REPORT OF WORK PACKAGE 1

Networking Centers of Excellence and Users

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Title: A European Research Arena on Intangibles (E*KNOW-NET)

Project coordinator: Prof. Mª Paloma Sánchez IADE/UAM (Spain)

Members: Prof. Manuel García-Ayuso SEV (Spain)
Dr. Rita Asplund ETLA (Finland)
Prof. Hanno Roberts BI (Norway)
Ms. Mona Skaret SINTEF (Norway)
Prof. Ulf Johanson IPF (Sweden)
Dr. Bino Catasus SU (Sweden)
Prof. Jan Mouritsen CBS (Denmark)
Prof. Per Nikolaj Bukh ASB (Denmark)
Mr. Bernard Marr CU (Great Britain)

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This report has been prepared on behalf of the E*Know-Net members by Rosario Pacheco and Sarah O'Brien (Autonomous University of Madrid-UAM).

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1 Executive summary

All the initial objectives of E*Know-Net relating to activity one have been successfully accomplished. As a result, a large thematic network on intangibles is operating on the E*Know-Net Web-Site (http://www.eu-know.net).

Presented in this report are the main drivers that have inspired the construction of the virtual network. Achieving the main objective of creating a generally accepted system for measuring, management and reporting on intangibles at a global level, strongly depends on both the integration of research efforts and the extensive diffusion of results in a European and International context.

Taking into account this complex research area is fragmented across different disciplines and regional areas, through the creation of the network, E*Know-Net has achieved some important first steps towards integration. The second part of the report focuses on the main objectives and processes followed during Activity I and is developed in three basic areas:

- Creation and visualisation of the existing community of practice interested in research on intangibles, and the aggregation of collected information in a large database.
- Development of a general structure for a quarterly newsletter.
- Development, maintenance, and improvement of a technological platform to support all resources and relationships of the network.

The first part of the report contains the principal outcomes obtained as a result of our work. In general terms, we now have a well known international community of practices on intangibles with 381 members (September 2003), and a powerful virtual space which supports interrelations and knowledge transfer. With the aim of giving a complete view of the E*know-Net virtual network this report shows how the E*know-Net web-site is structured and the principal sections, tools and contents that contribute to its composition. Then the report continues to demonstrate how the number of members has been growing throughout the first year of the network's life and to what extent the different resources offered by the Web-Site have been used. In this sense, statistics show how the "knowledge library" and "News & Events" sections amongst others, have been the most used web-site resources. Finally the additional activities developed in our virtual network are specified.

In conclusion, the report outlines how the E*know-Net virtual network and its initial activities have started to add considerable value to this field in a European and International context. Consequently, the further deployment of several strategies focused on aggregation, diffusion, excellence promotion, and knowledge mapping are seen as crucial activities to contribute to the 2010 Lisbon objective.

The strengths and achievements of the E*Know-Net virtual network over such a short time-frame justify continuing putting efforts into its maintenance and further development. Further justification stems from the demands of the research area. That is, the advancement of our research area strongly depends on interdisciplinary, inter-sectorial and inter-regional research collaboration; similarly, we need strong and powerful communication channels with a twofold purpose:

1. To disseminate and effectively implement our research findings trying and reach more heterogeneous and international external audiences
2. To capture and aggregate external knowledge in order to improve both internal research activities and network functionalities.

The E*Know-Net network as it is, exists and has demonstrated its ability to exist as a working framework and tool ready to respond to these. We purport the further development of the website to realise the huge future potential of the network.

2 Introduction

A society based on knowledge is conceived as being a networked society. The big takeoff in the structure of networks as a distinctive form of Organization, is found to be deeply connected with the great importance of knowledge acquisition, not only in economic processes, but also in the remainder of the main spheres that configure social action.

Social network analysis has shown that traditionally scientific communities proceeded the academic environment and were grouped around common scientific interests inside narrow frameworks of delimited regional and disciplinary action. Nevertheless, the current knowledge society requires a deep transformation of the way in which scientific communities are organized and the context in which they work.

Current science is faced with complex problems of investigation which require international contribution of an intersectorial and interdisciplinary character to be resolved. (European Commission, 2003; to put + ref.) This situation is causing the re-organization of scientific activity around new models in which figures such as networks of knowledge, centres, groups and leaders of investigation with international projection dominate (Nilsson, 2001).

