

Project Title: QMED



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Report on Promotional Activities & External Relations

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Abstract:

This work package documents the activities carried out to promote research networking, to disseminate new technologies and to generate new regional activities within the Eastern Mediterranean region.

1. External Relations – Promotion of Academic Networking

The Q-MED initiative provided the first example of regional collaboration in the field of Academic Networking in the area of South Europe and Mediterranean. Taking this as a starting point NTUA/GRnet and CYNET (both members of the Q-MED Consortium) initiated the MEDNET consortium for the promotion of regional Academic Networking among all Third Mediterranean Countries (under possible funding from the MEDA – EUMEDIS program). For this purpose two meetings were co-organized by NTUA/GRnet and CYNET. The first meeting took place in Athens in December 1998. During this meeting the strategy of the consortium was defined and the first project proposal was discussed. Then, both NTUA/GRnet and CYNET co-organized the second consortium meeting at Catania, Sicily in May 1999. During this second meeting the future of project was discussed and further actions were decided. A EUMEDIS call for Academic Networking is expected to be launched during the first months of 2001.

The MEDNET initiative involves a consortium of non-EU Mediterranean countries (all *Third Mediterranean countries*, i.e., Lebanon, Syria, Jordan, Israel, Turkey, Palestinian Authority, Egypt, Algeria, Malta, Cyprus, Morocco, Tunisia) and Greece. It aims to create *a main regional backbone infrastructure to interconnect the Research and Technology networks of the 12 Third Mediterranean countries with TEN-155 and its successor (GEANT)*. Hence, to provide a high quality Regional Academic and Research Network and offer a reliable regional gateway to the European Academic and Research Networking infrastructure via TEN-155/GEANT Points of Presence (PoPs).

For more on MEDNET please see Appendix 3

GRnet organized in Thessaloniki (1st of October 2000) a regional event to promote the creation of a Regional Research and Educational Network for Southeastern Europe. As a result of this initiative a Memorandum of Understanding (MoU) was signed among the Research Networks of Albania (INIMA), Bulgaria (UNICOM-B), FYROM (MARNET), Greece (GRnet) and Romania (RNC and RoEduNet). The MoU (attached as Appendix 4) was the result of a two days working session in Chalkidiki (29th and 30th of October). The working session prepared the MoU and made an action plan towards the creation of the Regional Network. During the event and the working session Q-MED project was presented as a model for regional co-operation.

2. Participation to QUANTUM test programme

There was active participation of Q-MED participants to QUANTUM test programme. For more information see:

<http://www.dante.net/quantum/qtp/>

3. Promotional Events and Workshops

The activities of the Q-MED project were promoted at the following events:

3.1 Regional Workshop “Towards the new challenges of the Information Society: opportunities for the Mediterranean Third Countries” (Catania, Sicily, 16 – 18th April, 1999).

During the Workshop a special parallel event (round table discussion) was organized to support the promotion of Academic Networking in the Third Mediterranean countries. In this event participated most of the representatives from the Academic and Research Networks of the Third Mediterranean Countries (participating in the MEDNET initiative). The GRNET/NTUA team presented a paper titled “On Recent Trends in Euro-Mediterranean Academic Networking” (attached as Appendix 2).

3.2 InfoSystems 1999, Special Fair on Information Technology organized by HELEXPO Greece (Salonika, 9-11th October 1999).

Q-MED was promoted via the stand of GRNET.

3.3. TERENA/NORDUnet Conference, Lund, Sweden, 7-10 June 1999 Howard Davies reported on the Q-MED development during the TERENA/NORDUnet Conference in a talk entitled “The QUANTUM and Q-MED Projects”.

3.4 Launching of the EUMEDIS Program in Israel

EUMEDIS is the largest project ever undertaken by the European Commission in the development of the global information society. Following the consultations held in the last three years by 1,500 experts from the Mediterranean and European countries, an overall Action Plan for the development of the Euro-Mediterranean Information Society has been developed. EUMEDIS is part of the Barcelona process announced in 1995 as part of the peace process in the Middle East and is the result of the formal requests made by the Mediterranean countries in the Rome Conference of May 1996. It is complementary to a regional telecommunications regulatory project launched by the Commission for the Mediterranean countries in the year 2000.

