SESSION 6: Knowledge Management, Paper N° 2

Information Management and Collaboration Support within SARNET

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SUMMARY

The success of SARNET as a Network of Excellence depends to a high degree on the collaboration of the 52 partner organizations, with over 250 participants. As the organizations are spread throughout Europe, an efficient way had to be provided to enable information to be shared between all participants, and to support communication between them. For these tasks, a so-called "Advanced Communication Tool (ACT)" had to be developed. Starting from the requirements on such a tool and a survey on existing tools, a portal solution was chosen which best fits the conditions of the project. The architecture of the underlying software and the design based on the project work structure are described. The experiences gained to date, particularly the results of a user's survey, are discussed. Finally, an outlook is given on capturing the project knowledge to promote dissemination of the project's results.

A. INTRODUCTION

The SARNET project is carried out by 52 European organizations. About 250 people are collaborating in the project. It is obvious that working together in the project requires means to facilitate the exchange of documents and information and to support communication between project partners.

The last years have seen a rapid development of communication channels based on collaborative computing, the utilization of document management, shared workspaces and portal solutions. Obviously, these tools fill a widely felt need for communication which reaches well beyond the exchange of information by telephone and e-mail. In particular, the paradigm of managing documents in a consistent way, in principle by avoiding dealing with copies of documents, has made much headway. The distribution by e-mail (mostly administrated in form of mailing lists) multiplies copies of a document, which might consequently be edited by the recipients, with the frequent result of many different document versions. In contrast, a central document management system avoids the dangers lying in manifold and diverging document versions, and the problem of merging them into a master. Furthermore, the idea of shared workspaces, which are easily accessible by Internet and which allow to exchange documents, information, opinions, maybe chat by text or voice, has gained considerable momentum.

These developments may be seen to lie at the heart of an efficient network consisting of locally widely separated organizations and participants. In consequence, the choice of the tools to promote collaboration between the partners, facilitating as far as possible their cooperative tasks, is of high importance for the efficiency of the network. Certainly, the actual development of collaboration tools is still experiencing a fast development, leading to new ideas and solutions, which is a clear indication that an optimum has not yet been achieved (if such an optimum is ever achievable). However, today's state-of-the-art tools have proven their capabilities sufficiently to provide the desired services.

In the following, the process which led to the provision of a suitable collaboration platform (referred to as the ACT, the Advanced Collaboration Tool) for the members of SARNET is described. The structure of the ACT and the arrangement of information will be explained in more detail, as well as the document management and collaboration features. The experience gained so far with the system will be related. Finally, an outlook is given to mapping the information and knowledge involved in the project for further dissemination of the project results.

B. THE ADVANCED COMMUNICATION TOOL (ACT)

B.1 REQUIREMENTS

The specification of the Advanced Communication Tool was derived from first defining and analyzing requirements, and classifying the requirements according to priorities. In a next phase, possible solutions fulfilling the requirements were sought, keeping in mind restrictions with respect to cost.

The requirements were mostly considered from the users' perspective. They include aspects such as document and information management, collaboration, rights management, search capabilities, and personalization. Furthermore, the requirement that the solution should be realizable in a short time was regarded as of high priority. The reason behind this is that from the start of the project on, there would a strong demand for collaboration and exchange of documents. If a tool were not available from the very beginning, then other means of communication would be established, particularly the exchange of e-mails by mailing lists. Once such communication paths would have been established, the transition to other means, even if considerably better, would be very hard to accomplish. For this reason, it was decided early on that a workable prototype should be available as soon as possible, offering collaboration tools since the very beginning, thus avoiding the establishment of alternative communication paths.

A large part of the activities in the SARNET ACT concerns managing documents. It was required that users should be able to publish documents in the ACT and to assign the rights to other participants to edit the documents. This team work on documents would be supported by means to ensure that the document is not edited simultaneously by more than one user, which may lead to overwriting each others changes in the document. Furthermore,

versioning of documents was required in order to follow the history of document changes, thereby offering the possibility to revert to a previous version of the document. The document management should enclose all established document formats, including images, audio and video formats.

With regard to information management, it was required that the participants of the project should have access to a multitude of information related to the project. This would include e.g. news regarding the project, outside news within the technical fields, information on participants and participating organizations, access to basic documents such as project and work description, information on new features in the ACT, access to codes, access to databases, links to the internet, and more. Also, outside document sources (e.g. file shares at partner organizations) should be accessible by a search performed in the ACT.

