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## **Collab-Net as a DSS for the Identification of Potential Partners and the Creation of Research Consortia**

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### **ABSTRACT**

Few demanding research issues can be addressed by a single researcher. Many advanced topics require huge sets of competences and transdisciplinary approach. Finding the right partners for a research project has always been a challenging task. Nowadays, competition for excellence and scarcity of funding make the search for adequate partners a critical element from the very beginning of a project definition, as the project consortium has to show the balanced qualification and experience needed to run the project in a fit-for-purpose and cooperative way among all partners.

The present paper presents the on-going development of a decision support system to support project leaders in identifying potential partners within the registered EWG-DSS members. Built on top of the long-term Collab-Net research project, the proposition is presented here under the form of three scenarios that are typical examples of how the new features are used and involved in use cases.

**Keywords:** DSS, EWG-DSS, Research Projects, Consortium, Partners-Search, Collab-Net

## 1 INTRODUCTION

Many research questions involve intrinsic difficulties that very often require multidisciplinary or transdisciplinary approaches, which can only be carried out by diversified and complementary groups of researchers. Many research funding organisms are pushing project leaders into building international consortia, involving different partners from different sectors and different countries in order to bring the complementary capacity needed for a cross-sector multidisciplinary project. Finding the right partners for a research project has always been a challenging task. Nowadays, competition for excellence, scarcity of funding and the internationalization of research networks, make the search for adequate partners not only more difficult, but also more critical from the very beginning of project definition.

One way to help researchers in this context is academic social networking sites (ASNSs), which are social media platforms designed to support the dissemination of research and social interactions among researchers [1].

An assessment of motivational factors of use; impact; quality of information and ease of finding peers on these platforms has been the subject of several recent studies [1-5] discussing the importance and complexity of the theme. An example of a successful network used by project coordinators for partners-search in ICT when applying for EU research projects is the "Ideal-IST" network.<sup>1</sup>

Concerned by the described challenge and aiming to support its members in the appropriate partner-search for research and development tasks related to topics related to Decision-Making, the EURO Working Group on Decision Support Systems (EWG-DSS) started to develop means to facilitate the identification of the needed research/development partners among its associates and collaborators.

On the one hand, the proposed DSS is willing to offer support to project leaders on the search for the most appropriate partners for his project consortium. On the other hand, the EWG-DSS aims to offer visibility of its associates current areas of research to any of the members. The long-term Collab-Net research project that serves as basis for the DSS proposed here, has been initiated with the intention to analyze relationships among members and encourage new research and academic cooperation [6-9]. Consequently, it is a convenient background platform to support this new project and integrate pieces of answer to the following research question: how to support the EWG-DSS members search for research partners while offering each member good visibility and strengthening the links in the group.

In the current paper we present the definition of new features, currently under development, introduced in the Collab-Net Platform in order to offer support to the identification of potential project partners. The structure of the paper is as follows: Section 2 briefly presents the existing Collab-Net Platform; Section 3 defines the extensions supporting partner selection. Limitations and Future work are discussed in Section 4; and Section 5 draws some conclusions.

## 2 BACKGROUND: The COLLAB-NET PLATFORM

The Collab-Net project was initiated in 2008 by the EWG-DSS coordination board members [6]. The main aims of the Collab-Net project were "to evaluate the group's collaboration dynamics since its foundation (in 1989), in order to encourage new research and promote further collaboration among the academic members of the group in common projects and joint-publications". A complete history of the project can be found in technical report [10] and books chapter [11,12].

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<sup>1</sup> <https://www.ideal-ist.eu/>

The current version of the Collab-Net project has been deployed in a web platform, so that it can be easily and effectively accessed by all EWG-DSS associates. It involves the respective bibliography of the EWG-DSS members, automatically collected from their Google Scholar individually maintained pages. The current platform aims to enable the affiliated members to investigate the publication relationship of the collaborative interaction among papers' authors within a publication database.

### 3 NEW FEATURES DEFINITION FOR THE COLLAB-NET AS DSS

#### 3.1 Methodology.

In order to define the features to be supported by the system, our initial step was to interview the senior board members (the three founding members) of the group and collect scenarios as user stories. The synthesis of this task results in three scenarios that were then formalized as use cases and are presented in subsection 2.2 of this paper. Then, a prototype interface was designed for the DSS, which is presented in subsection 2.3.

