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Abstract: *The continuous growth in the number of online news along with a wide variety of rich content presentation styles makes it difficult to maintain them. Creating effective retrieval and representation systems becomes necessary to do so. This paper investigates the performance of supervised news classification techniques based on a large-scale news data set. Well-known Information Retrieval (IR) models, namely, the Vector Space Model (VSM) and the K-Nearest Neighbor (K-NN) were investigated in this work. The aim is to improve accuracy in Information Search and Retrieval systems.*

Keywords: *News classification, Vector Space Model, K-Nearest Neighbor.*

Introduction

Text Classification in Turkish Information Retrieval Systems is a field whose main concern is to develop effective procedures capable of classifying and relatively extracting meaningful information from a collection of text documents (Can, Kocberber, Balcik, Kaynak, Ocalan & Vursavas, 2008; Salton & McGill, 1983). The enormous growth of on-line information has led to a comparable growth in the need for methods that help users organize such information (Lavrenko, 2004; Yang, Ault, Pierce & Lattimer, 2000). Management of these documents takes an important place in the Information-Systems area. A reliable document classification strategy can help users to improve the effectiveness of organization of this huge information source (Ilhan, 2001). There are many classification techniques applied to text classification. In contrast to the other languages, text categorization (TC) has not been studied often in Turkish language. Previous works in Turkish TC are very limited (Amasyalı & Yıldırım, 2004; Güran, Akyokuş, Bayazıt & Gürbüz, 2009). Supervised Text Classification (Sebastiani, 2002; Özgür, 2004) is the classification of units of texts with respect to a set of pre-existing categories. This paper investigates supervised news classification methods on the part of the large-scale Turkish news corpus (BilCol-2005, 2009). We would test the effectiveness of news classification algorithms, Vector Space Model and K-Nearest Neighbor. VSM is the most popular model in news classification (Salton, Wong & Yang, 1975), and K-NN is also another useful method that can be used for categorization (Soucy & Mineau, 2001).

Problem Description

This paper shows an application of news organization based on the Vector Space Model algorithm to improve the performance with the use the K-Nearest Neighbor. We show that k-Nearest Neighbor has a substantial effect on the classification of news correctly. We use a set of news with known topics for training and find the closest neighbors of the new news items with no topics assigned. We test this method for different values of K. These neighbors enable us to find the input news topic. We use a cosine similarity function in finding the distance between the news item with a previously known topic. K-NN classification needs training data sets with their topics known in advance. Input news are compared with all these training news with respect to their term vectors. Finally, extracted K news items are checked if the new document is similar and the new topic is selected based on its maximum topic weight.

Algorithm

We test the performance of VSM and K-NN for news classification based on news vectors. These methods rely on the use of cosine similarity measurement between the news vectors of two documents using *tf*idf* (term frequency*inverse document frequency) term weighting algorithm (Han & Kamber 2005; Salton & Buckley, 1988). In these methods we make use of training documents with known categories. In VSM, we find the closest one from training news and then decide with this news to select the correct subject. But in K-NN we find the K closest neighbors of the input news, and these neighbors enable us to find the correct subject. K-NN solution involves in a

similarity function too, based on cosine similarity vector or Euclidean distance in finding the neighbors of news to a previously known category, and finds the (K) closest neighbors of the input news sample among all the documents in the training set. We also evaluate and compare results of the two methods and show the result of OR combination of these methods.

In the Vector Space Model we retrieve the news items from the training set with maximum similarity score and select this subject as the classification subject for test news. In the K-NN, we test the different K values to extract the K closest neighbor of the input news and calculate the extracted subjects' weight and decide based on the maximum subject weight to select the correct subject. Finally, with the OR combination of VSM and K-NN, we try to classify the input news.

Term vector model representation is an important concept in text classification (Soucy & Mineau, 2001). Different representations of this model are Binary and Frequency Representations. The former shows that news can be represented as a binary vector and the latter shows that news can be represented according to the frequencies/occurrences of the terms therein. We used the frequency representation to show the news vector because this representation is more accurate. To give an example; a word "computer" may occur once in a text about games but hundred times in a paper about computer science.

Using this method, each news item is shown as a vector of the collection $t_1, t_2, \ldots t_n$ single words. Coefficient values of $t_1, t_2, \ldots t_n$ are determined on the basis of the number of times the related word appear in collection (t_i). In the VSM model, term weighting is shown in *tf.idf* (term frequency * inverse document frequency) (Salton & McGill, 1983). In Topic Detection and Tracking (TDT) studies, a term vector is created for each document to compare it with others. Then, the similarity between the two vectors are calculated using the following weighted term frequency (*wtf*) equation:

$$wtf\,(w) = tf_a(w) * tf_b(w) * idf(w) \text{ for term } w,$$

$$idf = log\ 2(N/n)$$

$tf_a(w)$ used in this equation is the frequency of word w in document a, $tf_b(w)$ is the frequency of word w in document b multiplied by $idf(w)$, representing the frequency of w word in all documents of the corpus. Here, N is the number of all documents and n is the number of documents where that term appears. The weighted term frequencies (*wtf*) are used in the similarity function. Similarity function takes one training document and a new document as parameters. It returns a value that corresponds to the amount of similarity between these documents. The similarity function is given below:

$$sim(a,b) = \frac{\sum_{w=1}^{n} tf_a(w).tf_b(w).idf(w)}{\sqrt{\sum_{w=1}^{n} tf_a^2(w)}.\sqrt{\sum_{w=1}^{n} tf_b^2(w)}}$$

Here, a is a vector that keeps all the terms in the new document (according to the term space model). Briefly, it represents the new document. b is the vector with same properties that represents the training document. If documents are longer, then they will have more common terms. But this should not increase the similarity rapidly. So, norms divide the summation in the formula.

VSM is usually used alone as an access function in information retrieval systems. But in this work we used it with K-NN method to show its performance in news classification. We test the performance of these methods as well as their logical combinations and present the results. VSM calculates the similarity between compared news items based on matching terms and K-NN creates an extended model using similarity distance and decides on the basis of the K nearest neighbors. In this context, we illustrate the classification of news items based on two independent decisions produced by these two methods separately.

The similarity function calculation is also repeated several times. In this work, the similarity of news items means defining the neighborhood for the news. We find the topics of the news using nearest neighbors. In our algorithm, we chose K from starting 1 and increase it to find the K which creates maximum similarity between the new document and the categories news.

Data Structures

We used new event detection and topic tracking test collection (BilCol-2009) which was developed by Information Retrieval Group of Bilkent University. The Bilkent Information Retrieval Group aims to develop effective and efficient information retrieval tools with an emphasis on the Turkish language. BilCol-2009 test collection comprises news items from five different Turkish news sources on the web (both broadcast news and daily news papers): CNN

Türk, Haber 7, Milliyet, TRT, and Zaman. More information about BilCol-2009 is provided in (Can, Kocberber, Baglioglu, Kardas, Ocalan & Uyar, 2010).

In order to experiment and analyze the performance, we test the practical experiment over the part of data set with news topic assigned manually. The program is tested over a set of news which is selected from different subjects. The documents have 80 different topics, such as Business & Economy, Education, Commercial, Sports, Government, and Health. We tried to classify the documents into their subjects correctly. Our dataset has 5,872 news. We set aside one third of as the training set and the remaining as test set.

Results

We correctly categorized news items with 93.23% accuracy in Vector Space Model. The best performance (92.98%) for K-NN is obtained when the (K=3). When we tried the OR combination of these two methods, we reached 97.86% accuracy for (K=8), close to 5% increase in performance.

K	KNN	VSM OR KNN	VSM
3	92.98	94.90	93.23
4	92.42	95.20	93.23
5	92.02	95.50	93.23
6	91.41	95.70	93.23
7	90.71	95.81	93.23
8	90.30	97.86	93.23
9	90.35	95.81	93.23

Findings can be used to augment experiences of users about Information Representation, Search, and Retrieval in news databases. We have introduced the most important factors that affect the performance of the classification as a result. As the number of the training news items increases, so does the accuracy of the classification.

Conclusion

In this paper, a K-Nearest Neighbor algorithm is used to improve the news classification results of the Vector Space Model. The K-NN algorithm is an efficient and simple algorithm since it is based on a simple weighting approach. With the help of K-NN and its OR combination with the VSM, the accuracy of the classification of news items has increased about 5% compared to that of VSM and K-NN used separately. K-NN can be easily developed further, where we demonstrate our future work.

Future Work

The K-Nearest Neighbor algorithm is an easily modifiable algorithm adaptable to different problems such as corpora of documents used by the Internet search engines. It is easy to add new sample documents into the training set. This will create a growing training data set and will give more accurate results.

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References

Amasyalı, M.F. & Yıldırım, T. (2004). Otomatik haber metinleri sınıflandırma. In *SIU 2004* (pp. 224-226). Retrieved January 31, 2013 from http://www.ce.yildiz.edu.tr/personal/mfatih/file/448/x.pdf

BilCol-2005. (2009). Bilkent TDT collection for the year 2005. Retrieved July 10, 2009 from http://www.cs.bilkent.edu.tr/~canf/bilcol/bilcol.html

Can, F., Kocberber, S., Baglioglu, O., Kardas, S., Ocalan, H.C. & Uyar, E. (2010). New event detection and topic tracking in Turkish. *Journal of the American Society for Information Science and Technology*, 61(4), 802-819.

Can, F., Kocberber, S., Balcik, E., Kaynak, C., Ocalan, H.C. & Vursavas, O.M. (2008). Information retrieval on Turkish texts. *Journal of the American Society for Information Science and Technology*, 59(3), 407-421.

Güran, A., Akyokuş, S., Bayazıt, N.G. & Gürbüz, M.Z. (2009). Turkish text categorization using n-gram words. In *International Symposium on Innovations in Intelligent Systems and Applications* (pp. 369-373). Retrieved January 31, 2013 from http://www.zahidgurbuz.com/yayinlar/Turkish%20Text%20Categorization%20Using%20N-Gram%20Words-2009.pdf

Han, J. & Kamber M. (2005). *Data mining: Concepts and techniques*. San Francisco: The Morgan Kaufmann.

Ilhan, U. (2001). *Application of K-NN and FPTC based text categorization algorithms to Turkish news reports*. Unpublished Master's Thesis, Ankara: Bilkent University. Retrieved January 31, 2013 from http://www.cs.bilkent.edu.tr/tech-reports/2001/BU-CE-0104.pdf

Lavrenko, V. (2004). A generative theory of relevance. Unpublished PhD Dissertation, Amherst: University of Massachusetts. Retrieved January 31, 2013, from http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA440135

Özgür, A. (2004). *Supervised and unsupervised machine learning techniques for text document categorization*. Unpublished Master's Thesis, İstanbul: Boğaziçi University.

Salton, G. & Buckley, C. (1988). Term-weighting approaches in automatic text retrieval. *Information Processing & Management*, 24(5), 513-523.

Salton, G. & McGill, M.J. (1983). *Introduction to modern information retrieval*. New York: McGraw-Hill.

Salton, G., Wong, A. & Yang, C.S. (1975). A vector space model for automatic indexing. *Communications of the ACM*, 18(11), 613-620.

Sebastiani, F. (2002). Machine learning in automated text categorization. *ACM Computing Surveys*, 34(5), 1-47.

Soucy, P. & Mineau, G.W. (2001). A simple KNN algorithm for text categorization. In *ICDM '01 Proceedings of the 2001 IEEE International Conference on Data Mining* (p. 647-648). Washington: IEEE Computer Society.

Yang, Y., Ault, T., Pierce, T. & Lattimer, C. (2000). Improving text categorization methods for event tracking. In *SIGIR '00: Proceedings of the 23rd Annual International ACM SIGIR Conference on Research and Development in Information Retrieval*, (pp. 65-72). New York: ACM Press.

An Interactive Platform for Retrieving Information in Newspapers' Digital Archives

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***Abstract**: A new, innovative platform is presented to access the archived newspapers collections processed with information retrieval systems (descriptors) and bar-coding. The platform includes the information retrieval system, Koha, open source software by which the old newspapers collections are processed using a barcoding system.*

***Keywords:** Digitizing, newspapers, archive, Koha, Romania.*

Introduction

Digitized archives developed through various platforms models are widely used by information documenting agencies. Considering the printing company initially set to issue printed newspapers and detaining classical newspapers collections, the digitized archive concept is less common. Digitizing these documents and their subsequent uploading to an appropriate platform is the solution for their preservation. The authors found an optimal solution of the digitize-preserve-automatic retrieval process for the classical paper documents. The DIGIBOOK 2NET scanner is used to digitize the documents (i2S-DIGIBOOK, n.d.). The Koha integrated library system is used for data recording and storage of each digitized document. An online catalogue is created and offered to the newspapers readers as a means of data retrieval. The Koha system generates barcodes automatically for each digitized document. These barcodes are retrieved by a document identifying scanner. These systems allows an inventory of the classical archives.