EUMEDIS will cover several strands of action:

- The creation of a network of Mediterranean Information Society focal points which should support the development of a harmonised strategy for the development of the Euro-Mediterranean Information Society.
- The funding of an Internet based interconnection between the European research network and the Mediterranean research networks. This connectivity should create a large "high bandwidth ring" all around the Mediterranean region, which will transport all the cooperative applications developed by the participants to the EUMEDIS initiative.
- Regional pilot Information Society projects in five sectors of intervention.

The EUMEDIS program was launched in Israel the 23 May 2000 in an event organized by the EUMEDIS Focal Point for Israel established at ISERD - The Israeli Directorate for the Fifth RTD Program of the European Commission.

At the event Israeli parties had an opportunity to get the information needed to participate in the EUMEDIS Pilot Projects Call. They met with the neighbouring Focal Points, Dr Soulla Louca from Cyprus and Hussam Najah Hussein from the Palestinian Authority. The call, launched last March by the Commission will close in early September. It offers a budget framework of 35 Million Euro for five areas of action. Proposals are requested for Information Society Technologies applications in the areas of Health, Education and Training, Tourism and Cultural Heritage, Electronic Commerce and Applications of Research for Industry, Business and Innovation.

3.5 InfoSystems 2000, Special Fair on Information Technology organized by HELEXPO Greece (Salonika, 29th September – 1 October 2000).

Q-MED was promoted via the stand of GRNET.

4. Newsletter/Brochure Publication

Each partner included material for Q-MED promotion within its local promotional material. For example, the leaflet of GRNET included a brief description on the aims and applications of Q-MED the Q-MED map, etc.

Q-MED was promoted also via Works of *DANTE* : (<http://www.dante.net/pubs/works/>)

Works of *DANTE* is a bi-monthly electronic newsletter reporting on the activities of DANTE.

5. Publicity

Press Releases in May 1999 and October 1999 (copied in Appendix 1) were disseminated among specialized journalists in the countries involved in the project. An extensive article for Q-MED was devoted among others by the Greek Daily IMERISIA (3-4 April, 1999) and the Greek Weekly ISOTIMIA (7-8 September 1998).

Press release:

<http://www.dante.net/pubs/press.html>

Publications:

<http://www.dante.net/pubs/press/ten-155press.html>

5. Website

The project Web site (www.ten-155.net/q-med), apart from a brief description of the Q-MED project, contained the following items:

- *The EU Conference "The Information Society and Telematics applications: An opportunity also for the Mediterranean Third Countries" (Catania, Sicily, 16 - 18 April 1999). The GRnet / NTUA Paper and Presentation are available.*
- *Internet-2 in Israel*
- *The Quantum Project*
- *The TEN-155 network*
- *Quantum developments as reported in The Works of DANTE*

Appendix 1: Press Releases

Israel connected to TEN-155!

Cambridge, 27 May 1999. The pan-European research network TEN-155 expanded into a new geographic dimension when the first production traffic flowed between Israel and TEN-155 on 21 May 1999. The Israel Internet-2 network, an extension of the IUCC, the national university network of Israel, will mainly serve Research and Development projects. MACHBA/IUCC is the first Southern Mediterranean university network to join the 22 European national university networks connected to TEN-155.

Israel is connected to TEN-155 via a 34 Mbps link, provided by the Israeli carrier Golden Lines, to TEN-155 in London. This connection is the direct result of the Q-MED project, a complementary project to Quantum, with the principle objective of connecting the Research and Development communities of Israel and Cyprus to TEN-155. In addition to a basic IP service, researchers in Israel and Europe will be able to benefit from guaranteed Quality of Service using a combination of IP and ATM technology.

The Q-MED Consortium consists of the national university networks of Israel (MACHBA/IUCC), Italy (INFN/GARR), Greece (GR-NET) and the University of Cyprus/CYNET with DANTE as the Co-ordinating Partner. The Q-MED Project is co-funded under the EC's Telematics Applications Programme.

IUCC (Inter University Computation Center) is a not-for-profit organisation mandated by the Israeli government agencies to co-ordinate and enhance the Israeli Internet-2 network. As of 1998, IUCC services eight universities and twenty academic colleges, which comprise about 100,000 students and 20,000 faculty members. DANTE organises advanced data networking services for the European research community.

INTERNET2 AND DANTE CONNECT ADVANCED R&E NETWORKS

New York, NY, Cambridge, United Kingdom - October 8, 1999 - DANTE and Internet2(tm) today connected high-performance research and education backbone networks across the Atlantic Ocean. Peering between Abilene, an Internet2 backbone network, and TEN-155, the pan-European research network, will enable collaboration among researchers and educators in the US and in Europe in ways not possible on today's commercial Internet. The interconnection will operate at 45 megabits per second, or nearly 1,000 times faster than a typical modem.

