



**FOREIGN
BROADCAST
INFORMATION
SERVICE**

JPRS Report

Science & Technology

Europe

REPORT OF THE EUREKA ASSESSMENT PANEL

DISTRIBUTION STATEMENT A

**Approved for public release;
Distribution Unlimited**

REPRODUCED BY
U.S. DEPARTMENT OF COMMERCE
NATIONAL TECHNICAL
INFORMATION SERVICE
SPRINGFIELD, VA 22161

19980518 256

JPRS-EST-92-001
28 FEBRUARY 1992

SCIENCE & TECHNOLOGY
EUROPE
CONTENTS
REPORT OF THE EUREKA ASSESSMENT PANEL

92WS0268A Brussels REPORT OF THE EUREKA ASSESSMENT PANEL in English 1991
pp 3-64

[A report on the status of the EUREKA program at the five-year mark, including an assessment of the program and recommendations for strengthening the productivity and competitiveness of European industries and EUREKA participants. Prepared by the EUREKA Assessment Panel -- chaired by Dr. Wisse Dekker -- and the EUREKA Secretariat for submission to the EUREKA Ministerial Conference.]

Introduction	1
Executive Summary	2
Findings and Recommendations	6
EUREKA: History and Place	16
Infrastructure	17
EUREKA Projects	20
Project Generation	20
Project Selection	22

Benefits From Participation in EUREKA	24
Profile of Partners	27
Quality of Projects	31
Supportive Measures	36
EUREKA and the EC Programmes	38
APPENDIX I. Members of the Assessment Panel	41
APPENDIX II. Terms of Reference	42
APPENDIX III. Methodology	43
APPENDIX IV. Questionnaire Results	47

INTRODUCTION

The Eureka assessment panel was asked by the Chairman of the Eureka Ministerial Conference to look into the status of the Eureka programme after its first five years. The main objective of the panel was to see if improvements could be made to further strengthen the initiative.

The panel has found it not to be an easy task to assess the Eureka programme. As a consequence of the federative and decentralised character of Eureka, the panel could not base its conclusions on information derived from one single source. Furthermore, Eureka has developed into a programme with many participants.

In order to obtain the necessary information, the panel has held meetings with government officials and project participants. These meetings were organized by the Eureka officials in the member states.

To supplement this information, the panel has sent a questionnaire to all Eureka participants. The panel has also been provided with other material relevant to its work (a.o. evaluations of Eureka in France and the United Kingdom).

The report of the panel can be divided in two sections. The first section (chapters 2 and 3) contains the findings and the recommendations of the panel.

The second part (chapters 4 - 9) contains the facts and figures on which the panel has based its recommendations. This section has been prepared by the panel's secretariat and is largely based on the outcome of the above-mentioned questionnaire.

EXECUTIVE SUMMARY

The Eureka assessment panel was asked to provide an insight into the status of the Eureka programme after its first five years. The main object was to see if improvements could be made to strengthen the initiative. The task is more specifically outlined in the terms of reference (see Appendix 2.).

During the assessment it became clear that the main issues the panel would have to address were in the areas of:

- the total concept of Eureka;
- the results and benefits to the participants and to Europe;
- the quality of the projects;
- the procedures;
- the relationship of Eureka to the technology programmes of the European Community.

The panel concludes that after five years Eureka has become an important instrument in the field of international technological (and to a lesser extent scientific) co-operation. The panel has a favourable view of the results that have been achieved so far.

The following elements are the strong points of Eureka:

- its bottom-up character which has encouraged a great variety of projects to be proposed;
- its market orientation has accelerated introduction of new technologies;
- its flexible and decentralised character has kept bureaucracy to a minimum.

However, the panel has noted that after five years of experience some deficiencies have become clear as well, relating to :

- a lack of transparency;
- insufficient synchronisation of procedures.

At present this can be regarded as an acceptable price to pay for the vitality of Eureka. Nevertheless the panel is convinced that there are ways and means by which these deficiencies can be removed without losing the advantages of the Eureka approach.

The panel believes that the time has come to put more emphasis on project quality. After five years of building and pioneering it is now time to consolidate and further strengthen the concept of Eureka. The panel is confident that the implementation of its recommendations will contribute to this effect.

The programme is well worth this effort. An important role is seen for the Group of High Level Representatives (HLG) and the Ministerial Conference (MC) to monitor the panel's recommendations.

The findings and recommendations of the panel can be summarized as follows:

The concept

The panel values highly the Eureka concept. The programme caters for a real need for industry and research institutes. The bottom-up approach and the flexible and decentralised character offer excellent opportunities for industrial partners to carry out the research they consider to be important, with the partners of their choice. This has resulted in a great variety of projects ranging from small bilateral projects to large prestigious projects. Participants include small and medium sized companies and multinational firms. There is also no limitation on the technological areas covered by Eureka. The panel regards this to be a particular asset of Eureka.

The panel acknowledges the role umbrella projects can play in bringing together interested parties, in defining common criteria and creating synergies in certain technological areas. In order to comply with the bottom-up character of Eureka these umbrellas should, after a certain start-up phase, be supported and financed by the participants themselves.

The panel recommends that the bottom-up character of Eureka be maintained and where possible strengthened.

The flexible and decentralised character of Eureka and the lack of bureaucracy are especially attractive to small and medium sized industries. This is reflected in an increasing but still modest participation of SMEs in Eureka (27% of all companies in 1990).

The panel recommends that the participation of SMEs be further encouraged by:

- providing better information;
- assisting in partner search;
- providing financial support for project definition and feasibility studies.

The results

Eureka has contributed strongly to the creation of an environment conducive to international co-operation. The panel considers this to be of great importance in view of the further integration of the European market. It has provided a valuable complement to the more structured approach of the European Community programmes.

The panel concludes that Eureka has contributed to the strengthening of the competitive position of individual European firms by stimulating co-operation in research and development, by accelerating the introduction of new technologies and by creating business opportunities.

The panel is confident that ultimately this will have a positive effect on the competitive position of Europe.

The panel has noted that strategic projects which would give Europe an additional competitive advantage have not materialised on a large scale. Strategic projects would afford the Eureka programme the higher profile it needs to continue attracting good project proposals and political support. The High Definition Television project (EU 95) is a good example of such a strategic project in which industry is in a bottom-up way responsible for the development of technology and products; governments and the European Commission have a special responsibility to adopt a consistent approach and to encourage the development of global standards.

The panel recommends that governments encourage industry to define a number of strategic projects in addition to the existing category of individual bottom-up generated projects. Governments should be prepared to create the right conditions for these projects to emerge (supportive measures). Industry in turn should make better use of the Eureka framework to launch this type of project.

The panel has found that the concept of supportive measures is little known among Eureka participants. These measures are aimed especially at promoting compatible standards and other regulations. Supportive measures are however often mistaken for public funding. Only a limited number of projects have made requests for standardisation measures. For less than 10% of all projects, supportive measures seem to be crucial for their implementation.

The panel recommends that additional information be made available regarding the concept of supportive measures.

Quality of projects

Taking into account the limited time that has elapsed since Eureka was launched, the panel is encouraged by the overall quality of the Eureka project portfolio. Almost 60% of all participants expect

marketable results within 5 years after the start of their project.

The panel recommends further improvement of the quality of individual Eureka projects by tightening existing procedures and by adjusting these procedures as proposed in this report. In addition, industrial projects should present the outline of a business plan to demonstrate the market orientation of the project.

Furthermore the panel recommends regular evaluation of the project portfolio by participating member states. In this evaluation special attention should be paid to the commercial prospects.

The panel recommends that a mechanism be introduced to withdraw the Eureka label if a project does not perform as expected.

The procedures

The panel has found that the confusion around the criteria for project selection and the funding procedures provides an important source of criticism. Almost half of all participants have experienced problems in this area.

The panel strongly recommends that the following measures be taken in order to strengthen the Eureka programme:

- Eureka criteria and procedures of all member states should be made transparent. The panel sees an important role for the International Eureka Secretariat to keep this information up-to-date;
- the timing of funding decisions in the different member states as they relate to one project should be synchronised;
- the international procedure (Eureka label) and the national procedures (funding) should be synchronised;
- the possibility of a pre-Eureka label should be introduced during which time a feasibility study could be performed and/or the co-operative framework built up.

Eureka and the European Community

The panel is encouraged by the way the relation between Eureka and the technology programmes of the EC is developing. The panel feels that the differences in concept and execution of the two schemes should be respected and maintained. This means that in principle the two mechanisms should remain separated. However, there are areas of overlap and opportunities for synergy between the programmes. These should be dealt with in a pragmatic manner and with close co-operation between the EC and Eureka.

The panel makes the following recommendations to further strengthen the links between Eureka and the EC :

- The Commission of the EC should promote the use of Eureka as an instrument to pull through European Community research to the market place. The Commission should therefore encourage participants in EC-programmes to continue their work in Eureka. Assistance should be given by the Commission to these projects to apply for Eureka status. The panel would like to see a significant proportion of Eureka projects, announced by the Eureka Ministerial Conference in the next two years, to originate from EC programmes.
- Effective use should be made of Eureka as a generator of precompetitive research topics which might be taken up in the EC programmes. This can be done by a careful screening of the Eureka portfolio, as is currently under way in the X-ray sessions of the NPC network. Active participation of the EC is encouraged.
- The panel recommends co-funding of Eureka projects by the Commission of the EC in those cases where:
 - a link can be established with the precompetitive research programmes of the EC. EC funding should be

primarily aimed at the precompetitive research itself.

financial participation by the Commission could facilitate the role of the EC in the field of standards.

The panel sees an important role for the HLG and the MC to monitor progress in this area.

The infrastructure

The panel is pleased with the absence of bureaucratic structures in Eureka. However, the programme cannot function without an adequate infrastructure.

The panel makes the following recommendations to make the Eureka machinery operate more effectively:

- *The network of NPCs plays an important role in making Eureka work. In order to further improve the NPC-network, the tasks to be performed by NPCs and the operating procedures should be harmonised as far as possible. Governments should make adequate provisions for their NPCs.*
- *Further study is necessary regarding the way the International Eureka Secretariat implements its tasks.*

FINDINGS AND RECOMMENDATIONS

The concept

The concept of Eureka is closely linked to its objectives. These were laid down in the Hanover Declaration of Principles. Key elements of these principles are: competitiveness, industrial orientation, flexibility, and the absence of a preconceived concept. The panel has noticed clearly the influence of these principles on the main elements of Eureka itself. They are:

- bottom-up project generation;
- market orientation;
- flexibility and decentralisation;
- supportive measures.

It is principally the bottom-up project generation which sets Eureka apart from other programmes. Together with the market orientation it forms what the panel considers to be the essence of Eureka. It is the most attractive feature to its participants. Eureka offers interested parties a framework for technological co-operation in areas they consider to be of importance, with the partners of their choice. Eureka has offered many firms and institutes a springboard to engage in international activities. Eureka is especially attractive to SMEs, and an important vehicle to learn to co-operate on an international level.

This is reflected in the participation figures for SMEs. SMEs represent almost 30% of all participants. Participation of SMEs in Eureka should be further encouraged. The panel has noted with approval that a number of Eureka-countries is now actively promoting the participation of SMEs through special funding in the project generation and definition phase.

The panel has also studied the concept of umbrellas. Although there are only five umbrellas to date, the panel has found that many participants in umbrella projects have experienced additional spin-offs by defining common criteria, creating synergies and bringing together interested parties. In order to comply with the bottom-up approach of Eureka the panel is of the opinion that these umbrellas should after a certain start-up phase be supported and financed by the participants themselves. The umbrellas will develop into specialised networks, thereby reducing the workload for the NPC network.

The panel considers it essential that the bottom-up approach and market orientation be preserved and where possible strengthened.

Another key element of Eureka is flexibility and decentralisation. The panel is convinced, that flexibility and decentralisation are an important complement to the bottom-up character. For this reason they should be maintained. However, the panel also notes that after some years of experience some procedural deficiencies have become clear. This issue will be addressed in more detail when dealing with the procedures of Eureka.

