Knowledge Networking – a Promising Tool for Developing Moldova's R&D Potential

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Abstract: Knowledge networking is a more and more popular research practice worldwide, being a key feature of the collaborative work regime that is nowadays prevailing in the creation and use of new scientific knowledge. This paper refers to the importance of knowledge networking to academic communities at large, and particularly to their involvement in collaborative research projects. In the Republic of Moldova's research, development and innovation (R-D-I) sphere, knowledge networking has become a priority given the country's integration in the European Research Area, fostered by its affiliation, in October, 2011, to the Framework Program 7 of the European Union. The ACADEMICA network is a dedicated ICT-based platform that can enable knowledge networking among key actors of Moldova's R-D-I system; the development path of the ACADEMICA network is presented, and its potential is highlighted with respect to supporting the necessary leapfrog from mere connectivity to sustained knowledge networking.

Keywords: knowledge networking, collaborative research, dedicated e-infrastructure, Moldova's academic community, information & communications technologies (ICT).

1 Introduction

In the 21st century, knowledge is recognised as a key driver of countries' economic competitiveness and sustainable development, (Seok, Noh and Filip, 2012) [1], as well as the prerequisite of rationality in tackling the challenges facing mankind, such as global warming, economic crises or demographic ageing. Human knowledge, in general, and the scientific and technological one, in particular, can be approached from a two-fold

perspective: stock and flow. The stock hypostasis is emphasizing the cumulative character of knowledge, as illustrated by the presence of think-tanks, idea repositories and pools of expertise; the main aspects relevant to this perspective are: expanding the amount of knowledge available and increasing its use. On the other hand, the flow hypostasis is centered on the transfer of knowledge within organizations or communities, as well as among them. While knowledge networking is involving both of the aforementioned hypostases, this paper focuses on the latter - knowledge as flow. After pointing out the role played by the respective practice within contemporary R-D-I systems, the example of pilot project ACADEMICA - the ICT-based network of Moldova's academic community - is briefly examined; the development path of this network is presented and reference is also made to its potential to support the necessary leapfrog from mere connectivity to sustained knowledge networking.

2 Knowledge networking – a promising practice in R-D-I systems

Knowledge networks are devoted to supporting information sharing and new knowledge creation, through enhancing the research and communication capacities among their members, be they individual or collective. Web 2.0 technological generation is a major enabler of knowledge networking, as it is collaboration-oriented by design, while the collaborative regime is currently prevailing in knowledge work (Razmerita, Kirchner and Sudzina, 2009) [2]. As pointed out by Lee and Lan (2007), "Through Web 2.0 platform, the traditional knowledge management with centralized knowledge repository has shifted into a more interactive conversational approach. Knowledge from specific disciplines is no longer provided and assessed solely by the domain experts, but by the peers who also possess the capabilities."

Within this context, connectivity appears to be a necessary, still insufficient condition for co-creating and sharing knowledge. The broader understanding of the notion of "networking" goes well beyond its technical layer, also encompassing behavioural features, such as openness towards collaborative research, mutual learning or open innovation.

From the point of view of ICT infrastructures available for knowledge networking, the distinction should be made between open-

access tools, such as the blogs, social networks or wikis versus platforms dedicated to certain projects or communities of users. The latter option appears to be relevant to the collaborative R&D projects unfolded by consortia or international thematic networks, such as the networks of excellence (NoE) gathering individual and/or institutional partners from member states of the European Union.

Getting engaged in knowledge networking requires partners sharing a common set of professional and ethical values, a common responsibility in managing their joint creative capacities and the portfolio of new ideas co-produced, as well as high degree of mutual trust and transparency of individual actions aimed at reaching the common goal. Given the As BRIC countries (Brasil, Russia, India and China) are of special interest from various points of view, including the dynamics of their information societies, it is worth mentioning the example of the National Knowledge Network (NKN) (www.nkn.in), developed under India's National grid Computing Initiative GARUDA (www.garudaindia.in) [3]; NKN is aimed at interconnecting all research, higher education and scientific institutions of the country, based upon an ultra high-speed backbone/data-network communication highway, thus encouraging sharing of knowledge and collaborative research (C-DAC, 2007). Almost at the same time, a scalable P2P platform for the Knowledge Grid was created in China (Zhuge et al., 2005) [4].