The search for information and documents is a basic feature of all portal solutions, and was therefore a strong requirement. The search machines of today are well advanced in indexing by using word breaking and stemming to provide comprehensive results in a free text search. The search results are ranked by the machine. Also, the search on profile data (also referred to as metadata, such as author, title or description, which describe the properties of the document and which are attached to the document) would be requested in addition to the search of the text body.

Besides managing documents, the ACT's second main task is the support of collaboration in the project. There are several teams in the project, working on specific work packages. Each team should have its own Team Site, which will be administrated by the team leader. The Site should be adaptable to the particular requirements of the Team. This might include features such as announcements, important events, task lists, discussion boards, or surveys. The functionality of the portal should be extensible to account for new requirements by users. A clean programming interface based on programming standards such as established web languages should be available to provide for easy provision of the required functions.

B.2 CHOICE OF TOOL

The tools which offer the functionality sought after are commonly referred to as Portal Software. The portals may be further classified in Internet and Intranet Portals. The Intranet Portals are often referred to as Enterprise Information Portals, but may contain dedicated portals for particular information tasks.

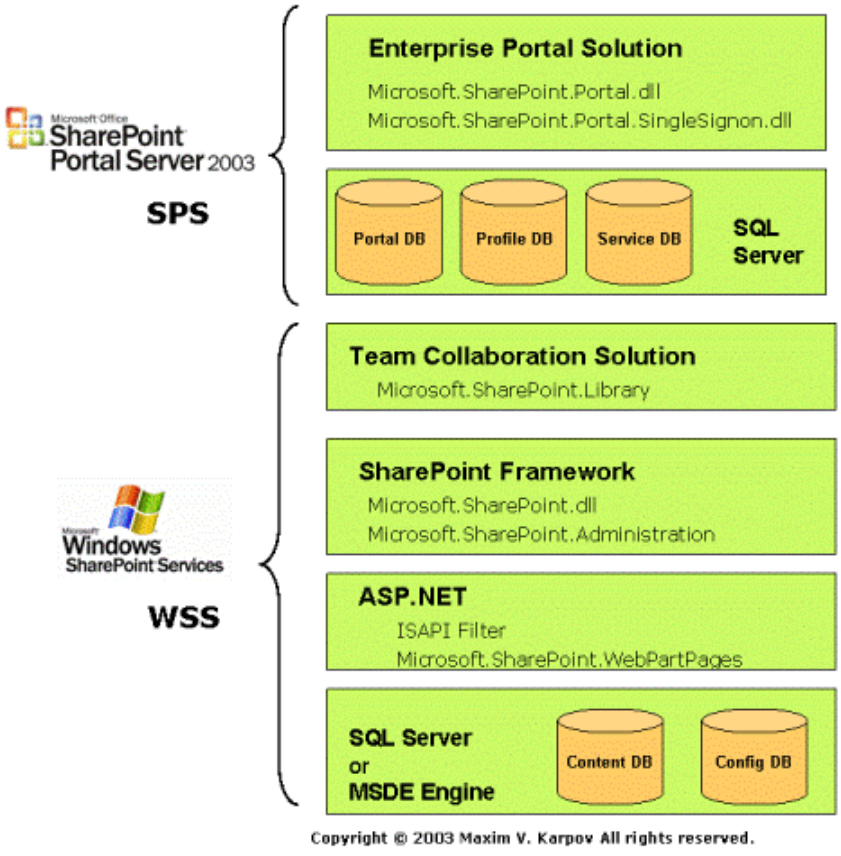
Portal Software has experienced a fast grow during the last years. The incentive stems to a great extent from the need for managing knowledge competitive knowledge-driven markets. Portal solutions are offered commercially by many vendors, there are also a few Open Source solutions available.

The process of choosing the tool compatible with the requirements is described in detail in a SARNET deliverable. In effect, the decision was taken to adopt MS Sharepoint Portal 2.0

as the underlying portal solution for the ACT. The decision came mainly from considerations of scope and costs, but also from previous experience where GRS had conducted an evaluation on available portal solutions. The Sharepoint Portal reflects the state of the art and offers most of the features requested in this project out of the box, which means that also the important requirement of setting up quickly a workable solution could be fulfilled.