During its fact finding, the panel has found that the key elements of Eureka (bottom-up, market orientation, flexibility) have resulted in a very diversified programme. This diversified character affects the visibility of Eureka. By encouraging the development of projects of a more strategic nature in addition to the very important category of individual bottom-up generated projects the visibility of Eureka can be further enhanced. Good examples of these projects are the HDTV project, Cosine and Prometheus.

In these projects, industry, governments, and the Commission of the EC all have a role to play. Industry is best placed to develop technologies and products in a bottom-up way.

Governments and the Commission have a role to play in the field of harmonisation and standardisation to facilitate market access for these new products. For this reason the panel recommends a more active role for governments to stimulate industry to propose large strategic projects. Industry itself could make better use of the opportunities of Eureka to launch projects of a more strategic nature. Governments can assist in creating the right conditions; industry should define projects in a bottom-up way that fit in the overall concept.

This is to ensure that practical and economically sound projects are undertaken. Many areas can be found where such projects could be defined.

Examples in the private sector are projects like CARMAT, PROMETHEUS, and FAMOS). Examples relating to the European infrastructure are: high-speed rail transport, traffic information and control systems, and toll-collection systems.

In these areas the opportunities for active participation of governments through supportive measures are most obvious. The panel feels that the opening of European borders provides the opportunity for the Eureka framework to be used for co-operative projects to improve the European infrastructure. These projects of a more strategic nature will give Eureka a higher profile. This will help to attract other good quality projects and will generate further political support for the initiative.

The results

The panel has looked at the results of the first five years of Eureka and has attempted to form an opinion regarding the overall quality of the Eureka project portfolio. It has also examined the profile of participants in Eureka and the benefits from participation.

In general the panel is pleased with the results that have been achieved so far. With a project portfolio of 378 projects, involving 2,300 partners, Eureka has clearly contributed to the competitive position of individual firms. This in turn will have a positive effect on the overall competitiveness of Europe.

Quality of projects

In order to be able to comment on the quality of the Eureka project portfolio the panel has distinguished between the following two aspects of quality:

- technological and scientific quality (content of the project);
- strategic quality (contribution of the project to the objectives of Eureka).

The panel has found it difficult to form an opinion on the technological- and scientific quality of the Eureka project portfolio. Both governments and participants were unable to provide the panel with the necessary information. The main reason is that many projects are still at an early stage. Furthermore no information is available on Eureka projects which do not receive public funding, since these projects are not required to file progress reports. The panel has therefore made an assessment of project quality based on the sample of projects it has analysed in more detail and on the benefits experienced by industry. In order to obtain a better insight into project quality the panel recommends a regular evaluation of the project portfolio by participating member states.

The panel has the impression that in the starting phase of Eureka the emphasis was more on quantity than on quality, i.e. getting an adequate number of projects under way. The panel feels this policy was justified since a certain number of projects was needed to give Eureka the necessary momentum.

Taking into account the time that has elapsed since Eureka was launched, the panel is encouraged by the overall quality of the Eureka project portfolio. However, the panel thinks the time has now come to put more emphasis on quality, independent of the size of the project. This can be achieved by a tightening of existing procedures, as will be explained later, and by a better monitoring of progress of individual projects. The panel would like to see each project present the outline of a business plan before Eureka status is granted. The level of detail of the business plan should increase in each subsequent phase of the project. This can be facilitated by agreeing on concrete objectives and milestones before a project receives Eureka status.

In order to protect the Eureka label as a "seal of excellence" the panel thinks there is ample justification to insist on progress reports even from projects which do not receive public funding.

The panel has noted that the requirements for progress reporting differ from country to country. Each government asks for a progress report for their (national) part of the project. At present a project has to produce several different progress reports to the various national funding authorities.

The panel recommends some harmonisation of these procedures. Only one report in a standardised format should be used for all involved parties to report on the progress of the project as a whole. This will strengthen the international dimension of Eureka projects.

The panel would like to see the possibility of a withdrawal of the Eureka label if a project does not perform as expected. A procedure to do this should be developed, which minimises the commercial implications to the partners concerned.

Regarding the strategic quality the panel has the following observations. The panel has looked at market orientation and contribution to Europe's competitive position. The panel has found that most participants consider their projects to be market oriented. This is reflected in the expectation that nearly 60% of all projects will result in commercial application (products or services) in a period of at least 2-5 years after the beginning of the project.

The panel believes that the strengthening of the competitive position of individual firms in Europe will eventually have a positive effect on the competitive position of European industry in world markets. In addition the panel would like to repeat at this point its recommendation for the inclusion of large, strategically oriented projects alongside the current individual projects with a more tactical industrial orientation.

Benefits from participation

The panel has found that the main motive for participation in Eureka is the access to complementary technological know-how and the sharing of risks and R&D costs. This is followed by commercial and market considerations. Looking at these motives, the panel concludes that Eureka attracts the right type of organisation.

The panel has received different views regarding the importance of funding. It is of the opinion that certainly in the project definition phase, funding is an important motive for participation. Many companies have testified to the panel that they would not have participated without financial support from their government. The panel, however, has the impression that financial support becomes less important when a project is well underway.

Standardisation has a low priority for most Eureka participants. This is in line with an observation by the panel that the concept of supportive measures is not well known nor understood by (potential) participants in Eureka.

Eureka has not proved to be a platform for broad dissemination of the results of the research. The spin-off to other sectors is very limited. This observation corresponds with the complementary nature of the partnerships in Eureka and with the close-to-the-market character of Eureka projects. Transfer of technology from projects tends to take place through the market place.

The panel concludes that the projects are of great importance to the participants. According to a significant number of participants, Eureka contributes to their competitive position. More than half of Eureka participants have stated that Eureka has contributed in establishing long-term business relations. In view of "1992" the panel considers this to be an important benefit of Eureka.

The success of Eureka can also be illustrated by the fact that half of all Eureka participants have indicated that they want to participate in a Eureka project again. The other half was not at that point in a position to express an opinion. Only 3% indicated that they would not participate again.

Profile of participants

The panel has found that participants look for technologically competent partners with complementary technologies or products in order to jointly develop new products or applications. Co-operation with complementary product producers is the most common type of co-operation. This is probably due to the market orientation of the projects. The panel has noted that not many "adventurous" partnerships have been established which would enable firms to explore new areas for innovation.

Looking at the type of projects in Eureka, the panel concludes that the partner choice is very much along the lines of the main objectives of Eureka: joint development of products and services.

The procedures

The panel has found a great diversity of procedures in Eureka. Basically, they can be divided into two categories : procedures to grant Eureka status to projects, and procedures to grant public funding to projects.

The procedure aimed at awarding the Eureka status is part of the international dimension of Eureka. The criteria in this procedure largely determines the size, shape and quality of the Eureka project portfolio. The Eureka label is the common denominator shared by all Eureka projects; it is the cement that binds Eureka together.

The panel has noticed that the member states do not systematically use all the criteria laid down in the Hanover Declaration of Principles to award the Eureka label. The only criteria always applied are the required international co-operation and the development or application of new or advanced technologies. No concerted effort is made at systematically applying the other criteria dealing with the strategic European dimension, market orientation and financial aspects (the fact that finance for a project needs to be guaranteed). This approach certainly accounts for a light and non-bureaucratic procedure but it also means that Eureka status is very often based on only a limited amount of information about the projects. In addition, many participants found that the selection criteria were not sufficiently transparent.

The panel feels that improvements are possible if more attention could be given to the procedures to obtain the Eureka status, taking into account the experience of the first five years of the programme. It is important that the criteria as laid down in the Declaration of Principles are observed.

However, it is appreciated that different weight has to be given to the criteria in case projects are proposed by small and medium sized enterprises.

Adherence to the criteria is the only guarantee that the value of the Eureka label as a "seal of excellence" is maintained and further strengthened in the future.

Although Eureka is not a funding mechanism, projects with the Eureka status may be awarded public funding. This funding always comes from national sources and as such the procedures to obtain these funds are national procedures as opposed to the international procedures leading to the Eureka status. This dichotomy in procedures is the most striking manifestation of the federative character of the Eureka programme.

As can be expected, the fact that participants in the same project have to go through different national funding procedures often causes problems in the definition and start-up of projects. Almost half of all projects has experienced procedure-related problems.

The problems are aggravated when the Eureka label is awarded before the project has passed through the funding procedures. In those cases co-operative arrangements have been known to fall apart, and even whole projects to be abandoned. In many cases, valuable time is lost. Many of the negative comments from participants spring from frustration with the lack of harmonisation between funding mechanisms as well as the lack of synchronisation between funding decisions in the member states.

The panel has devoted much of its discussions to the procedural aspects of Eureka. It has reached the following conclusions and recommendations:

- From the viewpoint of the participants in Eureka a harmonisation of funding mechanisms between the member states would be the ideal situation. However, the application of individual member states' funding programmes is a consequence of the federative approach that has been chosen. Therefore the panel does not necessarily expect a full harmonisation of funding mechanisms.
- The panel does, however recommend that the timing of funding decisions in the different member states as they relate to one project be synchronised as far as possible. The panel feels that this is a technical problem rather than a political one. It means that it can be addressed at the level of the executive bodies which administer the national funding programmes. Very often these executive bodies have close ties with the national Eureka offices.

The Eureka offices are proof that synchronised procedures can be achieved through close networking.

There is no fundamental reason why the executive programme bodies could not achieve positive results through closer interaction, either directly or through the Eureka offices.

- The panel also recommends a stronger synchronisation between the international procedure (Eureka label) and the national procedures (funding). Currently some countries will award Eureka status before starting funding procedures. The panel considers this an undesirable situation. The panel recommends a situation in which the procedure for the Eureka label goes hand in hand with the funding procedure. When a project is awarded Eureka status, it should be made clear in the same decision that the project is eligible for financial support.

It might mean a longer wait to acquire Eureka status but the panel is convinced that the simultaneous availability of public funding is worth the delay. The panel is strengthened in its conviction by the remarks of many project participants. An important additional benefit is that stricter procedures for acquiring the Eureka status will improve the quality of the Eureka project portfolio.

- The panel recommends the introduction of a two-tiered approach in which a project could receive a temporary Eureka status during which a feasibility study will be performed and/or the co-operative framework could be built up. For larger projects this period could also be used to acquire funding for the main phase of the project. Careful consideration of a satisfactory mechanism should be given by the NPCs to avoid the risk of ill-conceived proposals receiving temporary status.

The temporary Eureka status would be an asset in finding partners, funding, etc. It would end within 6 months (with a possible extension of 3 months), unless Eureka status is awarded for the full project.

When introducing this pre-Eureka label the panel feels that a number of aspects deserve special attention:

- To acquire the temporary label the project should at least score highly on all Eureka criteria.
In other words, the temporary label should be reserved for projects with a high probability of obtaining the final Eureka status.
- Preferably mechanisms and budgets should be available to support the feasibility studies. These mechanisms should be quick and unbureaucratic.

If adopted these recommendations will result in:

- a higher threshold to obtain the Eureka label (stricter selection procedures) ;
- achievement of full Eureka-status at a later stage when funding is guaranteed (private or public) ;
- a reduction in the number of labels that might otherwise be withdrawn.

The panel is confident that any unintentional inhibiting effect on the generation of projects will be balanced by the introduction of the temporary Eureka label. More generally, the procedural recommendations of the panel are primarily aimed at increasing the collaboration and networking between the national secretariats in order to alleviate the bureaucratic burden on the Eureka participants.

Eureka and the European Community

The panel has found that a very useful coexistence is possible between Eureka and the Framework Programmes of the EC. The fundamental differences between the programmes (bottom-up versus top-down and market-oriented versus pre-competitive) point in the direction of a complementarity between the two approaches. This opinion was supported by the government officials.

Complementarity was also recognised by the project participants, especially from industry, who were rather outspoken on the difference between the programmes, and had a strong preference for the Eureka mechanism.

The panel feels that this does not reflect negatively on the Framework Programmes or positively on Eureka. It merely means that both programmes are working as intended. Industry will always feel more involved with a bottom-up market-oriented approach than with a top-down precompetitive (meaning: more basic) type of programme.

In general the panel concludes that the main differences between Eureka and the R&D programmes of the EC are the result of the differences in concept (bottom-up versus top-down) and in their implementation (federative versus centralised).