New technologies in information and communications offer us the possibility to create the adequate infrastructures to organize these new models. According to Wellman (2001:1), communities or virtual networks have been a phenomenon of great importance due to the potential they offer not only as a social means of interaction but also as means of access and diffusion of knowledge.

The doubtless advantages that a virtual network of knowledge provides to each one of its components through a common set of resources and the execution of activities shared, is only one of the factors that incite the creation of this type of network. Other factors of great importance are: the need to form critical mass to obtain a greater visibility for policy makers and for the remainder of the company (Willard, 2001, b; Creech, 2001, b); the need to approach both academic institutions and businesses (Clark, 1998; Strong, 1996); and the establishment of long reaching channels to diffuse the results of investigation emanated from these types of networks (Clark, 1998; Willard, 2001, to and b; Creech, 2001, to; 2001, b).

The abovementioned is clearly achieved in the area of investigation of intangibles and capital intellectual. The extraordinary importance that knowledge has acquired as an source of economic growth, through the processes of innovation, has motivated the appearance of new disciplines which, from different perspectives, undertake the study of intangibles and knowledge as a factor of production. The youth and multidisciplinary character of the field of investigation, the urgent need to create solutions on a global scale, and the extensive collection of users interested in the results obtained in these investigations, are the main factors that incite efforts to carry out integration in the area of intangibles and intellectual capital. This justifies the need to advance this area of study and to diffuse its results efficiently and effectively.

Consequently, we consider that the mentioned integrated effort should be carried out through the creation of a virtual network of an international nature adapted to the exact needs of our field of investigation. The experience obtained throughout our activity has permitted us to observe the weight given to the importance of intangibles and Intellectual Capital since the 90's,

that results obtained through the joint efforts of businesses and researchers remain dispersed, and that, in most cases, the results of investigation tend to be diffused only amongst specific disciplines or limited geographical groups.

Keeping these important limitations in mind and assuming that the success and effective practical establishment of the results of investigation depend on a generalised acceptance from users on a European and global scale, the future of research on intangibles and Intellectual Capital should surpass two fundamental milestones. Firstly, the development of procedures that permit the identification, measurement and management of intangibles on some harmonized bases in a European and International environment (Sánchez, 2002); and secondly, the massive empirical elaboration of studies on these types of procedures to test their validity (Petty and Guthirie, 2000; Bontis, 2001).

The only possibly way to surpass these challenges is through the creation of a virtual space of collaboration capable of breaking down sectorial, regional, and institutional borders, with the purpose to grasp and create new knowledge and to disseminate it both inside and outside the network's environment.

2.1 Initial objectives

The principle objective of this activity was to create a virtual network among a set of excellence centres on intangible research and existing and potential users of information and knowledge on intellectual capital by networking main European and International bodies in this field. (Technical Annex, 2001: 13)

This objective was achieved through the following secondary objectives:

a) **A search of all the available sources (Webs, literature review, personal contacts, etc),** to find those centres researching intangibles worldwide and the users of information and knowledge on intangibles.
b) **Address the sources found with a questionnaire** to know their main research activities, state-of-the-art in the analysis of the management of intangibles (papers, guidelines, experiences), and main added value to the network (complement with existing centres)

c) **Create a database** on centres of excellence and users with the information gathered and make it widely available (using all possible sources such as the E*KNOW-NET website, Web sites of the members of the project and the OECD). This database will be updated every three months.

d) **Design the Virtual Network.** This virtual network will be supported by the creation of a website which will be known as a common knowledge base and principle tool of communication for the new members of the virtual network.

e) **Produce a newsletter to send to the members of the virtual network** with the important main publications and include it in the Web site. We estimate to elaborate this newsletter every 3 months.

f) **Update the design of the Web site,** the contents of the database and the newsletter.

Throughout the continued process of the creation of E*Know-Net, the initial objectives have not been modified. It is important to emphasize, however, that additional activities have unfolded in the last phases of activity 1, that were not included specifically in the objectives of the activity. They were initiated on our behalf with the purpose of enlarging the benefits that the virtual network and E*Know-Net offers to the international community.