"Interoperable next generation Internet technologies and tools will enable collaborations between researchers in the US and researchers in Europe across research networks today, and will promote the rapid transfer of these new capabilities to the commercial Internet. The relationship between Internet2 and DANTE and the interconnection of our networks

will help ensure that interoperability," said Douglas E. Van Houweling, President and CEO ofUCAID, home of the Internet2 and Abilene projects.

"Today's collaborative research applications require high-performance networks. These networks exist in Europe and in the US. Connecting the networks is a major step forward for the cooperation between researchers on the two continents", said Dai Davies, General Manager of DANTE.

Today's interconnection between Abilene and TEN-155 builds on the Memoranda of Understanding (MoU) the University Corporation for Advanced Internet Development (UCAID) has signed with DANTE and a number of its European partners, such as the national research networks of Belgium, the Czech Republic, Germany, Greece, Hungary, Ireland, Israel, Italy, Luxembourg, Poland, Portugal, Slovenia, Spain and Switzerland.

Germany and Italy together with France and the United Kingdom were signatories to an earlier MoU

The MoU between DANTE andUCAID provides for the use of the interconnection by European research networks which use DANTE's Europe US service. The MoU also encourages collaboration between member institutions, promotion of technology transfer from the joint endeavors to industry, and collaboration in developing common standards and technical implementations. It will enable European and US institutions to work closely together to address network application issues of common interest.

About TEN-155

The pan-European research network TEN-155 interconnects the research networks of 21 European countries. The TEN-155 network is co-funded by the European Commission and is the direct result of the Quantum project. In addition to the provision of a 'best efforts' IP service, TEN-155 provides the European research community with an end-to-end Managed Bandwidth Service, giving researchers across Europe dedicated connectivity for advanced application developments. TEN-155 also supports the Quantum Test Programme which experiments with and validates future networking technologies. More information about [TEN-155](#). The TEN-155 network is planned, built and organised by Delivery of Advanced Network Technology to Europe (DANTE), a not-for-profit company which has a number of European research networks as its shareholders. More information about [DANTE](#).

About Internet2(tm)

The Internet2 project is being led by over 160 leading US universities, working with industry and government, to enable and facilitate the advanced network applications necessary to meet emerging needs in higher education. Internet2 participants are developing the broadband applications, engineering and network management tools for research and education. More information on [Internet2](#), a project of the University Corporation for Advanced Internet Development (UCAID).

About Abilene

The Abilene network is a project of the University Corporation for Advanced Internet Development (UCAID), home of the Internet2 project. In partnership with Qwest Communications, Cisco Systems, Nortel Networks and Indiana University, UCAID is deploying Abilene as the most advanced and far-reaching research and education network in the United States. A primary goal of Abilene is to support the efforts of the Internet2 project. Operations began in February 1999, with over 70 Internet2 institutions planning to connect by the end of 1999. More information on [Abilene](#).

Appendix 2 Paper presented at the regional workshop “Towards the new challenges of the Information Society: opportunities for the Mediterranean Third Countries” (Catania-Sicily, 16 – 18th April, 1999).

On recent trends in Euro-Mediterranean Academic & Research Networking

V. Maglaris, T. Karounos, N. Katsanou, P. Stefaneas

**GRnet S.A. - Greek Technology and Research Network
Network Management Centre - National Technical University of Athens, Greece**

High - performance networking infrastructure is considered an inseparable part of any Academic and Research environment. This kind of networking is an important tool in all Academic disciplines supporting also University Hospitals, libraries, museums as well as cultural institutions. Academic and Research Networks also initiate new research activities in networking since they often play a leading role in such technologies world-wide. In this position paper we present very briefly three of the main projects in Euro-Mediterranean Academic and Research Networking: TEN-34/155, Q-MED and MEDNET.