The panel is of the opinion that these differences should be respected and maintained.

The conceptual differences between Eureka and the EC programmes do not always lead to a clear distinction between the type of work that is carried out within these schemes (application-oriented development versus pre-competitive research, respectively). There is an area of overlap, but the panel feels that this is not of any real concern. The panel concludes that in general both programmes should adhere to their principles. This means that Eureka should not move "upstream" towards basic research and the Framework programme should not move "downstream" towards the market.

Although the concepts and mechanisms of Eureka and the EC programmes should be kept separate, the panel would like to see improved relations between Eureka and the EC. The panel feels that this should be a two-way street.

Eureka could be used as an instrument for pulling through European Community research to the marketplace. In some EC programmes participants may be tempted to continue with their market oriented research, based on previous precompetitive research for example in BRITE/EURAM projects. The Commission should resist funding these projects. The Commission should encourage participants in EC programmes to capitalise on the results through participation in Eureka. The Commission should assist these projects in their application to obtain Eureka status. The panel would like to see a substantial proportion of Eureka projects, announced by the Eureka MC in the next two years, to originate from the EC.

Eureka projects could provide valuable input for the identification and selection of research topics to be addressed in the EC programmes. This could be achieved by a systematic screening of the Eureka project portfolio, as is currently being done by the NPC network in the so-called X-ray sessions.

There is a number of situations where the relation between Eureka and the EC is more complicated. The first example is co-financing of Eureka projects between the EC and Eureka. The panel has noted mixed signals on this issue. Some countries would like to see more participation by the EC in Eureka.

However, most of these countries feel that the EC participation should be on the terms of Eureka. Most countries note the potential complications of co-financing between the two different regimes of Eureka and the Framework Programmes, and the panel is inclined to respect this view.

From the discussion the panel concludes that participation of the EC in Eureka projects should be encouraged if :

- a link can be established between Eureka and the precompetitive projects of the EC, and conversely, when an existing EC programme might be able to accommodate a perceived Eureka need. In these cases EC funding should be primarily aimed at the precompetitive part of the programmes ;
- this facilitates the work of the EC in the field of standardisation.

The participation of the EC should be governed by the rules of Eureka. If this leads to a large unbalance because of a relatively large involvement of the EC, it could be preferable to split up the project into an EC project and a Eureka project. In all cases, EC participation would have to be linked to other policies of the EC (for example in the area of standards).

Another area of interface between the EC and Eureka lies in the realm of supportive measures, and notably standardisation. The EC plays an important role in European standardisation. The panel recommends that the role of the Eureka secretariats on standardisation matters be aimed primarily at informing and activating the responsible offices (e.g. the standardisation organisations and offices in the European Community) whenever they detect a need for action from the Eureka participants. This is especially needed given the low level of understanding of the concept of supportive measures. To achieve this, the panel favours further strengthening links at the working level between Eureka and the EC.

The infrastructure

It is clear that the NPC network and the International Eureka Secretariat play an important role in making Eureka work. The panel is impressed by the way the NPC network operates. The NPC offices differ in size and in tasks to be performed. This is also a direct result of the federative character of Eureka. Some NPCs are part of a research ministry, others are part of an industry ministry, some operate at arm's length from the government.

The panel has already indicated that it does not want to harmonise national Eureka procedures. However, since the NPC network is the basis for all Eureka operations, the panel thinks it justified to harmonise the NPC function between member states as much as possible. Special attention should be paid to tasks to be performed and size of the bureaus.

The panel concludes that the role of NPCs in the field of supportive measures should focus on creating awareness and referring interested projects to decision making bodies, either directly or through the International Eureka Secretariat.

The panel also feels that a significant part of the co-operation between EC and Eureka should be done at the level of NPCs. It has noted with satisfaction that increasing contact is occurring between NPCs and EC officials.

The role of a central body in a federative programme is limited.

The panel finds that the International Eureka Secretariat is confronted with many problems directly related to its position in a decentralised programme. The panel concludes that the secretariat has not yet found its proper place. The panel agrees with the tasks that have been assigned to the secretariat in Brussels:

- provide information on Eureka at the European level; support national secretariats in the field of information and communication;
- operate a database of Eureka projects;
- provide the necessary continuity for Eureka.

The panel recommends further study with respect to the implementation of these tasks by the secretariat. (It has noted with appreciation that such a study will be carried out).

The panel has heard many complaints regarding the Eureka database. It has been informed that changes are being made to improve the database. Thus special attention should be paid to improve the user friendliness of the database.

Non-Eureka countries

The panel has systematically raised the question of participation in Eureka by non-Eureka countries. In practice the question addresses Eastern European countries, the USA (and Canada) and Japan. In the eyes of the project participants this is not a fundamental issue. Most participants are satisfied to deal with this on an ad-hoc basis.

This means that they will favour the participation of any organisation which can make an essential contribution to their project. It is clear that individual participants do not view this issue from a European perspective but mainly from the perspective of their individual competitive position.

Government representatives have a more outspoken view although they too made a distinction between the formal admission of other countries as members to Eureka and the informal "ad-hoc" approach of third country participation in individual projects.

The panel is of the opinion that Eureka primarily is a programme to strengthen the competitive position of European industry. The panel feels that this should remain so; this should be the guiding principle for governments in their policy regarding new members.

However, the panel acknowledges that it may be desirable to deviate from this principle in order to further integrate the countries of Central and Eastern Europe. The participation by other countries should be dealt with on an ad-hoc basis, relative to individual projects.

EUREKA: HISTORY AND PLACE

The Eureka initiative was launched in April 1985 by France as a European reaction to the American Strategic Defence Initiative (SDI). The first Eureka Ministerial Conference was held in Paris (17 July, 1985). In November 1985 the Hanover Declaration of Principles was signed. The Declaration of Principles includes the objectives of Eureka, the focus and criteria and rules for project implementation and coordination. It furthermore describes the relation between Eureka, the European Commission and existing European co-operative arrangements.

From an intended response to the SDI-initiative, Eureka has developed into a civilian programme to promote international co-operation in the field of science and technology, to raise the competitive position of European industry. Eureka projects are market oriented.

The Declaration of Principles clearly states that Eureka projects are not intended as a substitute for existing European technological co-operation. They are complementary to the programmes of the EC.

The members of Eureka are the countries of the EC, the EFTA countries, Turkey and the Commission of the EC.

The Eureka machinery was established in the Ministerial Conference in London (June 1986).

During the past five years, 8 Ministerial Conferences have been held. This has resulted in 398 project announcements, of which, according to the Brussels' database, 20 projects have reached the status of finished project.

INFRASTRUCTURE

Each Eureka member country has nominated a National Project Co-ordinator to assist project participants.

In some countries the NPC is supported by a National Eureka Secretariat.

The Eureka Conference of Ministers is the highest level in Eureka and is responsible for overall policy and Eureka projects. The International Secretariat (IS) in Brussels supports both the Ministerial Conference and the National Eureka Secretariats. The main characteristics of the Eureka infrastructure are flexibility and decentralisation.

Eureka organisation

Conference of Ministers (MC)

The political body of Eureka is the Conference of Ministers. Its members are Ministers of the nineteen participating countries and the Vice President of the Commission of the European Communities. It is the responsibility of the Conference of Ministers to develop the substance and goals of Eureka and to evaluate the results of the programme. It meets once a year to review the progress. The Ministerial Conference also announces new Eureka projects.

High Level Representatives (HLG)

This group is made up of senior representatives appointed by the respective governments and the Commission of the EC. It formulates general Eureka policies for approval by the MC.

It also monitors the implementation of ministerial decisions.

The High Level Representatives meet when necessary in order to assist the Conference of Ministers in carrying out its tasks and to prepare its meetings, including briefings on projects to be notified to the Conference of Ministers.

Each makes arrangements (a.o.) to:

- 1) promote the necessary flow of information in their own country;
- 2) arrange contacts between enterprises and institutes;
- 3) exchange information with other High Level Representatives.

All activities regarding information on Eureka and on projects have been delegated by the HLG to the network of National Project Co-ordinators (NPCs).

National Project Co-ordinators (NPCs)

The National Project Co-ordinators are the frontline actors. They encourage and co-ordinate project participation and report on it. They usually work for a ministry or a national technology agency.

The National Project Co-ordinator is responsible for all project-related activities. Among these are: partner search, evaluating project proposals, and assistance in obtaining public and private project funding. In addition, the NPCs are involved in supportive measures and the promotion of Eureka in their country. To this end, extensive co-operation exists among the NPCs (NPC-network). As indicated, the NPC works under the supervision of the HLG.

In some countries the NPC is supported by a National Eureka Secretariat.

In other countries only a single person is responsible for project handling, sometimes even on a part-time basis.

Not only might the size of the national secretariats vary considerably among countries, their tasks may also differ: some secretariats are only involved in the Eureka status procedure, others also assist in obtaining project funding.

This difference is inherent to the federative character of Eureka and is often a reason for problems encountered by participants in the process of applying for Eureka status and funding.

International Eureka Secretariat (ES)

A small and flexible Eureka secretariat under the responsibility of the Eureka Conference of Ministers was established to enhance the transparency and efficiency of Eureka. It gathers and distributes information on projects, facilitates contacts between partners and promotes the Eureka concept in conjunction with national authorities.

The International Eureka Secretariat consists of 6 professional staff members under the Head of the Secretariat. The composition of the Secretariat reflects the participation of EC and non-EC members in Eureka. In addition, one EC-official is part of the professional staff. Members of the professional staff are nominated by their country of origin.

Among the tasks of the ES are :

- To collect and to disseminate information, thus offering the services of a clearing house. Information on projects is stored and maintained in a database in order to monitor the overall Eureka portfolio.
- To assist the various Eureka bodies in their work, in particular supporting the meetings of the MC and the HLG. In addition to this, the ES renders assistance to the Eureka chairmanship. This is a very important task of the secretariat. The workload varies with the country that chairs Eureka.
- To assist with the implementation of common information and communication policies.

This task has grown substantially over the past few years, and at the moment consumes the larger part of the secretariat's budget.

- To provide continuity in the tasks to be performed.

In this respect the professional staff of the ES is present at umbrella project meetings and other important Eureka events. They play a role in transfer of knowledge and experience within Eureka.

Functioning of the national Eureka secretariats

The NPC network is considered valuable and effective in the transfer of information among the Eureka-countries.

Eureka-participants have been asked to comment on the functioning of their national secretariat. In general the answers do not vary significantly from one country to another.

The service of the secretariats that is rated most favourably, is 'Providing general information on Eureka'.

Services that according to participants can be improved, are:

- 1) 'providing specific information on projects';
- 2) 'rendering assistance with project proposals';
- 3) 'acting as a platform for dissemination of results'.

Participants have expressed criticism regarding the role of the secretariats in 'explaining the differences in application procedures for public funding in the different countries'. This does not come as a surprise, as rules for obtaining public funding differ significantly among participating countries.

There is room for improvement in the area of 'partner search'. Here the secretariats can make a considerable contribution, in particular for SMEs.

Functioning of the International Eureka Secretariat

Most countries feel the ES is a useful instrument in supporting the Eureka organisation, but the opinions on the functioning of the database are not unequivocally favourable.

Many country representatives state that the database does not function according to the organisational needs.

The database' information is not reliable; part of it is inaccurate or outdated.

At present the functional design of the database is under study. The quality of the database information could be improved if the national secretariats send more accurate information to Brussels. Support by the NPCs is crucial in this respect.

Although the role of the ES is not in question, many government representatives feel there is scope for improvement in the way the ES performs its present tasks.

The role of the secretariat in co-ordinating the implementation of supportive measures is still underdeveloped.

Conclusions

It can be concluded that the NPCs play an important role in Eureka.

However, the support by the national secretariats could be improved, especially in the field of partner search, providing information about projects and public funding, and assistance with proposal preparation.

The NPC network functions well, but there is scope to strengthen further the networking and teamwork.

Because of the difference between the operating procedures of NPCs in the Eureka countries, weak links in the network exist.

As far as the ES is concerned, the functioning of the database needs considerable improvement.