Retrieving Information through Integrated Open Source Systems

Integrated library management systems can cut costs and enhance the efficiency of library services and therefore are absolutely necessary for the management of housekeeping operations. But small-and medium-size libraries face a difficult situation due to the high cost of commercial library management systems available in the market.

For at least the last two decades, libraries have overwhelmingly obtained their core automation systems from specialized vendors who offer the software through licenses that allow the company to retain exclusive access to the underlying source code. In recent years, open source software has become an increasingly popular alternative. The underlying program code is made available for anyone to inspect, repair, or improve. The open source software movement has entered the library automation industry, introducing a new set of integrated library systems and a clique of companies offering a business model based on service and support rather than software license fees (American Library Association, 2008).

The library integrated systems that are used in the Romanian university libraries are software products that were acquired from different suppliers. The investment to digitize the department library which is being developed -but is not designed to exceed 10,000 volumes in the near future- would be useless at this stage considering the availability of the open source library integrated systems that are used worldwide.

Naturally, libraries without much/appropriate financial resources need a cost effective way to automate their services. Free/Open source software was a revolutionary concept among computer programmers and users. To a certain extent, free/open source solutions could provide an alternative to costly commercial application software packages. Free/Open source software offers to its users the ability to run, copy, distribute, study, change, share and improve for any purpose (Vimal Kumar, 2005).

Koha - Integrated Library Management System

Koha is an integrated library management system that was originally developed by Katipo Communications Limited of Wellington, New Zealand, for the Horowhenua Library Trust (HLT), a regional library system located in Levin, some 100 kilometres north of Wellington (Koha, 2009).

Libraries considering implementing Koha have an option to hire Katipo staff to help with the implementation, and there is also a list of other organisations that could be hired at http://koha.org/installation/support.html.

The Koha project uses a number of channels to allow members of its community to communicate with each other - there is a general mailing list as well as separate ones for developers, Windows users, French-speaking Koha users/developers, and German-speaking Koha users/developers.

In addition, the developers use Internet Relay Chat (IRC), a real-time message facility for scheduled meetings and less formal conversations (Chawner, 2004).

Koha 3.0 was selected because the GNU licence (open source) was considered more future-proof than proprietary products, and more open to customisation to meet the special needs of the library (Bissels, 2008).

Thanks to the efforts of the open-source community, any library can now enjoy a serious ILS at no licence cost: the saved money can hence be allocated to the extension of the collection.

Koha satisfies all the functional requirements of a library management system. In addition to the functional modules (acquisition, cataloguing, OPAC, circulation, and serial control), Koha can provide some features that are only available with costly ILSs: web OPAC, document status inquiry, reservation and holds of documents through OPAC, customization of user and graphical interface, import and export of MARC data, etc. We implemented Koha, library integrated system and it has all modules to create online catalogue of digital archive.

We can choose the type of barcode (Fig. 1, Fig. 2, Fig. 3).

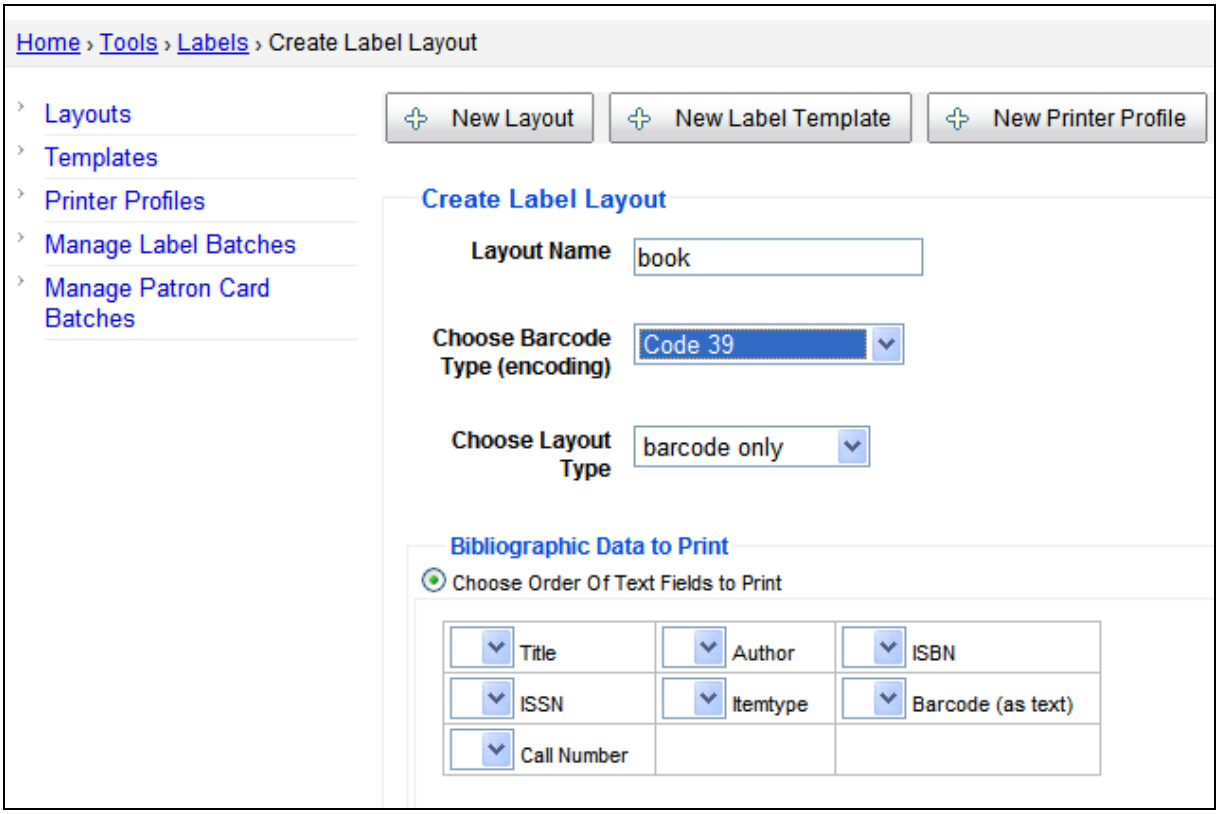

Figure 1. Create label layout for Koha barcode

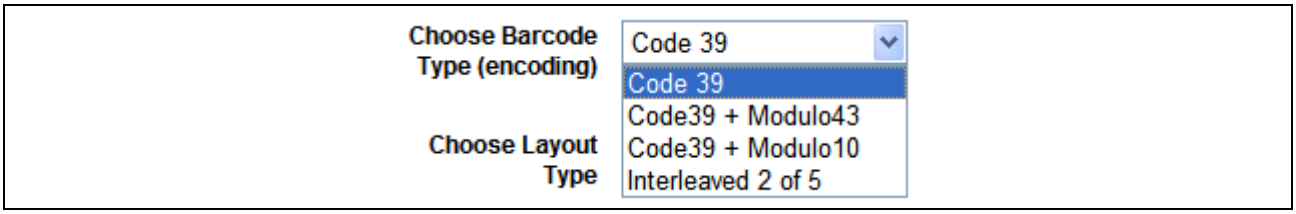

Figure 2. Choosing layout type for Barcode

Figure 3. Barcode for printing

We choose a layout type from the "Choose Layout Type" dropdown menu. From every barcode we choose digit representation.

Conclusion

The proposed solution offers a minimum cost model using open source software and a useful instrument for media industry.

References

American Library Association. (2008). Chapter 3: Major open source ILS products. *Information Science and Library Science*, 44 (8), 16-31.

Bissels, G. (2008). Implementation of an open source library management system. Experiences with Koha 3.0 at the Roya London hoeopathic hospital. *Program: Electronic Library and Information Systems*, 42(3), 303-314.

Chawner, B. (2004). *School of Information Management,Victoria University of Wellington*. Retrieved March 15, 2011, from http://vala.org.au/vala2004/2004pdfs/33Chawn.PDF

i2S-DIGIBOOK (n.d.) – http://www.i2s-bookscanner.com/pdf/digibook_mag_no6_en.pdf

Koha. (2009). *The Koha - Open Source Library System*. Retrieved March 12, 2011, from http://koha.org/documentation/manual/3.2/tools/label-creator

Vimal Kumar, V. (2005). Free/Open source integrated library systems: Comparative analysis of Koha, PHPMyLibrary and OpenBiblio. In *National Library Week Celebration "Modern trends in IT application in Library and Information Servises"*, University of Calicut.

Knowledge-Sharing Platform to Support Zero-Mail Policy: The Classroom as a Case Study

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Abstract: *During a 10 weeks course, an Enterprise Social Network (ESN) was used by 45 students in higher education to limit the use of e-mail and facilitate knowledge sharing and collaboration among the students. Research performed by the students shows that the use of an ESN can be of added value to higher education as it is adopted quickly and it makes knowledge sharing more easy.*

Keywords: *Enterprise Social Network, social business, zero-mail.*

Introduction

In 2011, Thierry Breton, CEO of the international technology company Atos, announced that Atos would finish the use of email among its 74,000 employees worldwide within three years. As an instrument to reach this goal, a social platform, called Bluekiwi was purchased (Atos, 2012). From that moment, there has been a further development of the functionalities of this platform and, furthermore, a community strategy has been developed to change the habits of the employees by creating a culture where knowledge sharing, cooperation and collaboration are stimulated. In this way, an enterprise social network (ESN) is being created, not only to facilitate the zero-mail policy, but also to promote innovation and efficiency.

At the end of 2012, teaching staff at The Hague University had the opportunity to test the Bluekiwi platform and to experience the zero-mail philosophy in an educational environment during a 10 weeks course at the Hague University. As the subject of the course was "The new world of working", it was a great opportunity for the staff to "practice what they preach" and for 45 students to experience the professional use of a social platform.

In this paper, I present the results of a research on these experiences. The main questions of the research were: How do students use an ESN and how does it contribute to knowledge sharing and creation? The research was done by the students. For this purpose, six groups were formed. Each group performed its own research and wrote a research report. Besides literature research, they held a survey, interviewed each other and studied the statistics of the platform usage. The research activities were monitored and accompanied by the teaching staff. This paper describes the main and most trustworthy findings from the six reports.

What is an ESN?

An ESN is a social platform where people can share documents, ideas, messages and knowledge in a professional environment. It connects people that share a common goal, such as project teams, employees of a company, clients and suppliers (Ergin, et al., 2013). In a way, an ESN can be described as "Facebook for companies", but its functionalities are wider and introduction of an ESN is accompanied by a program to change the habits of its users. Experiences with the IBM platform Beehive (DiMicco, 2009) show that people are more willing to share personal information on an ESN rather than on a public network as Facebook. The main functionalities of an ESN are: posting messages (private or for a group), sharing text documents and multimedia, creating spaces and linking with new contacts, e.g. by searching on the tags connected to users' profiles.

Sandy Carter, Vice president of IBM, uses the term "social business" to describe an open way of communication among employees and clients. She mentions three pillars that social business leans on (Carter, 2012): Engaged, transparent and nimble. Although Carter focusses most on the open connections with clients and the market, these pillars are also of great importance for communication and collaboration among employees.

In the case of Atos, Jean-Charles Pillet (2012) performed research to investigate the behavior of members of a business community, and to measure the business impact of an ESN. In his literature review Pillet describes several kinds of communities and he concludes that in an ESN, the focus is on a community of practice (CoP). The definition he provides for a CoP is: "a work-related group of individuals who frequently participate in sharing and learning

activities that are built upon shared interest and issues" (Lave & Wenger, 1991; Lesser & Storck, 2001 as cited in Pillet, 2012). This description is not only relevant to a business environment but also to a classroom: students and teachers are engaged in activities to share and create knowledge. For this reason, it was interesting to introduce an ESN in the classroom in higher education.

Information Sharing in Higher Education

Most courses in higher education are supported by an electronic learning environment (ELE), such as Blackboard or Moodle. Although they contain a wide range of functionalities, these platforms are mostly used in a limited way, only to distribute learning materials and tasks and to communicate by posting an announcement by the teaching staff or sending an e-mail. Students can upload their tasks and documents in a group-environment, but without functionalities like alerts, rating and tagging.

Characteristic for these environments is that the communication is staff driven: staff can upload documents in the main space and decide if students can use a group space.

Students and teaching staff in higher education often complain that the functionalities of an ELE are not user-friendly and students feel very dependent on the staff. They have no possibilities to create their own environment, and cannot search among the users and the documents. For this reason, most communication in an ELE can be described as one-directional (from teaching staff to students).

