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NETWORKING IS ONE OF THE EFFECTIVENESS FORM OF THE INTERNATIONAL RESEARCH. SOME ASPECTS.

Abstract: Today the Internet has become an effective environment for conducting joint research and exchange of experience in smaller and larger international teams.
This article presents some contemporary trends and overview a several Internet services, such as ResearchGates, Google Scholar, LinkedIn, Viadeo, which are gaining more and more popularity among scientists; furthermore, several factors contributing to this development are discussed. International research network IRNet (www.irnet.us.edu.pl) is one of the good example of international cooperation, exchange of experience and joint collaboration and research, which effectiveness supported by Internet network services.

Keywords: networking, International research network IRNet, Internet services, publications, citations.

Introduction. As stressed in conducted research study: "In recent decades there has been an enormous growth of scientific collaboration across national borders. The number of internationally co-authored scientific articles has grown at an average of 14% per year. Networking is now an important means of enhancing scientific quality. In an econometric study of the patterns of interaction the paper shows that scientific interaction follows the gravity model with size of collaborating scientific environments, transportation efforts, language similarity and political collaboration institutions, shaping the spatial pattern of scientific collaboration". (Andersson, Å.E. & Persson, O. Ann Reg Sci (1993) 27: 11). "Prior to 2003, mankind generated a total of about 5 Exabyte's of contents. Now, we generate this amount of contents in about two days! The spread of generic (as Twitter, Facebook or Google+) or specialized (as LinkedIn or Viadeo) social networks allows sharing opinions on different aspects of life every day." (Colace, Francesco; De Santo, Massimo; Greco, Luca (2013)).

Review of definitions and classifications of networks and networking
According to The Great Internet Dictionary of Polish, a net is:
– all the activities or relationships aimed at catching someone or taking control over someone;
– the worldwide information system which consists of interconnected computers (The Great Dictionary of Polish).

The Oxford Dictionaries contain several definitions of network and some sample sentences (http://www.oxforddictionaries.com/definition/english/network):
1. An arrangement of intersecting horizontal and vertical lines: a spider constructs a complex network of several different kinds of threads
2.2. A group of people who exchange information and contacts for professional or social purposes: a support network
2.3. A number of interconnected computers, machines, or operations: a computer network
As a verb:
1. [with object] Connect as or operate with a network: compared with the railways the canals were less effectively networked

2. [no object] (often as noun networking) Interact with others to exchange information and develop professional or social contacts: the skills of networking, bargaining, and negotiation. Smyrnova-Trybulska, Żebrok, 2015)

Networking is a phenomenon which gets into social focus with growing frequency. What seems to increase fast is the number of political, economic or educational activities, institutions and associations in the network form (Żmijski In: Elsner 2013: 29). This phenomenon consists in linking people in a more or less formal way and it results from the theory that a group can do more (synergy is often mentioned). These effects are achieved by the application of modern forms of media and the choice of appropriate information and communication technologies. Networking requires a lot of self-awareness and clearly specified aims and strategies but the effort associated with network organization pays back – it is possible to fulfil many tasks together, which cannot be done by individual resources. Smyrnova-Trybulska, Żebrok, 2015)

Networking is an activity which allows for establishing contacts, exchanging views, accessing information and for cooperation bringing about the expected results. It enables the process of achieving the desired results together in a long-term, systematic way, based on trust and mutuality. The network has a flat organizational structure based on the principles of self-regulation and self-organization. There is no typical head management and the interpersonal relations are based on the principle of partnership. There is no hierarchy typical of educational institutions either (Elsner 2013: 49).

Among its characteristics, education through the Internet has such features as shifting the burden onto learners and self-improvement on one's own. These solutions seem irreversible as in the modern world the expected effects are achieved through team work, frequently with people of different nationalities, professions and cultures and solving complicated problems is possible only owing to well-organized group work (Żebrok 2014: 115). It should be remembered that organizing within the network should be a grassroots initiative. What is worth quoting here is a definition of learning communities (*Professional Learning Communities – PLC*): "PLCs create networks to perform what their name suggests – learning from practice. PLCs meet regularly and the meetings are dedicated to the learners' work and their process of learning" (DuFour 2004: 6-11).

