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COMMUNICATION FROM THE COMMISSION
TO THE COUNCIL, THE EUROPEAN PARLIAMENT
AND THE ECONOMIC AND SOCIAL COMMITTEE

on the final evaluation of the centralized action for the dissemination and exploitation of knowledge resulting from the Community's specific RTD programmes (VALUE II)

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EUROPEAN COMMISSION

Commission Communication to the European Parliament, the Council and the Economic and Social Committee on the final evaluation of the Centralized Action for the Dissemination and Exploitation of knowledge resulting from the Community's specific RTD Programmes (VALUE II)

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- Encl.: 1) Final evaluation of the VALUE II Programme;
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COMMISSION COMMUNICATION TO THE EUROPEAN PARLIAMENT, THE COUNCIL AND THE ECONOMIC AND SOCIAL COMMITTEE ON THE FINAL EVALUATION OF THE CENTRALIZED ACTION FOR THE DISSEMINATION AND EXPLOITATION OF KNOWLEDGE RESULTING FROM THE COMMUNITY'S SPECIFIC RTD PROGRAMMES (VALUE II)

I. INTRODUCTION

1. The Council Decision of 29 April 1992 on the dissemination and exploitation of knowledge resulting from the specific programmes of research and technological development of the Community (VALUE II) lays down that, at the end of the action, an evaluation of the results achieved shall be conducted for the Commission by a group of independent experts, in order to determine the extent to which the results obtained help not only to achieve the objectives of this action and of the third framework programme (1990-1994) but also to assess the efficiency with which the action was carried out and promoted (Art. 4(2)).
2. The Commission therefore set up a group of independent experts known as the "VALUE II final evaluation panel" to carry out the evaluation. The group, chaired by Mr K.P. Friebe, carried out the evaluation from the beginning of February 1995 until the end of July 1995 and submitted its report to the Commission departments on 31 July 1995.
3. The dissemination and exploitation Committee (VALUE II Management Committee) expressed its observations on the final evaluation report at its meeting of 7 November 1995.

II. PANEL'S RECOMMENDATIONS ON THE STRATEGIC OUTLOOK AND THE COMMISSION'S COMMENTS

The panel believes that greater attention should be paid to innovation, which is not simply the product of research and technological development activities but also comprises organizational and social aspects. A major initiative with significant funding would, according to the panel, therefore be justified in the field of innovation.

The Commission agrees to a large extent with this analysis and on 20 December 1995 it adopted a "Green Paper on Innovation".

The basic premise behind the Green Paper is that European businesses are comparatively less able than their competitors to transform scientific breakthroughs and technological achievements into innovations.

Europe must therefore take resolute action and to this end the Green Paper proposes thirteen lines of action corresponding to the main objectives as follows: gearing research to innovation, strengthening human resources, improving financing conditions and creating a legal and regulatory environment suited to innovation, whilst developing the role and means of action of the public authorities.

The Green Paper on innovation is likely to be discussed widely in the first half of 1996 and the final evaluation of VALUE II may, to a certain extent, be considered as a contribution to that debate, making it possible to define innovation priorities and the measures to be carried out.

III. PANEL'S SPECIFIC CONCLUSIONS AND THE COMMISSION'S COMMENTS

The panel's final evaluation contains an analysis of the activities implemented under VALUE II and recommendations regarding their future development.

The VALUE II Management Committee for its part feels that with limited resources the Commission departments have developed and implemented new instruments which have considerably helped promote new attitudes regarding dissemination and exploitation under the fourth framework programme.

The conclusions regarding the main activities of VALUE II are as follows:

- The relay centre network:

The panel concludes that, in the 1993-1994 period, the relay centres succeeded, via a broad range of services upstream and downstream, in advancing the exploitation of Community RTD results in the Member States. It also felt that the key to the success of the relay centre scheme lay in the commitment, qualities and experience of those called upon to act as efficient "brokers" between businesses and technology holders.

The creation of the network of relay centres was one of the most significant new activities of VALUE II, and has served, with due regard for national contexts, to bring Community activities closer to local users' needs.

By now concentrating on its role of promoting innovation, the network of relay centres should, as the panel recommended, contribute more than in the past to matching businesses' needs with the technologies available and not confine itself to promoting the results of Community RTD activities.

As pointed out by the Value II Management Committee, these developments call for increased collaboration, with a view to improved rationalization of their respective activities, with the other Community networks promoting RTD activities (network of EuroInfoCentres, CRAFT network aimed at facilitating the participation of SMEs in Community RTD programmes, etc.), national networks - in particular those serving SMEs - and the other players in the innovation system.