In modern education, students are stimulated to do research by themselves, supported by the teaching staff and fellow students. The assumption is that an ESN supports these activities better than the traditional ELE does.

The Case and Findings

At the start of the course, students were introduced to the Bluekiwi platform by a hands-on demonstration. Therefore, students brought their own laptops and tablets (using the Bluekiwi app), a wireless internet connection was available. Some days later, Jean-Charles Pillet presented his research to inform the students about the main conditions for successful CoP's and to show how his research was performed.

The students were told that their research should be done in a similar way. Finally, the teaching staff asked the students to communicate only via the platform and thus avoiding the use of e-mail.

Students were surprised, but after a week, most students were already used to it. The main reason for the quick adoption of the platform were its easy-to-use interface and the fact that the platform resembles the Facebook experience that students are very familiar with. This was confirmed in the interviews.

The statistics show that the use of the platform was growing linear during the course: more and more materials were uploaded and more members read posts. It is striking to perceive that there were no "lurkers" (members who read but do not contribute). Every student shared documents, ideas and gave feedback to others' work, so it can be concluded that there was a great deal of engagement of the members. It has to be mentioned that the teaching staff played a role in this: they monitored the students' activities and promised credit points for students who contributed a lot.

The information that was shared can be divided into categories. The three main categories are: documents, events (every lesson was scheduled in the calendar) and messages. Together, these categories were responsible for 90% of the shared information, almost equally divided. The other 10% of the shared information consists of bookmarks, questions and ideas. These numbers are not spectacular; as mentioned, the platform replaced e-mail and Blackboard.

The aspects of trust and cooperation were measured via a survey. Most students trust that the information they share will be used by others in a proper way. Results show that 79% of the students agree that the ESN enables them to help other students with their problems and challenges. Again, this is something students are used to via the use of other social media. In the interviews, students mentioned that they feel they are responsible for sharing their knowledge when they use others' and that sharing their knowledge gives them a positive feeling. Results also show that 65% of the students (partly) agree that they feel solidarity in the community. The responses also show that 77% of the students (partly) agree that the ESN enables them to share solutions with experts in the community.

In the interviews, students gave positive feedback on the use of an ESN in the course. They not only like the idea of zero-mail, but also praise the easy-to-use functionalities of the Bluekiwi platform. Most students are very positive about the way an ESN facilitates and stimulates knowledge sharing. They believe this helps them to reach their goals: learning and fulfilling the assessment. Comparing with a traditional course, the use of an ESN makes the exchange of information more flexible and transparent.

Conclusion

It can be concluded that the use of an ESN in the course was a success. No e-mail was sent during the 10 weeks course and the students are very positive about the platform and its philosophy. The teaching staff monitored a lot of activity on the platform and are very positive about the learning products the students produced.

Although it is hard to measure if the ENS really improved the quality of knowledge sharing, students and staff are convinced that an ESN can have an added value for universities and other educational institutes. Depending on the situation, it can be implemented instead of or in addition to and ELE.

References

Atos (2012). *Atos lanceert met blueKiwi ZEN meest geavanceerde SaaS Enterprise Social Software*. Retrieved March 3, 2013 from http://nl.atos.net/nl-nl/nieuws/persberichten/2012/2012_11_08_01.htm

Carter, S. (2012). *Get bold!: Using social media to create a new type of business*. Boston: Pearson.

DiMicco, J.M., Geyer, W., Millen, D. R., Dugan, C., & Brownholtz, B. (2009, January). People sensemaking and relationship building on an enterprise social network site. In *HICSS'09. 42nd Hawaii International Conference on System Sciences, 2009* (pp. 1-10). Los Alamitos: IEEE.

Ergin, D., Gelderen, M. van, Postema, J., Reis, G., Sarac, A., & Valentin, D. (2013). *Connecting people: Research report.* Haagse Hogeschool.

Lave, J. & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.

Lesser, E. L. & Storck, J. (2001). Communities of practice and organizational performance. *IBM Systems Journal*, 40(4), 831-841.

Pillet, J-C. (2012). *Managing organizational communities*. Master dissertation, Toulouse Business School - IAE Toulouse.

Short Presentations (Pecha Kuchas)

Teaching Information Literacy via Blended Learning

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Abstract: *The LIS Department of The Hague University of Applied Sciences developed a blended learning course on information literacy for bachelor students of all disciplines. For the course, a new didactical concept has been developed and a new digital platform was built. Characteristics of the course are not only blended learning, but also the active learning model and a 'student centered learning' model. Students learn by practicing and no textbooks are used. During the first run of the course, the students were positive about the concept. The results of the final assignment were good.*

Keywords: *Information literacy, blended learning, e-learning.*

Introduction

Many librarians and LIS departments of universities have developed training and courses to teach information literacy to students in higher education. Naturally, there is a wide variety in length, content and didactical concepts, while the number of online courses is growing. Lindsay (2004) describes in her article that online courses are more popular among older students; youngsters feel the need to have face to face contact with an instructor. The LIS Department of The Hague University of Applied Sciences developed an innovative course for bachelor students (ages 18-25) to teach them advanced information skills. As information literacy is an important skill for students of all disciplines, this course can be taken by students from all faculties of the university.

For this course, we have chosen an advanced blended learning model, based on the definition by Vandeput (2010) who states that blended learning is not only a combination of online and face to face learning, but also a way to achieve active learning. According to Vandeput, active learning is the educational model of the 21st century.

Development

When developing the course, we concluded that active learning could be achieved by an attractive digital platform and a student-centered approach. Helvoort (2010) describes that student-centered learning is the model of current higher education in the Netherlands and he applies this model to a scoring rubric for performance assessment of information literacy. The skills we wanted the students to learn were based on this scoring rubric.

As a result, our didactical concept has the following characteristics:

- A combination of individual and group-learning
- The main part of the course materials consists of tasks and assessments. Textbooks are not used
- The subject for the main research task may be chosen by the students
- Web based technology enables the students to learn in a pace that suits them, however, students cannot access the group assignment until they have completed their individual assignments first. The students will push each other to complete the individual tasks
- Face to face contact between students and teaching staff is limited to twice per week.
- Teaching staff is available for Skype sessions to provide online help.

In this model, students learn through practice and teachers will only lecture when students ask for it.

Platform

A brand new platform has been developed for this course. The platform has been built by the software company Edumundo, which has experience in creating online courses and serious games. The design of the platform is basic: no pop-ups or animations, which ensures that students are not distracted from the content. Students can work on the platform via their tablet, laptop and even their smartphone. During a pilot, students had the opportunity to give feedback about the design and usability of the platform.

Experiences

In the spring of 2013, there was a pilot run of the course. Students were very positive about the concept and the platform. For the teaching staff, it was quite a shift: no lectures in the classroom, but Skype sessions and short face to face contacts to support the students. The exact results of the pilot will be presented at IMCW.

References

Helvoort J. van. (2010). A scoring rubric for performance assessment of information literacy in Dutch higher education. *Journal of Information Literacy*, 4(1), 22-39. Retrieved May 30, 2013 from http://ojs.lboro.ac.uk/ojs/index.php/JIL/article/view/PRA-V4-I1-2010-2

Lindsay, E.B. (2004). Distance teaching: Comparing two online information literacy courses, *Journal of Academic Librarianship*, 30(6), 482-487.

Vandeput, Luc. (ed.) (2010). *Van e-learning naar geintegreerd blended learning : Kernproject ENW-School of education*. Retrieved May 30, 2013 from: https://schoolofeducation.eu/projecten/Van%20e-learning%20naar%20blended%20learning.pdf

The Performance Evaluation of the Information Retrieval System of the Europeana Website

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Abstract: *Europeana is a platform that aims to digitize and to provide easy access to the library, museum and archive materials from the European countries. This platform includes a variety of content such as manuscripts, records and other valuable museum materials from Turkey. In this study, the information retrieval performance of Europeana was evaluated in terms of accessing the Turkish content. Accordingly, some sample queries were performed on the system. Subsequently, the system was tested for the following: (1) the retrieval effectiveness of the system for queries that are expressed using Boolean operators, (2) the retrieval effectiveness of the system for different document formats, and (3) the retrieval effectiveness for queries that are performed using Turkish characters. Furthermore, the relevancy of the search results was examined.*

Keywords: *Europeana, cultural heritage, information retrieval system, Europeana Turkish content.*

Introduction

Cultural heritage is a significant treasure that holds both a nation and all of humanity's past. It gives many clues about the history, and also clears up the future. Sometimes this treasure can be damaged due to natural disasters such as earthquake, fire, flood, and sometimes it can be locked away in storerooms. Digitization looks like a good opportunity to put away these threats and also to transfer the cultural heritage to the next generations without loss. In this study, some information about cultural heritage and digitization is given, and Europeana is introduced. The information retrieval system of the Europeana website in terms of the different aspects is also evaluated. Consequently, conclusion and some suggestions are presented.

Cultural Heritage and Europeana

Cultural heritage is defined as all collections which consist of artistic or symbolic materials and that are transferred from past to the future for humankind (Jokilehto, 2005, p. 4). In the past, users of cultural heritage sources were mostly comprised of historians, but now this common user group has changed a bit. Historians, amateur researchers, educators, students, some citizens interested in local history and genealogists have started becoming part of this user group (Liew, 2005, p. 5).

Digitization is an operation of conversion of an analog document to the machine-readable form (Coyle, 2006, p. 206). Through this process most of the cultural heritage products can be made available and be used easily. In recent years, awareness about the digitization of cultural heritage has considerably increased. Many countries have started to run a digitization project or take part in other ongoing projects. One of the major cultural heritage digitization projects is Europeana.

Europeana, the digital library, museum and archive of Europe, was implemented in 2008 by José Manuel Barroso, President of the European Commission (Purday, 2009, p. 919). It is a structure that includes more than 23 million objects and documents from more than 2200 institutions and 33 countries (Europeana Professional, 2012). Turkey takes part in Europeana through the AccessIT (Accelerate the Circulation of Culture through Exchange of Skills in Information Technology) Project and provides 50,000 documents to Europeana from National Library, General Directorate of State Archives and General Directorate of Libraries and Publications (Külcü & Ünal, 2011, p. 126).

About the Study

With Europeana, users can easily access and utilize the cultural heritage products (text or audio-visual) that they need, without any time or place restriction. Another significant point is Europeana has an information retrieval system that helps users to access the content in a proper way and in a short time.

In this study, the information retrieval performance of Europeana was evaluated in terms of access to Turkish content. To achieve this, some sample queries were performed on the system. Subsequently, the system was tested for the following metrics:

- The retrieval effectiveness of the system for the queries which are expressed by using Boolean operators,
- The retrieval effectiveness of the system for different document formats,
- The retrieval effectiveness of the system for the queries performed using Turkish characters.

Also, the relevancy of the search results was examined. In light of the preliminary findings of this study, it was seen that the result lists have the words that were restricted with "NOT" operator in the query which made us think the NOT operator did not work properly within the system. Some problems also exist for the query results that were created by using Turkish characters such as "â", "û", etc. On the other hand, no problem was observed for the queries where foreign characters (different from Turkish characters) were used. The information retrieval system of Europeana should be revised in terms of usage of Boolean operators and Turkish characters.

References

Coyle, K. (2006). Managing technology one word: Digital. *The Journal of Academic Librarianship*, 32(2), 205-207.

Europeana Professional. (2012). *Facts & Figures*. Retrieved June 10, 2012 from http://pro.europeana.eu/web/guest/about/facts-figures

Jokilehto, J. (2005). Definition of cultural heritage: References to documents in history. *ICCROM Working Group 'Heritage and Society'* (pp. 4-8). Retrieved May 29, 2012 from http://cif.icomos.org/pdf_docs/Documents%20on%20line/Heritage%20definitions.pdf

Külcü, Ö. & Ünal, Y. (2011). AccessIT Projesi kapsamında gerçekleştirilen faaliyetler ve geliştirilen elektronik sistemler [The activities performed and developed electronic systems in the context of AccessIT Project]. *Türk Kütüphaneciliği*, 25(1), 124-131.

Liew, C.L. (2005). Online cultural heritage exhibitions: a survey of information retrieval features. *Program: Electronic Library and Information Systems*, 39(1), 4-24.

Purday, J. (2009). Think culture: Europeana.eu from concept to construction. *The Electronic Library*, 27(6), 919-937.

