

Using the Internet for Collaborative Research in Europe – Experiences from the GARNET Virtual Network

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Management Summary

Collaboration is a key element in European research. In particular, networks of excellence serve to bring together experts from various member states in order to foster research in a particular field of science. An essential part of these networks is taking place virtually by means of internet support, such as e-mail, voice mail and forums. There is no doubt that technology serves as an enabler for EU research and that great achievements have been gained so far.

However, there is still a remarkable gap between collaboration in theory and research collaboration in practice. In fact, people collaborate to a certain extent and yet, little coherence is reached when it comes to pooling information, finding peers, sharing documents, or jointly working on research papers. For that purpose, collaboration platforms have been developed, which differ in quality but still offer a rather homogeneous set of features supporting the above named tasks.

Experience from information system research during the past decades shows that making use of information systems is not just a technical issue. Hence, in the context of the GARNET network, great emphasis has been put on the involvement of people from the outset. This has included interviews, on-site-visits and workshops for identifying the specific demands of the network members, to name but a few. Finalising the development phase, a detailed study on the actual usage of the network has been carried out which is documented in this paper for the purpose of learning how to improve the usage of the VN in the future.

The results of the study provide evidence of the academic evaluation that setting up a virtual network does not follow “routine design”. On the contrary, a considerable number of research

questions to be addressed remain, one of the most predominant being “how to make people change their habits, a development required in order to make the most of the technological potential”. Furthermore, our work indorses the assumption that “technology is not enough”. In particular the social network analysis reveals that little collaboration is taking place in the network. Hence, up to a certain extent, the lack of usage of the collaboration platform can be explained by a lack of collaboration in general.

These results do not doubt the great achievements of GARNET as a NoE. In particular, remarkable coherence had already been gained when forming the consortium of 43 institutions from 17 countries. However, that which we do see is that there is room for further improvement in terms of collaboration. In particular, the study shows that there is a significant increase of collaboration – also of the virtual kind - when real-life events arise in the network, such as the PhD School or the Annual Conference. Also, the intensive use of the VN for administrative tasks in relation to these events supports this observation.

The future strategy derived from this study will be to focus our work on these particular events that serve as “collaboration points” for network members. The objective will be to further find out how to support these particular events best through features of the VN. We assume that a convincing use of the collaborative features during these events will raise great interest in using the VN outside these events. An evaluation of this strategy is currently being conducted, focusing on the GARNET PhD School taking place in Brussels this year. Here the VN is used to bring together young research fellows and to help them exchange their academic knowledge both prior and after the actual PhD seminar. A virtual alumni club may serve as an example.

In brief, setting up a virtual network for an international research consortium, such as GARNET, provides great opportunities. That said, it still comes with a huge research challenge. In future work, a stronger dialogue about these challenges should take place among NoEs. In this, the GARNET experience might serve as a role model. It is in our interest to share our experiences with other networks and to jointly learn about new models for collaborative research in Europe.

ABSTRACT

University research is increasingly organised in inter-organisational networks. As part of its 6th research framework, the European Commission (EC) funded a total of 130 so-called networks of excellence (NoEs), a special kind of instrument with the purpose of strengthening and developing the European research community and scientific and technological excellence by integrating existing and emerging research activities and by exchanging knowledge. In such NoEs electronic cooperation platforms are typically implemented to support collaboration between the individuals from the various research institutions. In this paper we investigate the adoption of a cooperation platform in one NoE case - the GARNET network. We find evidence that the platform is used for administrative purposes and to support the organisation of events. However, a web log analysis reveals a lack of adoption for its key purpose – the support of collaborative research and knowledge exchange. A social network analysis further uncovers that the GARNET network is fragmented on the social level, which points to a misfit between network structure and the positioning of the cooperation platform. Our findings lead us to suggest immediate next steps for this NoE and also point to general implications for network designers and future research in this area.

Keywords: Research networks, Networks of Excellence (NoE), Cooperation systems, Adoption, Social Network Analysis (SNA).

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1 Introduction

In the past decade we have observed a profound transformation of the organization and practices of work: most obvious is the increase of distributed and networked forms of work within and across organizations (Ciborra and Suetens, 1996; Malhotra, Majchrzak, Carman and Lott, 2001; Orlikowski, 2002). An increasing number of companies as well as universities and research institutions participate in organisational networks of various kinds (Ebers, 1999). This increase in inter-firm cooperation and network building subsequently results in an increasing number of geographically distributed work teams (Bultje and van Wijk, 1998). However, virtual collaboration is often precarious with well-known organisational problems on the group level (Breu and Hemingway, 2004; Introna, 2001). The creation of the necessary social structures in distributed groups is often especially problematic (vom Brocke et al., 2008). Here, both an effective management of virtual work and the application of suitable cooperation systems are important.