It is worth noticing that we are interested in supporting projects that need Decision Support Systems and related tools in their solutions. The writing of scenario enhanced the distinction between two concepts relative to the project in question: *application domain* and *DSS scientific domain* (*scientific domain* in short)

#### 3.2 Scenarios: Consortium Building for a Project including a DSS in Oncology

*Context: A member of the group is targeting to compose a consortium for project attending a healthcare call for proposals of the European Commission current research program. She is willing to propose a project on the development of a DSS platform to support oncology practitioner in their diagnoses. Preparing this proposal, she is searching for partners interested in healthcare system applications and with experience in various DSS domains, in particular MCDA. She needs at least four partners from three different countries in Europe with consolidated competence on the required areas.*

##### Scenario 1.

User	System
1. The user connects to the system	
	2. The system presents the menus
3. User selects the menu "partners identifications"	
	4. The system presents: - the lists of members (with their nationalities, scientific domains and application domains), - the list of application domains and - the list of scientific domains.
5. User selects the application domain "healthcare"	
	6. The system presents: - the lists of members (with...) restricted to the ones associated to the application domain "healthcare", - the selected application domain "healthcare" - and the list of scientific domains
7. User observes the scientific domains of the selected members.	
8. User selects the scientific domain "MCDA"	
	9. The system presents: - the list of members (with...) restricted to the ones associated to the application domain "healthcare" and scientific domain "MCDA".

	<ul style="list-style-type: none"> <li>- the selected application domain "healthcare"</li> <li>- the selected scientific domain "MCDA"</li> </ul>
10. User asks for the network analysis involving the identified members and other researchers	
	11. The system presents: <ul style="list-style-type: none"> <li>- the graph of the members involved in application domain "healthcare" and scientific domain "MCDA".</li> <li>- the selected application domain "healthcare"</li> <li>- the selected scientific domain "MCDA"</li> </ul>
12. User selects a member and requests for his Google Scholar page	
	13. The system provides access to the Google Scholar account of the selected member.

### **Scenario 2.**

User	System
Steps 1 - 4 as in Scenario 1.	
5. User selects the scientific domain "MCDA"	
	6. The system presents: <ul style="list-style-type: none"> <li>- the list of members (with...) restricted to the ones associated to the scientific domain "MCDA".</li> <li>- the list of application domains</li> <li>- the selected scientific domain "MCDA"</li> </ul>
7. User asks for the networks análisis involving the selected members and other researchers	
	8. The system presents: <ul style="list-style-type: none"> <li>-the graph of the members having "MCDA" in their scientific domains.</li> <li>- the list of application domains</li> <li>- the selected scientific domain "MCDA"</li> </ul>
9. User selects a member and asks the system for his registered detailed data	
	10. The systems provides for the specific member: <ul style="list-style-type: none"> <li>- his affiliation</li> <li>- his email address</li> <li>- and hyperlink to his Google Scholar profile</li> </ul>

### **Scenario 3.**

User	System
Steps 1 - 6 as in Scenario 1.	
7. User asks for the networkanalysis involving the selected members and other researchers	
	8. The system presents: <ul style="list-style-type: none"> <li>- the graph of the members involved in application domain "healthcare".</li> <li>- the selected application domain "healthcare"</li> <li>- the list of scientific domains</li> </ul>

### 3.3 System Interface

To support the DSS, a prototype interface has been conceived, as shown in Figure 1, depicting the step 4 of the above presented scenarios. At the stage 4, the system presents (i) the lists of members (with their nationality, scientific domains and application domains), (ii) the list of application domains and (iii) the list of scientific domains. Note that the button "Show List" is currently activated and the "Show Network" is enabled.