Local Content in a Europeana Cloud: The LoCloud Project as a Best Practice

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Abstract: *The LoCloud Project aims to enhance the Europeana content base by aggregating cultural heritage content, complementing collections already accessible through Europeana and representing the diversity and richness of Europe's cultural heritage. LoCloud has a particular focus on the value of and interest in geographic locality as a starting point for users of Europeana and the requirement to increase the potential of the Europeana service in this respect. In addition to adding over 4 million items to the Europeana corpus, LoCloud will pursue a close engagement with the small and medium sized cultural institutions which constitute the sources of much relevant and interesting content and will build upon the solid base established in this respect by the Europeana Local (2008-11) and CARARE (2010) Best Practice Networks. In doing so, it will bring together and increase interoperability between content sourced by aggregation services in the archives, libraries, museums domains and that from the heritage domain, which are operated separately to a greater or lesser extent across European countries. LoCloud will make substantial steps towards exploring the potential of cloud computing technologies for Europeana, especially where they concern small and medium sized institutions, both in the direction of an easier to use and more efficient infrastructure (IaaS) and in the creation of a range of software services (SaaS) which will benefit content providers and users. This work will be carried out in a way which is consistent with the recently emerging development of a proposed cloud infrastructure for Europeana in general.*

Keywords: *Cultural heritage, LoCloud Project, Europeana, small and medium sized institutions.*

Activities and Outcomes Foreseen

1. Identifying standard metadata export formats that are commonly used in the information systems deployed by small and medium cultural institutions.
2. Developing and implementing the MINT service, currently used in a number of Europeana-related projects, to support the mapping and transformation of native metadata records to EDM via these intermediary schema.
3. Developing and implementing a LoCloud aggregation service, based on the MoRe aggregator developed in CARARE.
4. Developing and testing a number of key cloud-based micro-services (SaaS) useful to smaller institutions in enriching their metadata and improving data quality for the benefit of Europeana users.
5. Providing training, support and guidance relevant to the needs of small and medium sized cultural institutions and aggregators.
6. Evaluating and assessing the impact of this work, including the benefits of cloud services.
7. An intensive dissemination programme targeting smaller institutions and their aggregators across Europe.
8. Planning the sustainability and transferability of this approach in the framework of Europeana Consortium.

On 19-20 March 2013, at the National Archives of Norway in Oslo, the LoCloud Best Practice Network project was officially launched with 32 partners from 28 different countries. LoCloud will explore the potential of a cloud-based

technology infrastructure for aggregating local content. It will also develop a number of micro-services offering geo-location and metadata enrichment, multilingual vocabularies for local history and archaeology, a historical place named gazetteer and a Wikimedia application to handle relevant "crowd-sourced" content. As a result of the LoCloud's activities, access to over 4 million items of digital content will be made available through Europeana.

As a partner of the LoCloud Project Turkey will actively participate in all studies gathered in the 7 Work Plan:

1. Planning, preparation and requirements
2. Design and implementation of aggregation infrastructure
3. Micro services for small and medium institutions
4. Enabling and supporting small and medium institutions
5. Evaluation and impact assessment
6. Dissemination and exploitation
7. Management and coordination

Also, coordination of content provision and dissemination for Turkey and engagement of small and medium-sized institution are among the main tasks of Turkey. Turkey will use previous experiences in content provision to the Europeana and dissemination for Turkey in AccessIT Project.

At the end of the Project, Turkey will complete the works on metadata mapping and content sharing of the 880 postcards/photos and 120 maps and plans from VEKAM Museum in Turkey.

Hacettepe University is the owner of the activities of Team Turkey in LoCloud Project. As to personnel, Prof. Dr. Bülent Yılmaz is the coordinator of Team Turkey, while Assoc. Prof. Özgür Külcü, Asst. Prof. Yurdagül Ünal, Res. Asst. Tolga Çakmak are the researchers for the Project.

Panels

Records in the Cloud: A Collaborative Research Project[1]

Convener: Erik A.M. Borglund
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Abstract: *In 2012, a 4-year collaborative research project entitled "Records in the Cloud," commenced activities at the University of British Columbia (UBC) with the aim of exploring the benefits and risks of keeping records in the cloud. Participating institutions in the research project are: the University of Washington School of Information; the University of North Carolina at Chapel Hill School of Information and Library Science; Mid-Sweden University Department of Information Technology and Media; the University of Applied Sciences of Western Switzerland School of Business Administration; and the Cloud Security Alliance. In this Panel Session, the goals of the Records in the Cloud research project will be presented, along with early findings. Special attention will be given to: digital images - as individuals and organizations continue to create and disseminate images at an ever-increasing rate, the unique properties of images and the online platforms that facilitate their exchange invite further examination; and social media. As the adoption of social media tools is combined with information to create new forms of documents that pose unprecedented challenges to traditional recordkeeping and archival paradigms, it is necessary to study and discuss the implications and results. The early findings will support discussion about: the management, operational and legal issues surrounding the storage and management of records in the cloud, and the development of policies and procedures for organizations incorporating cloud technologies and services into their operations.*

Keywords: *Archives, cloud computing, records, legal, digital images, social media, policy, recordkeeping, preservation.*

1 Records in the Cloud (2012-2016) is supported by a *Social Sciences and Humanities Research Council of Canada (SSHRC)* Insight Grant.

Records in the Cloud - The Project

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Abstract: *Since the early 1990s, Information Technology (IT) has not only shaped economic exchange and cultural development, but has deeply impacted the archival domain. The Internet has created new opportunities for the creation of digital documents as well as new conditions for storing information. These innovations are marketed as the current hype "the cloud." The term "cloud" is a metaphor for the Internet, making it possible to create a virtual computing infrastructure by replacing in whole, or in part, the internal operations of an organization. With the abundance of computers used throughout business operations, a number of critical issues have arisen related to managing born digital records and preserving their authenticity (i.e., identity and integrity), accuracy and reliability. At this stage, there are relatively few studies addressing the cloud from an archival perspective. The current archival methods and technologies are not verified to work when records and archives are moved into the cloud. The UBC project, "Records In the Cloud" (RIC) focuses on the benefits and risks of keeping records in the cloud and is a response to the limited knowledge available regarding the unique circumstances the cloud brings to the long-term preservation of records, both public and private. In this article the research project will be presented and the early findings resulting from the first year of activities will be discussed. The objectives of RIC are: 1) to identify and examine in depth the management, operational, legal, and technical issues surrounding the storage and management of records in the cloud; 2) to determine what policies and procedures a provider should have in place for implementing the records/archives management regime of the organization outsourcing the records, for responding promptly to its needs, and for detecting, identifying, analyzing and responding to incidents; and 3) to develop guidelines to assist organizations in assessing the risks and benefits of outsourcing records/archives storage and processing to a cloud provider, for writing contractual agreements, certifications and attestations, and for the integration of outsourcing with the organization's records management and information governance programs. The project is qualitative and is structured as follows: Year 1) Data Collection; Year 2) Data Analysis; Year 3) Consultation, Review and Testing; and Year 4) Collecting Test Results, Finalizing Products and Writing Research Findings.*

Trustworthy Digital Images and the Cloud

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Abstract: *Digitized and born digital images are being created and disseminated at an ever-increasing rate as the by-products of business activities and the residue of organizational culture. In the past decade, the popularity of digitization as an archival activity aimed at preserving vulnerable archival materials and providing increased access to archival collections has presented archivists with a number of challenges including: platform interoperability, access controls, scalable infrastructure and privacy and rights management. The Cloud presents a range of solutions to the problems posed by managing large data-sets (e.g., digital images collections); however, at this early stage the risks associated with cloud services are still being identified. Further complications are being introduced by the adoption of mobile-computing (i.e., smart phones and tablets) loaded with social media applications to enable organizations and institutions to increase productivity, utilize third-party services and encourage collaboration between employees working in different locations. This paper will discuss the current state of digital imaging and highlight key issues in the creation and use, management, and preservation of digital images as trustworthy and accurate records in the context of an evolving online environment. Concepts used throughout this paper are framed by archival theory and diplomatics.*

Social Media Records: Management, Policy and Preservation Challenges

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Abstract: *Social media are consistently evolving with the ever-increasing ability to combine tools and information to create new forms of documents that are posing unprecedented challenges to traditional recordkeeping, archival and policy paradigms. As the desire and drive to incorporate them into organizational and government practices grows, it is necessary to study the products that are created as a result of this adoption and the resulting policy implications. The ubiquitous use, the ease of access and the democratic nature of social media technologies have afforded greater connection, collaboration and knowledge creation through the interactions amongst citizens, governments and organizations. However, the adoption of social media by individuals and within organizations and governments has proven to occur often on an ad hoc basis, and often without empirically informed policies, procedures or best practices. Social media are continually evolving as technologies change and are utilized in new ways by individuals to interact with organizations and governments. The by-products and outcomes of the use of social media technologies are by their very nature ephemeral and collaborative, and much is unknown about them. Examining these digital objects with the intention of understanding the record related issues linked to their creation and use will aid in identifying the risks in the use of social media, such as those that impact privacy, intellectual property, access, ownership, security, authenticity and trustworthiness, as well as begin to identify the best ways for addressing them. Through the lens of an archival theoretical framework and with the intention to inform information policy, this paper will examine the digital outputs of the use of social media applications by organizations and governments in their interactions with individuals and discuss the need to better understand and manage their creation, use, maintenance and preservation.*

Cloud on Cloud: Intellectual Property Issues in a Changing Environment

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Abstract: *Panel brings together experts to examine legal issues facing cloud computing in a changing information environment. The papers present perspectives from Spain, Venezuela, the United States, China, and Japan. Despite the variety of perspectives, there is a unifying theme in that the issues addressed in each country are quite similar.*

Keywords: *Cloud computing, legal issues, copyrights contract law, copyright law, license terms and conditions, unintended consequences, Public Policy, unconscionability, copyright, digital copyright licensing, government.*

Cloud Computing and Copyright: New Challenges in Legal Protection?

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Abstract: *This paper addresses the implications of Cloud Computing in copyrighted works under the U.S.A. Copyright Act provisions and court rulings, in order to determine the liability of Cloud Computing Service Providers for copyright infringement, and whether the current Law is able to address copyright issues in the Cloud. To fulfill the main objective, and to understand legal implications, Cloud Computing technology and services are analyzed in the first part. The second part explores copyright legal protection and ISP liability for copyright infringement, and the different court rulings in the matter of liability related to copyright infringements on the Internet and in the Cloud. The research is concluded with some considerations about the adequacy of current Law to resolve copyright issues arising from Cloud Computing.*

Keywords: *Cloud computing, copyright, Internet service providers, liability.*

Introduction

Cloud Computing services represents a new reality in the Information Society that has some implications in Intellectual Property, most of all in copyrighted works. The growth of Cloud Computing technology allows Internet users to access and store copyrighted works, like music, books and movies, from different devices located in different countries. These data are stored in cloud/hosting servers.

The main concern with Cloud Computing services and Copyright is whether the Law is able to address copyright issues arising from this technology. Once again, liability of Internet Services Providers (ISP) has been under examination by different courts in the USA, after legal actions seeking for liability of ISP's as contributors of copyright infringement.

This work will address the implications of Cloud Computing in copyrighted works under DMCA´s provisions and USA court rulings, in order to determine a possible secondary liability of Cloud Computing Service Providers in copyright infringement, and whether the current Law is able to address copyright issues in the Cloud. Part I describes Cloud Computing technology and services. Part II explores Copyright legal protection and ISP liability for Copyright infringement. Part III analyzes the different court rulings addressing liability related to copyright infringements on the Internet and in the Cloud. Part IV (Conclusion) answers the question about the adequacy of current Law to resolve copyright issues arising from Cloud Computing.

Cloud Computing: Technical Basis and Legal Issues

In order to get a better comprehension of copyright issues in Cloud Computing, it is necessary to explore the technical foundations of this new technology

According to the National Institute of Science and Technology (NIST):

“Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model promotes availability and is composed of five essential characteristics, three service models, and four deployments models”.

Essential Characteristics

According to NSTI, the essential characteristics of the cloud are the following: On-demand self-service, broad network access, resource pooling, rapid elasticity, and measured service.

Regarding copyright issues in Cloud Computing, on-demand self-service and broad network access are the most important.

Service Models

Service models in Cloud Computing are basic to analyze liability of Cloud Computing Service Provided.

The most important service models mentioned by NSTI are: Software as a Service (SaaS), Platform as a Service (PaaS), Infrastructure as a Service (IaaS).

Deployment Models

Four "deployment models" are defined by NSTI : Private Cloud, Community Cloud, Public Cloud, and Hybrid Cloud.

The differences between these models are also important in copyright scope in order to determine liability for copyright infringement. The main problems affecting copyrighted works relate to public clouds.

Legal Issues

The main legal issues in Cloud Computing include copyright infringement liability, data protection, data portability, intellectual property, applicable law, and issues relating to cloud computing agreements.

Following the main objective of this paper, we address the implications of Cloud Computing in copyrighted works, in order to determine the liability of Cloud Computing Service Providers for copyright infringement.