In this paper we study the network structures and the application of a cooperation platform in a specific type of organisational network. As part of its 6th research framework the European Commission (EC) funded a total of 130 so-called networks of excellence (NoEs). The purpose of NoEs is to strengthen and develop a research community and scientific and technological excellence through the integration of existing and emerging research activities and the exchange of knowledge (European Commission, 2003). For our study we observed the GARNET NoE (2005-2010), a network of researchers working on questions of global and regional governance. As software designers, two of the authors of this paper were responsible for the development of a collaboration platform that was deployed in the GARNET network. In this paper we report on the subsequent evaluation of the platform: we investigate the use and (lack of) adoption of the collaboration platform that was designed specifically for the NoE and implemented in order to facilitate and support collaboration between network members.

After introducing the study and our data collection approach in the next section, we present results of a log file analysis to show how the platform is currently being used and that the functionality of the platform is, to large extent, not utilised by the network members (section

3). We then draw on social network analysis (SNA) in order to investigate reasons for this lack of adoption within the NoE (section 4). We find evidence for a misfit between the existing network structure and the resulting requirements for supporting inter-personal processes in the network on the one hand and the current functionality and positioning of the platform on the other. We discuss the results of our analysis and reason about tool-support for this particular type of organisational network (section 5). We conclude with implications for network managers and future research (section 6).

2 Study Overview

2.1 Motivation

Within the 6th framework programme, the EC significantly invested in building networks between research institutions (Kock and Antunes, 2007). One particular action was the facilitation of 130 networks of excellence (NoE). NoEs are intended to increase excellence in European scientific work by means of the integration of existing and emerging research activities and by the exchange of ideas. The NoE as a specific type of network aims at integrating the research capacities of the network partners and, at the same time, at advancing knowledge creation in the particular NoE scientific domain (European Commission, 2003). While the EC had high hopes for the NoEs as a vehicle for knowledge sharing and new knowledge creation on a European level, internal EC research shows that only a few NoEs are currently considered successful. A major issue is the apparent lack of actual collaboration among network partners. Typically, collaboration is being supported by the application of e-collaboration tools, i.e. Internet-based collaboration platforms. However, in most cases the usage of these platforms falls far behind expectations. Little knowledge exists with regard to the reasons for this lack of adoption or, more generally, potential factors influencing the success of e-collaboration tools in the context of NoEs.

Unlike in other organisational networks, where organisations team up with a specific aim, such as the development of a joint product or the streamlining of joint processes, in NoEs the participating organisations come together mainly because of their similar interests in a research domain. The NoE acts as a vehicle or potentiality for facilitating new activities, but the network formation itself is not motivated by the immediate aim to develop a joint product

or artefact of any kind. As we will discuss later, this has implications for the type of e-collaboration tools that might be helpful in this context. In order to identify typical usage problems and reasons for the lack of adoption of e-collaboration tools in NoEs we investigate as part of a case study the GARNET network, which is a typical NoE both in terms of organisational characteristics as well as its regional distribution.

2.2 The NoE GARNET and its electronic platform

The network of excellence GARNET consists of 42 research institutes from 17 European countries. It is organised around nine organisational work packages, in the first of which the authors were responsible for the development and introduction of the collaboration platform. Generally, the NoE aims at increasing the communication between its members by financing visits, conferences, collaborative publications and the building up of a common database on the topic of globalisation and regionalisation. In every work package and topic group multiple institutions are working together under the lead of one or more coordinating partners.

The collaboration platform used within GARNET is based on an open source platform, which was adapted for the specific needs of the GARNET NoE. The core element of the platform is a knowledge management system, in which information resources are organized in tree-like structures. Every (knowledge or other) object (information resource, group, user) can be characterised using a database of keywords. Furthermore, the platform facilitates text discussions, which can also be attached to specific objects (e. g. documents). Chat rooms, newsgroups and wikis can be used for communication purposes. Extended user profiles and search functionality allows the built-up of an expert database and several tools are available for organising the process of information generation, such as a messaging and a calendar system.

2.3 Research Design and Data Collection

Our study is divided into two parts. The first part focuses on the usage of the GARNET collaboration platform. In order to investigate platform use patterns and the adoption of particular functionality we carried out an analysis of the platform log file data. The main finding from this analysis – while the platform was generally used, usage was mainly

constricted to network organisation, rather than actual scientific discussions – led us to investigate the reasons for the lack of actual collaboration with a social network analysis (SNA) of the GARNET structures.

2.3.1 Log File Analysis

We carried out a log file analysis to investigate platform usage by GARNET members and to get an idea of the adoption of single features. The data for the log file analysis was collected with web usage mining techniques. On the platform every user action, such as document requests, is logged. Data is stored regarding the time of a request, the feature accessed and the knowledge resource involved in the user action. For our analysis we relied on data collected between November 2005 and July 2007. The data was extracted from a central database using SQL statements and imported into spread sheet software, where the data was visualised.