- The information and dissemination service:

Significant improvements have been made to the CORDIS information service in recent years, as the final evaluation report and the comments of the VALUE II Management Committee emphasize. CORDIS has become a widely-used, recognized tool for the dissemination of information on Community RTD activities

(14 000 users). Nevertheless, the panel regrets the lack of an integrated EC policy on RTD information and the risk of duplicating efforts, and would like to see the introduction of a coherent, well-defined approach. It also recommends that a study should be carried out on demand, the future development of the system and its cost. These recommendations are, to a large extent, shared by the VALUE II Management Committee.

The Commission has noted the panel's recommendations, most of which it has already accommodated. It has taken steps to increase the coherence of its information instruments on RTD activities. It has set up a Working Party to promote the creation of bridges between the national and Community systems for disseminating scientific and technical information. It is also continuing its efforts to better adapt to existing or potential demand and to reduce the system's collection and operating costs. Finally, it has launched studies aimed at defining the possible future development of the system.

- The utilization of RTD results

The panel believes that the exploitation projects have made a significant contribution to the programme and that the activity has been organized efficiently. It recommends that priority should be given to user-driven consortia and to projects on generic technological fields with a high spin-off potential. It is also of the opinion that the exploitation measures should not be confined to Community RTD activities but should also include all the results available from European RTD. The VALUE II Management Committee considers that these projects have a high value added and have had spin-off effects by helping to promote the development of an "exploitation" culture at Community level.

The Commission to a large extent shares the opinion expressed by the panel and the VALUE II Management Committee. It is lending its support through the new Innovation Programme (4th framework programme) to technology validation and transfer projects. These projects are demand-oriented and trans-sectoral. In this respect they differ from other RTD activities and, in particular, from cooperative research projects which, while also demand-oriented, are further "upstream" and are not *a priori* trans-sectoral. Moreover, as recommended by the panel, the technology validation and transfer projects are no longer confined to the exploitation of Community RTD results. They arouse great interest amongst SMEs, since more than 60% of project coordinators are SMEs, and there is at least one SME in 90% of the projects selected. "Project" activity is also now granted a much higher level of funding and it should therefore be possible to better promote the innovation culture at Community level.

- Legal protection of results

The panel considers that the results obtained as regards intellectual property are relatively meagre, and approves the recent initiatives aimed at improving the quality of the services proposed in the field of patents.

The Commission believes the issues surrounding intellectual property are very important in the context of innovation policy. The role of the Community in this respect is relatively limited for legal reasons. This is particularly true regarding shared-cost activities because of the contractual liabilities of the contracting parties in RTD projects. The financial resources allocated to this activity were also very limited under VALUE II. Nevertheless, there have been a number of recent initiatives, some of them referred to in the panel's evaluation (quick scan, patent building scheme, training of project leaders, etc.), which should make it possible to take fuller account of these aspects in the management of projects receiving Community funding.

- Promotional activities:

A large number of promotional activities were carried out, but the panel felt their impact on the main target groups could have been greater. The panel therefore proposes that a more coherent overall promotion strategy should be drawn up, taking better account of the needs and perceptions of the various target groups.

The Commission has noted the panel's observations. It has already taken organizational measures which should enable the adoption of a better coordinated, more targeted approach.

- Research-Scientific Community and Research-Society Interfaces:

The panel expressed its interest in the activities carried out, with limited resources, in these areas. It recommends that their results be promoted by means of campaigns aimed at pre-defined target groups.

The Commission also attaches great importance to the social aspects of research and innovation. The work programme of the Innovation Programme accordingly provides for a line of action devoted to raising public awareness of research and technology issues and the role they play in the present society.

- Relations with other Community initiatives

The panel considers that the Value II Programme should maintain closer links with other Community initiatives such as those of the structural funds, or with other policies such as industrial policy or enterprise policy (particularly in favour of SMEs).

Dissemination, exploitation and innovation activities take place at the interface between research and these policies or initiatives, and the Commission thus shares the panel's view. Several pilot projects have already been implemented, and these will have to be assessed and, if necessary, pursued and further developed. In particular, they may concern specific actions at regional level, actions targeted specifically at SMEs and measures to improve the terms of innovation financing.