The strategy for supporting supra-national collaboration within the European Social Fund at the level of the European Commission is manifested e.g. by encouraging and enabling to create a network of collaboration, mutual learning and exchange of experiences among the EU countries in the framework of the so called Learning Networks. They are grassroots initiatives of the member states, which are active in some particular areas and within which the participants have the possibility of exchanging experiences, good practices and of joint work on the solutions to some problems. Some psychological, pedagogical and organizational aspects of communication in a virtual team are analysed by Smyrnova-Trybulska and other authors (Smyrnova-Trybulska, 2009; Morze, Varchenko, Smyrnova-Trybulska 2015; Issa, Isaias, Kommers, 2016; Smyrnova-Trybulska, Żebrok, 2015)

Some examples of notions referring to the metaphor of the net and networking are presented in Figure 1, whereas the classification is exemplified by the distinction into economic, virtual and social networks, which is provided below. More detail different category of Networks were described in Smyrnova-Trybulska, Żebrok, 2015
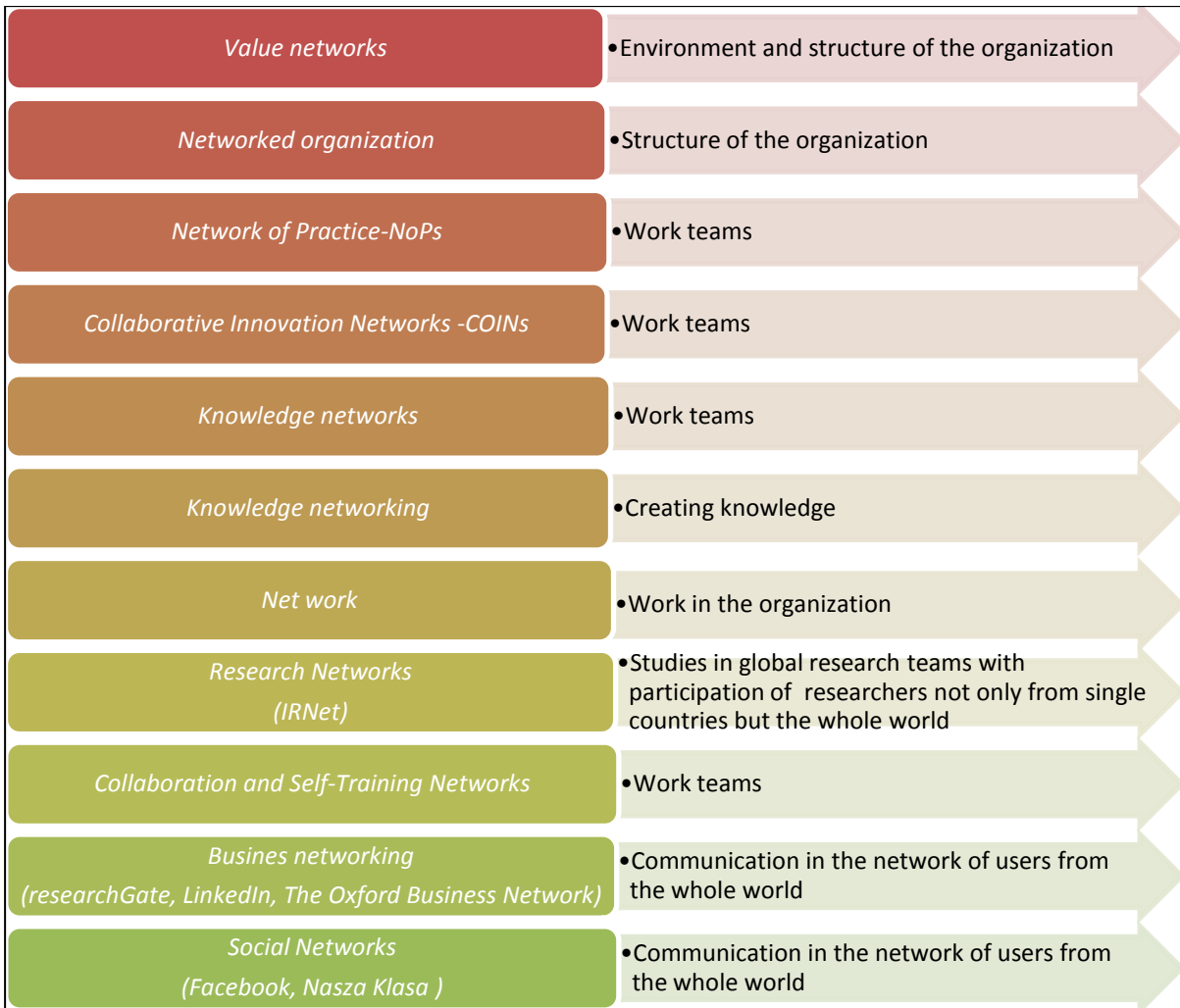
Value networks	•Environment and structure of the organization
Networked organization	•Structure of the organization
Network of Practice-NoPs	•Work teams
Collaborative Innovation Networks -COINs	•Work teams
Knowledge networks	•Work teams
Knowledge networking	•Creating knowledge
Net work	•Work in the organization
Research Networks (IRNet)	•Studies in global research teams with participation of researchers not only from single countries but the whole world
Collaboration and Self-Training Networks	•Work teams
Busines networking (researchGate, LinkedIn, The Oxford Business Network)	•Communication in the network of users from the whole world
Social Networks (Facebook, Nasza Klasa)	•Communication in the network of users from the whole world