As a first step in our analysis we concentrated on the structure of the document tree, the nature of files that were up- and downloaded and the areas that were used most frequently. Based on this information we were able to draw conclusions regarding the purpose, for which the documents have been accessed. In a second step, we looked at the usage of collaboration features and tools like chat rooms, wikis and newsgroup resources. Here, we focused on a comparison of the usage intensity of documents and cooperation tools. Results of the log file analysis are presented in section 3.

2.3.2 Social Network Analysis

Motivated by the results of the log file analysis we carried out a social network analysis. Data was collected with an online survey. In the survey every registered NoE member was asked to describe their relations with all other members. For doing so, four different options were provided with which to describe the existing relationships: 1) “I do not know this person”, 2) “I know this person”, 3) “I am in regular contact with this person”, 4) “I cooperatively work with this person”. In addition to describing relations, we also asked for attributes such as gender, age, role in the network (project manager, administrator, senior researcher, PhD student, post-doc) as well as affiliation. Furthermore, all institutions were considered in the

context of the countries they are located in, in order to investigate the regional distribution of the social network.

Around 300 participants were contacted; this includes all registered NoE members, which are the core group of this study, as well as other researchers, who have come in contact with the core network on conferences or workshops organised by GARNET members. The questionnaire return rate was 27% in total, which is not very good at first glance. However, the figure has to be divided in separate return rates for NoE members, which was 71% (69 of 97), and non-NoE members, which was 7% (14 of 203). Hence, we were able to get a good picture of the core group from this data. The poor return rate for non-members points to a rather loose integration of these individuals with the GARNET network. For carrying out the SNA we included the data of all 83 individuals who answered the survey. The restriction to those members who answered the survey is necessary to ensure the validity of SNA measures such as centrality measures (see section 4).

3 Characteristics of Platform Usage

In order to investigate the adoption and use of the collaboration platform as a first step a web usage analysis of the platform was performed using log file data. The first objective of this part of the study was to determine whether people actually register for the platform. Second, we looked into the usage intensity of the specific functions on the collaboration platform. Finally, we aimed at identifying those tasks that were mainly executed on the platform. Due to space restrictions we only briefly present the main findings of the analysis; a detailed description was published elsewhere (vom Brocke, Große-Böckmann, 2007).

3.1 General registration with the platform

The most basic step in determining the diffusion/adoption of the platform by network members is to look at the proportion of people registering with the platform and thus able to use its features. Hence, we first analysed whether the majority of NoE members registered with the platform. The initial goal when setting up the platform was to reach 80% of GARNET members within the first two years. Our analysis of registration data and user names shows that until July 2007 more than 420 people registered with the platform. This number includes external individuals that are registered for one of the GARNET research projects, conferences or with the GARNET PhD school. Since a fixed list of GARNET members is not available (in order to maintain flexibility of membership), we looked into the research projects in order to see whether a large enough number of individuals had registered with each single project. In every research project between six and 41 individuals were registered. Since the typical project size in GARNET is five to 15 members, it can be concluded that in every project the expected number of individuals or more were registered. Please note that the large number of members in some projects is caused by opening these projects to a broader scientific community. In summary, it can be said that a significant number of all GARNET members was reached by the platform; the platform is known within the network and used within all workgroups and research projects.

3.2 Types of information resources most frequently accessed

This part of the analysis was concerned with the content tree, which contains the shared information resources being stored on the platform. This resource tree is divided into different areas by purpose of the resources and the sub project they are used in. Because of this, the distribution of objects (documents, wikis, newsgroup content or chat objects) across the resource tree gives good insight as to the purpose the collaboration platform was used for.