3. Methodology

The development of the E*Know-Net virtual network can be referred to in terms of 6 sections, outlined below, in which the different processes are integrated and directed towards the fulfilment of each of the initial objectives described in the previous section.

Process of searching and locating the potential members of the network.

A) Definition and classification of the members of the network: following a conceptual analysis of the 'centres of excellence', the coordinating team produced a document which proposed a definition and initial classification for 'centres of excellence' and for 'users'. It was detected during this phase that some potential members of the network acted simultaneously as centres and users of investigation.

B) Establishment of requirements with which to comply in order to form part of the network: Although there were no requirements for users, centres of excellence were subject to the following:

- To carry or to have carried out at least one project of investigation relating to the thematic area of the network.

- To include prior publications in the given field that vouch for the researchers line of investigation.
- To have at least one project director that carries the title of doctor.

c) ***Process of locating and collecting basic data:*** via several sources:

- **Consulting all people connected to the Project:** A survey was sent, that asked for basic data from the possible centres of excellence and users of the network, to all the persons linked to the project. After a period of two weeks, the members of the project completed the information of all the centres and resulting units of investigation that arose from their own search processes.
- ***Internet Search:*** by using the main search engines available on the Internet, the coordinating team carried out an additional search for other possible centres of excellence and users.
- ***Searching lists of international events related to the area.***
- ***Collection the names of centres and users in different national seminars who presented a view relating to the MERITUM guidelines.***

1. Process of recollecting information.

This process consisted of the following phases:

a) ***Design and elaboration of a survey:*** two surveys were developed one directed at centres and the other at users.

b) ***Test phase of the surveys:*** In order to detect possible errors, or to introduce omissions or improvements, both surveys were sent to the E*Know-Net members for completion. Subsequently, after incorporating the suggestions received from the members, the final versions of both surveys were devised and are included as Annex XXX.

c) ***Delivery and Collection of surveys:*** the surveys were sent by email to a total of 164 centres and research units and 71 users. Comments and suggestions were taken into account.

2. Design and completion of the databases

Two databases were designed, one for the centres of investigation and individual investigators and another for the users. In both cases, the design of the database was inline with the structure of the surveys (Figure n1).

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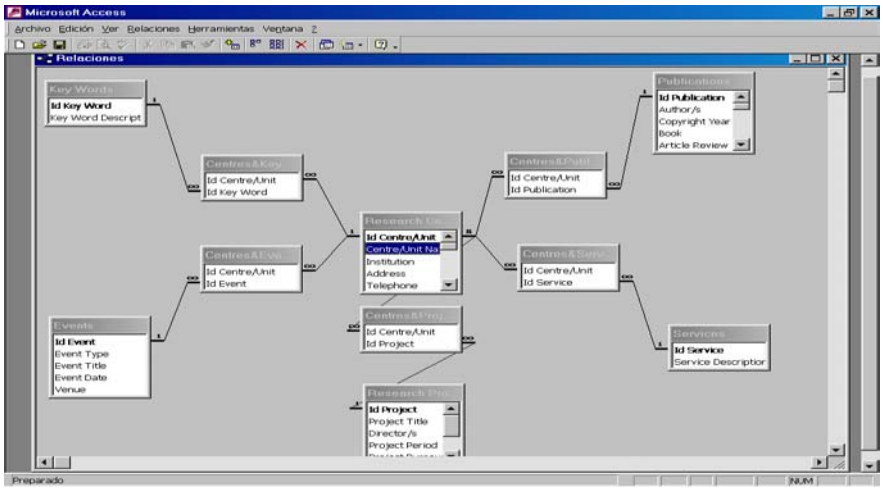


Figure 1: Basic structure of the database of the centres of excellence.

3. Development and Design process of the Web-Site

This process was conducted jointly by the Autonomous University of Madrid and The University of Seville. The former coordinated the tasks of content design and development, whilst the latter coordinated the tasks of hosting and programming. Throughout this process there has been a tight contribution and interaction between both institutions, which has permitted joint learning and facilitated the coordination of tasks for the attainment of this objective.

a) ***Specification of contents of the Web-Site:***

After approval from the members of the project, the coordinating team remitted to the University of Seville an initial document which contained the original design of the web site and a first rough draft of the contents of each of the sections. Subsequently, several versions of this document were created that included the enlargements and improvements generated in the process of interaction.

b) ***Programming, implementing and executing the Web-Site:***

The portal was developed using PHP, in combination with the data bases agent MySQL. Both programs shorten the page response time and renders the site more dynamic overall.

