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Faculty of Computer Science and Engineering

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Preface

The Conference of Informatics and Information Technology was held for the ninth time, traditionally in Bitola, Macedonia during April 19-22, 2012. This year, for the first time it was organized by the Faculty of Computer Science and Engineering (FCSE). FCSE is the result of the unification of the two largest institutions in the area of informatics and computer technologies in Macedonia – the Institute of Informatics at Faculty of Natural Sciences and Mathematics and the Institute of Computer Techniques and Informatics at Faculty of Electrical Engineering and Information Technologies. The previous eight conferences were organized by the Institute of Informatics at the Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius in Skopje. Now, FCSE continues the tradition of giving the opportunity to researchers to present their latest results in the field of Informatics and Information Technologies.

During the three days of the conference 81 presentations were given in 13 regular sessions. One project meeting and special student session were also held. On the student session 15 student projects were presented and the best one (chosen from the student participants) was awarded.

Professor Vedran Mornar from Faculty of Electrical Engineering and Computing in Zagreb gave the invited lecture "State Matura and National Information System for Application to Higher Education Institutions".

The rich variety of topics covered by the presentations provided a setting for numerous fruitful discussions on different concepts, methods and technologies for the benefit of advancing these research areas.

As editors we hope that the CiiT conference will continue its growth toward becoming an influential international conference with great impact to ICT research and development.

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eWorld – eWork, eCommerce, eBusiness, eLearning

SOCIAL NETWORKS AS A RESEARCH INFRASTRUCTURE

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ABSTRACT

This paper gives an overview of different social networks and their tools that can be used for research in various disciplines. The focus is on those social networks whose infrastructure is particularly suitable for research and teamwork. We examined their functionality, benefits, method of interaction and collaboration between users. Despite not doing any statistics and prove, social networks helped us with doing a lot of researche. That helped us ensuring ourselves that at the moment, the social networks are the best way of doing research work and make the academic work a lot of more easier.

I. INTRODUCTION

In the world of the Internet for a very short period there was an explosion of social tools that help people easily to connect and join the global conversation. People who previously used the Internet for daily research, using these tools now can create and share information in public. Web 2.0 represents the evolution of social and interactive web that has easy access, can be used by everyone, not just those who have more computer knowledge. With the creation of new applications and their simple usage, web 2.0 democratizes the Internet allowing all users to join. Social tools provided by Web 2.0 are very attractive and are used by large number of people of all ages. Through these new tools people exchange and share knowledge and information with colleagues, acquaintances and other participants. Web 2.0 allows people to create and share content such as photos, reviews, videos, etc., and simultaneously to have a review of information provided by other users.

II. WEB 2.0

Web 2.0 is a collection of technologies, business strategies and social trends. Beside its predecessor Web 1.0, Web 2.0 is dynamic and interactive and allows users to access to all online content and contribute to them. It was developed at a higher level and it is very important for people to have a previous knowledge in order to be able to use it. With his appearance, Web 2.0 became attractive to many users, business sector and IT professionals. Web 2.0 has expanded the web in terms of collaboration and interaction, emphasizing the social interaction between users and collective intelligence, and presents an opportunity for expanding the Internet and more effective involvement of users. Web 2.0 lets users keep up with a site's latest content even without visiting the actual Web page. It also lets developers easily and quickly to create new Web applications available on the Internet. Realizing Web 2.0's importance, many IT vendors and service providers are positioning their products and services as "Web 2.0 ready" and are bringing new Web 2.0 development tools to market. Web 2.0 is not supplementing of the old version because:

- facilitates flexible Web design, creative reuse, and updates;
- provides a rich, responsive user interface;
- It facilitates the creation of content and their modification;
- enables the creation of new applications and combining different web; applications;
- establishes social networks for people with common interests;

Web 2.0 is an important phenomenon of the 21st century, a trend that made unification of all users in one place.

III. SOCIAL METWORKS AS A WEB 2.0 TOOLS

Social networks represent a structure composed of a set of participants (individuals or organizations) and relationships between participants. In the last few years social networks have become one of the most popular online destinations. With the rapid growth of the actuality of social networking, social networks developed into attractive forms that people use every day and which can respond to their needs and interests. There are various social networking platform designed for a particular group of people, networks that are focused on a particular science and whose target group are people with appropriate knowledge of that science, beginners and people interested in it. Table 2 gives the statistics of most used social networks by the number of registered users by 2011.

Table 2. Review of social networks by the number of registered users by 2011.