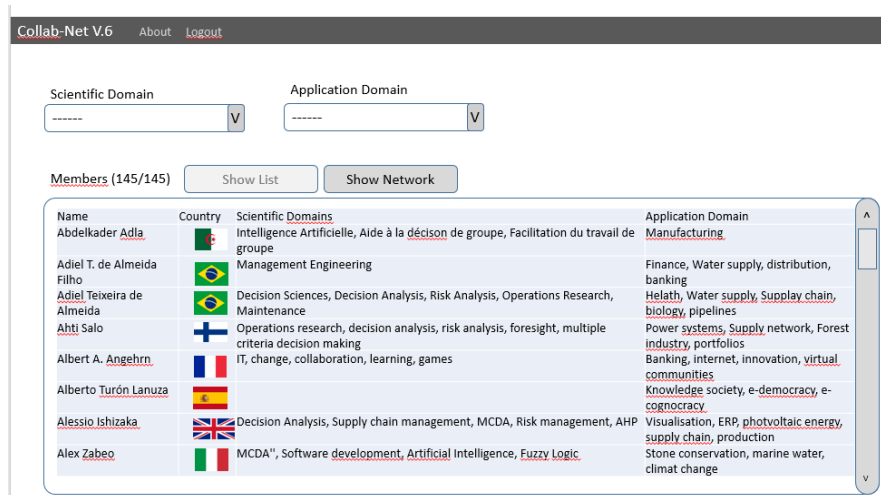


Figure 1. Prototype Collab-Net DSS Interface - Scenario 1, Step 4

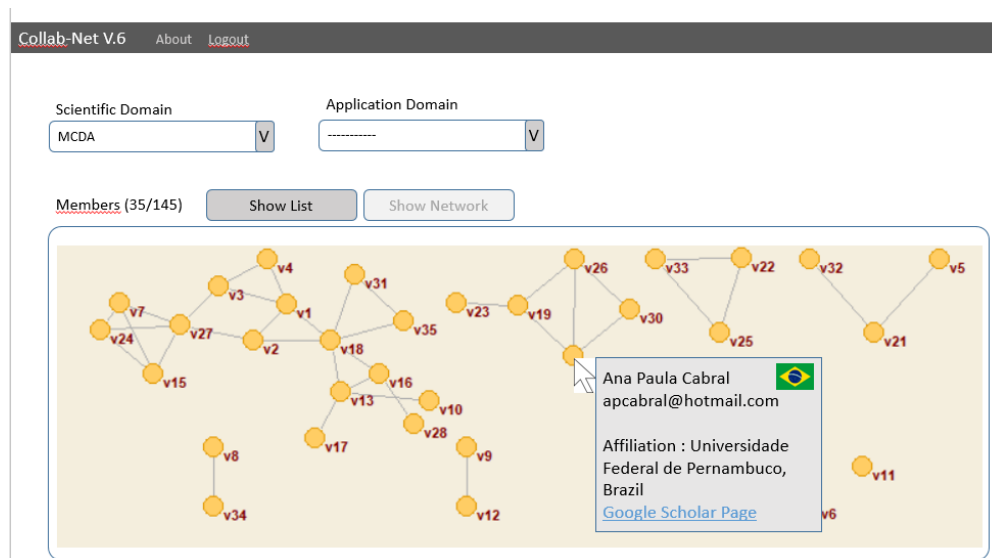


Figure 2. Prototype Collab-Net DSS Interface featuring Scenario 2, Step 10

Figure 2 presents the interface illustrating Scenario 2. At this stage, the system presents: (i) the graph of the members having "MCDA" in their scientific domains (as in step 8), (ii) the list of application domains, (iii) the selected scientific domain "MCDA". Moreover, given the selection of a specific member (at step 9), the system presents now (i) his affiliation, (ii) his email address and (iii) a hyperlink to his Google Scholar profile, as shown in the displayed window of the interface in Figure 2. The "Show Network" button is activated, whereas the "Show List" is enabled for further member selection. Note that the "vxx" labels displayed on the network nodes are used here for the purpose of the prototype. They will be replaced by the actual names of members taking part in the selected subnetwork.

## 4 LIMITATIONS AND FUTURE WORK

At the time of writing this paper, our DSS proposition is still a prototype design. However, the database that will support the application is already ready and tested. The data collection relies on the data involved in the current Collab-Net platform, which are extracted from Google Scholar. Currently, 145 authors among the 250 officially registered EWG-DSS members have identified public Google Scholar accounts that can be used by Collab-Net. Most of the currently scientifically active members are among the 145 identified authors. Among the missing ones, we observe mainly: (i) old members of the group, probably not willing to engage in new social network application, (ii) young researchers and Ph.D. students, whom we really want to push them to create and open their profiles; and (iii) members from the industry having a low engagement with scientific publications.

Regarding members engaged in the industrial sector, it would be highly relevant to find another way to involve them in the platform, in order to enrich the search of the DSS not only with publication evidences, but also with consolidated work experience. Indeed, companies are often rich partners in consortium and their participation is requested by different funding agencies. Including existing partnership in research project into the network would be an added-value and a solution to this issue. However, finding a data source where to collect automatically this information is still an open challenge. Similarly, co-authorship is not the only important existing relation among the members of the groups. Other relevant ones like: experience in being partner in research projects, scientific visits in renown institutions and organizations, Ph.D. thesis co-supervisions, etc., also exist, to mention only the main obvious ones. Again, the question of the data source for acquiring this information is here a challenge to overcome.

The scenarios described in this paper have mentioned the notion of scientific domains and application domains. Scientific domains will be retrieved based on the topics declared by members in their Google Scholar profile. This data collection is already done. However, the existing topics are user-defined outside any typology. A matching procedure has to be defined between them and a more standardized list. This is a topic for further exploration on the project.

Regarding the application domains, a typology has to be selected. We plan to use text mining technique on the list of publication, in order to associate the relevant domains with each of the members of the group. Reports on future developments in this direction will be made available as soon as results are obtained solving this issue.

## 5 CONCLUSIONS

Selection of appropriate partners for research project consortia is a demanding and critical task in the definition of research project proposals, based on the requirements of the associated research for funding. Offering support to this task is among the challenges that the EWG-DSS Coordination Board is willing to face. The long-term Collab-Net research project offers an opportunity for inclusion of features related to this task. The current paper presents a designed prototype in this perspective and discusses the open challenges and future work.

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