Fig. 1. Some examples of notions referring to the metaphor of the net and networking
(notion and aspect)
Source: Smyrnova-Trybulska, Żebrok, 2015

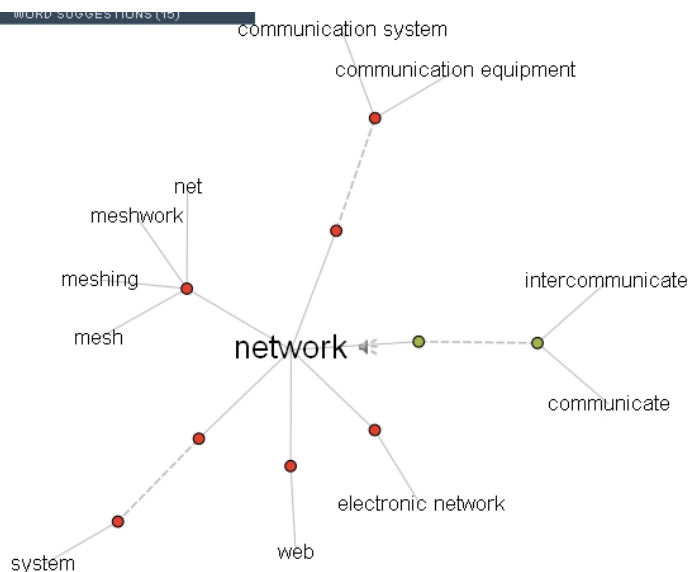Mapping and visualisation of „Network" category presented on the Figure 2.

Fig. 2. Mapping and visualisation of „Network" category.