The data base, was developed according to the relational model and supports all the dynamic elements of the site, such as the knowledge library, the newsletters and the information on centres and users.

Additionally, the portal incorporates numerous automatic elements that facilitate the daily management tasks, such as notices to the administrator when a user registers, automatic shipment of newsletters, statistics, and other similar types of services.

c) ***Test phase and the adaptation of suggestions for the project:***

An intense test phase in every section was carried out as well as the services of the web site to rectify the possible errors of access and automatic delivery systems. This test phase was launched by giving access via a login and password to all members of the project as well as to the member responsible for the European commission in order to collect the initial impressions and suggestions of modification before the final launch

d) ***Launch of website and network:***

Once the suggestions were known, the web site of E*Know-Net was made public in September of 2002 at the following address: (http://www.eu-know.net). The launch was announced by e-mail to all members of the network and further publicised via other mediums.

4. Design and Elaboration of the "Newsletter"

The structure, reflected in figure 2, is represented by the same sequential options that appear on the home page of the web site.

Newsletter Structure	
Sections	***Contents***
Editorial	A report from the Editor outlining the most prominent facts that show the strategic importance of intangibles and intellectual capital in the development of policies directed to promote social and economic development, especially within the European Union.
Best Practices	A presentation of an organization that demonstrates a good example of practices in the management, measurement and disclosure of intangibles.
Profiles	A presentation of the main research line of a

	centre of investigation or an individual investigator whose work is considered of general interest.
News and Events	States the latest and most interesting events in areas related to the intangible.
Publications	Latest and most relevant publications in the area on a global scale.
Own section	Prominent diffusion of events related to the E*Know-Net network.

5. Maintenance and Improvement of the Web-site

Although the design phase of the site was completed in August/September 2002, we have continued working intensely with the maintenance and improvement of the web-site throughout the duration of the project. Asides from addressing the updating of the web-site, of the data bases, and of the development and delivery new newsletters, our efforts have also been focused on identifying possible improvements for the site with the aim to render it more attractive for the present and potential members of the network and to enhance its international presence.

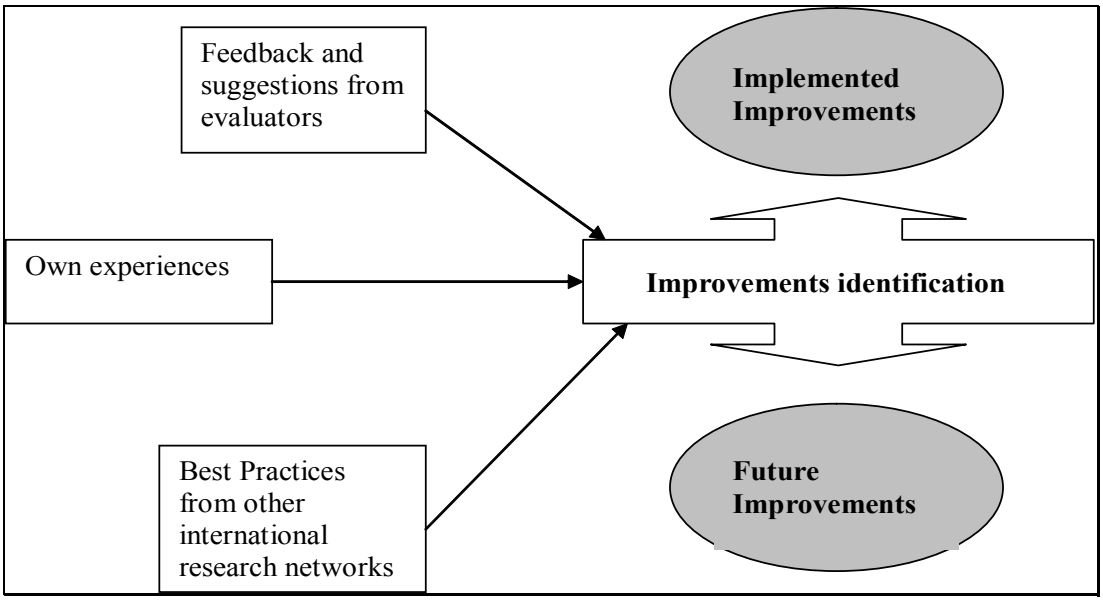


Figure 3:

Figure 3 shows three sources that have led us to identify improvements for the web-site. Special attention has been paid to the suggestions carried out by the evaluators of E*Know-Net appointed by the European Commission.

The first and most important group of suggestions, is centred around access to information, greater orientation to the interests of the users and the increase of information available on the site. The design of the new portal has facilitated the incorporation of these suggestions. Not only is the new design structure more intuative but it has alsoallowed us to simultaneously increase the content of the site.

The second group of suggestions were more specific and, in response we have initiated the following actions:

- Marketing Strategies:
  - By refining key words, "tags" and "metatags", we have managed to situate our web-site amongst the top 10 positions in the results lists of many of the main search engines available on the internet.
  - Establishment of links to external web pages of strong national and international position.
  - Additional publicity, such as, the distribution of our newsletters in national and international events.
- Obtaining information about the use of the web-site:
  - Elaboration of an extensive statistics spectrum, which shows for example the number and location of visitors for certain periods, number of hits, new visitors, more commonly visited pages, number of registrations etc.
- Updating of the web-site:
  - Recently, a tool has been introduced that shows the last date of updating and the main pages which have been modified.

The third group of suggestions stretch beyond the agreed objectives of the project and well beyond the timeframe and human and financial resources available. Having said this we recognise these improvements as being imperative in order to extract the maximum benefit from the extensive work already done and we highly recommend the extension of the life of the web-site. Future improvements include:

- Increase marketing strategies
- Inclusion of more dynamic tools of interaction: discussion forums, chat rooms etc.
- Improve the sophistication of the search tools.
- Data bases elaboration relating to the dissemination of the MERITUM guidelines. and of the businesses that have adopted them
- Monthly distribution of the newsletter (currently distributed quarterly)
- Convert the website into the world leader in Capital Intellectual

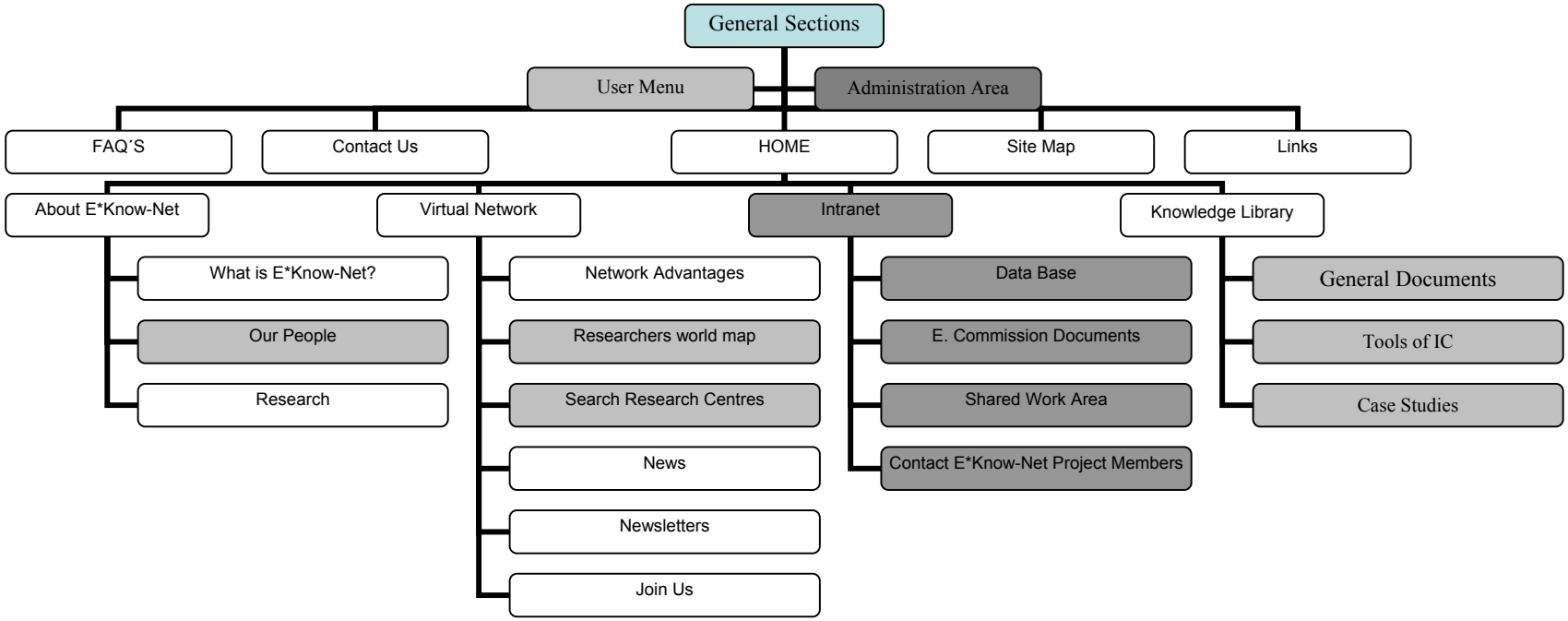
Given the extraordinary importance of networks of knowledge and excellence in society, we consider the continuity of the work of this ambitious project very necessary.