B.3 ARCHITECTURE OF THE SHAREPOINT PORTAL

The architecture had an impact on some fundamental decisions concerning the design of the Sarnet portal. In effect, the Portal includes two main products, the Windows Sharepoint Services, which are delivered free of charge with the Windows Server 2003 operating system, and the Sharpoint Portal proper. This is sketched in the following figure:



The Windows Sharepoint Services Services (WSS) offer the basis for Team Collaboration. They provide Sites which may be populated by Web Parts for a variety of tasks. These Web Parts may display Lists (e.g. a document library, event and task lists, announcements, discussions, surveys) or may have particular functionalities such as displaying contacts, viewing Web pages or documents, or editing arbitrary content.

The Portal is set on top of the WSS. It provides mainly a search facility on all WSS sites, the possibility to index external content, the administration of users (Active Directory, User Profiles), and the personalization of the sites. The Portal allows for scaling to large, distributed server farms, assigning different tasks to several machines. The Portal is organized in Areas, which in principle are WSS sites, but with specialized features. Areas may be organized as Topics areas, which provide an important navigation instrument and appear in the top menu. Specific areas are available for the Homepage, for News and the Site Directory (directory of WSS sites).

B.3 DESIGN OF THE ACT

The main guideline for the design of the ACT was the specification of the main topics of the project, and the determination of the teams which would profit from shared workspaces. Both of these questions could be solved by looking at the Annex I of the contract, "Description of Work". Therein, the main topics are described in the Joint Programme of Activities (JPA). These were the candidates for ACT Areas, as they would contain mostly information of a more "static" nature (important information and results on the topic). In addition, some general topics would be included as Reference Information and Management issues. Thus, the resulting Topic Areas are the following:

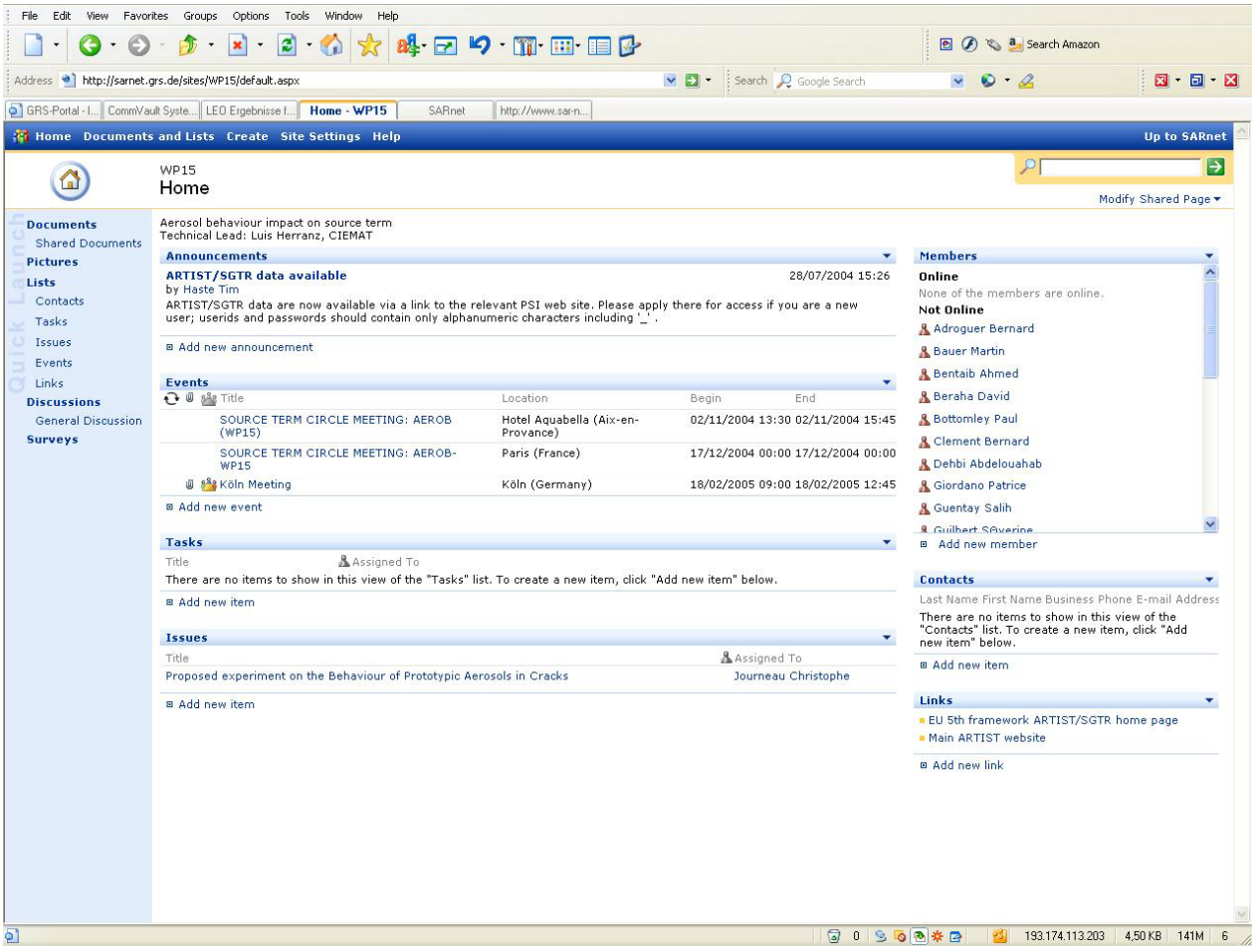
- Reference Information
- Management
- Astec
- Containment
- Corium
- Source Term
- PSA 2
- R&D Priorities
- Data Base
- Excellence Spreading
- Communication Tool