The practical example of a network is the research network IRNet (www.irnet.us.edu.pl), in which one of the authors of this article takes active part as its coordinator. IRNet – International Research Network for study and development of new tools and methods for advanced pedagogical science in the field of ICT instruments, e-learning and intercultural competences (www.irnet.us.edu.pl) is a project financed by the European Commission under the 7th Framework Programme, within the Marie Curie Actions International Research Staff Exchange Scheme. Grant Agreement No: PIRSES-GA-2013-612536. Duration of the project: 48 months 1/01/2014 – 31/12/2017. The IRNet project aims to set up a thematic multidisciplinary joint exchange program dedicated to research and development of new tools for advanced pedagogical science in the field of ICT instruments, distance learning, and intercultural competencies in the EU (Poland, the Netherlands, Spain, Portugal, Slo vakia) and non-european countries (Australia, Russia, Ukraine). The program will strengthen the existing collaboration and establish new scientific contacts through mutual secondments of researchers. The main objectives of the project are: 1. to exchange expertise and knowledge in the field of innovative techniques of edu cation between the EU and Third Countries and to suggest effective strategies of implementing new tools in the educational profession; 2. to analyze and evaluate social, economic, legal conditions, as well as methodologies and e-learning techniques being developed in the European and Third Countries involved. Figure 3 shows the example of integration of the experience and scientific relation between IRNet consortium institutions for new network consortium achievements.
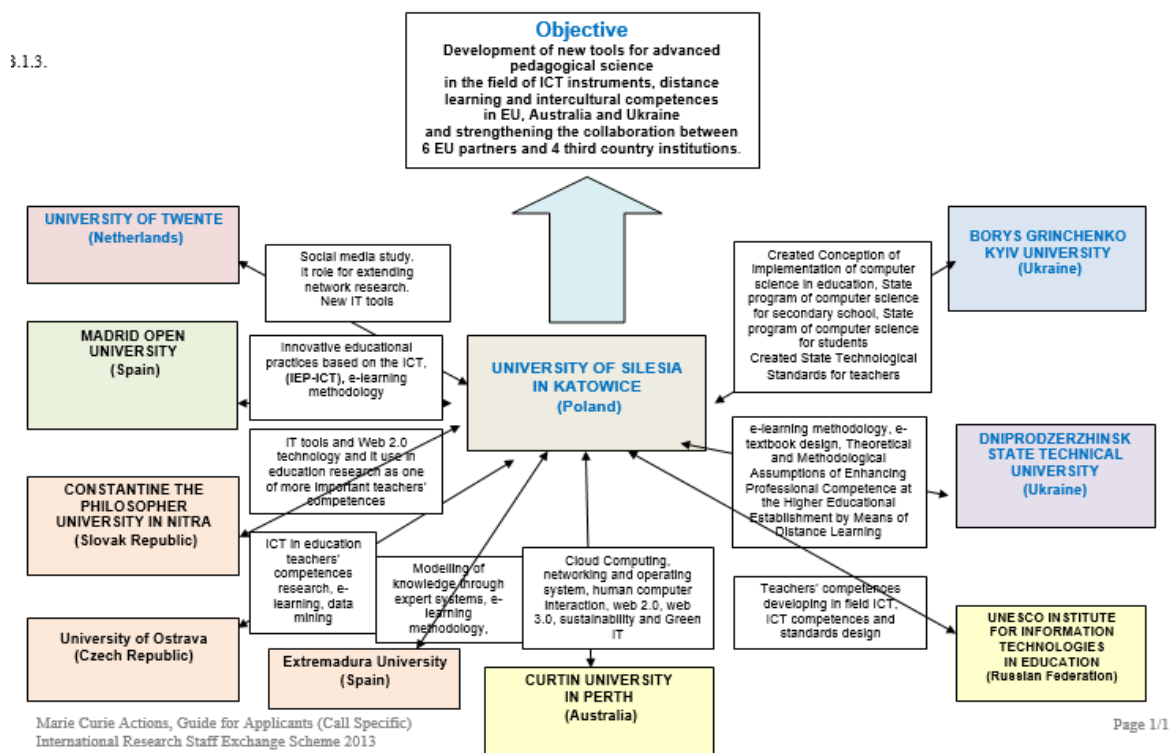

Fig. 3. Example of integration of the experience and scientific relation between IRNet consortium institutions for new network consortium achievements

Network created also by different kind of contacts:
- Personal contacts
- Scientific contacts
- Professional contacts
- Participate in joint conferences
- Common projects, etc.

During first 44 months of the project implementation was published more than 180 publications, conducted more than 50 conferences and workshops, seminars, presented more than 300 presentations and lectures. Main results and achievement Deeply analyzed and presented in numerous publications and reports. Below will present some Internet services and review of the several free social networking site, which can useful in dissemination of network results and broadening of scientific cooperation.

Review of the free social networking site. ResearchGate (RG) (https://www.researchgate.net/). ResearchGate is an international, free social networking site dedicated to Scientists of all disciplines. The portal has registered over 11 million ResearchGate users were founded in 2008 by Ijad Madisch and Sören Hofmayer, medical students. The company is headquartered in Berlin. The service contains 81 Millions of documents.