However, NPCs must stimulate project participants to provide timely and correct information on projects, in order to keep the database up-to-date.

EUREKA PROJECTS

In this chapter the following issues are dealt with :

- project generation;
- project selection;
- benefits from participation;
- profile of partners.

The information presented in this chapter is derived from the survey and the forum sessions conducted by the assessment panel.

PROJECT GENERATION

With respect to project generation the following aspects are discussed:

- Principle of project generation (bottom-up versus top-down);
- Umbrella projects;
- Information services;
- Partner search;
- Project definition.

Principle of project generation

The bottom-up approach sets Eureka apart from national programmes and the R&D programmes of the EC. Industry can propose projects tailored to their specific needs. The bottom-up approach was widely supported by participants and government officials during the survey. However, the bottom-up approach may have a top-down element in areas where governments play a role in setting norms and standards (governments define the rules, industry is invited to come forward with proposals; example: environment). Governments can facilitate project generation by organizing or encouraging industrial fora in selected fields.

Umbrella projects

Umbrella projects are groups of related Eureka projects. Formally umbrellas are not part of the Eureka infrastructure; they are not set up by governments but are initiatives of the Eureka participants themselves.

Umbrellas are supposed to be market-places for "white-spot" analyses and for generating new project ideas.

They cover well-defined technology areas which governments and industries consider to be of strategic importance for the competitive position of Europe. To date five umbrellas have been established (FAMOS, Eurolaser, Eurocare, Euromar, and Euroenviron).

It is their function to investigate the technology developments in their area and indicate how barriers to competitiveness can be eliminated. The results may be used as a frame of reference for new project generation and the search for potential participants. The umbrellas thus serve as a platform for discussion among industry and governments, and also for transfer of technology and experience.

Some umbrellas comprise only a few projects (e.g. Eurolaser), others have already encompassed a large number of projects (e.g. FAMOS).

There is some disagreement among the national Eureka representatives whether umbrellas are consistent with the bottom-up approach. Some claim the task of umbrellas is to co-ordinate and to rationalise projects rather than to initiate projects; umbrellas may become small programmes in themselves. According to the advocates of the umbrella concept, the bottom-up concept is not violated, since project ideas are generated by industry itself.

There is no agreement on whether the umbrellas have resulted in relevant projects. Some national representatives are of the opinion that umbrellas do not result in additional benefits; they state that umbrellas are better suited for creating more basic research projects, and consequently should be top-down oriented. In fact, this applies to most of the umbrellas, with the exception of the FAMOS umbrella which is a clear example of being close to the market. In contrast to this, a large majority of participants being involved in an umbrella state they experience additional spin-offs from participating in an umbrella. By defining common criteria, creating synergies, and bringing together interested parties, umbrellas add considerable value.

In order to maintain the bottom-up character, umbrellas must not be dependent on governments and must operate as self-supporting networks. They may provide tailored services to participants that the national secretariats cannot offer. This leaves more time for the NPCs to concentrate on other projects. Finally umbrellas may be instrumental in the transfer of know-how between projects in the umbrella, a feature which is weak at the present stage in the evolution of Eureka.

Information services

Providing information on Eureka to potential participants is the most important instrument in stimulating new projects. In some countries the Eureka concept is well known by industry and research institutes; in other countries industry is not fully aware of the possibilities of Eureka.

It can be concluded that the general information provided by the National Eureka Secretariats is adequate. There is however room for improvement as to information on procedures and specific projects. Highlighting successful projects could be an important instrument to encourage industry to participate (success breeds success).

Another point of criticism is that national secretariats do not provide adequate information on Eureka policies, procedures in other countries.

This information is important in the process of partner search and project start-up, because participants must be able to set realistic expectations on the commitment of their partners.

Partners may leave the project if their governments do not provide sufficient financial support.

Information should be provided at the national level (national Eureka secretariats) as well as the central level (ES). In this respect the Eureka Technological Folders, issued by the ES, are highly appreciated by participants and Eureka officials.

Partner search

Overall, 14% of the participants state they were approached by their national secretariat to participate in a specific Eureka project. In most large countries this percentage is over 14%, but in the smaller countries it may vary considerably (0% - 50%).

In general, participants select their partners themselves. In many cases the larger companies use existing business contacts to define a project, but SMEs have indicated they need more help in partner search. Some countries already acknowledged this issue.

Since June 1990 the French government has decided to give additional support to SMEs in order to enhance their participation.

The role of the national secretariats in partner search should be improved for SMEs. There seems to be a general agreement that the EC does a better job in this respect.

Project definition

Support of the project definition phase by the national secretariats differs from country to country.

Some countries provide financial support: support for the preparation of a proposal, support for a definition phase etc. Two Eureka member states have recently decided to provide support for project definition and partner search to SMEs by means of additional subsidies. Some countries give no help at all apart from information.

39% of participants experienced contractual drafting difficulties at the start of their project (no differences among different organisation types).

The survey indicates that government support for the definition phase should be improved.

PROJECT SELECTION

In most countries participation in Eureka involves two procedures. Firstly, at the international level the Eureka status must be acquired. Secondly, an approved project may be eligible for public funding.

Acquiring Eureka status

Potential participants will first contact their national secretariats for an evaluation of their idea. The secretariat will indicate whether the project idea is suited for Eureka, or what changes may be needed to comply with the criteria.

If suitable for Eureka the applicant together with his partner(s) can start writing a proposal using the standardised Euro Format. If needed, the National Secretariat may assist the applicant in drafting the project proposal and in finding the (international) partners. To this end the NPC usually contacts NPCs in other countries and the ES.

When the project participants have finished their proposal, it is handed-in at the respective national Eureka secretariats, together with a Memorandum of Understanding (MoU) signed by all the participants. Via the ES the proposal is distributed to the other NPCs. Each national secretariat will start a national procedure to determine whether their country will support the project for the Eureka label.

In the Declaration of Principles the following criteria for Eureka projects are mentioned:

- co-operation between participants in more than one European country;
- identified expected benefits from co-operation;
- use of advanced technologies;
- technically and managerially qualified participants and adequate financial commitment;
- exchange of technologies;
- research and development projects aimed at the creation of technical prerequisites for a modern infrastructure and the solution of transboundary problems are also allowed.

In some countries the Eureka secretariat itself decides whether the project meets the criteria and whether it can be supported for Eureka-status.

In other countries external consultants, advisory committees or governmental departments are responsible for the evaluation of the proposals. The basis for the evaluation is the Euro Format, which gives global information on the project objectives, the participants, costs,

technology envisaged, market applications etc. NPCs of several countries have stated that the only generally accepted criteria are international co-operation and the use of advanced technologies. Many countries in fact use the criteria set up for their own national R&D instruments.

In addition there is no consensus among countries whether the projects should be focused on market applicability or whether basic research is allowed as well.

During the evaluation procedure the NPCs will consult each other on an ongoing basis. Where one or more countries disagree with a proposed project, improvements can be made in co-operation. As soon as the proposal is supported by two or more of the involved governments, the project can be announced at the ES. Then the proposal will be distributed to all member countries and will circulate for 45 days. The national secretariats in turn will inform companies, universities and research institutes in their country of the expected projects, and provide them with an opportunity to express their interest in participation. If, during this circulation period, no objections are raised against the project, it will be proposed to the High Level Group. When the HLG accepts the project, it has the status of "Expected Project". With this status participants can start the project. All projects that have been accepted by the High Level Group will be announced officially once a year at the Ministerial Conference.

Obtaining project funding

Because of the federative character of Eureka, project funding is not centralised but each participant may apply for national public funding in his own country. In some countries Eureka-status implies that the project is entitled to public financing. However, in most countries the application for public funding can only be handed in after the

project has received Eureka status. Often more than one national R&D fund exists, meaning that organisations should first find the most appropriate funding source to hand-in their application. In this task they are often assisted by the national Eureka secretariat. Only in a few countries the funding of Eureka projects is handled by the Eureka secretariat itself. Most countries however do not have a separate budget for Eureka projects. This implies that Eureka projects compete with national projects for a part of the national R&D budget.

For the funding application procedure additional information is required and additional criteria are used. Furthermore the type and level of financial support given by governments may differ among the participating countries. In most countries grants are given. Some countries supply loans which have to be repaid only when the project has been successful.

The difference in funding procedures may cause considerable delays in the project start-up or even the collapse of the project itself. 44% of respondents mentioned funding problems or the withdrawal of a partner from the project. This affects especially the quality of bilateral projects. Some projects include "sleeping partners" because of public funding problems. This is why participants indicated a strong need for harmonisation and synchronisation of the funding procedures.

Conclusions

The procedure for obtaining Eureka status is generally perceived as straightforward and unbureaucratic. The various funding procedures however are not transparent. This results in project delays or even the collapse of projects. That is why there is strong preference among participants for uniform and synchronised funding procedures.

BENEFITS FROM PARTICIPATION IN EUREKA

In assessing the benefits from participation in Eureka, the following aspects have been examined:

- Motives for participation;
- Technological results of cross-border research and applicability of results in the market;
- Long-term relationships as a result of participation in Eureka;
- Knowledge transfer;
- Contribution to competitiveness;
- Future participation in Eureka.

Motives for participation

Motives for participation can be ranked as follows :

1. Technology motives;
2. Business opportunities;
3. Financial aspects;
4. Standardisation.

An elaboration of these motives shows the following :

Technology motives

- The opportunity to do more R&D, or to accelerate product introduction;
- Risk sharing in advanced research;
- Bringing together complementary technologies;
- Exchange of knowledge.

Business opportunities

- Creating a larger market for R&D intensive products;
- Creating a high-tech image;
- Providing a stepping stone to other business relations with partners.

Financial aspects

- Availability of public funding;
- Cost sharing.

More than half of the participants state they would continue their projects even if Eureka status (and consequently Eureka funding) had been withheld.

Category	Continue project without Eureka support
- Overall	55%
- Industry	
. ≤500 employees	52%
. >500 employees	57%
- Research institutes	54%
- Universities	68%

Technological results of cross-border research and applicability of results in the market

According to industry Eureka contributes to:

% of respondents indicating Eureka contribution	
New process technologies	75%
Commercial applications	62%
Accelerated product introduction	56%
Patents or patents pending	31%

Industrial participants indicate Eureka has made an impact on their technology position (74%) and their R&D strategy (71%).

Project results are expected by 8% of participants within two years after the start of the project, 49% expects results between 2 and 5 years while 24% expect commercial applications after more than 5 years.

It should be mentioned that the respondents on average have participated in Eureka for about two and a half years. Nevertheless, results are clearly visible. This is confirmed by the forum discussions: half of the forum participants are already obtaining tangible results from participation.

Long-term relationships as a result of participating in Eureka

More than half of Eureka participants state Eureka resulted in long term co-operation with foreign partners.

% indicating long-term co-operation

Industry	66%
Research institutes	79%
Universities	80%

Knowledge transfer

Participants do not perceive knowledge transfer an important characteristic of Eureka. Industries are not keen on sharing their project results with (potential) competitors: Eureka R&D apparently is too strategic.

The fact that there is no obligation for disseminating results among participants and other interested parties is perceived as a significant advantage over the EC programmes.

Arrangements on industrial property rights are left to the discretion of the partners.

Contribution to competitiveness

58% of industrial participants state Eureka contributed to their competitive position in Europe; 49% even mentioned a contribution from Eureka to their global competitive position. This despite the relatively short period of participation (on average 2½ years).

In general, smaller organisations (less than 500 employees) experience a more significant contribution to competitiveness than larger organisations do.

Care must be taken in interpreting these results. The experience of most respondents with Eureka is limited.

In addition most projects have a planned duration exceeding two years.

These facts are not easily reconciled with the favourable results of participation. Most likely, the results are somewhat biased by the participants positive expectations.

Future participation in Eureka

Only 3% of respondents state they will not participate again. 47% however is positive, and 50% is not yet certain of future participation. In most cases a negative attitude is caused by bad experiences with funding (too little - too late).

Conclusions

Motives

The main motives for participation are the technology aspects of Eureka: doing more R&D and sharing of risks and costs. However, it cannot be concluded that Eureka contributes significantly to scale effects in research or to the diffusion of technological know-how.