The Impact of Internet and New Technologies in Copyright Protection

Internet and Intellectual Property

The impact of the Internet in Intellectual Property was addressed in 1996 by the World Intellectual Property Organization (WIPO) with two new treaties: the WIPO Copyright Treaty (WCT) and the WIPO Performances and Phonograms Treaty (WPPT).

These treaties, known as "Internet Treaties", were approved with the goal to update the international treaties on copyright and related rights in the digital age.

Copyright Legal Protection in USA

In the USA, copyright is protected under the Copyright Act of 1976, included in Title 17 of United States Code. In 2000, the Digital Millennium Copyright Act (DMCA) was enacted. This Act is a consequence of the Internet development, and implements the principles of WIPO treaties in this country. The U.S. Copyright Act was amended to incorporate DMCA.

DMCA establishes the safe harbor defense rules as a limitation of liability for ISP regarding copyright infringement by Internet users. The U.S. Copyright Act also establishes the fair use exemptions in copyrighted works.

Safe harbor principles and fair use have been considered by courts in this country to determine ISP secondary liability for user services copyright infringements.

Intermediary Liability for Copyright Infringement

Secondary Liability Doctrine

Before addressing ISP liability for copyright infringement, it is important to mention that to find an ISP liable for secondary liability, there has to be a primary liability.

On the Internet, users have primary liability for uploading and making available copyrighted works to the public without authorization. Due to network configuration and user privacy, it is very difficult to find the primary person liable.

In U.S. there are two different theories of secondary liability, which are: vicarious liability and contributory infringement. Vicarious liability is considered a form of indirect copyright infringement, and is applicable when the ISP has the ability to control users, and a direct financial benefit from allowing them to use copyrighted works without the author's authorization. Contributory infringement is related to a party where, with knowledge of the infringing activity, induces, causes or materially contributes to the infringing conduct of another.

Most of the litigation regarding vicarious liability against Internet intermediaries is related to actions against developers of P2P software. Contributory infringement has also been considered by courts in P2P cases. In the case of Napster, the ISP was found guilty for contributory infringement. In this case, the court found that Napster had materially contributed to the infringement by providing the support services that allowed users to find and download music.

Limitations on Liability Related to Material Online

Safe Harbor

Section 512 of the U.S. Copyright Act establishes the safe harbor principles as an exemption to ISP liability. This section differentiates between four kinds of activities of service providers: (a) transitory digital network communications, (b) system caching, (c) hosting information posted by users in their systems or networks; and (d) providing information location tools that may direct users to infringing material.

According to this section:

> A service provider shall not be liable for monetary relief, or, except as provided in subsection (j), for injunctive or other equitable relief, for infringement of copyright by reason of the provider's transmitting, routing, or providing connections for, material through a system or network controlled or operated by or for the service provider, or by reason of the intermediate and transient storage of that material in the course of such transmitting, routing, or providing connections, (…).

The ISP can benefit from the safe harbor provided when they comply with the conditions provisioned under section 512 (i):

> i) Conditions for eligibility
> (1) Accommodation of technology. — The limitations on liability established by this section shall apply to a service provider only if the service provider
> (A) has adopted and reasonably implemented, and informed subscribers and account holders of the service provider's system or network of, a policy that provides for the termination in appropriate circumstances of subscribers and account holders of the service provider's system or network who are repeat infringers; and
> (B) accommodates and does not interfere with standard technical measures.

Fair Use

Section 107 of the U.S. Copyright Act establishes the fair use doctrine as an exemption to copyright protection. The fair use of a copyrighted work is based on the purpose of the use, and includes the use by reproduction in copies or phonorecords for certain purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research.

The following factors are to be considered to determine fair use

1) the purpose and character of the use,
2) the nature of the copyrighted work;
3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and

4) the effect of the use upon the potential market for or value of the copyrighted work.

These four fair use defenses have to be considered on a case by case basis in order to determine if the use of copyrighted material without authorization is fair according to the statute, and the defense is available to uses from New Technologies, including cloud computing services. Different courts have applied the fair use exemption regarding to ISP liability for copyright infringement. Fair use is considered a flexible doctrine that evolved with the development of New Technologies.

File Sharing and Copyright Infringement

Before the development of Cloud Computing, the most important cases related to ISP secondary liability were connected to file sharing and Peer to Peer (P2P).

P2P allows users to access and download copyrighted works (books, music, movies) without the author's consent. By using specialized software, users are able to share these files.

P2P became popular in 1999 with the introduction of Napster, a central application which allowed users to share files. Napster was sued for copyright infringement and the court found the corporation liable for contributory and vicarious liability.

The technology in P2P and file sharing has evolved since Napster. File sharing itself is not illegal. The most important legal issues in P2P are related to copyright infringement. Even though users have the primary liability in these cases, the ISP could be found indirectly liable. Safe harbor and fair use have been used to deal with copyright infringement in this matter.

This section describes how copyright cases affecting the liability of ISP have been addressed by courts in the USA, regarding to P2P.

Cloud Computing Service Providers Liability for Copyright Infringement

The Safe harbor and fair use principles have also been used by courts in the U.S. to deal with copyright infringement regarding Cloud Computing Service Providers Liability.

This section describes some cases affecting the liability of Cloud Computing services providers for copyright infringement in USA.

Conclusions

This section answers the question about the adequacy of current Law to resolve copyright infringement issues arising from ISP liability regarding Cloud Computing services.

Click Here to Cloud: Issues in Cloud Computing TOS Agreements

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Abstract: *Several End User License Agreements (EULAs) or Terms of Service (TOS) agreements offered by commercial providers of cloud computing services are reviewed: iCloud, OpenDrive, Dropbox and Amazon Cloud Drive. The legality of the mass-market licenses is assessed. Specific provisions are reviewed with the goal of understanding the consequences on the user/consumer of cloud computing services; particularly those provisions that may result in unintended or detrimental consequences for users/consumers are identified. The effect of the law of contract (license) is contrasted with the law of copyright. Recommendations are made to improve EULA/TOS provisions in light of the discussion. Developments in the law of contract are surveyed to determine the enforceability of specific provisions such as the impact of the recent U.S. Supreme Court decision in AT&T Mobility LLC v. Concepcion, 131 S.Ct. 1740 (2011), as well as the potential avenues of challenge to problematic clauses discussing whether such clauses might be unconscionable.*

Keywords: *Contract law, copyright law, license terms and conditions, unintended consequences, public policy, unconscionability.*

Introduction

Cloud computing services are obtained via contract law through license agreement rather than the copyright law. The consequences for cloud computing users are significant. These agreements are referred to as End User License Agreements (EULAs) or Terms of Service (TOS). As such agreements are not sales but licenses contract law governs the acquisition of these services and subsequent use. Using contract law allows a service provider (or content provider for that matter) to ignore in a sense the default rules of copyright law that otherwise apply to the use of content protected by copyright law. License agreements of this sort also establish other operating rules governing use of the service, including the obligations and responsibilities of each party. Moreover license agreement provisions can further elaborate how disputes will be settled, limit damages and otherwise reallocate risk among the parties. Cloud computing service EULAs or TOS are not subject to negotiation and so the user is faced with a take-it-or-leave-it scenario choice of either accepting the provisions of the license in total or foregoing use of the service. This paper analyzes the text of four common cloud computing TOS: iCloud, OpenDrive, Dropbox and Amazon Cloud Drive. (The version of each agreement used in this assessment was that available on Sunday May 19, 2013.) Several questions are posed in the context of United States law. Are such TOS valid? Are there particular provisions that take away rights that users would otherwise have in the absence of the TOS, i.e., that users would have if the transaction was subject to the copyright law? Are there other unintended consequences for users such as a limitation on other rights or imposition of burdensome obligations? Finally, is legal challenge to these consequences possible?

Legality: Contract Formation Issues

While web-based contracts are valid there must be an opportunity to read the terms prior to agreement and a clear mechanism for assent (agreement to those terms). In web-based environments this is often accomplished through use of a click-to-agree mechanism. Agreements that equate use of the service with assent or agreement raise problems not only regarding initial contract formation but in change of terms, remedy, etc. How is use of the service (an expected course of conduct) to be distinguished by assent or agreement. Thus every use is also construed under the contract as an agreement. It is determined that the agreements examined raise contract formation and assent issues. Each of the services examined exhibit some form of use-equals-agreement in either or both contract formation and change of terms provisions.

Unintended Consequences

Cloud computing EULAs or TOS may alter the legal landscape of copyright ownership and use rights. Particular provisions may take away rights that users would otherwise have in the absence of the contract, i.e., rights that users

would have if the transaction was subject to the copyright law. It is not uncommon for other web-based services such as social network sites to require users grant the service a non-exclusive right to use content submitted by users. *Agence France Presse v. Morel*, 2013 WL 146035 (S.D.N.Y. January 14, 2013). To what extent do cloud computing agreements vest similar rights in the provider?

License agreements also establish other operating rules governing use of the service, including the obligations and responsibilities of each party. Moreover license provisions can further elaborate how disputes will be settled, limit damages and otherwise reallocate risk among the parties. All of the agreements reviewed disclaim various warranties regarding the availability of the service and harm from loss of service. The license may also limit the form of remedy user may pursue. One agreement reviewed requires the parties to use arbitration, with users forced to waive their right to participate in a class action suit against the provider. This can be a significant deterrent for individual users. The implications of these disclaimers are discussed.

More important some services also require the user to indemnify the provider for harm (infringement for example) that results from user content stored in the cloud. Indemnifications have serious legal consequences; these are discussed. In addition, so-called boilerplate provisions can be problematic. Such provisions can be found in content, software and cloud computing licenses. Choice of law and choice of forum and non-waiver are two examples. In cloud computing environments termination provisions are very important. While it not uncommon for contractual relationship to end at some point one consideration is whether adequate notice is provided if the provider intends to terminate the user's access from his or her cloud and whether suspension of services is also possible These provisions are also reviewed.

Unconscionability

There is legal recourse to challenge the onerous nature of oppressive contract terms. One viable route for this challenge is found in the concept of unconscionability. The determination of unconscionability is a matter of law for the court to decide and is made on a case by case basis. A court can void the entire agreement (if the entire contract is unconscionable), strike a particular clause or clauses and leave the remainder of the contract sans the offending language intact and in force or leave the language as drafted but limit the application of the clause(s) so as to rectify the unconscionable affect.

There are two aspects to the concept of unconscionability: procedural unconscionability and substantive unconscionability). A number of courts (a majority rule) require that both elements be present before a provision or an entire contract is deemed unconscionable. "The procedural component is satisfied by the existence of unequal bargaining positions and hidden terms common in the context of adhesion contracts. The substantive component is satisfied by overly harsh or one-sided results that 'shock the conscience.'" *Comb v. PayPal, Inc.*, 218 F. Supp. 2d 1165, 1172 (N.D. Cal. 2002), citing *Blake v. Ecker*, 113 Cal. Rptr. 2d 422 (2001). Cloud computing service EULAs or TOS are not subject to negotiation so the user is faced with a take-it-or-leave-it scenario choice of either accepting the provisions of the license in total or foregoing use of the service. Such contracts are known as adhesion contracts and satisfy the first element of procedural unconscionability. The Questions remains whether the element of substantive unconsionability is present. Until 2011, one state court held that a class action waiver was per se unconscionable but that result is now foreclosed by the United States Supreme Court. *AT&T Mobility LLC v. Concepcion*, 131 S.Ct. 1740 (2011). All provisions must now be assessed under the two pronged concept of unconscionability. The likelihood of suspect provisions in cloud computing licenses is assessed against this framework.

It is also possible that a contract may be voided as being against public policy. The factors considered in favor of enforcement of the suspect term include the parties' justified expectations, any forfeiture that would result if enforcement were denied, and any special public interest in the enforcement of the particular term. Those factors weighing against enforcement of the suspect provision such as the strength of the policy against enforcement as manifested by legislation or judicial decisions, the likelihood that a refusal to enforce the term will further that policy, the seriousness of any misconduct involved and the extent to which it was deliberate, and the directness of the connection between that misconduct and the term are also considered. Again, the likelihood of suspect provisions in cloud computing licenses is assessed against this framework.

Conclusion

The review and comparison of the four cloud computing services TOS reveal a number or onerous or otherwise problematic provisions. Awareness is the first step towards change. While these licenses are not negotiable, general public sentiment has in the past promoted change and may do so again. Short of the ability to alter the TOS users

make better choices among service providers when more information regarding the impact or particular provisions is known.

References

Agence France Presse v. Morel, 2013 WL 146035 (S.D.N.Y. January 14, 2013).

AT&T Mobility LLC v. Concepcion, 131 S.Ct. 1740 (2011).

Blake v. Ecker, 113 Cal. Rptr. 2d 422 (2001).