Basic functions:

Individual researchers' profiles,
- possibility of placing full texts self-archiving of texts (Self-Archiving)
- the ability to put bibliography of your achievements,
- the ability to observe the activity of other researchers,
- citation tracking,
- data on research interests,
- project data,
- communication tool (discussion);
- Statistics of read / downloaded texts.
- International cooperation environment:
- Groups

Thanks to thematic groups using the portal have a unique opportunity Interactive discussion with users of common scientific interests. The group is equipped not only with its own discussion panel, but also with applications. Allows you to collaborate documents, organize meetings, create probes (http://www.ptchem.lodz.pl/pdf/rg1.pdf). And the exchange of scientific information. Different scientists may be interested and collaborated in the group
- Access to scientific and professional literature

The ResearchGate portal publishes more than 1,000 open source resources, including: Pubmed, ArXiv, IEEE or CiteSeer. The Figure 4 and 5 shows profile of the author of the article in RG.
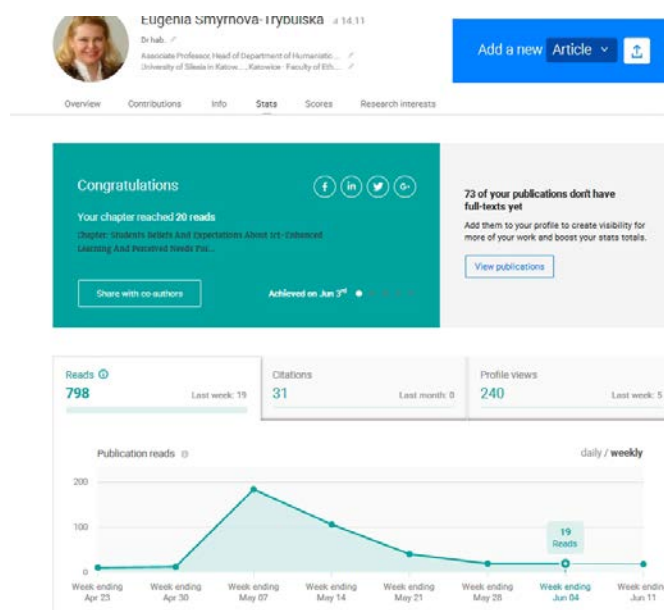

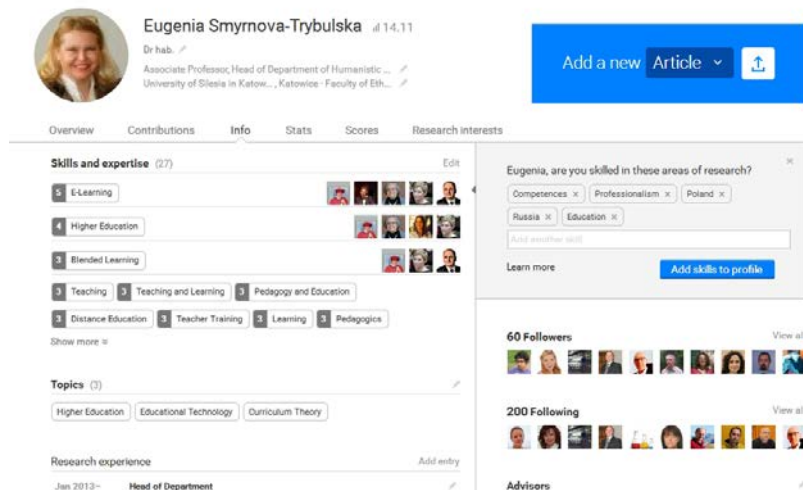Fig. 4. Profile of the Eugenia Smyrnova-Trybulska in RG

Fig. 5. Profile of the Eugenia Smyrnova-Trybulska in RG. Skills and expertise. Research and scientific connection with other researchers.