The TEN-34/155 project

TEN-34/155 is the first Europe-wide high speed computer network, co-funded by the European Commission (DGIII and DGXIII) offering high quality of service INTERNET facilities to the European Academic and Research Community. In effect, it is a European initiative similar to American and Japanese ones. An increasing number of National Research Networks (NRNs) in Europe have set up a national high speed computer network infrastructure, interconnecting Universities and Research Institutes within their country. These NRNs have enabled researchers to use, among others, sophisticated multimedia and real-time applications (e.g. video-conferencing, which requires constant bit rate and isochronous streams of data) on the network. However, a high speed backbone facility among these national “Information Superhighways” was previously missing, thus seriously hampering international collaboration of European researchers. TEN-34/155 emerged as a breakthrough for co-operation between the European NRNs and also achieved a new level of collaboration between them and the major European Public Network Operators (PNOs), who are all involved in the project. ***TEN-34/155 has been established as a major part of networks forming the global INTERNET.***

The Q-MED project

Q-MED (Quality Network Technology for User Oriented Multimedia in the Eastern Mediterranean Region) aims to offer high quality INTERNET interconnection services to the Academic and Research Networks of Israel (MACHBA) and Cyprus (CYNET), by providing a reliable and high speed gateway to the European Academic and Research Networking infrastructure (project TEN-34/155). The creation of such a high speed backbone network will promote and enhance the scientific co-operation and mutual understanding among the academic and research communities of the countries involved. This initiative will enable the Academic and Research Communities of Israel and Cyprus to have access to scarce expertise, strengthen the potential to create an open market, promote economic and social cohesion, promote collaboration between Academics and Researchers among Mediterranean and European countries thus enabling the formation of collaborative teams, and contributing to the development of the Euro-Mediterranean Information Society.

The Q-MED Project will closely co-operate with TEN-34/155 in the trials of protocols for real time multi-media services, as well as the QoS management inherent in the ATM technology, and will utilise the results in order to develop real time multi-media services to the Euro-Mediterranean region.

The main objectives of the project include:

1. Creation of a regional Academic Network and to provide connectivity to the QUANTUM service, for Eastern Mediterranean region, initially for Israel and Cyprus.
2. Investigation and identification of some pilot applications, that will improve QoS for the region; and
3. Promotion of Academic Networking within the region, in order to get more countries involved.

Q-MED will also investigate potential applications for new technologies, improving QoS for the region, through collaboration to TEN-34/155 testing activities. It will also explore how to use new technologies - with high demands for QoS - into some pilot applications addressing the needs of a limited group of interested users in the region. The deployment of the Q-MED backbone network consists of a 34Mbps line from Israel to the TEN-155 Point of Presence (PoP) in London, and a 4Mbps line from Cyprus to the TEN-155 PoP in Athens. The line from Cyprus is expected to be upgraded to 34 Mbps within the MEDNET project.

The MEDNET project

The MEDNET project, under preparation from a consortium involving most Mediterranean countries (Lebanon, Syria, Jordan, Israel, Turkey, Palestinian Authority, Egypt, Algeria, Malta, Cyprus, Morocco, Tunisia) will aim to provide the necessary research network interconnection infrastructure and services. The consortium is co-ordinated by the National Technical University of Athens and the University of Cyprus. MEDNET is expected to enable transfer of know-how and support collaboration between countries in the Mediterranean region, as well as between the Mediterranean region and Europe. The MEDNET infrastructure is expected to take the form of high-speed

interconnections between National Academic, Research and Education facilities, achieving in parallel the introduction of international network services as a forerunner of commercial services. This initiative will provide tangible benefits to the whole Mediterranean Community. This project proposal will be submitted for funding to the MEDA programme of the European Union.

MEDNET aims to be a high quality regional network for the countries of the Mediterranean region providing a reliable regional gateway to the European Academic and Research Networking infrastructure via TEN-34/155 Points of Presence (PoP). It is expected to support considerable co-operative regional development activity in the area of multi-media services and applications on a Euro-Mediterranean basis and create important spill-over effects from research and academic communities to a wider range of social groups. Real time interactive multi-media applications, such as multi-media conferencing, require predictable quality of service, as well as a high bandwidth network infrastructure.

Therefore, MEDNET will provide the opportunity to introduce, in the Euro-Mediterranean basis, new generations of users in the exploitation of modern communication technologies. Its main objective include among others the creation of ***a main regional backbone infrastructure to interconnect the 12 Third Mediterranean countries***, as well as the provision of connectivity to the TEN-34/155 pan-European Academic & Research Network. It aims also to facilitate and accelerate the collaboration between Academics and Researchers, provide training, investigate specifications for a number of pilot application projects and advanced networking services that will improve quality of services. Last but not least it will also enhance Cultural Exchange and capitalise on the richness of heritage in the region, where cultural civilisation is reported to have been born, spanning over 4000 years.