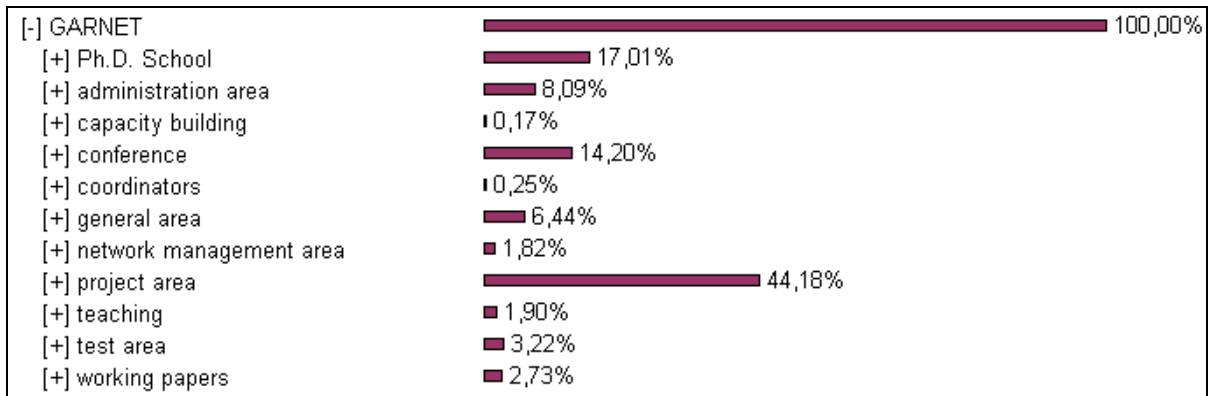


Figure 1: Document distribution across the resource tree

Figure 1 shows the relative distribution of documents in the main areas of the resource tree. Most documents were created in a project context (44%), in the PhD school (17%), or the conference area (14%). Another 8% were created in the administration area. Documents created in the PhD school and conference area are predominantly related to the reviewing processes of paper submissions (86%). For the project area a brief content analysis was carried out: 42% of all documents were concerned with the preparation and wrap-up of conferences and workshops, 23% were used for management reports, another 12% for other organisational tasks, such as personal management or budget management, and a mere 23% of documents were related to actual collaborative research: the preparation of books, papers and other publications.

Consequently, the web usage analysis reveals that only 13% of all documents on the platform are related to the actual scientific work. In contrast, 57% of all documents on the platform are related to conference or workshop preparation and wrap-up, a further 15% are used in administrative tasks concerning the whole network or specific projects and the remaining 15%

have been created in various other contexts. Hence, since the main idea of the collaboration platform was to support the collaborative research and scientific work, this emphasis on project coordination and administrative tasks points to a lack of adoption of the platform with regard to the daily work practices of researchers and scientists. This is corroborated by an examination of the level of usage over time: although the platform is used continuously, the usage level increases significantly right before conferences and PhD workshops, when formal reports and administrative documents had to be prepared and uploaded on the platform.

3.3 Usage of collaboration features

In the final step of the analysis the usage of collaboration features was examined (wiki, newsgroup and chat). Our analysis shows that only 45 wiki texts with an average of 2.2 versions each and 53 newsgroups with an average of 2.4 entries have been created. The collaboration features were mainly used for carrying out scientific cooperative work, but the absolute number and especially the intensity of the initiated discussions falls far behind expectations.

In summary we conclude that by examining the platform usage patterns we find little evidence with regards to the achievement of the main NoE goal with respect to the workpackage at hand – the support and intensification of web-assisted collaborative work within the GARNET network. We see that most of the uploaded documents are not related to scientific work, but to organisational tasks. Additionally, our data reveals that the communications tools on the platform are seldom used. Increasing the level of direct collaboration hence could not be achieved with the introduction of the platform. However, the platform in general has been accepted and used for conference and workshop organisation as well as administrative tasks, and as a document base for project reports etc. Usage thus is mainly coordinative and not collaborative in nature.

Two possible reasons for these observations should be considered: either a lack of acceptance of large parts of the platform, e.g. due to usability problems, or a lack of collaboration in general that is only mirrored in platform usage patterns. General acceptance of the platform for coordination tasks in stark contrast to the lack of evidence found for collaborative scientific work leads us to the question whether the social network within GARNET shows

structures typical of inter-unit collaboration. To explore the social structures the results of the social network analysis are presented in the next section.

4 Social Network Structure

4.1 Overview

The objects of interest in a social network analysis (SNA) are the relationships (and their type/nature) between members of an organisational unit and the structures they form (e.g. with regard to the particular nature of the resulting networks). A social network can be defined as a number of individuals (the nodes) and the relationships between them (the links) (Newman, 2003). The SNA as an analytical tool aims at describing and explaining the behaviour of individuals by scrutinising the existing structures of their social networks, as well as the creation and development thereof (Jansen, 2006). Again, we are only able to report on the most important results of our SNA, for a full account of the study, please refer to Riemer and Klein (2008).

The analysis of the social structures of the GARNET NoE reveals a high degree of centrality in the network, which means that only a few individuals are able to work efficiently, as they have the necessary social influence and access to resources. The social influence can be measured using the so called rank prestige (Friedkin, 1991). Rank prestige is defined by the sum of all connections that lead to an individual in the network, either directly or indirectly; every connection is then weighted by the influence of the individual where the connection originates from (Trappmann, Hummell and Sodeur, 2005). Further analyses led us to single out the following three findings, which are suitable to explain the reasons for the lack of adoption of the collaboration platform:

- **Initiation of new cooperation:** Only a few individuals in the network are well enough connected to initiate new cooperations.
- **Existing scientific cooperation:** Only one third of the scientists in GARNET are connected in a way that makes them members of a scientific cooperation of three or more individuals.