4. Results (innovative aspects)

Available resources

The web-site's basic structure is shown in figure 4. This structure acts as a facilitating mechanism whereby needs and demands from users can be identified and responded to as a continual process. Nevertheless, a virtual network, being a technological tool, exists in a fast-paced continually changing environment and so the Web-Site has had to act as a flexible, adaptable and non-static system that is capable of changing over time to suit new challenges and needs. In this sense, the structure of the web-site is susceptible to environmental demands for any kind of transformations in function. Thus, new needs have and continue to arise. In order to continue to respond to these new demands, financial, human, and technological resources for long-term management are required.

ORGANIGRAMA WEB: E*KNOW-NET



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Using available resources.

Detailed below are some of the most relevant data relating the use of the web-site.

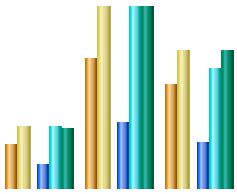
- At the time of the public launch, the network consisted of a total of 235 members, 164 centres and 71 users. From this date, and through the "on line" surveys, another 137 members have registered 89 centres or other units of investigation and 48 users. As of September 2003, the network counts on a total of 372 members distributed of the following form:

Members	Europe	America	Asia	Africa	Oceania	Others	TOTAL
Researchers	198	33	7	0	12	3	253
Users	114	3	0	0	2	--	119
TOTAL	312	36	7	0	14	3	372

- The total number of visits to the web-site as of the above mentioned date is 3375, of which 2391 have originated from registered users of the network. In the following figures the data shows the total number of visits along the life of the network:

Summary 2002

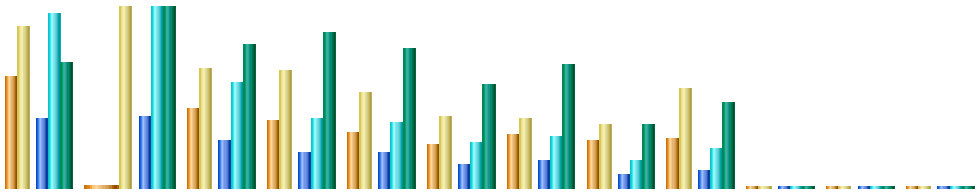
First visit	Summary			**Last visit**
08 Oct 2002 - 17:03	**Year 2002**			31 Dec 2002 - 17:26
Unique visitors	Number of visits	Pages	Hits	Bandwidth
<= **557** Exact value not available in 'Year' view	**763** (1.36 visits/visitor)	**13704** (17.96 pages/visit)	**37473** (49.11 hits/visit)	**157.90 MB** (211.9 KB/visit)



Oct 2002 Nov 2002 Dec 2002

Summary 2003 (until September 24)