Appendix 3: The MEDNET Initiative

3.1 GENERAL FRAMEWORK

MEDNET initiative aims to provide the necessary research and academic network infrastructure and services, in order to enable transfer of know-how and support collaboration among Third Mediterranean countries, and between the Mediterranean region and European Union. For regional research projects to be successful, a network infrastructure paralleling that available in European Union is essential. The infrastructure is expected to take the form of high-speed interconnections between national Academic, Research and Education facilities, achieving in parallel the introduction of international network services as a forerunner of commercial services. This initiative will provide tangible benefits to the whole Mediterranean Community and directly addresses the objectives of the MEDA programme.

MEDNET aims to be a high quality regional network for the countries of the Mediterranean region providing a reliable regional gateway to the European Academic and Research Networking infrastructure via the TEN-155/GEANT Points of Presence (PoPs).

MEDNET will enable the Mediterranean communities to have access to scarce expertise, to strengthen the potential to create an open market, to promote economic and social cohesion, to promote collaboration between academics and researchers from the Mediterranean region and Europe thus enabling the formation of collaborative teams, and contributing to the development of the Euro-Mediterranean Information Society.

The creation of such an advanced infrastructure in the Mediterranean region will support the newly emerging National Academic and Research Networks (NRNs) of the Mediterranean countries and help the co - operation and mutual understanding among the Academic and Research communities of the countries involved. Sharing experience and facilities among Universities and Research Centres will be also strongly supported. The deployment of joint research projects as well as cooperative forms of teaching (as tele-teaching via teleconferencing) and training will be promoted as well.

In this context MEDNET will further provide a reliable regional gateway to the European Academic and Research Networking offering high quality services of regional connectivity and will add an opportunity for regional co-operation in applications and content development, thus creating important spill-over effects from the research and academic community to a wider range of social groups.

The high-speed IP interconnection of the Euro-Mediterranean will enable the research and development of applications and services in the domains of public interest, for example in such core areas as electronic commerce, health, education, culture and tourism, and teleworking.

3.2 ORGANISATIONS – PARTICIPANTS

1. University of Cyprus - CYPRUS (Co-ordinator)
2. National Technical University of Athens & GRnet (Project Manager) - GREECE
3. Bogazici University (CNRC) & Middle East Technical University - TURKEY
4. Informatics Department - SYRIA
5. Council for Scientific Research and Networks (NCSR) – Lebanon
6. InterUniversity Computation Center (IUCC) MACHBA - ISRAEL
7. Computer Center - Birzeit University - PALESTINIAN AUTHORITY
8. National Information Center – JORDAN
9. Computing Services Center-University of Malta - MALTA
10. CERIST – ALGERIA
11. MARWAN – MOROCCO
12. Regional Information Technology and S/W Center (RITSEC) – EGYPT
13. Institut Regional des Sciences Informatiques et des Telecommunications (IRSIT) –
TUNIS

3.3 MAIN OBJECTIVES

1. To create the main regional backbone infrastructure and connectivity to interconnect the 12 Third Mediterranean countries of the region, as well as provide connectivity to the TEN-34/155 Pan-European Research and Academic infrastructure.
2. To facilitate and accelerate the collaboration between the Mediterranean region and the European Union on projects which will enable the smooth introduction of technical know how necessary for the lifting and economic viability of the region and its gradual introduction in the global marketplace.
3. To facilitate and accelerate the collaboration on specific projects between countries in the Mediterranean and benefit from exchange of information and expertise in order to enable subsequent collaboration on social, cultural, and economic projects in the area of education, electronic-commerce, health, cultural heritage, tourism, environmental issues (earthquake crisis management, water management, solar energy) etc.

4. To utilise and further develop existing national network management and operation service centres.
5. To provide training and education of national network management centres, to enable their collaboration with others in the region, to encourage the sharing of experience and facilities, and to offer advanced networking services so that they can support the needs of the projects.
6. To investigate specifications for a number of pilot application projects and advanced networking services that will improve quality of services, where applicable, in the region and optimise bandwidth utilisation over the wide area network of the region,
7. To enhance Cultural Exchange and capitalise on the richness of heritage in the region, where cultural civilisation is reported to have been born, spanning over 4000 years.
8. to validate and disseminate Academic Networking in the countries involved and draw conclusions concerning the creation of the advanced networking services required for the necessary group multimedia communications. Effective bandwidth management and quality of services are issues to be investigated, and
9. Training.