- **Junior faculty cooperation:** Young scientists (PhD students, post docs) are generally only poorly connected.

In the following sections we elaborate on these observations.

4.2 Initiation of new cooperation

Initiation of new cooperations can generally be done in two ways: Either one or more of the future cooperation partners initiate the contact (internal initiation) or an outside person triggers the cooperation without further participation (external initiation).

For self-initiating new cooperations, a high direct social influence is necessary, as the future cooperation partners need to know each other. At least this needs to be true for one of them. Direct social influence can be best measured by the outdegree of degree centrality (Breiger, 2003; Friedkin, 1991; Jansen, 2006). Actors score high on centrality when they hold a large number of outgoing connections (Knoke and Burt, 1983). The individuals 5, 89 and 85 have the highest direct social influence with an outdegree of more than 60 connections. Also the individuals 4, 20, 65 and 6 with an outdegree of more than 30 connections still have an acceptable potential for the internal initiation of new cooperations. But 71% of the NoE members are connected to less than a quarter of the other individuals. Overall the potential for internal initiation is low for these individuals. They will most likely have to depend on external initiation by other NoE members. As only seven individuals have a significant potential for internal initiation of cooperation, the network mainly depends on a handful of mediators to externally initiate any new collaborative endeavours.

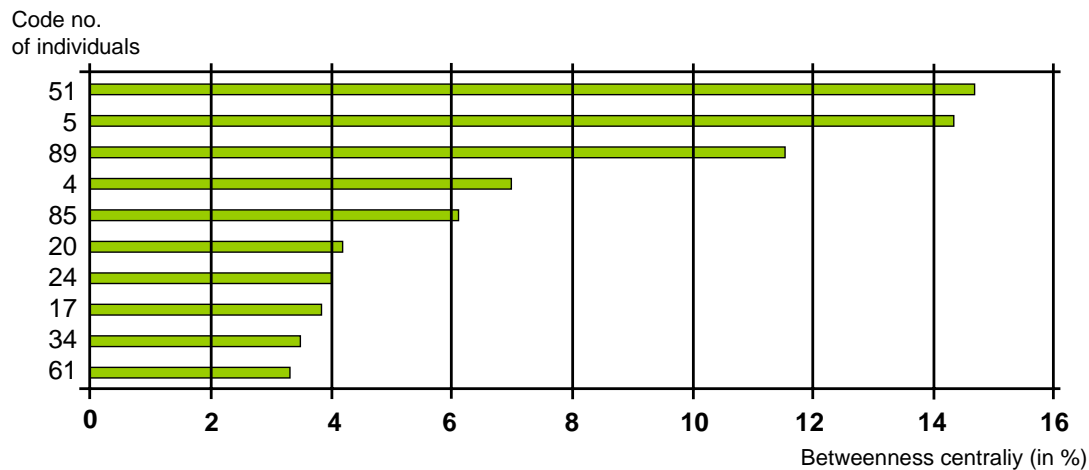


Figure 2: *Betweenness centrality*

The potential for acting as a mediator to initiate new cooperations can best be determined by the betweenness centrality (Friedkin, 1991). The ten individuals with the highest betweenness centrality and hence the potential to act as a mediator are listed in figure 2. Individuals 51, 5 and 89 are included in more than ten percent of all connecting paths in the network and thereby have a high mediating potential. Moreover, 78 of 83 individuals have nearly no potential for acting as a mediator. Based on the analysis of centrality measures we conclude that the structure of the GARNET social network neither holds significant potential for internal nor for external initiation of new cooperations. Hence, this reduces significantly the likeliness for the formation of new cooperations from the social network.

4.3 Existing scientific cooperation

Not surprisingly, the low potential for creating new cooperations is reflected in the number of existing ones. In order to analyse existing cooperations only connections can be meaningful that give an insight into the work relations of the GARNET members. Thus, only type 4 connections were considered (“I cooperatively work with this person”).

In total, eleven cliques were identified in the social network; two cliques consist of four and the rest of three members. The most influential individuals in terms of centrality (see above) are also best represented in the cliques. Individual 5 is part of four, individuals 89 and 85 are part of three cliques. All in all only 20 individuals belong to at least one of the cliques. This indicates that more than two thirds (42) of the scientists (senior researchers, PhD students and

post docs) in the network are not represented in any of the cliques. 38 scientists are represented in 16 so called 2-clans (which consist of three or more individuals). This still excludes more than one third of the scientists from cooperative work. As scientific cooperation is based on intensive joint work it is reasonable to believe that 2-clans would become cliques over time. Consequently, we have to conclude that two thirds of all GARNET scientists are not included in any cooperative groups with three or more of the other GARNET members. All existing cooperations are pictured in figure 3. The individuals are coloured according to their affiliations.