3 The experience with the Moldavian pilot project ACADEMICA

The ACADEMICA network was officially set up on 27 May, 2010, on the basis of the Decision no. 86 made by the Supreme Council for Science and Technological Development of the Academy of Sciences of Moldova. Its main objective was to provide a dedicated computerised infrastructure for accessing and sharing scientific and technological information by organisations within the research, development and innovation (R-D-I) sphere coordinated by the Academy of Sciences of Moldova (ASM).

The ACADEMICA network was meant to be designed and further developed in line with European and international standards of performance to date in providing ICT support for R-D-I activities.

The evolution of the ACADEMICA network in terms of its configuration, facilities provided and range of individual and institutional users is shown in Table 1.

Table 1. The development path of the ACADEMICA network

Year	Num-ber of hubs	Types of services available	Number of organisations connected			Estimated number of users within beneficiary organisa-tions
			Institutions in the R-D-I sphere		Educa-tional institu-tions	
			R-D-I insti-tution s	Coordina-tion and support institu-tions		
2010	18	14	19	4	1	763
2011	21	14	19	6	2	925
2012	21	16	19	6	2	1014
2013	21	16	19	8	2	1030

Source: records of the Information Society Development Institute, Chisinau

Table 2 includes the main services supported by the ACADEMICA network that are relevant to knowledge networking.

Table 2. Main services supported by the ACADEMICA network

Types of services	2010	2011	2012
ICT HelpDesk	yes	yes	yes
Providing institutional e-mail accounts for members of the affiliated R-D-I institutions (number of accounts)	734	822	1012
Access to major international scientific publications databases	yes	yes	yes
Hosting websites of affiliated R-D-I institutions and their members	yes	yes	yes
Online platform for the submission of research project proposals competing for public funding (number of proposals uploaded)	374	232	278

Management of video records on domestic scientific events (number of events covered)	40	8	35
Videoconferencing among affiliated institutions	no	no	yes

It is worth mentioning that the ACADEMICA network plays a pioneering role in bringing together R-D-I institutions and educational ones, a kind of partnership that, despite its crucial importance, is still underdeveloped in Moldova; on this basis, the current weakness consisting of the insufficient research orientation of universities (Dragomirescu and Tighineanu, 2012) [5] could also be addressed.

4 From connectivity to knowledge networking - a necessary leapfrog in Moldova's R-D-I system

Based upon the experience acquired with the ACADEMICA network, the next logical step from the technical point of view would consist of rendering the same range of services available throughout the wider ICT-based network RENAM that includes all major universities of the country.

From the technical point of view, the connectivity ensured by the ACADEMICA network ranks high in terms of performance and reliability. But the capacity of the ACADEMICA is still underused, due to the low degree of sophistication of the applications currently run by the affiliated R-D-I institutions.

Knowledge networking can and should be used as a powerful tool for increasing the synergy of the country's R-D-I system, especially between the universities and the institutes coordinated by the Academy of Sciences of Moldova. Up to now, there was an emphasis on rendering research results available for use in innovation and industry; however, a priority for the near future is rendering these results available to universities, in order to update the scientific standing of course taught, also involving professors and students in research projects.

Research project consortia are operational patterns that not only allow, but also rely upon sustained knowledge sharing among partners. Therefore, another strategic axis in promoting knowledge networking in Moldova refers to boosting the involvement of domestic researchers in international partnerships, especially within the European Research Area.

5 Conclusion

As a pilot project meant to support the collaborative knowledge work within Moldova's R-D-I community, the ACADEMICA network can be considered a successful one. The experience acquired to date confirms the initial assumption that a dedicated network is the right technical solution that also best fits users' needs.

Undertaking the necessary leapfrog from mere connectivity to knowledge networking is conditioned by factors mostly non-technical. Cultivating the values of partnership for science and adopting management stakes higher than just survival are key challenges to the addressed in the near future.

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