Project results are not shared by large groups of participants. This is in line with the close-to-the-market character of Eureka.

Most industrial participants do not seem to be in favour of dissemination of know-how; most participants seek partners with complementary know-how and products, each partner remaining proprietor of its own know-how.

International co-operation is also valued highly. This is probably due to the marketing spin-offs and business opportunities arising from international co-operation, rather than to the joint development and application of technical know-how (i.e. creating economies of scale in research).

Surprisingly a relatively low value is attached to the subsidies as such; public funding is used to execute the projects on a wider scale, to accelerate the project, or to overcome the extra costs of international co-operation. In contrast, it has been reported frequently that partners withdrew from a project because funding could not be obtained. There is some evidence that the relative importance of funding decreases as the project progresses. Initially funding is very important to stimulate participants and to remove barriers to participation.

As a motive for participation, standardisation ranks rather low.

This either means that Eureka is not (yet) perceived as a good instrument for standardisation, or that the need for standardisation in general is not very great among European industry.

Technological results

Technological results of participation in Eureka are perceived favourably by industry. Eureka provides a large number of commercial spin-offs in a relatively early phase of the projects. Furthermore, Eureka has a clear impact on the technology position and R&D strategy of industry.

However, participants indicate that more than half of Eureka projects would also have been implemented without the assistance of Eureka. Added value from Eureka therefore must also be sought in:

1. acceleration of bringing technologies to the market;
2. implementation of projects on a larger scale;
3. implementation of projects on an international level resulting in the creation of business links and a more efficient utilisation of R&D resources;
4. positive effect on the image of the company and the motivation of its R&D staff.

Long term relationships

Although Eureka is perceived as a successful instrument in stimulating cross-border co-operation, the average number of foreign contacts is limited. (This is discussed further in chapter 7, Quality of projects.)

Universities and research institutes especially are looking for long-term relationships. For industry, in particular SMEs, this is less important.

Contribution to competitiveness

Eureka contributes to competitiveness. This contribution develops along two lines:

1. Eureka effectively stimulates co-operation across borders, between industry and research organisations, and between complementary product producers.
2. On a technology level Eureka contributes to the acceleration of new product introductions on a wider scale.

As most participants are Europe-oriented, Eureka stimulates intra-European competitiveness more than global competitiveness. Of course the strengthening of the competitive position of individual European based firms will result in a stronger industrial position of Europe in the long run.

The contribution to the overall competitiveness of Europe cannot be assessed at this time, the more so because the amount of R&D performed within the Eureka framework is small compared to the total European R&D effort ($\pm 2\%$). Despite this Eureka has a clear visibility.

PROFILE OF PARTNERS

Participants have been asked to indicate what aspects they consider important when selecting project partners.

It is clear that different organisations have different partner needs. In order to structure the answers, the following categories have been identified:

- Industries smaller than 500 employees;
- Industries larger than 500 employees;
- Research institutes;
- Universities;

The results for these categories, as far as the preferred partner profile is concerned are described below.

Industry versus universities and research institutes

The table below shows how the partner profile aspects have been rated by industry, universities and research institutes (1 = most important):

Partner profile aspects	Industry	Research Institutes	Univ.
Technical know-how	1	1	1
R&D complementarity	2	2	2
Marketing know-how	3	5	7
Long-term R&D relation	4	3	3
Existing relation	5	4	4
Other long-term relation	6	6	6
Other complementarity	7	7	5
Nationality/language/culture	8	8	8

The table shows that technical know-how and R&D complementarity are the most important partner aspects for all parties involved.

For universities and research institutes, the potential of building a long term R&D relationship with partners is much more important than it is for industry. Nationality, language or culture hardly affect the partner selection.

Other differences between industry and research institutes and universities are presented below:

Ranking of motives for participation

Motives	Industry	Research Institutes	Univ.
Technology motives	1	1	1
Business opportunities	2	3	4
Financial motives	3	2	2
Standardisation	4	4	3

Results of participation

% of respondents indicating results

Results	Industry	Research Institutes	Univ.
Commercial applications	66%	62%	55%
New process technologies	74%	82%	67%
Accelerated introduction	58%	51%	46%
Patents (pending)	30%	37%	25%
New distribution channels	33%	42%	26%
Coop. with foreign partners	66%	80%	79%

Impact of Eureka

% of respondents indicating impact

Impact on	Industry	Research Institutes	Univ.
R&D strategy	72%	79%	82%
Technology position	75%	70%	67%
European competitive position	59%	70%	67%
Global competitive position	50%	46%	57%

Most important aspect of Eureka

Ranking of aspects

Aspect	Industry	Research institutes	Univ.
Technology development	1	2	1
International co-operation	2	1	2
Additional R&D-funding	3	4	4
Knowledge diffusion/sharing	4	3	3

Procedures and problems encountered

- 23% of research institutes became involved in Eureka via the national secretariats, which is considerably more than other categories of participants indicate;
- Harmonisation of funding procedures is requested by all groups;
- Industry more often reports contractual drafting difficulties;
- Only 15% of universities indicate that a partner has withdrawn from their project, which is half of what other participants indicate.

Other aspects

- Industry has a higher proportion of projects with a relatively short duration;
- 44% of research institutes indicate they are involved in an umbrella against 30% of the other categories.
- Universities and research institutes are more certain of their future participation than industry is.

Small versus large industries

According to the database in Brussels 28.7% of the Eureka-companies employ less than 500 employees. In the early years of Eureka this percentage was considerably lower, but the involvement of SMEs has increased steadily in recent years. The bottom-up approach of Eureka and the stimulation of close to the market development are attractive features for smaller companies.

Differences between SMEs (<500 employees) and larger companies (>500 employees) are not striking. The main findings regarding the following aspects are:

Aspect SMEs compared with larger companies

Business

- International competition is almost the same environment as for larger companies;
- R&D is equally important for corporate strategy;

Partner profile

- Marketing know-how of partners is valued more;
- Less frequent co-operation with competitors;
- Existing relations are less important;
- Less emphasis on building long-term R&D relations than larger companies;

Motives for participation

- Business opportunities are rated higher;
- Funding is considered slightly more important;

Results of participation

- Eureka has a larger impact on R&D strategy;
- More benefits from business contacts abroad;
- Impact on the technology position is the same as for larger companies;
- Project duration on average is shorter;

Functioning of the Eureka mechanism

- The same problems experienced as larger companies;
- National secretariats valued the same as by larger companies;
- More assistance needed with partner search;

Eureka versus EC-programmes

- Eureka is preferred for business opportunities;

Conclusions

SMEs participating in Eureka compete almost to the same extent in international markets as do the larger companies. Furthermore many SMEs involved are high-tech producers.

Participation in Eureka may be very rewarding for SMEs. It is demonstrated clearly that SMEs benefit from Eureka in establishing new business relations abroad and that Eureka has a clear impact on their R&D strategy.

Once involved in Eureka, SMEs are not more prone to project failure than other companies are.

Nevertheless, more support should be given to SMEs in the field of partner search, project definition, and feasibility studies.

Industrial co-operation within Eureka

Participants have been asked what type of organisations they prefer to co-operate with (e.g. competitors, customers, suppliers).

Universities and institutes indicate no preference. Industry clearly prefers co-operating with complementary product producers (60%), and with customers (41%). Stratification according to company size shows the following:

Type of partner	Industries ≤500 employees	Industries >500 employees
Complementary producers	70%	63%
Customers/ users	49%	41%
Competitors	34%	53%
Suppliers	29%	45%

(As more than one alternative was allowed, the percentages in this table do not add up to 100%).

The results show that the co-operation looked for in Eureka is more vertically (industry chain) than horizontally (competition) oriented. Industry prefers to co-operate with complementary product producers, customers and suppliers. Nevertheless large industries often co-operate with competitors (53%).

It is likely that this co-operation only takes place in markets in which they do not compete, or that the research involved is of a precompetitive nature.

Conclusions

Participants prefer partners with complementary technologies or products in order to jointly develop new products or applications. Co-operation among competing companies is not very frequent, especially in the case of SMEs. This is obviously a result of the strong market orientation of most of the projects.

QUALITY OF PROJECTS

In the Hanover Declaration of Principles objective criteria for project quality have not been set out. During the panel discussions most of the National Project Coordinators had problems with identifying unbiased quality criteria, other than the broadly defined criteria like international co-operation and the use of advanced technology.

Like project funding, progress reporting is decentralised in Eureka. Progress reporting to the national Eureka-organisation is not compulsory in all countries. Due to this, the database cannot be accurately updated as far as changes in expected duration and results are concerned. Consequently a complete and up-to-date picture of the full portfolio is not available, which makes it difficult to assess the quality and progress of the individual projects. The need for uniform progress reporting procedures among participants is not often mentioned.

As progress reports have to be submitted to the national funding organisation and have to comply with national rules, harmonisation of progress reporting is difficult. Also most NPCs are not in favour of harmonizing reporting procedures. They expect this will result in more bureaucracy.

Many of the National Project Coordinators are of the opinion that the quality of the project portfolio in general should be more consistent.

When Eureka started, selection criteria were applied less stringently as more attention was paid to getting an adequate number of projects under way. However, some countries have already tightened their procedures for proposal acceptance.

Quality may be viewed upon from different angles.

Yardsticks for quality assessment could be:

- 1) technological content;
- 2) market orientation;
- 3) international dimension and factual co-operation;
- 4) strategic potential.

In order to assess project quality, a sample of 40 projects has been examined in more detail.

Technological content

The technological content of projects has not been investigated in this study. Data concerning this yardstick are not available at the moment.

For 74% of all the respondents, the R&D function is significantly involved in formulating corporate strategy. Technical know-how and technological complementarity are considered the most important aspects for partner selection. Participation in Eureka significantly influences the R&D strategy and the technology position of the participants. Most participants are intensively involved in R&D indicating that Eureka attracts the right organisations.

Market orientation

Eureka projects are market oriented. This is confirmed by Eureka participants. They value Eureka for:

- applicability of results;
- building business relations;
- market opportunities.

The market orientation of Eureka implies that the diffusion of know-how is limited. The fact that there is no obligation to share project results with other Eureka participants is considered an advantage of Eureka by participants.

The table below shows the number of projects announced at the Ministerial Conferences and the number of projects that have been finished.

Ministerial conference	Announced projects	Project finished in		
		'88	'89	'90
Hanover, November 1985	10	-	1	-
London, June 1986	58	2	3	3
Stockholm, December 1986	37	1	5	2
Madrid, September 1987	58	-	-	2
Copenhagen, June 1988	54	-	-	1
Vienna, June 1989	89	-	-	-
Rome, May 1990	91	-	-	-
Total	397	3	9	8

SOURCE: EUREKA-DATABASE BRUSSELS, JANUARY 17, 1991

The table below gives a further breakdown of the projects that have reached the status of 'finished project':

	Number of projects
Finished projects successfully and have introduced product on the market;	10
Finished the research phase successfully but have not launched product yet;	3
Finished feasibility phase but have not yet decided whether to continue within Eureka;	3
Finished feasibility phase but decided to continue outside the Eureka framework;	4
Total number of projects finished within Eureka	20

SOURCE: NPC'S OF COUNTRIES INVOLVED, FEBRUARY 1991

8% of the participants expect marketable results within two years from the start of the project. For 49% this will take between 2 and 5 years and for 24% it will take more than 5 years before commercial results can be expected (19% of participants did not express any expectation).

The fact that only 20 projects have been finished to date and the relatively long project duration suggest that many Eureka projects involve precompetitive research as well. This has been confirmed by participants as well as by government representatives. Both are of the opinion that it should be possible to some extent to do precompetitive research within the Eureka framework. Information from the Eureka database shows that the expected average project duration is decreasing at the moment, indicating that recently approved projects are closer to the market.