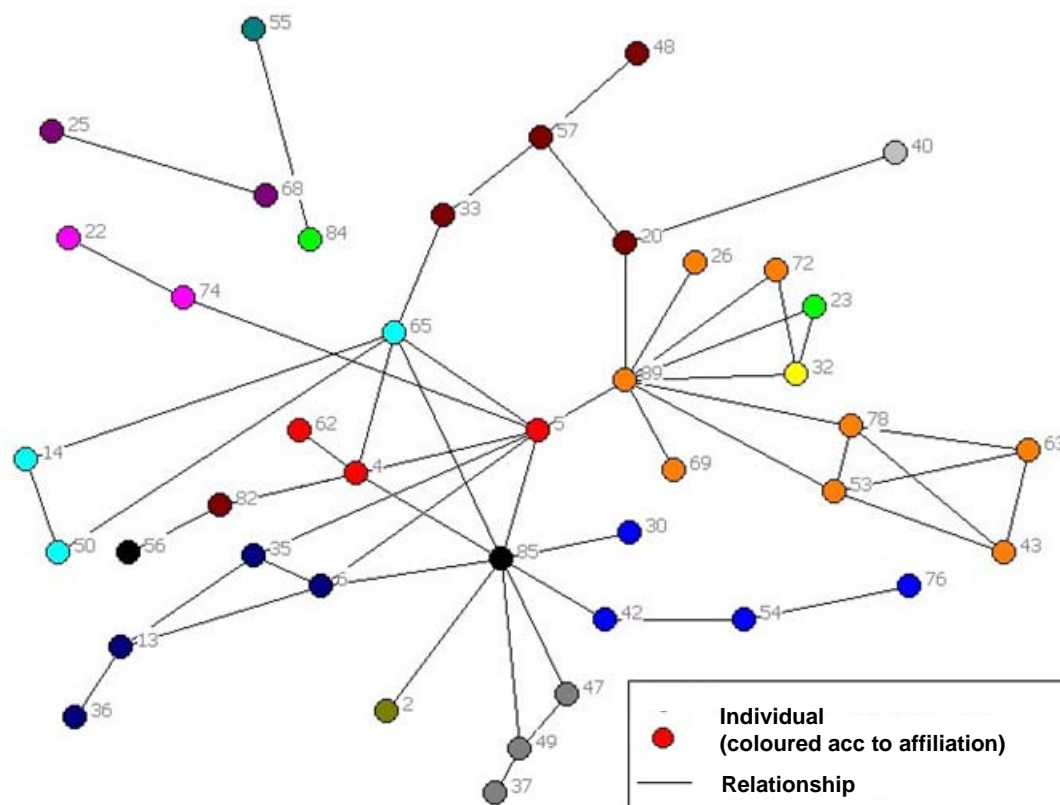


Figure 3: Existing groups of cooperation

Figure 3 reveals a strong local character of collaboration: in four of the eleven cliques all members [(6, 13, 35) (14, 50, 65) (53, 78, 89) (43, 53, 63, 78)], in another five at least two members are working at the same institution [(4, 5, 82) (32, 72, 89) (4, 5, 65, 85) (47, 49, 85) (5, 6, 35)]. Only two cliques feature members who are all working in different institutions [(23, 32, 89) (5, 6, 85)]. All in all, nine of eleven cliques have to be characterised as geographically close cooperations. Only two cliques (<20%) qualify as geographically distributed cooperations.

4.4 The network of young scientists

The network of junior faculty members or young scientists, as pictured in figure 4, includes the PhD students as well as the post docs. The betweenness centrality in the network of young scientists (0.38) is noticeably higher compared to the overall network (0.13). This indicates that the most central individual (4) is much more influential than in the most central one in the overall network (Jansen, 2006). This is also reflected in the social influence of individual 4 (0.555), who has more than double the rank prestige than the second influential individual, no. 76 (0.26). Consequently the network of young scientists is quite centralised.

Centralised networks in general are very effective when it comes to goal-oriented problem solving (Jansen, 2006), due to the central position of the individual with the highest social influence who is in a broker position in an otherwise only sparsely connected network (Burt, 1992). However, a scientific network such as GARNET aims to bring together as many individuals as possible for discussion and knowledge sharing. In order to form an efficient scientific network therefore social capital in the form of densely connected social networks is necessary (Coleman, 1990). This is not the case in this network however; the closeness centrality for the network of young scientists (17.002) is just a third of the closeness centrality of the network of senior researchers (53.123). In the network of young scientists it is thereby hard to get in contact with other individuals. This is also reflected in the generally low number of connections: individuals in the network have a mean of 2.5 connections to other individuals (7.6 connections in the network of senior researchers). The absence of social capital in the form of a high degree of connectivity is to be seen as a major problem for the facilitation of joint work and collaboration in the GARNET network, since most of the actual work tends to be carried out at the junior faculty level. Hence, the lack of suitable social structures between young scientists is a good indicator for the absence of notable collaborative activity in the entire social network within the NoE.