Comb v. PayPal, Inc., 218 F. Supp. 2d 1165, 1172 (N.D. Cal. 2002), citing *Blake v. Ecker*, 113 Cal. Rptr. 2d 422 (2001).

Government Participation and Its Role in Digital Copyright Licensing

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Abstract: *Governments in many countries and regions actively participate in public digital culture construction and the resolution of the attendant copyright issues resolution. This paper discusses China's digital copyright system and several important problems of its implementation, introduces several digital culture projects, e.g., China National Knowledge Infrastructure (CNKI) that is run by a private company, National Public Culture Sharing Project (NPCSP), launched by Ministry of Culture of PRC. It also discusses the ways government participates in copyright resolution. The paper argues the necessity of government participation as a result of some face to face interviews of government officers and NPCSP constructors of Guangdong province. The paper will also discuss the relationship between copyright market and government participation, and finally draw some conclusions.*

Keywords: *Copyright, digital copyright licensing, government.*

Introduction

Public culture refers to the total of all of the public cultural organizations and services. That means these organizations and services are managed by government and serve the entire society. Their aims are to popularize cultural knowledge, spreading advanced culture, satisfying cultural needs of citizens and protecting the basic cultural right. Digital public culture refers to digital status of public culture. In the era of digitization, informatization, and globalization, the development of digital public culture is very important because it is an easy way for government to supply this kind of service to citizens. In addition, use of advanced techniques and communication methods such as information techniques, digital techniques and internet techniques can help to improve the quality of public culture service. During the development process of digital public culture, digital information resources are a very important factor. Therefore, it is vital to discuss relevant copyright issues of these digital resources' access and usage. It is necessary to have a suitable copyright system and functional copyright resolution in order to boost the development of digital public culture. Meanwhile, as the development of digital public culture service is mainly led by government, government policies have great impact on it.

China National Knowledge Infrastructure (CNKI) is a project whose aim is to achieve the goal of knowledge sharing and dissemination and value-added utilization of cultural resources. It was initiated by Tsinghua University and Tsinghua Tongfang, Inc., which is an information technology company controlled by Tsinghua University that was founded in June 1999. This project is funded by the government and is also supported by the Ministry of Education, Ministry of Propaganda, Ministry of Science and Technology, General Administration of Press and Publication, National Copyright Administration, and other departments of China. Now the CNKI project is the biggest full text information provider in China (http://www.cnki.net/).

The National Cultural Information Resources Sharing Project (NCISP) is also a project led by the government to provide cultural public service of culture. Through the National Digital Culture Network website (http://www.ndcnc.gov.cn/), we can find almost all of the digital resources of libraries, museums, art galleries, art troupes and research institutions in China. This project was founded in 2002, mainly relying on those existing cultural facilities for dissemination of cultural information resources available to the public. The project network nodes are composed of a national center, a few of provincial sub-centers, and basic level centers. The National Cultural Information Resources Sharing Project is not only a cultural construction project, but also a government work that is funded by the central government special fund. The project is very important for the smooth development of China's cultural construction.

In this article, the authors will discuss the copyright issues within the development of digital public culture and the solutions, and then identify the functions of government during the development. The two projects above can reflect

the existing development of public digital culture construction and the existing digital copyright issues and solutions in China. Because the government has participated in these two projects, we can clearly find its role in copyright solution.

Research Methods

This paper uses document and case analysis methods, as well as interviews of government officials and creators of the digital cultural projects.

By using the document analysis method, the authors have a comparison analysis of domestic and foreign research documents in order to understand the current research situation of the digital public culture field.

Case analysis method is used to summarize the existing copyright problems by analyzing solutions of the relevant projects to find out the proper solutions through a discussion of the judicial cases.

Interviews allow the authors to have a direct contact and deep understanding of the copyright problems and solutions during the development of digital public culture, by conducting face-to-face interviews of government officers and NCISP developers in Guangdong province.

Government Participation

The two projects above have applied cloud computing techniques. Cloud computing is a colloquial expression used to describe a variety of different computing concepts involving a large number of computers that are connected through a real-time communication network. Usually it involves the Internet to provide dynamic, scalable and often virtualized resources. Cloud computing is called "Information age business model innovation" by China Cloud Innovation Industry Alliance, and as been described as the development trend of future Internet. Because cloud computing copyright issues are noteworthy, the Chinese government is also actively involved in the cloud computing copyright resolution. To strengthen the cloud computing industry and encourage and support some cities, the China Pioneered Cloud Computing Industry Patent Analysis Projects was awarded the first national "Cloud Computing Intellectual Property Test Area" Award in September 27, 2012 in the Chongqing Province of the PRC. In the next three years, Chongqing will explore solutions to the emerging copyright issues in cloud computing. Since January 2012, the "Cloud Computing Intellectual Property (Chongqing) Test Area" has already yielded good results. Intellectual Property Support China-- the project study of “cloud plan,” as well as the Chongqing copyright cloud services platform have been put into practice, providing copyright free registration.

Necessity and Influence

The necessity of government intervention is exemplified in the construction of the public digital cultural service system. Contrasted with the rapid development in the technologies of digitalization and network communication, China lacks the corresponding development in establishing legislation of network management, which has brought new impacts on copyright laws. With the emergence of new media, it is necessary to clarify the legal responsibilities of all parties involved and lay out new regulations concerning personal rights and property rights of authors under the protection of traditional copyright laws. Observation of the digital copyright market based on theories of market economy not only proves the effectiveness of government intervention but also of its necessity.

Conclusion

In this article, the authors find that the Chinese government played an important role in the development of digital public culture construction, especially on the copyright issues. The Chinese government participated actively in solving the digital copyright problems in China by different methods, including country buying, administrative allocation, copyright collection, donation sourcing, construction of database by government or in cooperation with other companies. However, in some special copyright cases, such as the protection of orphan works and out of print works, there was still little research focused on these aspects. In conclusion, although the development of digital public culture in China is still a new concept, it cannot be denied that government already made several efforts, as demonstrated by such cases as CNKI and NCISP. In the future, more effort needs to be put on the development of digital copyright. At the same time, it is also necessary to learn from overseas experience in order to improve the digital copyright system in China.

The Influence of Recent Court Cases Relating to the Cloud Services on the Copyright Scope Changes in Japan

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Abstract: *The utilization of cloud computing is still inadequate and cloud services are thought to have a huge potential for development in the future in Japan. Cloud services include online platforms for publishing photographs and videos, social networking sites, and digital locker services. In Japan, meanwhile, the legality of digital locker services centers mainly on whether a service provider falls within the definition of a principal committing copyright infringement, because there is no general fair use exception in Japanese copyright law. The recent amendments of Japanese Copyright Law in 2012 provide punitive sanctions for downloading copyrighted works that have been uploaded illegally, even when this is done for private use. This paper examines the influence of recent court cases relating to cloud services on the scope of copyright changes in Japan.*

Keywords: *Cloud computing, cloud services, digital locker services, copyrighted works, Japanese Copyright Law.*

Introduction

The utilization of cloud computing in Japan is still inadequate, but cloud services are thought to have a huge potential for development in the future. The expectations regarding the contributions to come from cloud computing are high in Japan (Keidanren, 2012). NIST defines Cloud Computing as “a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction”(Mell & Grance, 2011). However, cloud computing is still an evolving paradigm.

The data on cloud services would flow and be stored among servers potentially located outside national borders. This causes the following pertinent legal questions such as the location of the data, the access to the data, and the protection of the data. Cloud services include online platforms for publishing photographs and videos, social networking sites and digital locker services (Senftleben, 2013).

In Japan, meanwhile, the legality of digital locker services centers mainly on whether a service provider falls within the definition of a principal committing copyright infringement, because there is no general fair use exception in Japanese copyright law (Kidokoro, 2012).

In 2011, the Japanese Supreme Court reversed the decision of a lower court that found no infringement based on the right of making broadcasts transmittable or the right of public transmission (Rokuraku-II, 2011). The recent amendments of Japanese Copyright Law in 2012 provide punitive sanctions for downloading copyrighted works that have been uploaded illegally, even when this is done for private use.

This paper examines the influence of recent court cases relating to cloud services on the scope of copyright changes in Japan.

The Cloud Services in Japan

Japan is considered slow in adopting foreign technology, for example, social media services such as Facebook, Twitter, and others, and Japanese companies are still cold to the idea of using social media as part of their day to day operations (Cruz, 2012). The Japan Business Federation (Keidanren), the nation's largest business lobby, held a meeting for the purpose of discussing policy issues related to cloud computing in March 2012 (Keidanren, 2012). The report from the meeting makes the statement that “cloud computing enables resource-short entrepreneurs, small businesses and developing countries to access information and communication technology (ICT) infrastructure at low cost and as needed. As a result, the benefits of cloud computing are not limited to just the ICT sector, the "cloud" is an important platform for the growth of all industries”.

In July 2012, the Japanese government announced a new strategy for “Japanese Renewal.” The report mentioned that expectations are high in Japan regarding the contributions to come from cloud computing, because sharing of information is critical for Japan (National Policy Unit Cabinet Secretariat, 2012). Moreover, cloud computing services are changing the style of business and public services, and are considered a service industry where huge development is expected. In order to develop a cloud computing service in Japan, the IPSP report states that legal risks must be resolved and environmental improvement must be promoted (Intellectual Property Strategic Program, 2012). As pointed out in the report, new information terminals are becoming more widely used along with the development of cloud computing services, but the delay and loss in viewing videos across national borders and via mobile communication are caused by the presence of legal risks.

Borek (2013) analyzed the investment effects of the Cartoon Network, et al. v. Cablevision decision in the U.S. and court rulings in France and Germany on venture capital (VC) investment in U.S. cloud computing firms relative to the EU. A separate analysis on the effects of the French and German court rulings on VC investment on cloud computing firms in these countries was also performed. Findings suggest that decisions around the scope of copyrights can have economically and statistically significant impacts on investment and innovation.

The Cloud Services and Limitation on Reproduction for Private Use

The Japanese Copyright Act has explicitly enumerated limitation provisions depending on each kind of bundle of rights and relevant exploitations. One such limitation is the private use limitation for the reproduction right,

> Article 30 (Reproduction for private use): (1) Except in the cases listed below, it shall be permissible for the user of a work that is the subject of a copyright (below in this Subsection simply referred to as a "work") to reproduce the work for his personal use or family use or other equivalent uses within a limited scope (hereinafter referred to as "private use"): … (from Japanese Law Translation Database System)

Each cloud services customer wonders whether one should be liable for infringement of the reproduction right if the use falls within a “private use”. Even if each customer is exempted from liability based on such a limitation, however, a service provider may still be liable for the customer’s exploitation of the particular copyrighted works under the Karaoke theory or its variation (Isoda, 2011).

Karaoke Theory

The 'Karaoke theory' is now prevalent among copyright infringement cases in Japan. The Karaoke theory was originally adopted to decide whether a manager of a traditional Japanese Karaoke bar was liable for infringement of the “right of performance” on copyrighted musical works when it provided occasions for its customers to perform such works. Copyright holders wanted to charge the manager of such a Karaoke bar instead of an individual customer (Isoda, 2011). Beyond the Karaoke bar case, the Karaoke theory has been more broadly applied to other kinds of services when the provider is merely an indirect actor, but the customers directly exploit particular copyrighted works (the so-called “variation” of the Karaoke theory). When the Karaoke theory is applied to the cloud services as to whether or not the reproduction provided falls within a “private use,” it should be carefully considered on the basis of utilization status of the cloud service.

Cloud Services and Copyrighted Works

In this paper, cloud services will be limited in scope to services that offer individual users the opportunity of storing copyrighted works on an online platform. This definition still contains various types of platforms and services. The first type of cloud services is an online platform for posting photographs, such as Flickr, Photozou and picasa, or online platforms for posting videos, such as YouTube and niconico, which allow individual users to make content generally available on the Internet (Figure 1). The second type of cloud services is a social networking site, such as Facebook, Line and Twitter, that allows individual users to post various types of works, such as texts, photographs and videos (Figure 2). In this case, the target audience is a specific group of Internet users having access to the personal webpages of the individual user providing content. Similarly, the data of copyrighted works can be shared within an organization (Figure 3). Here, the data of copyrighted works is uploaded to a server within an organization and then browsed in various places within an organization. The third type of cloud services is a digital locker service allowing individual users to upload personal copies of protected works to personal cloud storage space for later downloading or streaming on multiple devices, or a private video recorder allowing users to obtain recordings of TV

programs for the purpose of watching them at a more convenient time or place (Figure 4). In this case, the target audience is confined to the individual user (Senftleben, 2013).