IV. CONCLUSION

The Commission wishes to thank the VALUE II final evaluation panel for its comments and recommendations, some of which have already been accommodated in the measures provided for under the Innovation Programme. It also considers this report to be a valuable contribution to the debate on innovation in Europe.

This communication, together with the final evaluation report, is submitted to the European Parliament, the Council and the Economic and Social Committee, in accordance with Article 4 of the Council Decision of 29 April 1992.

VALUE II Programme

• *Final Evaluation* •

31 July 1995

Report prepared by an Evaluation Panel at the request of the European Commission's Directorate General XIII : Telecommunications, Information Market and Exploitation of Research.

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VALUE II Programme

• *Final Evaluation* •

A final evaluation of the Community's Centralised Action for the Dissemination and Exploitation of Knowledge Resulting from the Specific Programmes of Research and Technological Development (VALUE II).

EVALUATION PANEL:

K.P. Friebe (Chairman)

Dr. L. Crespo

Prof. Th. Durand

Prof. N. Gangas

Dr. F. Gonçalves

Prof. P. Hills

Dr. B. Svensson

Ir. A. Vyverman

EDITORIAL SUPPORT:

Mrs. M. Victor

31 July 1995

Report prepared at the request of the European Commission's Directorate General XIII : Telecommunications, Information Market and Exploitation of Research.

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The VALUE Evaluation Panel would like to express their sincere appreciation to all those interviewed throughout the Commission and elsewhere. The assistance of the VALUE Team, particularly Mr. Giulio-Cesare Grata, Director of DG XIII-D, Mr. Jean-Nöel Durvy, and Mr. Constant Gitzinger is gratefully acknowledged. The views and recommendations contained in the report are, however, the responsibility of the authors alone.

I. EXECUTIVE SUMMARY

1. STRATEGIC ISSUES

In relation to the strategy of VALUE, much has already been said in the Mid-Term Review about the historical strategy of the VALUE I and II programmes. The panel felt that there was no need to duplicate this and that it was more appropriate to identify the lessons from past experience and concentrate on discussing future strategies.

The panel wishes to stress that the real objective behind investing in RTD is competitiveness through innovation and that innovation is not just a spill-over of RTD. While the existence of the Third Activity recognises that it is not enough to invest in RTD, the current attention paid to innovation is clearly insufficient to leverage RTD properly.

The panel insists in pointing out that innovation should be recognised as a risky business for companies. Furthermore, it is difficult to fund. While past thinking and action was inspired by a technology-push perspective, the relevant approach should be mostly around demand-led policies. RTD programmes should not be expected to generate off-the-shelf-technologies, except for very specific but nevertheless important cases. Instead, RTD projects should be regarded as ways to build a wide variety of expertise available to help firms solve the problems encountered in their innovation processes.

In addition, innovation encompasses organisational and social dimensions as much as technological ones.

The panel strongly advocates a major initiative dedicated to the promotion of innovation. A detailed discussion of the strategy issues is to be found on p. 53-61. This initiative should help co-ordinate the many actions of the Commission. This major action has a validity of its own, beyond RTD activities.

Significant funding should be allocated to this initiative. The panel considers that 10% of the RTD budget is a much more relevant order of magnitude than the amounts allocated to past actions.

The panel suggests four major action lines (see p. 60-61) for promoting innovation, encompassing a variety of approaches in order to reach SMEs and help experience-sharing across borders. The panel recommends that new thinking and thus new actions on innovation emerge within the Union. The panel suggests strongly that this initiative be recognised as a top priority and wishes to raise political awareness in the Community.

2. VALUE RELAY CENTRES NETWORK

There is no doubt that the recognised difficulty in translating R&D results into marketable products/services, including the corresponding production processes, is a weakness that needs to be addressed urgently and in such a way that it should be considered a strategic issue, given the importance that variables such as "reduced time to market" and "shorter product life cycles" assume in today's supra-national competitive environment.

Taking into consideration the Mid-Term Review and the recent evaluation of VRCs, the panel concludes that, in general, both the analysis and recommendations made in these documents still remain valid. The main conclusion of the aforementioned evaluation is that during their pilot operation in 1993 and 1994, VRCs succeeded, via a wide spectrum of upstream and downstream services, in advancing the valorisation of Community RTD results across the Member States.

In view of this positive outcome of the detailed evaluation of the VRCs, we expand below in this report by presenting some general reflections on the Relay Centres concept which is pertinent to the currently unfolding Third Activity as well.