First visit	Summary			**Last visit**
01 Jan 2003 - 09:29	**Year 2003**			24 Sep 2003 - 21:16
Unique visitors	Number of visits	Pages	Hits	Bandwidth
<= **1648** Exact value not available in 'Year' view	**2612** (1.58 visits/visitor)	**41644** (15.94 pages/visit)	**93091** (35.63 hits/visit)	**734.65 MB** (288.01 KB/visit)



Jan 2003 Feb 2003 Mar 2003 Apr 2003 May 2003 Jun 2003 Jul 2003 Aug 2003 Sep 2003 Oct 2003 Nov 2003 Dec 2003

- The most visited sections during 2003, excluding those in obligatory transit, have been firstly, and with a great deal of difference, the “Knowledge Library” section with 2161 accesses, adding also 1146 and 1157 accesses for “case studies and tools for IC management” respectively. Following this the “News and Events” section received 1382 accesses, the section of information on the CD of the

conference, 1155 accesses and the "researchers world map/ search research centre" and "Join Us" with 588 accesses and 333 accesses respectively.

The above data demonstrates, firstly, a constant growth in the formation of new members of the network, clearly favouring the European environment and the research community. In our opinion there are many possible factors that influence these results and its interpretation should be conducted with extreme prudence given the short lifespan of the network. Nevertheless, it is clear, the strategies of marketing and diffusion have been of greater effect in these environments. A future strategy, should be to increase efforts in international marketing directed especially towards users.

As for the volume and distribution of visits to the web-site (http://www.eu-know.net), few reliable conclusions can be derived given the short lifespan of the site. Nevertheless, we identify in the first place a recovery of activity in the period from November from 2002 to February of 2003, we believe this result was influenced by the project conference. From this date, a light descent is identified that we believe has been influenced by the works of construction of the new portal and subsequently by the drop in activity during the summer period. These seasonal variations should be interpreted over more extensive periods.

The most visited areas, have been sections such as the "Knowledge library", especially since the publication of the MERITUM guidelines, and "News and Events". This fact suggests that the true focus of attraction are the knowledge bases that are made available to the members of the network. The newsletter section is not visited extensively which can be explained by the fact that the publication is sent directly to all members via e-mail the same day of its launch.

Other activities developed by the network

In spite of the fact the launch of the web-site was only a year ago, and that all of the initial objectives have been achieved, numerous additional activities of interaction and diffusion have been undertaken. Among them are the following:

- Announcement and personalized commemorative were sent to all members of the network inviting their participation in the International Conference carried out under the project "The Transparent Enterprise: The Value of Intangible" celebrated in Madrid the 25 and 26 of November of 2002.
- Launch of the survey carried out under activity 3 of the project by Aarhus School of Business, for the purpose of the elaboration of a future research agenda.

- Announcement of the new portal.
- Announcement and invitation to participate in new proposals of projects carried out by the members of the project: diffusion of the "Imagine" proposal.
- Direct Attention to hundreds of requests of information from both members of the network and other visitors of the web-site through the "Contact Us" section.

5 Conclusion

5.1. Value added by the virtual network

The E*Know-Net virtual network constitutes the major integrated effort initiated in the areas of knowledge related to intangibles and intellectual capital not only in a European context, but also internationally.

By means of attaining of our core objectives, through the creation, development and continual improvement of the virtual network, we have managed to add significant value to our research area. Among which are the following:

Obtaining a knowledge map: through the harvesting, ordering and grouping of information that was previously dispersed, the virtual network has managed to obtain a global vision of the type of research that is created, the main bodies that generate it (central and other units of investigation), as well as of those bodies that demand it and the form in which it is demanded (users). This knowledge map constitutes a fundamental pillar for the development of future strategies of work in the European and international environment.

The endowment of a sense of community for those involved in the area of intangibles and the **creation of a virtual space** that facilitates the establishment of relations and free access to knowledge bases generated.

Promotion of excellence and European leadership in research on intangibles: E*Know-Net promotes the international, intersectorial and interdisciplinary contribution to research on intangibles in Europe and internationally. Thus a unique opportunity is presented to promote and guarantee European leadership by means of an adequate use of government competencies and management assumed in the network.