In own study researchers stressed that "ResearchGate (RG) is a scholarly social network that possesses an impressive array of reputational metrics and has the potential to supplant publishers as the prime deliverer of scholarly reputation. It possesses 10 reputational mechanisms, and these are the subject of an evaluation employing desk research, expert evaluation, and an analysis of 400 RG members. The main conclusions are: RG (1) provides a rich, albeit confusing, amount of reputational data; (2) struggles with the deployment of alternative, engagement metrics, such as Q&A and follower data, which can lead to reputational anomalies; (3) employs usage data in an especially effective manner; and (4) leads the field in the way it engages with the scholar". (Nicholas, Clark, Herman, 2017)

"The increasing popularity of academic social networking sites (ASNSs) requires studies on the usage of ASNSs among scholars and evaluations of the effectiveness of these ASNSs. However, it is unclear whether current ASNSs have fulfilled their design goal, as scholars' actual online interactions on these platforms remain unexplored. To fill the gap, the researchers (Jeng, DesAutels, DesAutels, Spencer, 2017) presents a study based on data collected from ResearchGate. Adopting a mixed-method design by conducting qualitative content analysis and statistical analysis on 1,128 posts collected from ResearchGate Q&A, we examine how scholars exchange information and resources, and how their practices vary across three distinct disciplines: library and information services, history of art, and astrophysics." (Jeng, DesAutels, DesAutels, Spencer, 2017).

Google Scholar. Google Scholar (GS) - free, specialized search engine of the US company Google Inc. Used to search the database containing a variety of scientific publications from many fields of knowledge. The service was launched in beta in November 2004. Google Scholar includes in its database the most widely available online scientific articles provided by the world's largest publishers. GS works similar to other free services of this type: Scirus (Elsevier), CiteSeer and getCITED, and also available for a fee Scopus (Elsevier) and Web of Science (Thomson ISI). However, Google Scholar claims that its database has more scientific journals in more languages. (https://pl.wikipedia.org/wiki/Google_Scholar).

According opinion some researchers Google Scholar can be considered as an alternative to the Web of Science. An attempt to compare the two tools for citation analysis was executed by Hanna Celoch (2010).

Google Scholar has been researched in different study and publications. For example, **in** a conceptual approach on the possibilities for SMEs marketing through social networks

(Lopez, Luis Gerardo; Freire, Leonor (2015)), methodological and technical suggestions for researchers concerning use of Google Scholar for dissemination scientific results proposes in own script E.Kulczycki (2013). The figure 6 shows an example the list of citations of author's publications in Google Scholar.
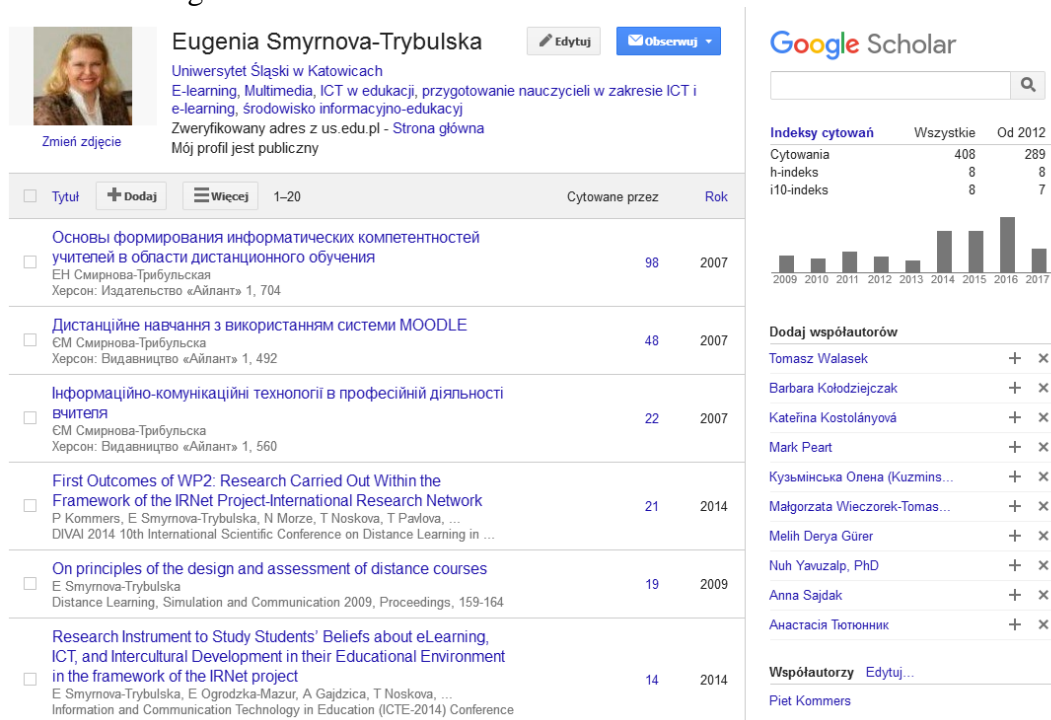