The cornerstone of the success of any Relay Centres experiment is basically and inevitably dependent on the commitment, skills and expertise of the people involved in becoming effective brokers between business and technology. Synergies could be achieved through the utilisation by RCs of the old SPRINT networks, given the complementary nature of their activities.

The VR-Service, acting as a permanent monitoring, guiding and supporting feedback system, could enhance its efforts for a more active networking of the RCs, as well as for a better cohesion in their operations across Europe.

The most important asset of each RC is its own personnel. Their managerial, technical and entrepreneurial skills are the key issue of all operations. Any measures taken to secure and expand this asset are, therefore, vital for success.

3. CORDIS

At the end of 1994, the recommendations formulated during the Mid-Term Review were still valid. Since then, progress has been observed.

A coherent and well defined RTD information provision approach seems highly desirable in order to make any innovation policy successful. This

is, of course, not the responsibility of one single DG, but must be assured at the highest EC level.

Means should be found and procedures be established to shorten drastically the delay in provision of information on projects and results from EC RTD programmes and to enable the delivery of more up-to-date information.

The information provided by CORDIS could be expanded in ways which we recommend in our report.

It is recommended that in the medium-term an integrated in-depth study be undertaken in which the following items should be addressed. Of these issues, the first is considered to be the most important.

- The demand side: the impact of the service should be measured and the users surveyed. Such a market study should also cover the most appropriate marketing policy to be followed in terms of money charged for services.
- Technological evolution: how the information provision could look like in about 5 years' time and how CORDIS could adapt to technological evolution. This study should also take into account the relationship with national or regional RTD databases.
- Cost control: essential for the operation of CORDIS, while maintaining high quality and service. This plan should be based on a profound assessment of the actual process for the creation and maintenance of the databases and should contain the steps to be taken in order to cope with the technological changes of the near future, to ensure a significant and lasting cost reduction over the coming years.

CORDIS also has a role to play in bringing the national and regional RTD databases closer to potential users in a harmonised way.

4. UTILISATION OF RESULTS

Directly supported valorisation projects make an important contribution to the programme. The Commission have organised the activity effectively. Several, and probably many, projects are of high technical quality and should lead to exploitation which would have been lost without VALUE. More could be achieved, however, with a better focused and more commercially oriented approach.

This would take greater account of two points: that technology transfer and innovative attitudes are best diffused via personal contacts; and that appropriate technological solutions are more likely to be generated by

demand from the bottom up, than by top-down dissemination. The Commission should reflect these considerations in selecting projects and setting their objectives.

There should be increased emphasis, therefore, on user-driven consortia. All projects should include, as main partners, an organisation committed to exploitation if the project is successful. More weight should be placed at all levels of the programme, on demonstrating the innovative attitudes behind the projects, as well as their results. Projects should be selected wherever possible to cover generic technologies with a high spin-off potential.

5. LEGAL PROTECTION OF RESULTS

The panel considers the results achieved in the IPR field within the framework of the VALUE programme to be relatively meagre both in quantitative and qualitative terms. This is supposed to be caused by lack of financial resources as well as lack of initiative on the part of DG XIII Patent Section.

Among key activities in future are a "*Quick Scan*", which allows assessment of the novelty of technologies in collaboration with the European Patent Office in The Hague, and a "*Patent Build-up Scheme*", which is aiming to make contractors aware of the importance of the priority year and the opportunities for secondary filings.

The panel concludes that there is a need for a radical change in the present organisation and operations of the Patent Section considering the great importance of IPR matters in connection with RTD projects. It therefore welcomes the recent initiatives which aim to offer improved patenting services in future.

The evaluation is concluded by a presentation of five specific ideas that could serve as viable tools in the future operations of DG XIII Patent Section and other pertinent EC bodies involved in IPR matters.

6. PROMOTIONAL ACTIVITIES

The panel has the impression, when surveying the large number of promotional activities undertaken, that they have resulted from a step-by-step line of action rather than from a well thought-out and well-integrated promotional strategy. A possible consequence of this is that there has developed only limited awareness among important target groups about the links between individual activities and the overall objectives and ambitions of the VALUE programme.

The panel suggests a more powerful promotion of the Third Activity in the future based on:

- an analysis of the needs and perceptions of different target audiences and the results of previously carried out promotional activities under VALUE
- a coherent promotional strategy across all three objectives of this Activity, and
- a strong and clearly identified connection between promotional efforts related to individual activities and the principal common elements of the overall promotional strategy.