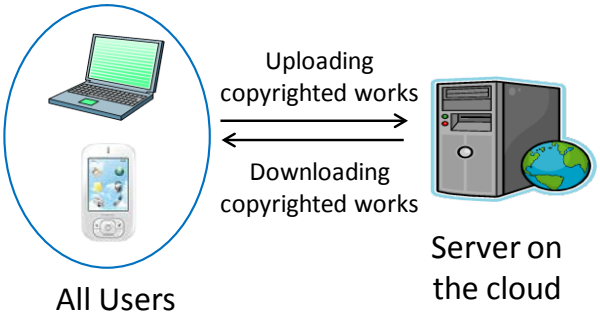

Figure 1. Online platform for posting photographs or videos

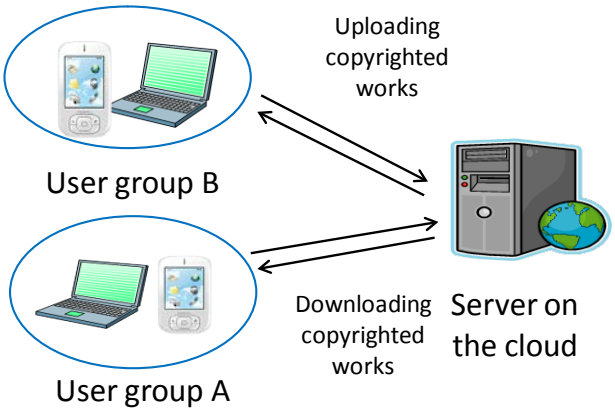

Figure 2. SNS service as online platform allowing individual users to post various types of works, such as texts, photographs and videos

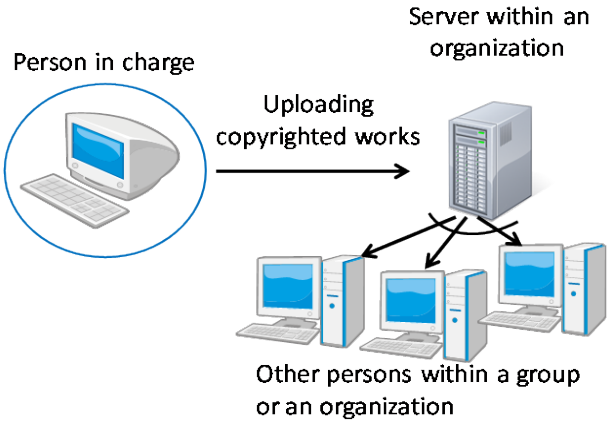

Fig. 3. Uploading the data of copyrighted works to a server within an organization and browsing it in same or other place

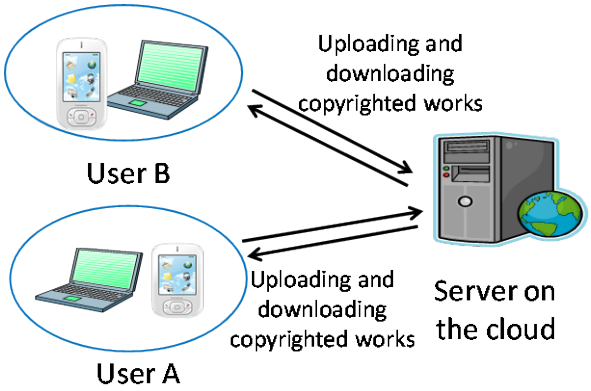

Fig. 4. Digital locker service allowing individual users to upload personal copies of protected works to personal cloud storage space

Court Decisions Regarding the Cloud Services

Table 1. Court Cases relating to the Cloud Services in Japan

Date	Case	Court
Nov. 15, 2005	Rokuga Net	INTELL. HIGH Ct.
May 25, 2007	MYUTA	Tokyo D. Ct.
Sep. 8, 2010	TV Break (formerly, "Pandora TV")	INTELL. HIGH Ct.
Jan. 31, 2012	Maneki TV	INTELL. HIGH Ct.
Jan. 31, 2012	Rokuraku-II	INTELL. HIGH Ct.

Table 1 shows some court cases relating to cloud services in Japan. The legality of personal locker or placeshifting services as a type of cloud services, centers mainly on whether a service provider falls within the definition of a principal committing copyright infringement, because there is no secondary liability theory in Japanese copyright law. Most courts have applied an overall consideration standard such as the Karaoke theory or its variation to this issue.

Because courts apply an overall consideration standard, however, it is difficult to find the critical factor that would make a personal locker or placeshifting service legal or illegal.

Rokuga Net

Rokuga Net was a service that enabled its customers who lived abroad to view Japanese television programs. The provider placed a personal computer together with a television tuner having the function of receiving and recording television programs for each user at its office. Each user operated his or her own TV-personal computer from home through the Internet to reserve recordings of programs and could transmit the recorded files to his or her own personal computer located at home or offshore. The Intellectual Property High Court (IPHC) concluded that the service of Rokuga Net was the principal committing infringement of the "reproduction right" by considering its actions in terms of the copying of the television programs as a whole (Rokuga Net, 2005).

MYUTA

MYUTA was a service that enabled its customers who had both a personal computer and a mobile phone to be connected to the Internet. The service allowed a user to upload music recorded on their own computer, such as from their CDs, the user stored it on the provider's servers under his or her own personal and restricted account and then the user downloaded music to his or her mobile phone to listen to. The music could only be downloaded to the user's mobile phone and was not available publicly or to any other users. The provider claimed that essentially the parties that copy/send the music are the users themselves and that they do not send the music to unspecified parties so they are not violating any copyright laws. The Tokyo District Court concluded that the central servers in the MYUTA system are owned and managed by the provider, and that the provider is guilty of copyright infringement unless it obtained consent from the copyright holder (MYUTA, 2007).

TV Break (formerly, "Pandora TV")

TV Break was a service that allowed its customers to post and share videos on its website. The service allowed a user to upload video recorded on his or her own computer, and the user stored it on the provider's servers and then other users downloaded video to their own computer. The Intellectual Property High Court (IPHC) concluded that the service of TV Break was the principal committing infringement of the "reproduction right" and "right of public transmission" by storing videos from users on the provider's servers and distributing them to users (TV Break, 2010).

Maneki TV

Maneki TV was a service that enabled its customers who lived abroad to view Japanese television programs. The service used a device called a "Base Station" that converted television broadcasts into digital data and transmitted them to a customer's personal viewing device through an individual customer's remote control. The Intellectual Property High Court (IPHC) concluded that the service of Maneki TV was the principal committing infringement of the "right to make his performance transmittable" and "right of public transmission" by transmitting television programs to a customer's personal viewing device through an individual customer's remote control (Maneki TV., 2012).

Rokuraku-II

Rokuraku-II was a service that enabled its customers who lived abroad to view Japanese television programs. The service used two devices called "Parent Device Rokuraku" that converted television broadcasts into digital data and transmitted them to a customer's personal viewing device through an individual customer's remote control, and "Child Device Rokuraku" that was set in each customer's home. The Intellectual Property High Court (IPHC) concluded that the service of Rokuraku-II was the principal committing infringement of the "reproduction right" by transmitting television programs to a customer's personal viewing device through an individual customer's remote control (Rokuraku- II., 2012).

Conclusions

Most courts in Japan have applied the Karaoke theory or its variation to the cases relating to the cloud services. The legality of personal locker or placeshifting services as a type of cloud services, centers mainly on whether a service provider falls within the definition of a principal committing copyright infringement. As affairs now stand, it is difficult to find the critical factor that would make a personal locker or placeshifting service legal or illegal. Going by the revised Japanese Copyright Law, it is illegal to download sound files (music, voice, ring-tones, etc.) or video files

(movie films, television programs, etc.) that are uploaded in violation of copyright laws. Even if for personal use, downloading those files is prohibited. The revised Japanese Copyright Law became effective as from 1st October, 2012.With regard to improving the environment for cloud services, the use of common content is being promoted for multiple information terminals, such as smart phones and tablet terminals. It is important to consider how to resolve legal risks associated with clarifying the extent of private duplication and indirect infringement in the copyright system, and then apply necessary measures.

References

Borek, C., Christensen, L.R., Hess, P., Lerner, J., & Greg Rafert, G. (2013). Lost in the clouds: The impact of copyright scope on investment in cloud computing ventures. Retrieved June 2, 2013 from http://www.ccianet.org/index.asp?bid=11

Cruz, X. (2012). The state of cloud computing around the world: Japan. *CloudTimes. December 4*. Retrieved June 2, 2013 from http://cloudtimes.org/2012/12/04/state-cloud-computing-around-world-japan/

Intellectual Property Strategy Headquarters, Prime Minister of Japan. Intellectual Property Strategic Program 2012. Retrieved June 2, 2013 from http://www.kantei.go.jp/jp/singi/titeki2/ipsp2012.pdf

Isoda, N. (2011). Copyright infringement liability of placeshifting services in the United States and Japan. *Washington Journal of Law, Technology & Arts, Law, Technology & Arts Group Feature Article.* 7(2), 149-207.

Japanese Law Translation Database System. Retrieved June 2, 2013 from http://www.japaneselawtranslation.go.jp/

Keidanren: U.S. - Japan Cloud Computing Working Group Report (2012-10-18). Retrieved January 10, 2013 from http://www.keidanren.or.jp/en/policy/2012/073_report.html

Kidokoro, I. (2012) Cloud service providers' copyright infringement liability - comparison of case laws between Japan and the U.S. The conference report of Information Network Law Association Japan. In Japanese. Retrieved April 17, 2013 from http://in-law.jp/archive/taikai/2012/kobetsuC4-resume.pdf

Maneki TV. Intell. High Ct., Japan. (Jan. 31, 2012). Retrieved June 2, 2013 from http://www.courts.go.jp/hanrei/pdf/20120201162709.pdf

Mell, P. & Grance, T. (2011). The NIST Definition of Cloud Computing - Recommendations of the National Institute of Standards and Technology. *NIST Special Publication* 800-145.

MYUTA. Tokyo D. Ct., Japan. (May 25, 2007). Retrieved June 2, 2013 from http://www.courts.go.jp/hanrei/pdf/20070528141551.pdf

NAKPAT. (2011). LEGAL UPDATES: Decisions of the Supreme Court in the Maneki TV case and Rokuraku II case. Retrieved April 21, 2013 from http://www.nakapat.gr.jp/english/legal/2011/04/decisions_of_the_supreme_court.html

National Policy Unit Cabinet Secretariat, Japan. Comprehensive Strategy for the Rebirth of Japan. Retrieved July 31, 2012 from http://www.cas.go.jp/jp/seisaku/npu/pdf/20120731/20120731_en.pdf

Rokuga Net. Intell. High Ct., Japan. (Nov. 15, 2005). Retrieved June 2, 2013 from http://www.courts.go.jp/hanrei/pdf/842BD42DCC4020FC492570C100253DFF.pdf

Rokuraku- II. Intell. High Ct., Japan. (Jan. 31, 2012). Retrieved June 2, 2013 from http://www.courts.go.jp/hanrei/pdf/20120201164305.pdf Supreme Ct., Japan. (Jan. 20, 2011).

Senftleben, M. (2013). Breathing space for cloud-based business models - exploring the matrix of copyright limitations, safe harbours and injunctions. Retrieved June 2, 2013 from http://dx.doi.org/10.2139/ssrn.2241259.

TV Break (formerly, "Pandora TV"). Intell. High Ct., Japan. (Sep. 8, 2010). Retrieved June 2, 2013 from http://www.courts.go.jp/hanrei/pdf/20100909131245.pdf

Policies on Open Access to Publications and Research Data in Europe

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Abstract: *Open Science has increasingly been mentioned in the context of fostering science, technology and innovation in recent years. Open Access to publications and data engendered from publically- funded research is crucial for Open Science. In addition to fostering science and innovation, Open Access enables taxpayers to get access to the findings of research carried out with their monies. Therefore, legislation and policies have been issued to make Open Access to research mandatory. This panel reviews Open Access policies in Europe through three Open Access projects supported by the European Commission, namely, the MedOANet (Mediterranenan Open Access Network Project), OpenAIRE (Open Access Infrastructure for Research in Europe), and RECODE (Policy Recommendations for Open Access to Research Data in Europe).*

Keywords: *Open access, MedOANet, RECODE, OpenAIRE, open data, intellectual property rights.*

MedOANet Project: Towards Coordinated Open Access Policies and Strategies in the Mediterranean Area

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Abstract: *MedOANet is an EC-funded project which addresses the necessity for coordinated strategies and policies in Open Access to scientific information in Europe. It supports the implementation of the relevant Recommendations of the European Commission, it helps enhance existing policies and strategies and contributes to coordinating the necessary processes at the national and regional level in six Mediterranean countries: Greece, Turkey, Italy, France, Spain, Portugal. This presentation focuses on outlining the streams of work followed and the results obtained towards the end of the project. Particular emphasis is placed on the policy development guidelines.*

The project unfolded in five streams of work: Mapping the open access landscape in each of the six countries, and in particular the open access policy landscape; facilitating national processes for the development of policies; coordinating developments in the six countries; providing guidelines for implementing open access policies; implementing tools that monitor developments in open access.