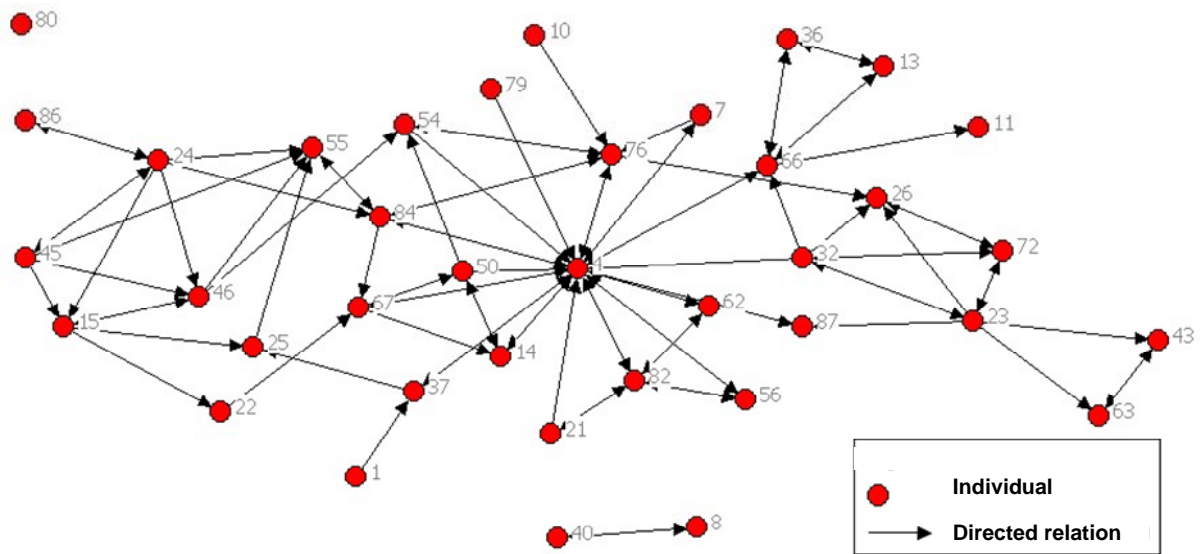


Figure 4: Network of the young scientists

5 Discussion

5.1 Usage of the platform to support organisational tasks

The main goal for introducing the cooperation platform in GARNET was supporting geographically distributed cooperative work in groups of three or more individuals. However, as our results reveal, the platform was mainly used for organisational tasks instead of cooperative work. Tools for cooperative work (chat rooms, newsgroups and wikis) have hardly been used and only 13% of all documents uploaded to the platform are related to the actual scientific work. Thus, we can conclude that nearly no cooperative work is taking place on the platform and that the original goal has not been fulfilled. Nevertheless, the platform has been and is still being used by GARNET members, albeit with a different focus. Usage was mainly concentrated on coordinative or administrative tasks (72%). Particularly intensive use of the platform could be observed in the periods before upcoming events (conferences, PhD workshops); the platform was used to organise the event and to fulfil the necessary reporting tasks, even without the existence of specific features (e.g. for planning) to support these tasks. Hence, there seems to be a high demand within GARNET to better support conference organisation and reporting tasks.

Support of organisational tasks was not the focus when introducing the collaboration platform. Usage for these tasks clearly exceeds expectations. Despite providing some

functionality that can be adapted for event organisation (calendars, support for paper submission, project working areas...), the use for such purpose was neither pushed nor supported explicitly by way of planning features or document templates provided. We conclude that one possible next step is to reposition the platform to better support these organisational and administrative tasks through integration of project management functionality.

5.2 Structure of the network and facilitation of new cooperation

Despite the administrative use of the platform, overall usage still did not reach the expected level. The social network analysis of existing cooperations in the network, especially considering the geographical factor, shows that almost no distributed cooperation in the GARNET network proliferated to date. Most individuals are not sufficiently connected; the current network structure is highly fragmented. That gives advantage to certain individuals with high social influence as they can take broker positions (Burt, 1992). However, information exchange within the network as well as the creation of new cooperation suffers from this fragmented structure. In the GARNET network this is especially true for young scientists. Most individuals do not have the influence to initiate new cooperation on their own and, in addition, there are only very few individuals that can act as brokers for facilitating cooperation.