In order to achieve the above it is necessary to establish regional networks providing each country with high-speed connectivity among all countries in the region. Cross connections between regional networks will be established as well as one or more high speed connection to the Trans European Academic and Research Network. The creation of the necessary research and subsequent economic activity will enable a reversal in brain drainage currently observed in the Mediterranean region. This project would also require the creation of appropriate management structure capable of evaluating the regions requirements and able of optimizing the use of available resources with respect for the national peculiarities.

Priority must also be given to evaluate national requirements and availability of services in order to generate a common and unified set of services. This would allow a degree of justified flexibility in order to enable the smooth introduction of the services.

3.4 EXPECTED RESULTS

The increasing need of the academic and research community for networking infrastructure and services, in order to enable know-how transfer and support collaboration, the need to rapidly integrate the Mediterranean region towards the Global Information Society, leads to the increasing requirements for high-speed interconnections within the Mediterranean, as well as between the Mediterranean region and Europe. MEDNET aims to offer high quality, high speed network services for the Mediterranean region providing a reliable regional gateway to the Euro-Mediterranean Academic and Research Networking infrastructure via a high speed network.

In addition, a considerable co-operative regional development activity in the area of multi-media services and applications on a Euro-Mediterranean basis will create important spill-over effects from research and academic communities to a wider range of social groups. Multilinguality (in terms of content and tools) will be strongly supported.

Real time interactive multi-media applications, such as multi-media video-conferencing, require predictable quality of service to be available, as well as a high bandwidth network infrastructure. Therefore, MEDNET will provide the opportunity to introduce, in the Euro-Mediterranean basin, new generations of users in the exploitation of new communication technologies.

The creation of such an advanced infrastructure in the region will help the co-operation and mutual understanding among the academic and research communities of the countries involved. Sharing experience and facilities between universities and research centres will be strongly **supported**. The deployment of joint research projects as well as co - operative forms of teaching (such as tele-teaching via teleconferencing) will be promoted as well.

Market situation

An important issue is the cost of transmission capacity between Europe and Mediterranean countries. The need to develop specific dialogue between Euro-Mediterranean Telecom Authorities and promote awareness and adoption of the latest Telecommunication standards and solutions will open a new market.

The creation of an appropriate business environment for large pilot projects will create a consumer base for both IT industry and service providers, enlarging the Euro-Mediterranean market. Development activities aiming at offering diversity of networking services, in a wide area networking environment as well as research activities on new generation of services, will enable the academic and research community to participate in pre-commercial trials with emphasis on quality of service and optimization of bandwidth utilization.

All of these issues are likely to lead to market offerings in the upcoming years in the Mediterranean region.

Knowledge of the technologies to be used

Within projects carried out up to now (TEN-34, QUANTUM/TEN-155, Q-MED/QUANTUM's extension to the Eastern Mediterranean, and other national implementations) useful knowledge on internetworking issues (performance and management, limitations and potential) of IP and ATM technologies have been acquired. Through the experience gained, advanced multi-media applications over a wide area network will be assessed shared and expanded. It will also give the opportunity to form the basis for testing new technologies.

3.5 BENEFITS

Multilinguality aspects and cultural issues

This project is expected to provide a new way for the Euromed countries to capitalize on their common cultural heritage. Until now this common cultural heritage has only been exploited in a rather limited way, through country-to-country manifestations. However,

as boundaries between countries are breaking down there is a need to find similarities and common bonds. Cultural and religious differences between the countries in question have minimally helped this common heritage to be projected in a more organized and easily accessible way. Modern facilities though, in the form of information communication technologies have become an enabling medium that can bridge these differences and help countries with diverse cultures and religions to concentrate on their common bonds.

Users involved

The main users of the project consist of the Academic and Research communities of the Mediterranean countries.

A number of Advanced User Groups will be included in the proposal. Advanced networking services (high bandwidth) users will be identified and encouraged to become members and use the network. The thematic groups identified as priority areas in the Information Society Action Plan will be expected to make use of the high speed network, as they become active projects (the thematic areas are Electronic Commerce, Education, Health, Culture and Tourism). Others, such as the weather forecasting departments and TV and audio broadcasting institutions, and SME networks will also be approached.