Early in the project extensive surveys were carried out to map existing policies, strategies and structures in each of the six countries. They were directed to research funding organizations, research performing organizations and academic/scientific publishers. They all indicate an environment favourable to open access, with significant advances in open access infrastructures, but with policy work still remaining behind.

At the national level, Task Forces were set up comprising significant stakeholders, especially policymakers from research funding and performing organizations. The project immersed in a continuous engagement of the stakeholders, culminating in 6 national workshops organized in each country. Their outcomes contributed to defining a course of action in each national context and added momentum to the process of implementing open access policies in each of the countries. National policymaker engagement continues throughout the project, as an essential component in bringing about policy development.

Alongside work at the national level, coordination among the countries takes place through a workshop and a final conference, through continuous exchange of best practices among the partners and using the project website as a means of transmitting relevant information to each country. As the project nears its end, the results of the mapping, national engagement and regional coordination lead to a set of guidelines on implementing open access policies, to be published in the end of the summer 2013. These will be presented at the conference.

Finally, the project developed an important tool that helps track progress in open access in the six countries, the Open Access Tracker. The Open Access Tracker brings together information on the growth of different types of open access resources and policies in the 6 countries, effectively creating a profile of growth for each country. It draws information on journals, repositories, institutional policies, funder's policies and publishers' self-archiving policies from authoritative services, such as DOAJ, SHERPA/RoMEO, SHERPA/Juliet, OpenDOAR, ROARMAP. The Tracker is intended to encourage the stakeholder community to register its open access resources with these established services from which it draws information in order to increase the accuracy of information regarding open access in the six countries.

RECODE: Policy RECommendations for Open Access to Research Data in Europe – A New Research Frontier

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Abstract: *This presentation will provide a snapshot of the funded, European Commission research project, RECODE – "Policy RECommendations for Open Access to Research Data in Europe – a new research frontier" (Grant agreement no. 321463).*

RECODE aims to leverage existing networks, communities and projects to address challenges within the open access and data dissemination and preservation sector and produce policy recommendations for open access to research data based on existing good practice.

Throughout the presentation, attention will be drawn to the aims of the RECODE project, as well as its methodology of using five case studies:

- *Particle Physics and Particle Astrophysics (PPPA) Group (University of Sheffield) - Case Study Focus: Storage and processing Big Data*
- *FP7 Project EVA (Markers for emphysema versus airway disease in COPD) - Case Study Focus: Ethics and data Security in OA*
- *Bioengineering Institute, Auckland NZ, and Virtual Physiological Human (VPH) Community - Case Study Focus: Sharing complex data and models. Issues of repeatability*
- *FP7 Project EuroGEOSS and Digital Earth and Reference Data Unit - Case Study Focus: Interoperability in OA*
- *Open Context - Case Study Focus: Deposition, accessibility and preservation of data in OA*

These case studies will be used to examine gaps, tensions and good practice solutions for infrastructural and technological, legal, ethical, institutional and policy issues relating to the sharing of data. During the presentation, in addition to discussing the goals and direction of the project, presenters will also draw attention to preliminary findings of the project thus far. The presentation will conclude by considering key questions for stakeholders interested in enhancing access to research data in Europe.

OpenAIRE - An Open Science Infrastructure for Europe

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Abstract: *OpenAIRE is about opening up publically funded research. The services it offers enables researchers upload, share, link, get statistics and make more visible their valuable output, in a feel-good easy to understand workflow. The newly launched data repository, Zenodo is a new innovative service that allows researchers to upload their data.*

The OpenAIRE initiative supports the open access policy of the EC as it heads towards its new funding stream, Horizon2020. Initially gathering the peer-reviewed output of the FP7 funding stream, OpenAIRE is now expanding to other national funding schemes. This contextual information is now enriched by links to associated underlying datasets. The project will establish an e-Infrastructure to harvest, enrich and store the metadata of open access scientific datasets.

Scholarly communication touches upon many disciplines. The project's horizontal outreach will therefore facilitate collaboration across data infrastructures, providing information to scientists, non-scientists as well as to providers of value-added services. Innovative underlying technical structures will be deployed to support the management of and inter-linking between associated scientific data.

OpenAIRE is unique in that its technical infrastructure is complemented by a successful community network. Each member state (and five other countries) are represented in the project and work to the common goal of supporting researchers in their countries contribute to the collaborative gathering of publications and data. By working to harmonise open access policies, OpenAIRE has a good overview of open science activities in the EC.

OpenAIRE also provides a data repository, for both publication and data. ZENODO, is a simple new service that enables researchers, scientists, EU projects and institutions to share and showcase multidisciplinary research results (data and publications) that are not part of the existing institutional or subject-based repositories of the research communities.

ZENODO enables researchers, scientists, EU projects and institutions to 1) easily share the long tail of small research results in a wide variety of formats including text, spreadsheets, audio, video, and images across all fields of science; 2) display and curate their research results and get credited by making the research results citable and integrate them into existing reporting lines to funding agencies like the European Commission; 3) easily access and reuse shared research results.

This session will give an overview of:

- *An outlook on Open Access and open data in the EC.*
- *How OpenAIRE provides infrastructure and services to support researchers and other stakeholders make their research more open.*
- *How OpenAIRE can support the long-tail data originating in research institutions.*

IPR Management in Open Access Publishing of Scientific Information: The Guidelines Developed by the MedOANet Project

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Abstract: *Intellectual property rights are at the very core of Open Access (OA) publishing. The success of the long overdue paradigm shift towards OA to publicly funded scientific information depends on the consent of the authors of this information, i.e. the researchers, to make their works – and the underlying research data – available via the internet in a way that they may easily be re-used in various ways without prior permission-seeking. Such OA compatible re-use of scientific works is not reduced to copying and citing but may include the making of derivatives such as intellectual translations or text and data mining by machines. A sustainable management of intellectual property rights will even have to consider the fact that information technologies are advancing faster than we can anticipate. OA licensing schemes will have to be constructed in a way that leaves scientific information open to new IT developments if we do not want to change copyright laws or to add new licenses to already licensed content over and over again every few years in order to make them suitable to the digital age.*

The current legal framework of the EU with regard to intellectual property rights does not specify any regulations on the OA publishing of publicly funded research outputs. Though some Member States are actually re-viewing certain details of their national copyright legislations in order to make OA of publicly funded research more feasible, this approach is a scarcely coordinated one. The EU as a legislator as much as a research funder relies on the possibility of making OA to scientific information possible while respecting the existing copyright framework of the EU. Grant holders of EU funds are therefore expected to negotiate the rights of their research outputs so as to be able to publish them OA – either originally via Gold OA or additionally as a secondary publication in a repository via Green OA.

Negotiations with publishers usually require a special behaviour and some special knowledge on copyright which do not normally belong to the standard business repertoire of researchers. A set of guidelines which contain practical recommendations –in line with the recommendations of the EU – on how to deal with publishers to make OA of publicly funded scientific information possible is therefore needed. These guidelines have to be specific enough to actually help researchers to perform their task of individually negotiating their copyrights to OA, and they have to be universal enough to cover all legal regulations of one legal (EU) entity and the entire corresponding scientific research area, the European Research Area (ERA).

MedOANet (Mediterranean Open Access Network) is a project funded by FP7. It addresses the necessity for coordinated strategies and policies for OA to scientific information in Europe. The project started in December 2011 and enhances existing policies, strategies and structures for OA and contributes towards the implementation of new ones in six Mediterranean countries: France, Greece, Italy, Portugal, Spain and Turkey. MedOANet also promotes national and regional coordination of policies, strategies and structures in these six countries and beyond. In early summer 2013 the MedOANet guidelines were developed as a deliverable of the project; they contain some valuable information on how to deal with copyright questions when producing policies for OA to scientific information on national and international level.

Which are the policies and strategies with regard to the management of intellectual property rights that are outlined in the MedOANet guidelines?

The presentation will highlight the MedOANet project, focus on the MedOANet guidelines as a result of the project and give an overview of the existing recommendations concerning copyright which can be given to i) researchers, ii) research funding organisations (RFO) and iii) research performing organisations (RPO) when designing coordinated OA policies. These recommendations include a set of useful tools which have been developed by other stakeholders of OA, such as SHERPA / RoMEO,[1] author's addenda,[2] the Copyright Toolbox[3] and template letters for amendments to

[1] http://www.sherpa.ac.uk/romeo/

[2] http://www.sparc.arl.org/author/addendum.shtml or http://sciencecommons.org/projects/publishing/scae/

contracts with publishers and a model "License to Publish". However, these tools may not be sufficient to support the researchers in their negotiations with publishers. RFOs and RPOs may strengthen the position of researchers by introducing a mandate into their OA and/or copyright policy: when signing the working or funding contract all employed or funded researchers grant the university or funder a nonexclusive, irrevocable right to distribute their scholarly articles for non-commercial purposes. This upfront right to OA publication cannot be overridden by contracts with publishers.

The final question of whether the individual negotiation of intellectual property rights within the existing legal framework is sufficient to make libre OA to scientific research possible also for future technologies remains open for discussion at the end of the presentation.

[3] http://copyrighttoolbox.surf.nl/copyrighttoolbox/

Workshops

Improving Systems for the Discovery of Scientific Information: A Workshop

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Abstract: *The core functions of libraries and information centres include providing assistance to users/clients when they want*

1. *to discover the most relevant information sources needed to support their work and afterwards*
2. *to access the selected/identified sources.*

Here we focus on the first phase: information discovery.

Problem statements:

1. *Which worldwide trends and evolution can we identify in information discovery methods and systems?*
2. *Having identified these facets in evolution, then how can or should information centres implement them?*

Methodology:

This contribution is mainly based on published literature, plus experience and empirical research, in the context of academic and scientific information services.

Findings, suggestions, recommendations, discussions:

The following gives a list of aspects/components/facets of library and information centres that are related to information discovery.

- *From print to digital*
- *Disintermediation*
- *The online catalog*
- *Enhancing subject retrieval*
- *Digital search*
- *Federated search*
- *Merging of databases*
- *Combining federated search and merging of databases*
- *Link generators in digital information systems*
- *Advanced commercial discovery services*
- *The importance of freely available discovery services*

For each of these facets, we will structure the workshop as follows:

1. *Outlining the trends.*
2. *Based on this evolution, opinions/views/suggestions/recommendations are formulated towards colleagues active in some information centre.*
3. *Reactions are invited, which can lead to a constructive exchange of experiences, views and opinions, as we are well aware of the fact that various information centres show a significant diversity in size, funding, experience, ambitions and so on. This leads concretely to questions like:*

- *Do I agree with the view of the presenter?*
- *Would this application or system be useful in my context?*
- *Would this application or system be affordable?*
- *How far advanced is all this already in my organization? Are we running behind?*
- *Should we shift emphasis in my organization?*

Reading Comprehension without Comprehension: Information Retrieval and the Orientation Phase

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Abstract: *At the LIS department of The Hague University of Applied Sciences it is mandatory for first-year students to take a ten-week course entitled 'Desk Research.' The primary assignment of this course is for students to find 20-30 scholarly articles/books on a query given by a teacher (for example: "How does increasing usage of social media by teenagers impact their online privacy?").*

During the first three weeks of the course students familiarize themselves with the given query. This is done by using a variety of methods such as creating a 'mindmap' to map out their own frames of reference on the subject, as well as reading encyclopedic articles and introductory works, to expand these frames of reference and increase their awareness of the various contexts in which their subject may be placed.

The following issues arise during this orientation phase:

1. *Students often experience difficulties in selecting and extracting keywords that might be used as search queries to retrieve scholarly articles/books from introductory texts due to a lack of comprehension of the context in which the keywords are used.*
2. *Students often experience difficulties in combining different keywords into search queries that will yield the desired results.*

Project Management for “Overworked” Professionals

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Abstract: *This comprehensive project management workshop is an intensive, hands-on course providing overworked professionals who are juggling multiple projects with the skills, knowledge and tools to be successful. This workshop provides sound techniques for planning, estimating, tracking and controlling projects. Throughout the workshop, participants will learn and apply the basic techniques that can be applied for a variety of programs whether you are working with digitization or implementing new software.*

Objectives:

- *Increased awareness in applying Project Management methodology.*
- *Produce a well-defined project plan that can be used over and over again.*
- *Improved team collaboration by understanding your stakeholders, potential team dynamics and who needs to be on board before the project starts.*
- *Better control over each stage of the process so you can meet the bottom line.*
- *Ways to balance a large project with big outcomes with a small budget.*

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