Without creating new connections, the network will stay fragmented and not build up the necessary social capital, i.e. the necessary connections, trust and also joint understanding among network members, for enabling effective inter-personal cooperation across institutions (Riemer, 2005). This is particularly problematic for NoEs, since they are created specifically to support information exchange and the facilitation of new cooperation among European scientists. Hence, it is imminent to increase the degree of connectivity in the sense of dense network structures (Coleman, 1990), because densely woven networks are known as good environments for information exchange as well as for creating awareness of other network members as potential cooperation partners (Nahapiet and Ghoshal, 1998). Consequently, new opportunities for making contact, establishing relationships and thus create social capital in the NoE are needed. Following this line of reasoning there seems to be another route for

repositioning the GARNET platform as a vehicle for relationship facilitation and network creation.

5.3 Cooperation platforms for fragmented networks

Our results point to a need for relationship formation within the GARNET network in particular and in NoEs in general. NoEs are artificially generated setups aiming at facilitating cooperation and knowledge exchange, but without a lot of explicitly designed mechanisms for doing so (apart from vehicles such as the joint meetings, workshops or working paper series). Technical support for relationship facilitation seems one promising approach for doing so, albeit embedded in other organisational measures that are not in the focus of our study (e.g. workshops, team exchanges etc.).

We argue that the collaboration platform might be redesigned to support the initiation of new contacts in fragmented networks. Since many GARNET individuals do not know each other yet, the platform might support getting to know each other instead of supporting existing cooperation. Tools that hold the potential to improve the structure of a social network are tools that collect, structure and provide information about members and with that increase the awareness of other individuals and their skills in the network (Huysman and Wulf, 2006). Here, typical functionality of social software seems promising (Hippner and Wilde, 2005; Parameswaran and Whinston, 2007).

By integrating functionality typically known from social software portals such as MyFaces, Xing, or Facebook the platform might be able to support the creation of new connections between network members (Hippner and Wilde, 2005). In social network platforms, various features aim at gathering information about platform members or facilitating contact between them. Users are typically able to describe themselves using profiles that hold contact details, interests, professional background etc. and to maintain a list of contacts in (buddy) lists. By applying functionality like “contacts of my contacts” members can playfully search for other people who are only indirectly connected with themselves but might have related interests (Parameswaran and Whinston, 2007). With such features, the broker potential of the most central individuals can be better utilised; the initiation of new contacts, in particular for junior faculty, can be facilitated and with that the proliferation of a denser network structure.

Interestingly, the cooperation platform used in GARNET already provides some rudimentary profile description as well as a feature to search for experts, however, without providing the same functionality for supporting the facilitation of new contacts or for searching the network by related contacts. Here, the interactive and participative nature of social software features might be the key to enable network formation. In a next step these features could be integrated in the platform on a prototype basis and be tested with GARNET members in order to learn about their suitability in a specific network context such as the NoE.

6 Conclusions

Our results reveal certain limitations as to the use of the virtual network in GARNET until July 2007. Taking into consideration that most NoEs are very similar in their structure and the nature of formation it is likely that these findings are transferable to other NoEs. Consequently, at least for GARNET, we propose a repositioning of the platform in use. More specifically, we propose a two step approach: first, the obviously existing demand for supporting organisational and administrative tasks should be met, and then features (e.g. derived from social software) should be implemented to support members getting in contact and to create new cooperations. A successful realisation of step one can hereby act as a promoter for success in step two; as an increased usage of the platform will make users not only more familiar with it, but will also simply increase the time during which they use it and are amenable for using the opportunities provided for getting aware of other members.

Our findings show that our cooperation platform was not adopted by the GARNET members in the way we expected it would be. One reason was found in the structure of the network. But though the proposed repositioning of the platform could contribute to improving the network structures, we still need to find out the underlying reasons for these social network structures, especially since – typical for an NoE – in GARNET opportunities in the form of conferences and mobility funding existed to create new contacts among members and with that to create a denser network structure. It needs to be investigated whether missing opportunities for contact are the only problem leading to the lack of cooperative work in the NoE. Therefore, a detailed analysis of the organisational structures of GARNET and the motives for members to join the network are needed. After all, the creation of new cooperations is only possible in an environment promoting a cooperative culture (Figallo and Rhine, 2002).

By implementing our two-step approach we will also have to analyse to which extent the proposed actions are able to improve the usage of the cooperation platform as well as the formation of new contacts and cooperation between the network members. Apart from further analysing the GARNET project, studies on other NoEs as well as networks with a similar structural setting need to reveal whether our findings represent a general phenomenon for this particular type of network or if they are specific for the GARNET case. From our experience and a brief overview of other NoEs we believe that our findings should be of interest for managers and platform designers in other NoEs. We also hope to make a contribution to better understanding the application of collaboration platforms in distributed research contexts.

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