SNS Statistics: Registered Users		
Social Network	Registered Users	Source
Mendeley	1,911,582	http://www.mendeley.com/
Dropbox	More than 50M	http://www.dropbox.com
Academia.edu	1.231.575	http://academia.edu
LinkedIn	120,000,000	http://www.linkedin.com/
Microsoft Academic Search	19,407,652 authors	http://academic.research.microsoft.com/
myExperiment	5706 members	http://www.myexperiment.org/home

Source: www.wikipedia.com

Social networks are part of everyday life of people and their work and are used for: communication, sharing ideas and opinions, entertainment etc.

IV. RESEARCH IN SOCIAL NETWORKING

During the everyday work, researches showed as the most effective way in performing the academic work where the researchers use the social networks as a crucial tools for supporting each phase of their research work. Using the social networks is of great benefit for the researchers because thus, they can find their necessary information far more easier. The implementation of the research process consists of several phases shown in Figure 1.

Figure 1
(source:www.ucl.ac.uk/infostudies/research/ciber/social-media-report.pdf) shows the research lifecycle. Notice that to perform a research is necessary to pass several phases such as: identify research opportunities, find collaborators, secure support, review the literature, collect research data, analyse research data etc.

In continuitation we will consider some of the social networks intended just for research.

Mendeley. Mendeley is a combination of a desktop application and a website which helps us to manage, share and discover both content and contacts in research. This software program offers various tools such as:

- Automatic extraction of document details (authors, title, journal etc.) from academic papers into a library database;
- Super-efficient management of your papers;
- Sharing and synchronisation of your library with a selected group of users. This is the perfect way for collaboration and jointly managing of all documents.

myExperiment. myExperiment is a collaborative environment where scientists can safely publish their scientific papers and experiments, to share with other groups and to find articles by other authors.

Academia.edu. Academia.edu is a form of social networking that is used for academic research. Allows importing information for your research, you can write about certain events and share with other users, to upload your own personal paper or download scientific papers by other users.

Twitter. Twitter is an microblogging platform and is a useful database where you can find groups of people for some academic project. Twitter has around 110 million users with a rate of 300,000 new ones are signing up every day. As a social network, Twitter is based on the principle of monitoring. Apart from other social networks, Twitter allows you to perform searches and when you have not created your own profile.

Wikis. Wiki is a simple website that allows creation and editing of web pages that are interconnected through a web browser.

It is used by research group of users who discuss and processed a particular topic, giving suggestions and possible solutions to solve a problem, and all proposals and views are stored in one place.

Dropbox. Dropbox is one of the several Web-based file hosting service that allows easy access to your files from anywhere and share them with other users.

Facebook. Most visited website after Google has more than 500 million users, half of which log on daily. Two thirds of top 100 websites in the U.S. are integrated with Facebook, where participate millions of entrepreneurs from 180 countries. Harward and Oxford universities have over 65,000 and over 52,000 fans accordingly Facebook pages. Here inform about important news and integrate them into web pages for students not to miss something and be reminded through their favorite social networking - social networks.

LinkedIn LinkedIn is a network useful for academic cooperation. Each user can join groups from different fields, to communicate with others in the field and jointly help in resolving certain issues. Apart from other social networks, the purpose of LinkedIn is purely professional networking.

LinkedIn has 70 million users and executive directors of the largest 500 companies. According to Fortune here subscribed 80% of companies that use it to recruit new employees in 200 countries (source: http://www.socialmediacompass.net). Except that is being used for recruiting, valuable is the various groups and the function Answers. Group members can discuss the narrower topics, answer questions and to choose the best answer. Over the time can build a name and position as an expert in a given field. This is especially attractive for students and youth who have already infiltrated in greater detail in certain matters.

These are just some of many scientific-research social networks. Besides these there are those that can fully say that they are relevant for this purpose, networks which have integrated tools that can help in research. In the following we will consider some of these social networks.

Google Scholar. Google Scholar is a simple tool for searching scientific literature. Using Google Scholar you can search multiple sources in one place, you have access to various articles, theses and books from many academic researchers and universities, through your library or the Internet you can find the full document and to increase your knowledge in the area you are interested.

The information shown on the pictures below will show us that social networks are really very topical.

Figure 2. Social networking use by age

Source: Pew Research Center's Internet & American Life Project surveys: February 2005, August 2006, May 2008, April 2009, May 2010, and May 2011.
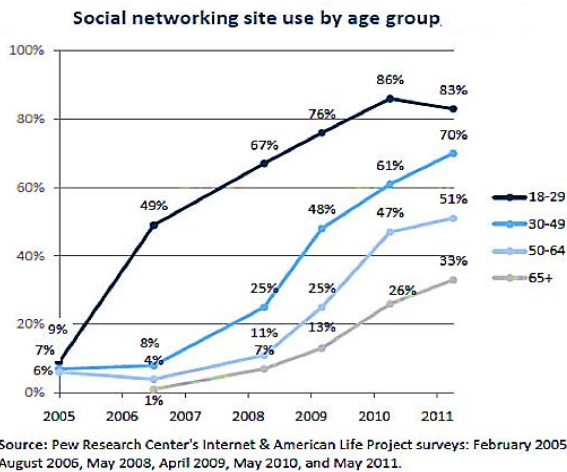
Figure 2 shows graphically display of the trend of using social networks by different target groups (by age) in the period from 2005 to 2011. Based on the represented statistics we can conclude that within six years the number of users is significantly increased, including people of different ages. The number of users aged (18-29 years) from 9% in 2005 increased to 83% by 2011. We also have a significant increase in the number of older users, over 65 years.