International dimension

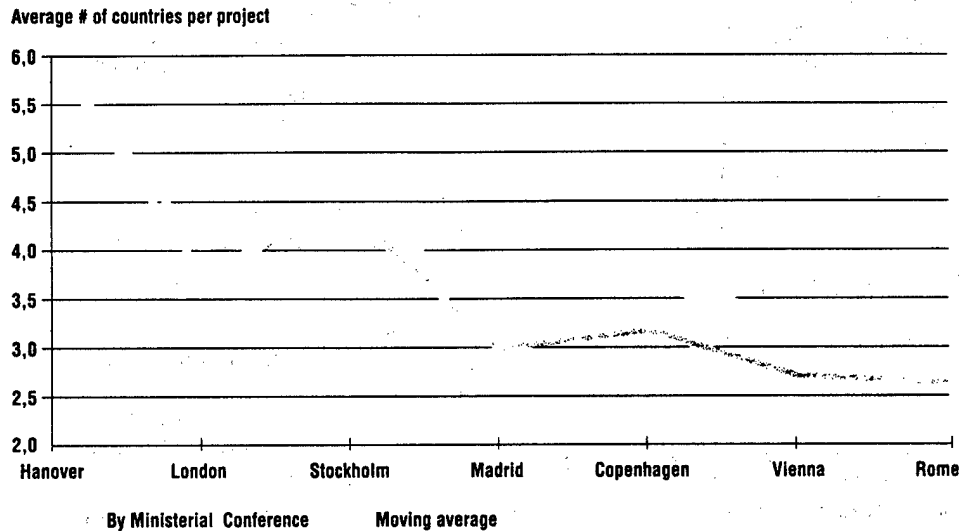
Information from the Eureka database (June 1990) shows the following with respect to the international dimension of Eureka projects:

In almost half of the Eureka projects only two countries are involved.

The percentage of binational projects is even higher in the group of projects announced at the last three Ministerial Conferences: the average number of countries involved in projects announced at Hanover in 1985 is 6.0 against 2.6 for the projects announced in Rome in 1990.

# of countries per project	# of projects	% of total portfolio
2	122	44%
3	72	25%
4	35	12%
5	20	7%
6	14	5%
7 - 10	14	5%
≥11	6	2%

Country participation by Ministerial Conference and for total portfolio



This inclination towards projects with a small international scope may be due to the procedures for project funding. As procedures differ from country to country, the complexity of the project start-up and lead-time increase with the number of participants, providing an incentive for participants to minimise the number of countries involved.

It is unknown how strong international co-operation among participants really is in practice. Initially, at the proposal stage, strong co-operation among participants is necessary. After Eureka status has been approved, international co-operation may decrease. This may be due to 'natural' mechanisms, inherent to

the types of co-operation and the market orientation of Eureka:

- Organisations usually co-operate with complementary product producers or customers/suppliers. Together with the finding that disagreement on property rights is quite rare it may be concluded that project partners often operate in different markets. In such cases projects can easily be split up in logical parts which can be executed separately.
- Co-operation with competitors and knowledge transfer within Eureka is not very frequent. These findings suggest that industry is reluctant to co-operate with partners too closely because of the confidentiality of results.

Strategic potential

Eureka has no preconceived strategic concept. Most projects that involve advanced technology and European co-operation will be approved. However, not all projects that meet these criteria need to have a strategic impact on a European level.

Recently NPCs have taken up "X-ray sessions" in order to assess the quality of the portfolio and to identify whether the portfolio covers the technological areas which are considered to be important for Europe's future competitive position.

Main competitors of participants are (1 = most important):

	A	B	C	D	E	F
European companies	1	1	1	1	1	1
U.S. companies	2	2	2	3	3	2
National companies	3	3	3	2	2	3
Japanese companies	4	4	4	4	4	4

1. This includes 28 responses from "other" organisations.

- A = All respondents (n = 870 (1))
- B = Industry (n = 603)
- C = Universities (n = 93)
- D = Research institutes (n = 146)
- E = Industry ≤500 employees (n = 311)
- F = Industry >500 employees (n = 292)

As participants' main competitors are located within Europe, a contribution to their strategic position will increase competitiveness within Europe. In line with this, participants indicate that Eureka contributes more to their European than to their global competitive position.

An important element of the Eureka concept is the bottom-up approach. Project ideas are left to the participants' own initiatives. Industry is best placed to identify important markets. But industry's decisions on R&D will be driven by the need to improve their own competitive position.

Vertical co-operation (complementary product producers, customers/suppliers) will probably improve the organisations' cost effectiveness and product quality and will positively affect the organisations' competitive advantage.

Conclusions

Project quality has primarily been assessed in terms of market orientation, international orientation and strategic potential. Technological content has not been investigated in depth.

The results have shown that Eureka manages to attract organisations, for which R&D/technology is important. The technological quality of individual projects cannot be assessed in detail. However, it is generally accepted that the technological content of Eureka projects varies. This variation can be reduced by applying selection criteria more strictly.

Eureka projects are market oriented. However, the assessment shows that a number of projects take considerable time to complete, suggesting that pre-competitive research is executed in Eureka projects as well. Precompetitive research within Eureka is acceptable if this does not result in duplication of research covered by the EC programmes.

Diffusion of technical know-how and the international scope of projects are very limited. The limited diffusion of know-how is partly inherent to the market orientation of Eureka and the partner profiles preferred by participants. The trend towards bilateral projects has resulted in a limitation of the international scope of projects. This may be reversed if and when the funding mechanisms in the various countries are better synchronised and preferably harmonised.

The bottom-up approach has resulted in projects that primarily contribute to the organisations' individual competitive position. Eureka is a good instrument to accelerate the introduction of new products to the market. Furthermore, Eureka contributes to quality and cost advantage of products due to vertical co-operation. These aspects are considered to be of major importance to the strategic position of European industry.

The bottom-up approach is widely appreciated, but it has some limitations. It will not result in a portfolio of long-term fundamental research projects, neither will it be possible to stimulate explicit strategically important technological areas. According to the Hanover declaration of principles, however, this was not intended.

SUPPORTIVE MEASURES

According to the Declaration of Principles, governments and Eureka participants will inform the Conference of Ministers through the High Level Group on issues regarding supportive measures.

Supportive measures are measures in the field of standardisation and harmonisation in technological, economic and legislative areas, that are necessary to a successful implementation of a Eureka project. The need for such supportive measures will be communicated by the participants to the NPCs and the HLGs through the EURO-format.

Perception of supportive measures

It has been noted that the concept of supportive measures is not well known nor fully understood by participants.

Very often supportive measures are mistaken for public funding, whereas aspects such as harmonisation, standardisation and legislative support are not very well understood by participants. Consequently, additional communication is required to explain the concept of supportive measures to existing and potential participants.

Need for supportive measures

According to the Eureka database in Brussels, supportive measures have been requested for 166 projects.

According to the same database 42 of these projects have already been withdrawn. From the remaining 124 projects, 74 projects are in need of supportive measures, 50 projects requested other support not related to supportive measures as intended by the Declaration of Principles. Unfortunately, from the descriptions in the database it is hardly possible to find out what specific actions are requested.

Therefore the database at the moment cannot function as an adequate instrument to facilitate the process of finding the right standard making bodies or to co-ordinate the requests for supportive measures.

As indicated before, standardisation is not a major motivation to participate in Eureka: out of 870 Eureka participants only 182 have mentioned standardisation being an important aspect for the success of their project (research institutes and universities value this aspect more than industry does).

From this group only 81 (i.e. less than 10% of the total) state that supportive measures are crucial to the implementation of their project.

Of the participants who mentioned that supportive measures were crucial to the success of their project (81):

- 42 stated that Eureka made an important contribution to the implementation of supportive measures;
- 24 stated that the supportive measures requested have been implemented already;
- 22 experienced problems with the implementation of supportive measures.

As far as 'bringing together relevant parties for supportive measures' is concerned, they rated their national secretariats as follows:

- 18 participants mentioned "good";
- 42 participants mentioned "could improve";
- 8 participants mentioned "bad";
- 13 participants had no opinion.

According to these participants, their national secretariats could do better in bringing relevant parties together for supportive measures.

It can be concluded that supportive measures is not an important feature of Eureka at the moment. This is partly due to participants' unfamiliarity with the supportive measures concept. Besides, the need for supportive measures may not be as great as may have been expected initially. The assessment has not found a reason for this.

The role of Eureka with respect to supportive measures

Although Eureka has no direct role in the field of norms and standards, it should further develop its service function to participants seeking these measures. It is important that Eureka is seen to respond to supportive measure related questions. To this end the tasks of the various bodies involved must be defined clearly.

The national secretariats must play an active role in communicating both the existence and the contents of the concept of supportive measures to (potential) participants. The national secretariats must identify supportive measure needs among participants and subsequently communicate these needs and their priority to the ES in Brussels.

The ES must inform the Commission on the requested supportive measures.

The ES and the Commission can then jointly co-ordinate the efforts for both programmes, and introduce the Eureka partners concerned to the appropriate standard-making authorities. From there onwards the ES must only give feedback to the Eureka parties, leaving the contents of the supportive measures to the standard-making authorities and the Commission.

In addition the ES must support the national secretariats in explaining the concept of supportive measures to participants. Furthermore, the Brussels secretariat must store adequate information on requested supportive measures. At present this function is poorly developed.

The Eureka Ministerial Conference and the HLGs have an important role to play in monitoring the implementation of supportive measures.

EUREKA AND THE EC PROGRAMMES

According to the Declaration of Principles "Eureka projects are not intended as a substitute for existing European technological co-operation such as programmes sponsored by the European Communities ...".

Their purpose is rather to extend or supplement them.

The Declaration of Principles also mentions the possibility of the EC participating as a partner in Eureka e.g. through its own research capacity, its R&D programmes or by financial support.

It also mentions the role of the European Communities, together with all member states of Eureka countries, for

creating an environment conducive to technological co-operation. This is considered to be a particular prerequisite for the success of the Eureka initiative.

Because both programmes have the objective of improving the competitiveness of European industry, the relations between the two programmes and the added value of Eureka given the existence of the EC programmes have been examined

A comparison between Eureka and the EC technology programmes can be summarised as follows:

Programme	EC programmes	Eureka
Legal base	Treaty (SAE)	Declaration of Principles
Objectives	Strengthen scientific and technological base of European industry in order to strengthen its competitive position (art 130F, SEA)	Strengthen competitive position of European industry by developing new products and services with a world wide market potential
Project type	Precompetitive	Market oriented
Procedures	Status and funding application are one integrated international procedure	Status and funding application are separated; international procedure for status, national procedures for funding
Decision	Council of Ministers/ Commission of EC	Status by M.C. and HLG, funding by national institutions
Financial support	50% of eligible cost	Depending on national support schemes; some projects are not funded at all
Progress reporting	Centralised	Decentralised, required in case of national support
Areas covered	Framework programme (top-down)	No guidelines (bottom-up)

Strengthening the competitive position of Europe

In theory the demarcation between Eureka and the technology programmes of the EC is clear. EC programmes focus on improving the scientific and technological base of European industry by stimulating the development of new technologies. As such these programmes mainly cover basic and precompetitive research. Eureka aims to improve Europe's competitive position by the development of new high technology products and services and focuses on the application of existing technologies and scientific know-how. The projects are market oriented, whether the market be private or public.

Flexibility

Due to its bottom-up approach and the absence of a framework, Eureka is considered to be more flexible than the EC programmes. In principle there are no limitations to the areas that can be covered by Eureka projects. Neither are limitations in size and scope imposed upon projects. Some participants consider Eureka to be a better platform from which to initiate more ambitious projects.

As a result of this Eureka is preferred over the EC programmes on the following aspects:

- chance of proposal acceptance;
- flexible procedures;
- relatively low cost of writing a proposal.

However, participants respond differently when asked more explicitly about the procedures for status in combination with funding (reference is made to chapter 6.2.). In general it can be said that the procedures for Eureka status are simple, flexible and non-bureaucratic. However, after status has been approved, participants may experience extensive bureaucracy and problems during their national funding application. Often the flexibility is reduced as projects have to meet national criteria in order to be eligible for funding.

The situation for the EC programmes is just the other way around. It is difficult to get a project approved, as criteria are more strict and the number of proposals exceeds the available funding.

However, the rules for participation in the programmes are clear.

Once awarded EC status, projects automatically receive EC funding.