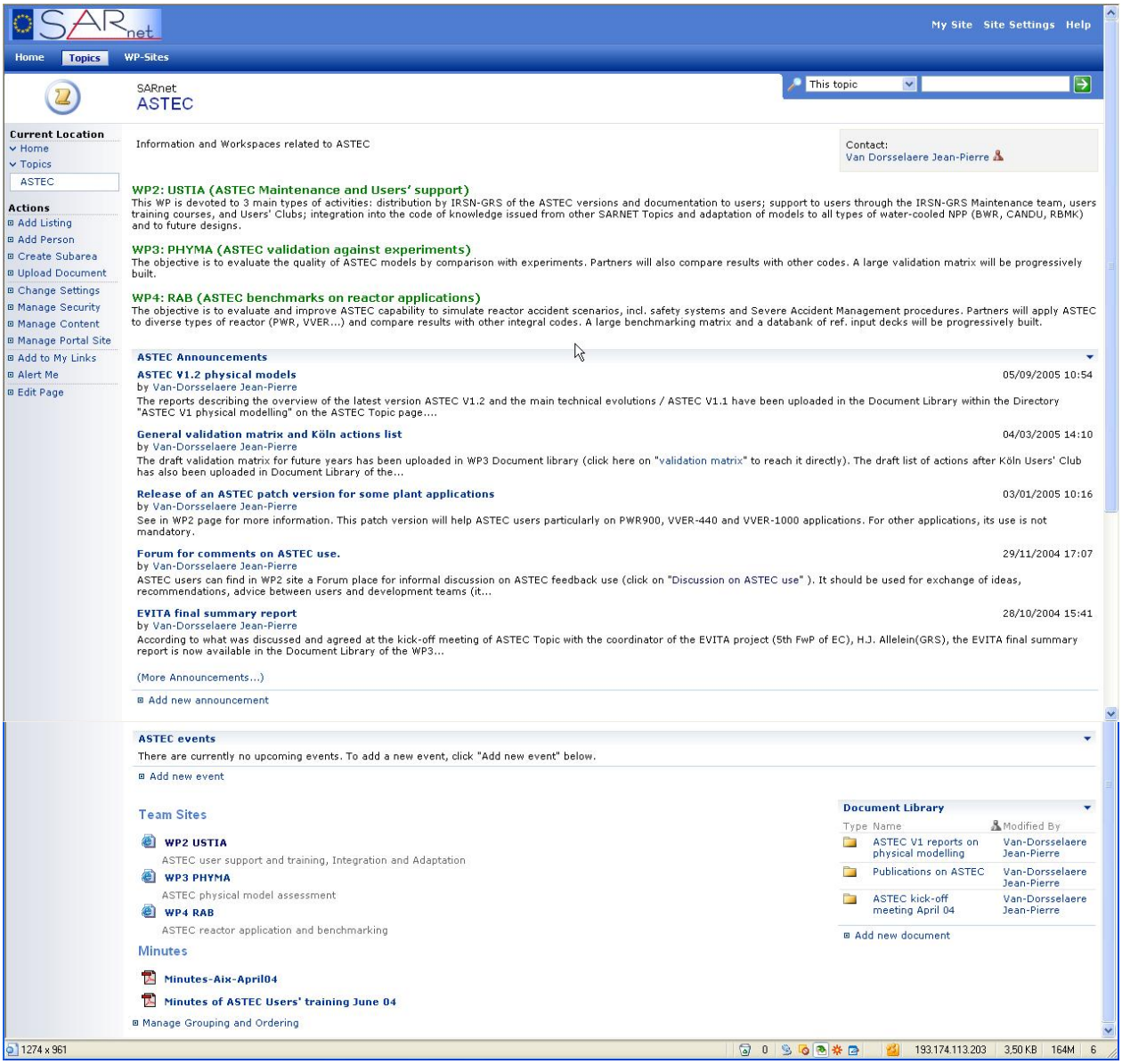
For setting up the Team Sites, the definition of the Work Packages in the Description of Work provided a "natural" structure. The team sites contain information related to e.g. team meetings, announcements, documents which are pertinent to the team itself. These team sites are related to the topic areas. In each topic area, links are provided which lead to the respective team site (or sites). Overall, there are 20 Work Package Sites, with some of the work packages having more also subsites.