Fig. 6. An example of list of citations of Eugenia Smyrnova-Trybulska publications in Google Scholar.
Source: https://scholar.google.pl/citations?user=o-k9zQkAAAAJ&hl=pl (Accessed 14.08.2017)

LinkedIn.com. "Research on scholars' use of social media suggests that these sites are increasingly being used to enhance scholarly communication by strengthening relationships, facilitating collaboration among peers, publishing and sharing research products, and discussing research topics in open and public formats. However, very few studies have investigated perceptions and attitudes towards social media use for scholarly communication of large cohorts of scholars at national level. This study investigates the reasons for using social media sites for scholarly communication among a large sample of Italian university scholars (N=6139) with the aim of analyzing what factors mainly affect these attitudes" (Manca, Ranieri 2017). "13 years ago, a social networking site specializing in business-to-business contacts" (Wikipedia). This service can also be described as the world's largest professional network or "global job board," where profiles (like virtual CVs) are created by people looking for work, recruiters or companies. And all this to improve and refine the process of EFFECTIVE job search and effective recruitment" (https://socjomania.pl/jak-powinien-wygladac-twoj-profil-na-linkedin-krotki-tutorial-krok-po-kroku).

LinkedIn - an international social networking site specializing in business-to-business contacts. Service launched in December 2002 and launched in May 2003 (https://thealarmclock.com/2004/08/06/linkedin_hq_mou/ [access 2014-04-30].) In November 2011, the portal had over 135 million users in more than 200 countries. The portal is available in more than a dozen languages, as of April 2, 2012 also available in Polish. This research (Janakova 2016) is dedicated to improving education in computational science with support of examples from practice based on links from social networks as Twitter and LinkedIn. We have many of successful examples, but the question is what the benefits are for education. The aim is to contribute to improve study results and optimal orientation of

students in the CRM (Customer Relationship Management) with regard to practice. The existing controversy creates inconsistency between a successful example in practice and education that is not always successful. The method of solution uses the multidimensional approach, and other sources of information are realized surveys in CRM courses. Achieved results show that examples from practice are adequately supported with suitably verified links to Twitter and LinkedIn research (Janakova 2016).

Viadeo. Viadeo is a Web 2.0 professional social network whose members include business owners, entrepreneurs and managers.("Viadeo Raises $32M To Expand Its Professional Social Network In China, Russia And Beyond". TechCrunch.com. 11 April 2012. Retrieved 17 July 2012) As of 2014, the site had 65 million members.("Viadeo continues to grow: 65 million members worldwide, including 25 million in China". *Viadeo SA. 11 December 2014*. Retrieved 24 February 2015.).

"Although use of Social Media has shown a rapid rise during the past few years, research studies are still dominated by members' motivations for joining Social Media. Only a few studies have investigated members' motivations for sharing content, and these have been applied only to the context of Online Social Networks (Facebook, Tumbler, Google+, Skyrock, RenRen.com...). ." (Grissa, Karim (2016))

Besides presented above Internet services of course the most popular network is the social networks such as Facebook, Twitter, etc. This article not describe of this social network, however IRNet project also has profile in this prestigious social portals: https://www.facebook.com/IRNet-1669593856645370/, https://twitter.com/irnet_project

Conclusion. Networking is a phenomenon which gets into social focus with growing frequency. ResearchGates, Google Scholar, LinkedIn, Viadeo, well-known Internet services, which are gaining more and more popularity among scientists; in the article several factors contributing to this development are discussed. International research network IRNet (www.irnet.us.edu.pl) is one of the good example of international cooperation, exchange of experience and joint collaboration and research, which effectiveness supported by Internet network services. However, we feel this issue now needs to be explored further. And next results of consortium research and network activities will analyse and presented in the next publications.

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