Technologies and/or approach used

Advanced telecommunications technology based on IP and if feasible a combination of IP and ATM technologies will be used, with a specific objective of testing the ability of the technology to offer predictable Quality of Service on a multi-vendor regional network.

Expected benefits for the citizen of the Mediterranean region

The advances in scientific and industrial research and enhanced co-operation on a Pan-European and Mediterranean basis will lead to improvements of the quality of life of the general population through developments in such areas as education, medicine, cultural heritage and tourism, environment, biological sciences etc.

Expected benefits for the users of the application

All users will benefit from effective high performance network services. It will provide reliable, high quality and high throughput access to the main nodes of Global Information Infrastructure. Some users will also be able to exploit switched interactive multi-media services and will also be able to develop (networked) multi-media applications in an academic environment.

Expected benefits for the Industries of the countries involved

Industry will have the opportunity to gain a leading position in the area of new networking services (e.g. multi-media services) as a result of the testing program.

Contribution to EU-policies

The project supports the overall collaboration between EU and Mediterranean countries in the fields of education, technology and research. It will also provide support for a wide range of Academic and Research activities, and will determine the best approaches to supporting such applications by promoting the introduction of appropriate cost effective networking services with improved QoS.

Euro-Mediterranean value-added

Whilst TEN-34 has represented a major step forward in European research networking, there is still a significant gap between the capacity available in national research networks in Europe where 155Mbps is feasible today and Mediterranean NRNs where the maximum access speed rarely exceeds 2Mbps, if any. It is the intention of the MEDNET Project to improve the homogeneity of research networking across the Mediterranean region and make a small initial step toward providing high-speed connectivity, as in the European counterpart. Developments on Internet technology and ATM aiming at solving management control issues and quality of service will have a major impact on the international market place for networking services in the next decade. MEDNET, will contribute to build a Euro-Mediterranean interconnection activities and give the opportunity to Europe to extend its technical lead to the Mediterranean region.

Economic and Social Impact

The high speed interconnection of Mediterranean national research networks will enhance future development in the countries involved and benefit the population at large by promoting the advance of both pure and applied research, as well as improving facilities for higher education. The advanced networking services offered by the new network will encourage the development and deployment of (networked) multi-media applications that will permit new ways of working, teaching, and distributed collaboration between Europe and Mediterranean region. These will enhance more effective competition in the global research community. The development of a high performance communications infrastructure is critical to the future of Euro-Mediterranean industry, and will influence the well being of its economies in years to come. It will also contribute to a more rapid integration of the region towards the Global Information Society, by bringing interaction between industries, citizens, research communities and government, and by creating an appropriate political and regulatory framework.

The advances made in scientific and industrial research will lead to improvements in the quality of life of the general population through developments in diverse domains of public interest, such as medicine, environment, health, education, culture, tourism, etc., in view of the forthcoming Information Society.

3.6 PROPOSED ACTIVITIES

Project Objectives

The MEDNET project has the following main objectives:

- To create the main regional backbone infrastructure and connectivity to IP interconnect the 12 Third Mediterranean countries of the region.
- To provide connectivity to the TEN-155/GEANT Pan-European Research and Academic infrastructure.
- To investigate specifications for a number of pilot application projects and advanced networking services.
- To provide training for the personnel of the Academic & Research Networks

Project Starting Point

MEDNET will provide connectivity between the existing NRNs of each country in the Mediterranean. Even though internal to each country, in most cases, an adequate backbone network providing service to the academic community exists, there is currently no interconnectivity between the NRNs.

Project Evolution

It is envisaged that the project will evolve through certain predefined stages. These stages define both the definition of regional networks, the inclusion of new members, and the upgrading of the connection and subsequent services offered. The final order of events is defined by the members of the consortium and the technical viability and feasibility of the proposed solution.

The model proposed is one along the same lines as other regional networks e.g. NorduNet, and CEENET. The management of the overall project is then made easier. We propose the formation of one regional networks covering the Eastern and Western Mediterranean region, interconnecting the countries in the region, as well as interconnecting to other regional networks and to the European Research Network.

Figure 1 shows the current terrestrial fibre links linking the region. The connection node to Europe is expected to be via the Q-MED node in Cyprus which in turn is connected to the Greek node of TEN-155 (currently QUANTUM).