The next figures show a typical work package site, and a topical area. As the areas and team sites are highly configurable, each site may look different from the other. However, templates were provided in order to set up default sites, which then could be changed by the administrator, to provide a similar look and feel for the users.

An important aspect of the design is the rights management. Since some proprietary information is involved, not all information should be accessible by all participants. The principle has been established that the owner of the areas and sites should be also the rights manager for his sites. This means that each topical leader has administration rights for his area, and each work package leader the administration rights for his team site. This involves the definition of access rights (reader, editor, …) and of members of the team sites. The rights management extends to single document libraries or lists. A particular feature of the Sharepoint Portal is that rights may be managed only on the library and list level, not for single items. This occasionally requires the definition of several document libraries per team site.

The appearance and the type of lists and libraries are customizable in wide ranges. Also, this customization is left to the topic and work package leaders in order to best fit their particular needs.





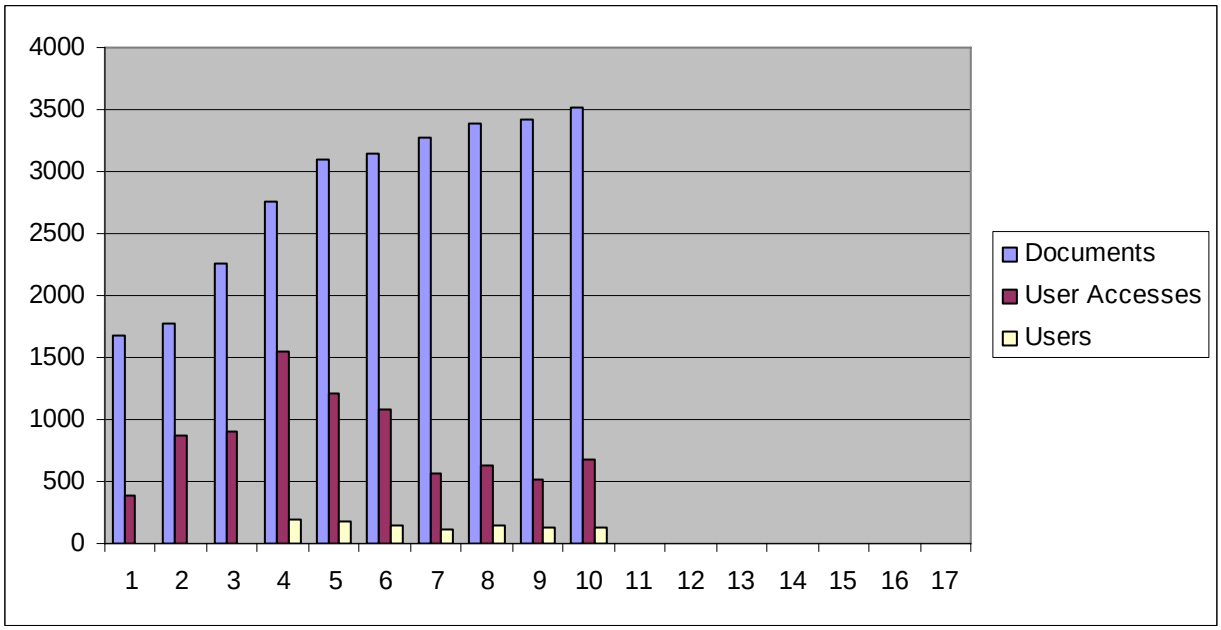
C. EXPERIENCE WITH THE ACT AND OUTLOOK

As foreseen by the choice of the portal software for the ACT, the customization of the ACT by structuring according to topics and work packages was possible in a short period of time. Thus, the requirement of providing the ACT at a very early time in the project was met. In addition, at the time when the ACT was opened to all participants, some support and help features were established, such as an interactive training, a Users Manual, a discussion group for utilization of

the ACT, and reference to the administrators (mail and phone numbers). No use has been made of the discussion group, the other help facilities were used to some extent.

This basic structure was quickly filled with appropriate content. The home page of the portal contains information on the project, the basic documents such as contract and consortium agreement, announcements and news of general interest, as well as links to other web presences. The topics leaders each provided a short description of their activities, and customized their web sites. The team started to collect their documents and information from the very beginning of the project.

As indicators of the use of the ACT, two measures were defined: the number of accesses to the portal, and the number of documents in the portal. Both these figures are given below, together with the number of different users accessing the ACT. They show the rise in both indicators at the beginning of the project, and a tendency to stabilize after the peak which corresponds to the meetings in February 2005 in Cologne.



In order to gain feedback on the satisfaction of the users of the ACT, a survey was started in spring 2005, asking users about their opinions on the portal. 27 answers were obtained. Although this is not a representative figure, the summarized answers below provide some indications on user opinions:

- Problems are encountered mainly with document management (particularly) when editing and saving documents. Help and more information were requested on that topic.
- Navigation was judged to be satisfactory in retrieving the requested information users were looking for by navigation. The search function is less used.
- Participants feel adequately informed on project progress and project events.

- Suggestions for improvement are directed mainly towards the awkward handling of links in announcements and events (no direct links), as well as towards improving Meeting workspaces.
- The alert function is used as a means of getting information on document changes to some extent.
- Work Package Sites are felt to be adequate, but would need improvements.

The evaluation of the feedback has led to extending and improving the Frequently Asked Questions list to provide more guidance, particularly on document management. Some of the hints could be realized, however, some suggestions such as improvements in meeting workspaces and links from announcements and events concern inbuilt features, which cannot be changed easily. These topics were sent to the appropriate Newsgroups to suggest the need for improvements by Microsoft.

The ACT is mostly concerned with information management. It provides a solid basis for managing the knowledge deployed and created in the project. In order to pursue the topic of knowledge management further, mapping of the knowledge involved in the project will be tried out. For this purpose, a tool will be applied which has been created by the Institute for Human and Machine Cognition, the Concept Map Tool. This allows the construction of concept maps, i.e. graphic maps showing the important topics and their interrelations. Each topic may include a number of resources, include text, video, audio and links. These maps have proven valuable in capturing the knowledge in a given domain, in this case the SARNET project. It is expected that the map will contribute to the dissemination of the project know-how and the project results, and retain the knowledge involved in the project well after the project's end.

E. CONCLUSIONS

The ACT seems to be fulfilling its two-fold role as a document management system and as a platform for collaboration. The strong initial efforts by project, topic and work package leaders have led to a structure which enables participants to find information on their topics, and to cooperate with other members of their teams. Requests for help on the portal functionality have been strongly decreasing in the last half year, indicating a growing familiarity of the participants with the ACT. The feedback from a user's survey has been used for mainly improving the information on the ACT in form of a Frequently Asked Questions list.

The information management performed in the ACT paves the way towards knowledge management. As a step towards managing the knowledge involved in the project, an attempt will be made at mapping the project knowledge by means of concept map techniques.