Co-operation between Eureka and the Commission of the EC

As the EC programmes are pre-competitive and Eureka is market oriented, Eureka seems to be a good vehicle to apply the know-how of the EC programmes. However, at present this applies only to a few Eureka projects. Most government representatives agree that better utilisation of the results of the EC programmes within Eureka should be made possible.

The funding level of the EC programmes is very attractive. Therefore EC participants may be inclined to continue using the EC framework for their development of market oriented activities as well.

Funding of these projects should however be restricted by the Commission.

The complementarity between both programmes could be improved if the NPC network was better informed of completed EC projects of which the participants want to implement their results. The Commission of the EC must give practical assistance to the projects when application is made for the Eureka status.

Eureka can collaborate effectively with the EC in the area of standardisation. In chapter 8 it was noted that Eureka must only be involved in identifying the need for supportive measures, leaving the implementation to the Commission and the authorities responsible for setting standards, as they are much better equipped for this task. In cases where Eureka as well as EC projects express identical standardisation needs, closer interaction and co-ordination between participants of both programmes must be arranged.

The single European act allows the Commission the possibility of participation in Eureka projects. There are risks that this would divert the objectives of a long-term programme to short-term industrial needs; it is important to avoid this temptation. So far this opportunity has not been used very often: the Commission's financial participation is limited to 8 projects. Funding applies only to the precompetitive part of Eureka projects. These precompetitive parts are often presented to the Commission as separate projects and have to follow normal procedures for approval.

Co-funding by the Commission of the EC should be encouraged in those cases where:

- a link can be established with the pre-competitive research programmes of the EC, the EC-participation would be primarily aimed at the pre-competitive part of a Eureka project;
- financial participation would facilitate the role of the CEC in the field of standardisation.

When the EC participates in a Eureka project, they must be prepared to follow the rules of Eureka.

Conclusions

- Both programmes focus on improving Europe's competitive position. Eureka in principle is market oriented, while the EC programmes are pre-competitive in nature.
- EC programmes tend to move closer to the market, which may increase duplication which already exists between Eureka and the EC programmes. Pre-competitive research within Eureka is considered to be acceptable for the technology areas not covered by the EC.
- Despite the complementarity Eureka is not very often used to exploit the scientific and technological results from the EC programmes. Participants may be tempted to continue the research in EC programmes. Financing these projects however should be restricted by the Commission. They should encourage participants to apply to Eureka.
- Eureka is considered to be more flexible than the EC programmes, but national funding procedures may reduce this flexibility.
- Participation by the Commission in Eureka projects is rare and co-operation between Eureka and the EC programmes still is weak.

APPENDIX I.

MEMBERS OF THE ASSESSMENT PANEL

1. Prof. Dr. Wisse Dekker,
chairman
Chairman Supervisory Board
N.V. Philips Gloeilampen Fabrieken
The Netherlands

The panel has been assisted by the
Eureka assessment secretariat:

Mr. Bert van Duyvendijk
Ministry of Economic Affairs
The Netherlands

2. Mr. Henrik Ager-Hanssen
Senior Vice President
Statoil Group
Norway

Mr. Emile Louzada
Ministry of Economic Affairs
The Netherlands

3. Sir Geoffrey Allen
Executive adviser to the President
of Kobe Steel Ltd
Kobe Steel Ltd.
Great Britain

The Eureka assessment secretariat
was supported by Andersen Consulting,
Arthur Andersen & Co. S.C.,
The Hague.

4. M. Philippe Desmarescaux
Chairman Agrochimie
Executive Vice President
Groupe Rhône - Poulenc
France

5. Prof. Antonio Garcia-Bellido
Research head developmental
genetics section CBM
Universidad Autonoma de Madrid
Spain

6. Mr. Yrjö Toivola
President
Vaisala Oy
Finland

7. Prof. Dr. Ing.
Hans-Jürgen Warnecke
Director
Fraunhofer Gesellschaft
für Produktionstechnik und
Automatisierung
Germany

TERMS OF REFERENCE

The following terms of reference for the assessment of Eureka were submitted to the Eureka Ministerial Conference in Rome:

"The Eureka assessment panel is requested by the Eureka Ministerial Conference, to assess the first five years of Eureka. In this context special attention should be paid to:

1. The principles and objectives of Eureka as laid down in the Hanover Declaration of Principles November 6, 1985;
2. The main objectives of Eureka, being to strengthen the productivity and competitiveness of Europe's industries and national economies on the world market;
3. The contribution Eureka has made to the completion of the internal European market, taking into account efforts to elaborate joint industrial standards, eliminating existing technical obstacles to trade and to open up the system of public procurement;
4. The participation of industry, research institutes, universities and other organisations in Eureka, and their experience with and perception of Eureka as a framework for scientific and technological co-operation in Europe;
5. The relation between Eureka and other European programmes in the field of science and technology, taking into account the specific place and objectives of each of these programmes;
6. The procedures for Eureka projects as approved by the Eureka Ministerial Conference of June 30, 1986.

The Eureka assessment panel will report to the Eureka Ministerial Conference through the chairman before January 1, 1991."

METHODOLOGY

In choosing its methodology, the panel was faced with two constraints: the first was the decentralised character of the Eureka programme, which made it impossible to access information on projects and to monitor the functioning of the Eureka organisation in one specific location. The second constraint was the large number of projects and participants, which made it impossible to gather in-depth information on each individual project. It was obvious that the broadest possible coverage would have to be achieved, both with respect to the countries participating in Eureka and with respect to the composition of the project portfolio. In order to reconcile the requirements of broad coverage and in-depth assessment, several sources of information were used. These will be described below.

Eureka database

The Eureka database in Brussels has been used to gather information on projects.

The information from the database has also been used to compose the questionnaire and to take a representative sample from the total portfolio for the forum discussions.

Questionnaire

A questionnaire was designed which was sent to all participants in all Eureka countries. The national secretariats have been responsible for the distribution of the questionnaire. According to the secretariats, 1935 questionnaires have been mailed.

Nine questionnaires have been returned uncompleted because the addressee did not participate in a Eureka project.

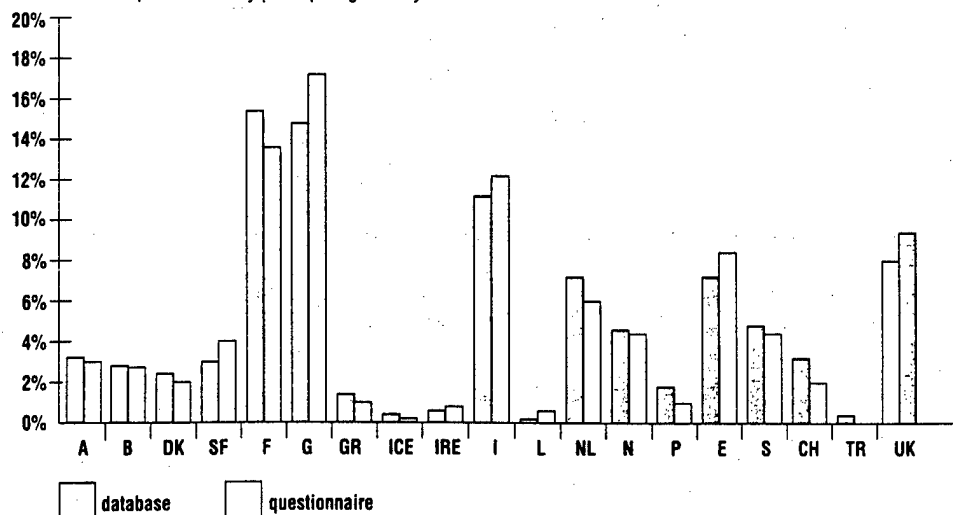
In total 874 completed questionnaires have been returned by the participants: a response of 45.17%.

The response by country is shown for the total portfolio in graph 1.

This graph shows that the response matches the proportional participation by country for the total portfolio.

Graph 1.

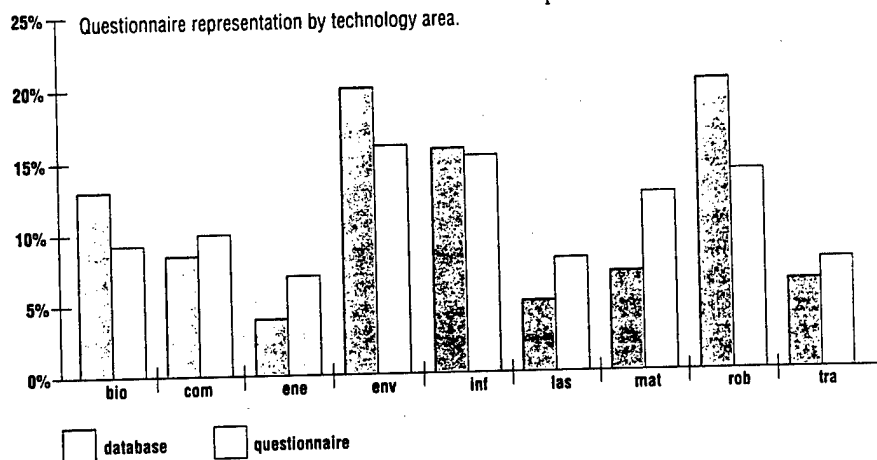
Questionnaire representation by participating country.



The questionnaire results are also representative of the total portfolio as far as the technological areas are concerned. For some technological areas, the proportion of participants according to the questionnaire is larger than the proportion of participants according to the Eureka-database. This indicates that for some participants it is not clear to which technological area their project

has been assigned. As some of the technological areas are closely related to each other, it is quite possible that participants have indicated participation in a different technological area than the one to which they have been assigned in the Eureka database. This might have been the case for biotechnology and environment and also for laser, materials and robotics.

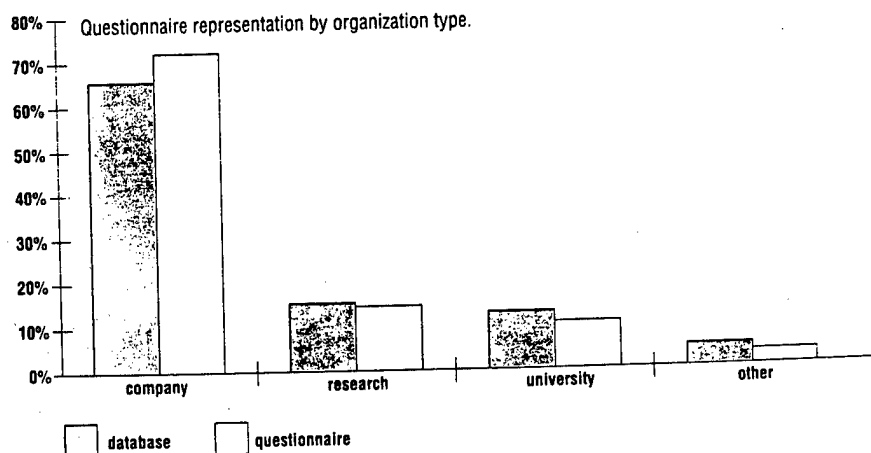
Graph 2.



Graph 3 demonstrates that the results of the questionnaire are a valid representation regarding the type of organization.

Table 1. shows that this is also the case for the response of the individual countries.

Graph 3.



Participation of organisation types in %.