The proposed network topology is shown in Figure 2. Only terrestrial fibre links are shown. It is a subject for further study to consider alternative connections, such as satellite based ones. Note that the connection of individual countries can proceed at the pace dictated by their readiness to connect (since the infrastructure to connect will already be in place, i.e. a connection from the regional hub to the regional node and to the TEN-155/QUANTUM/Q-MED). The capacity of the connection from Cyprus to Greece is estimated to be less than the sum of the requirements of each country, as there will be some gain due to statistical multiplexing (here it is shown as 10 Mbit/sec for Cyprus to Athens PoP and 6 Mbit/sec for Malta to Italian TEN-155 PoP). The gain due to statistical multiplexing will be estimated more accurately, once the topology is finalised.

Two alternative connections are proposed to provide better connectivity.

Appendix 4: Memorandum of Understanding towards the creation of a regional Research & Educational network in South - Eastern Europe.

Memorandum of Understanding

Among

**GRNET, INIMA, MARNET, RNC,
RoEduNET, UNICOM-B**

towards

***“THE CREATION OF REGIONAL ACADEMIC &
RESEARCH NETWORK SERVICE
IN SOUTHEASTERN EUROPE”***

***October 1st, 2000
Thessalonica, Greece***

MEMORANDUM OF UNDERSTANDING

Among

- The Greek Research & Technology Network (**GRNET**) <http://www.grnet.gr>
- The Albanian Institute of Informatics and Applied Mathematics¹ (**INIMA**): <http://www.inima.al/>
- The Academic and Research Network of the Former Yugoslav Republic of Macedonia (**MARNET**): <http://www.marnet.mk/>
- Romanian National R&D Computer Network (**RNC**): <http://www.rnc.ro/>
- Romanian Educational Network, (**RoEduNET**): <http://www.roedu.net/>
- The Bulgarian Academic and Research Network (**UNICOM-B**): <http://www.acad.bg/>

Towards the creation of a,

Regional Academic and Research Network Service in South Eastern Europe

In order to attain this goal, the undersigned National Research & Education Networks (NRENs) GRNET, INIMA, MARNET, RNC, RoEduNET and UNICOM-B agree, inter alia, to adhere to the following principles:

1. to provide appropriate network interconnections and services in order to develop, implement, test and use advanced research and education applications;
2. to promote a co-operation for the deployment of the next-generation networking in the area of research and higher education;
3. to affirm a co-coordinated and effective presence of the undersigned NRENs to the Trans-European Research & Academic infrastructure (TEN-155 and its successor GEANT), having in mind common educational, scientific, cultural features, interests and strengths of the region;
4. to extend the aforementioned presence in other regions, such as the south-eastern Mediterranean region and the USA (particularly with respect to the Internet2 initiatives);

¹ INIMA represents the Albanian Research and Educational Networking community and will be replaced by a formal NREN organisation, when such an entity will be established.

5. To foster community building among Albanian, FYROM, Bulgarian, Romanian and Greek academics & researchers, thus enabling proper conditions for a cross-country educational, scientific and cultural exchanges, activities and projects;
6. To collaborate with government organizations, agencies, and other relevant institutions in their respective countries, in order to encourage and build the interconnectivity necessary for the operation of a regional Academic and Research Network in South Eastern Europe, based on the proliferation of the most advanced networking technology and the associated services for the benefit of society in the South Eastern Europe, in general;
7. That, in furtherance of this goal the undersigned NRENs agree to monitor and employ the technology or other tools deemed necessary to ensure that the quality of the networking traffic between their respective institutions is neither degraded nor diminished as a result of congestion induced by a commodity-type traffic;
8. The undersigned NRENs may establish bilateral and multilateral consortia, fora and non-for-profit entities,
9. The undersigned NRENs agree that the Regional Academic & Research Network Service in Southeastern Europe will not be used to carry purely commercial traffic;
10. Unless and until the parties mutually agree otherwise in writing, each party will be responsible for its own costs, fees and expenses (which also covers the representation), incurred in connection with the transactions contemplated under this MoU, including but not limited to the negotiation and execution of the definitive documents.

Agreed to By:

Dated at Thessalonica, this First day of October, 2000.

For **GRNET:**

For **RNC:**

Prof. Basil Maglaris
Chairman of the Board

Dr. Eugenie Staicut
Manager

For **INIMA:**

For **RoEduNet:**

Dr. Neki Frasheri
Vice-Director

Eduard Andrei
General Manager

For **MARNET:**

For **UNICOM-B:**

Prof. Oliver B. Popov
Chairman of the Board

Orlin Kouzov
CEO