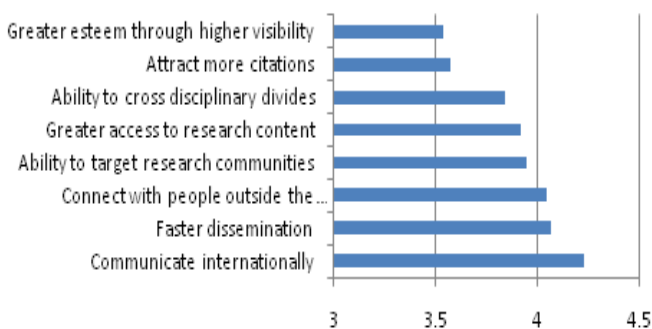Figure 3. Perceived benefits of social media use in research

Figure 3. Benefits of using social networks for research

Figure 3 with a rating scale of 1 to 5 represent the benefits of using social networks in our research. We can conclude that there are more benefits such as: communicate internationally, connecting with people outside the academy, greater acces to research content, etc.

V.   RESEARCH CYCLE WITH SOCIAL NETWORKS

According to the above displayed research life cycle, this section will present the research lifecycle in our organization using social networks.

Figure 4.   Research   lifecycle   in   our organization
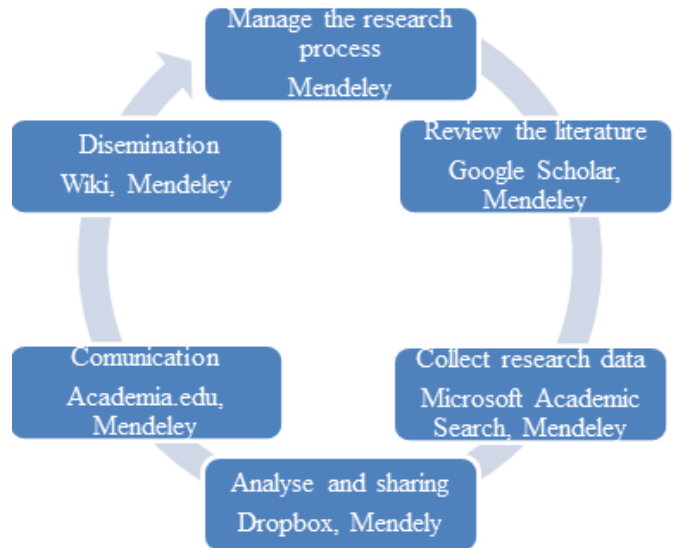

Figure 4 represented the research cycle that we use in our workplace. It is a research cycle that consists six different modules that are implement to obtain effective results. In each module we use various social networks in order to gain more information. The first module is designed to manage the research process conducted by Mendeley, in the section review of the literature we use Google Scholar and Mendeley, for collecting research data besides Mendeley we use Microsoft Academic search, Dropbox and Mendeley for analyse and sharing, for communication Academia.edu and Mendeley and for disemination we use Wiki and normaly Mendeley.

We can see that Mendeley social network appears in every part of the cycle. The reason for his presence are actually great number of tools and advantages that have, tools that make Mendeley better than other social networks.

Mendeley advantages

- Creating Library;
- One – click Web importer – allows only with one click to add references from other services;
- Synchronize PDFs with Mendeley account – If you want to have access to your PDFs from anywhere use the sync library tool;
- Manage documents
  - Read/unread
  - Favourites

- Sharing documents and refferences
- Create groups
    - Public
    - Public invite – only groups
    - Private
- Adding members and documents

VI. SUMMARY

During our research we explored the technical infrastructure and tools used in social networks and we saw the reasons for high use of social networks in all spheres of life. We put emphasis on the social networks that we use in our organization and the most popular social networks. We made research in the social networking, reviewed in detail the tools used in Mendeley, Dropbox, Wiki, Academia.edu, LinkedIn, etc. in order to observed the benefits of such technical infrastructure. Parallel to that researched more about the use of social networks by age, benefit from their use and reviewed the research life cycle that we think is the main factor for a successful and qualitative research. We can say that social networks have become very topical, offering flexible tools that daily attracted large numbers of users.

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