	Companies		Research Institutes		Universities		Other organisations		Total	
	1	2	1	2	1	2	1	2	1	2
Austria	62,3	62,0	7,24	27,5	21,7	10,3	8,69	0	100	100
Belgium	60,7	80	8,92	12	26,7	8	3,57	0	100	100
Denmark	62,5	66,6	18,7	27,7	12,5	5,55	6,25	0	100	100
Finland	82,5	86,8	7,93	7,89	3,17	2,63	6,34	2,63	100	100
France	69,0	83,7	20,8	12,4	7,57	1,55	2,52	2,32	100	100
Germany	57,2	48,1	16,8	27,7	21,3	22,8	4,53	1,23	100	100
Greece	62,9	66,6	14,8	22,2	18,5	11,1	3,70	0	100	100
Iceland	75	33,3	12,5	0	12,5	33,3	0	33,3	100	100
Ireland	41,6	14,2	398,33	14,2	33,3	42,8	16,6	28,5	100	100
Italy	71,9	69,8	16,1	16,3	8,51	10,3	3,40	3,44	100	100
Luxembourg	83,3	80	0	0	0	0	16,6	20	100	100
Netherlands	70,4	89,4	14,0	7,01	6,04	0	9,39	3,50	100	100
Norway	67,0	68,2	19,1	24,3	6,38	4,87	7,44	2,43	100	100
Portugal	44,7	22,2	21,0	33,3	26,3	11,1	7,89	33,3	100	100
Spain	66,4	86,0	16,7	10,1	12,0	3,79	4,69	0	100	100
Sweden	71,1	48,6	11,3	29,7	13,4	10,8	4,12	10,8	100	100
Switzerland	62,6	38,8	13,4	11,1	20,8	50	2,98	0	100	100
Turkey	37,5	0	0	0	62,5	0	0	0	100	0
United Kingdom	70,6	76,1	9,58	6,81	11,3	12,5	8,38	4,54	100	100

1 = Total Population 2 = Questionnaire Results

Table 1.

According to the database 28.8% of the companies participating in Eureka are registered as SMEs, while in the questionnaire 53.6% of the companies indicated that they employ less than 500 employees. The difference can be partially explained by the fact that the Brussels' database uses the national

yardsticks for SMEs, and most countries have different definitions of SMEs. The fact that SMEs are over-represented in the survey does not influence the overall outcome of the questionnaire because separate analyses have been made for SMEs and large companies.

Forum discussions

In order to gather in-depth information on the projects and the functioning of the national Eureka organisations, forum discussions with participants and government representatives have been held. Nine locations were chosen: Stockholm, Paris, Madrid, London, Bonn, Vienna, Brussels, The Hague and Rome. These locations were chosen because of the geographical location of the project participants invited to the forum discussions.

With the exception of Brussels, in each city government representatives and project participants from one or more participating countries were invited.

In Stockholm, Swedish, Danish, Norwegian and Finnish government representatives and project participants were invited. In Madrid, government representatives and project participants from Portugal and Spain were invited.

In The Hague meeting, Belgian and Dutch project participants and government representatives were invited.

The forum discussion in Brussels was entirely devoted to meetings with the European organisation of employers UNICE, the European Commission and the International Eureka Secretariat.

To gather relevant information, only projects which started more than two years ago were invited.

The 40 projects were selected at random. This selection represents well the total portfolio as far as participation by country, umbrella projects, supportive measure projects and other projects are concerned. The panel only invited the project leaders but the project leaders were free to be accompanied by their project partners. The government representatives were not present during the discussions with the participants. Besides the Commission, UNICE and the International Secretariat, government representatives from 13 countries have been involved in the forum discussions.

Desk research

In preparing the assessment, desk research were conducted to form the background for the assessment.

The information was made available by the national Eureka secretariat of the Netherlands and the International Eureka Secretariat in Brussels.

Also material available at Andersen Consulting were used.

APPENDIX IV.

QUESTIONNAIRE RESULTS

In this appendix the results of the questionnaire that was mailed to all the Eureka participants are presented.

In total 1935 questionnaires were mailed to the respondents, and 874 questionnaires were returned, resulting in a response rate of 45.2%.

The results are presented in three different ways. For the major part of the tables in this appendix, separate percentages for each organisation type (companies >500, companies ≤500, research institutes and universities) or aggregated for all organisation categories have been used.

Some tables present scores between 1.0 and 4.0 or 1.0 and 3.0. These scores are weighted averages, based on rankings that have been given by the participants. The lower the score the more important the item is valued by participants.

Finally in some tables the results are presented as numbers of respondents for each specific organisation category.

As the proportion of "other organisations" was relatively low (2%), their results have been omitted.

Table 1

Technology area by Organisation type (number of participants)

	Company ≤500	Company >500	Research institute	University
Biotechnology	40	36	16	10
Environment	69	34	48	42
Communications	30	48	10	9
Energy	22	18	8	4
Laser	27	22	30	11
Robotics	61	60	20	11
Informations	74	69	20	10
Materials	41	54	22	12
Transport	26	40	11	3

Table 2

Response by country and organisation type (number of participants)

	Company	Research institute	University	Other	Total
Austria	18	8	3	0	29
Belgium	20	3	2	0	25
Denmark	12	4	1	0	18
Finland	33	3	2	1	38
France	110	15	2	3	129
Germany	78	46	36	2	162
Greece	6	2	1	0	9
Iceland	1	0	1	1	3
Ireland	1	1	3	2	7
Italy	82	20	10	4	116
Luxembourg	4	0	0	1	5
Netherlands	51	4	0	2	57
Norway	28	10	2	1	41
Portugal	2	3	1	3	9
Spain	68	8	3	0	79
Sweden	31	4	3	3	37
Switzerland	7	2	9	0	18
Turkey	0	0	0	0	0
United Kingdom	68	6	11	5	88
Total	620	139	90	28	870*

* Four respondents did not indicate their organisation type

Table 3

Year started in Eureka (number of participants)

	Company ≤500	Company >500	Research institute	University	Total
1985	3	15	7	2	27
1986	43	52	18	8	121
1987	57	51	35	14	157
1988	67	72	25	28	192
1989	76	62	38	19	195
1990	55	35	14	14	118
No response	10	5	9	8	32
Total	311	292	146	93	842

Table 4

Main competitors of participating organisations

	Company ≤500	Company >500	Research institute	University
National competitors	2.3	2.6	2.1	2.6
European competitors	1.8	1.8	1.9	1.8
Japanese competitors	3.0	2.9	2.9	3.2
U.S. competitors	2.4	2.4	2.3	2.1

Scale 1 - 4 ; the lower the score the more important these competitors are according to the participants.

Table 5

Involvement of R&D function in formulating corporate strategy

	Company ≤500	Company >500	Research institute	University
1 Very much	43%	27%	23%	22%
2	30%	41%	14%	12%
3	18%	21%	11%	7%
4	6%	6%	1%	6%
5 Not at all	1%	1%	1%	1%
No response	2%	2%	50%	52%

Table 6

Motives for participation in Eureka

	Company ≤500	Company >500	Research institute	University
Technology aspects	81%	88%	87%	96%
Financial aspects	45%	50%	52%	62%
Business opportunities	72%	61%	37%	11%
Standardisation	15%	25%	37%	32%

As more than one option was allowed, percentages do not add up to 100%.

Table 7

Important aspects for partner selection

	Company ≤500	Company >500	Research institute	University
Technical know-how	95%	98%	92%	95%
Marketing know-how	64%	49%	45%	29%
Existing relations	42%	57%	55%	61%
R&D complementarity	86%	82%	93%	85%
Other complementarity	38%	37%	39%	32%
Nationality/culture/ language	15%	13%	11%	17%
Establishing long- term R&D relations	62%	57%	74%	74%
Establishing other long-term relations	51%	43%	44%	34%

Table 8

Project continuation if Eureka-status had not been granted

	Company ≤500	Company >500	Research institute	University	Total
Yes	52%	57%	54%	68%	55%
No	45%	39%	40%	27%	40%
No response	3%	4%	6%	5%	5%

Table 9

Type of partner co-operated with in Eureka

	Company ≤500	Company >500	Research institute
Competitor	34%	53%	42%
Supplier	29%	40%	46%
Customer/user	49%	37%	50%
Complementary product producer	70%	56%	48%
No response	8%	2%	12%

Table 10

The way organisations became involved in Eureka

	Company ≤500	Company >500	Research institute	University
Own initiative	49%	53%	50%	51%
Approached by a Eureka participant	33%	33%	24%	38%
Approached by or via own government	15%	8%	22%	10%
Other	2%	5%	2%	1%
No response	1%	1%	2%	0%

Table 11

Need for change in procedures

	Company ≤500	Company >500	Research institute	University
Need for simplification of Eureka procedures	79%	79%	78%	91%
Need for uniform funding procedures	93%	89%	88%	90%
Need for reducing reporting requirements	68%	73%	63%	75%
Need for uniform reporting procedures	76%	76%	76%	63%

Table 12

Problems experienced within Eureka project

	Company ≤500	Company >500	Research institute	University	Total
Contractual drafting difficulties	39%	38%	34%	40%	39%
Financial problems with partners	32%	27%	27%	31%	29%
Disagreement on product rights	12%	12%	6%	5%	10%
Technical inability of one of the partners	11%	9%	14%	14%	11%
Partner(s) withdrew from the projects	25%	30%	31%	15%	26%
Partner(s) failed to meet time schedules	24%	26%	24%	21%	24%
Delay by disagreement on supportive measures	15%	16%	21%	15%	16%

Table 13

Appreciation of services provided by the national secretariats

	Company ≤500	Company >500	Research institute	University
General information on Eureka	1.3	1.3	1.4	1.5
Information on Eureka application	1.5	1.5	1.6	1.6
Specific information on projects	1.7	1.6	1.8	1.7
Assistance with project ideas	1.9	1.8	2.1	2.0
Assistance with project proposals	1.8	1.7	1.9	1.9
Partner search	1.9	1.8	2.0	2.0
Information on subsidy application	1.9	1.8	2.0	2.0
Explaining differences in subsidy applications for the different countries	1.7	1.6	2.2	2.2
Bringing together parties for supportive measures	2.0	2.0	2.1	2.0
Platform for dissemination of results	1.9	1.9	1.9	1.8
Assistance in project management/control	2.0	1.9	1.9	2.1

Scale 1-3; a low number indicates a high appreciation for the service mentioned.

Table 14

Preference: Eureka or the EC technology programmes

	Not answered	Eureka	EC- programme	No preference	Item not answered
Chance of proposal acceptance	40%	41%	11%	2%	6%
Required procedures	40%	38%	16%	1%	5%
Cost of writing proposal	40%	38%	12%	2%	8%
Successful project implementation	40%	23%	15%	4%	18%
Technical level	40%	19%	20%	5%	16%
Building business relations	40%	30%	11%	4%	15%
Applicability of results	40%	32%	7%	4%	17%
Market opportunities	40%	31%	8%	3%	18%
Access to capital markets	40%	18%	11%	3%	28%
Added value	40%	19%	8%	4%	29%

In total 40% of all respondents did not answer this question at all.
Some respondents did not answer all items of the question.

Table 15

Contribution of Eureka

	Company ≤500	Company >500	Research institute	University	Total
New commercial applications	70%	62%	62%	55%	62%
New process technologies	72%	77%	82%	67%	75%
New distribution channels/markets	33%	28%	42%	26%	37%
Long-term co-operation with foreign partners	66%	67%	80%	79%	71%
Acceleration of product introductions	59%	57%	51%	46%	56%
Patents or patents pending	28%	32%	37%	25%	31%

Table 16

Impact of Eureka participation on technology - and competitive position

	Company ≤500	Company >500	Research institute	University	Total
R&D strategy	79%	65%	79%	82%	73%
Technology position	76%	73%	70%	67%	73%
Competitive position in Europe	51%	47%	70%	67%	61%
Global competitive position	53%	46%	46%	57%	50%

Table 17

Commercial applications expected, counted from beginning of the project

	Company ≤500	Company >500	Research institute	University	Total
Within 2 years	12%	7%	5%	4%	8%
2 to 5 years	60%	51%	35%	26%	49%
After 5 years	22%	37%	15%	18%	24%
No response	6%	5%	45%	52%	19%

Table 18

Additional spin-offs from participating in an umbrella

	Company ≤500	Company >500	Research institute	University
Yes	29%	25%	36%	24%
No	9%	7%	8%	7%
No response	62%	68%	56%	69%

Table 19

Most important aspects of Eureka

	Company ≤500	Company >500	Research institute	University
Technology development	72%	76%	66%	64%
Knowledge diffusion/sharing	36%	37%	44%	51%
International co-operation	58%	55%	75%	58%
Additional R&D funding	53%	43%	42%	47%

As more than one option was allowed, percentages do not add up to 100%.

Table 20

Intention for future participation in Eureka

	Company ≤500	Company >500	Research institute	University
Yes	42%	43%	55%	62%
Perhaps	55%	54%	43%	35%
No	3%	3%	2%	3%