Utilisation of new strategies of communication and bilateral diffusion: thanks to the creation of this large networked society and to the diverse technological resources developed by E*Know-Net, the research community has the opportunity to utilize alternative forms of communication and diffusion. The low prices

of the new channels of communication, and the identification of those receiving the information permits not only a more frequent diffusion of results, but also the opportunity to create different modes that attend more specifically to each user group. In this way, it forms the establishment of bilateral flows throughout the research process that reduce the existing gap between the researcher community and the user community (Stone, Maxwell and Keating, 2001).

Formation of critical mass and increased visibility: the E*Know-Net virtual network, supports the development of new research projects and proposals and the creation of new research alliances which permit the formation of synergies and increased visibility within European and Internationally.

All the abovementioned offered by the E*Know-Net virtual network contributes essentially to two of the most important aspects of the Lisbon objectives "the reinforcement of innovation" (COM, 2003) 112, and the "integration of European research" through the Program "WAS" (COM, 2000) 6 and (COM, 2002) 565.

This is justified, firstly, because the objective of the research network, the creation of harmonized systems of measurement, management and disclosure of intangibles, represents a critical aspect in the rationalization of innovation process and policy on a micro scale (businesses) and macro scale (European Union). (Sánchez, 2002)

Secondly, the virtual network was developed according to the principles of the "ERA" program in this area of research, and put into practice some of its more important lines of action, especially, those conceived under the VI Framework Program in the formation of "Networks of excellence", directed at avoiding the fragmentation of European research.

In this sense, the E*Know-Net virtual network has managed to capture not only some of the profiles of the most prominent research centres in Europe and the remainder of the world in this area, but also the profiles of users of the given information. With these, and through the employment of information technology, we have created a virtual space that in addition to receiving an extensive spectrum of knowledge bases, has facilitated the important exchanges of information among the members of the network and contributed to, diffusion of information and results, formation of alliances and increased visibility.

Finally, the European initiative of formatting an international research network, further promotes European leadership in the research of intangibles and intellectual capital.

5.2 Future research needs

The E*Know-Net virtual network is an existing and functioning mechanism for diffusion. It's current state and achievements to date demonstrate numerous reasons for us not only to invoke its continuity, but to continue enhancing and improving; demands that a network in constant growth and expansion requires.

The expansive of E*Know-Net and its objective is inherent in its nature. Our aspiration consists in expanding the properties and services that our virtual space provides, centralising global resources and experiences and promoting the integration of research activities and diffusion within Europe and Internationally.

These ambitious goals constitute a long-term task. The enlargement of the capacities of a knowledge virtual network should be developed naturally and sequentially as the network grows and evolves. International registered experiences of the formation of knowledge networks, show how this type of network takes many years to be formally constructed and only begin to yield their better results medium and long term. (Creeh and Willard, 2001)

As previously demonstrated, the E*Know-Net virtual network has begun to see positive results and create important linkages that could attract the necessary resources to convert the E*Know-Net network into the world leader in the area of the intangibles and intellectual capital.

The immediate objectives and actions predicted for the future would be the following:

- An unfold of aggressive global marketing strategies.
- Development and employment of tools to evaluate the use of the web-site in addition to the current statistical sources and through direct surveying to members of the network.
- Creating a more interactive network by introducing more dynamic technological resources: forums, chats, etc.
- Introduction of sophisticated knowledge management tools that allow us to improve the use of the services and the access to knowledge.

- Establishment of an activities program that is developed by the members of the network and promotes the motivation and participation of the members.

- Creation of services for users (businesses)
- Enlargement and development of an Intranet that contains advanced project management tools to centralise the work of different virtual teams and could compose the nucleus of the network.
- Codification of norms, calendars of activity and work plans keeping in mind the functional and cultural differences of the members of the network
- Creation of a governing and management organism of the network.
- Increase of channels, the frequency of communication and diffusion of results.
- Promotion of the explicit and implicit benefits of the network to the users of information on intangibles.

The predicted evolution of E*Know-Net would not only contribute to reduce the existing gap in practice of networks between Europe and other parts of the developed world, but also a space of work would be created to develop research projects, to forge new proposals and alliances, and to direct the advances in the area toward the policy makers, businesses and potential users.

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