The evaluation concludes by suggesting that the promotional activities for each of the three objectives of the Third Activity should be subordinate to, or comply with the principal common elements of a coherent promotional strategy.

7. INTERFACES II AND III : RESEARCH-SCIENTIFIC COMMUNITY AND RESEARCH-SOCIETY

Innovation, as a whole, is the outcome of a large combination of interdisciplinary activities and to be successful it requires, among other facts, social awareness, acceptance and training to lead to the desired proper use. Barriers and threshold levels for technology acceptance may vary from country to country but transnational considerations and lessons learned at a European level will be of great importance. Interfaces II & III addressed these issues with very reduced human and budgetary resources.

The panel recognises the efforts and the qualified approach of the project team as well as some relevant results. In general terms it has been a tool-oriented concept which led to some workable goods and manuals. A special mention has to be made of the awareness workshops methodology which has been very successfully used in several European cities to deal with the issue of sustainable living in urban environments. This methodology has been recognised and adopted by relevant European and national institutions.

Therefore, the panel expresses its surprise and concern about the dismantlement of this activity at the end of VALUE II and the apparent abandonment of these action lines within the Third Activity. It hopes that this situation will be reconsidered and reinstated or continued with appropriate resources and with a clearer recognition of its benefits at Commission level. The resources foreseen for accompanying measures could be used synergistically for this purpose.

II. BACKGROUND TO THE FINAL EVALUATION OF THE VALUE II PROGRAMME

1. OVERVIEW OF VALUE II

Programme title: Centralised Action for the dissemination and exploitation of knowledge resulting from the specific programmes of research and technological development of the European Union.

Programme period: May 1992 - December 1994.

Programme Acronym: VALUE II

The Third Framework Programme stipulated that measures for disseminating knowledge and results arising from the specific and supplementary programmes shall be implemented, on the one hand, by these programmes themselves and, on the other, by means of the Centralised Action. The goal of this action, in particular, was to add specific value to the whole range of Community RTD activities which were the subject of the Third Framework Programme (1990-1994), co-ordinating and supplementing the measures taken under the specific RTD programmes. More specifically, the main objective was to promote the dissemination and utilisation of the results of EU Research and Technological Development (RTD) activities with a view to attaining the declared goal of the Framework Programme. Thus, exploitation per se of research results was not within the objectives of VALUE II.

The Council Decision (see Annex 1) for the Centralised Action (or VALUE II) was adopted on 29 April 1992 and allocated to this programme a budget of 57 MECU. Later, by the Decision 93/167/Euratom, EEC, of 15 March 1993, this amount was revised to 66 MECU. Thus, the funds allocated for VALUE II are higher than those for VALUE I, but they still represent a small fraction (1%) of the financial envelope for the whole Third Framework Programme. Therefore, VALUE II was given inadequate means to promote significantly RTD results and to facilitate their effective utilisation across the EU.

VALUE II both provided continuity for the measures carried out during 1989-1993 under Sub-programme I of VALUE I and introduced new topics of strategic importance for the promotion of Community RTD results and for facilitating their utilisation. These new topics brought into focus the perspectives of:

- the interdisciplinarity of research; and

- the repercussions of RTD activities and of their results on society as a whole.

More specifically, the Council Decision specified that VALUE II should be implemented:

- in accordance with the principles of Horizontality, Complementarity and Subsidiarity; and
- along three interfaces; those of "Research-Industry", "Research-Scientific Community" and "Research-Society".

The objectives set for each of these interfaces can be summarised as follows:-

- Interface I, "Research-Industry", for improving the international competitiveness of Europe's industry in accordance with the provisions of the EEC Treaty by means of specific projects designed to maximise the impact of Community R&D activities on industry as a whole.
- Interface II, "Research-Scientific Community", for contributing to an interdisciplinary reflection on research, its methods, problems and impact.
- Interface III, "Research-Society", for identifying and studying the societal impact of the new scientific and technological knowledge acquired as a result of Community activities as well as for providing information to the public so as to ensure that changes in the contemporary approach to science are compatible with developments in society.

The following tables depict the main activities carried out per action line of the programme and the corresponding funds spent or allocated until 31 December 1994.

Table 1

LINES OF ACTION OF INTERFACE I		Cost (MECU)
I.1a	VALUE Relay Centres	13.4
I.1b	CORDIS and publications for dissemination	11.6
I.2.	Utilisation of results	11.1
I.3.	Protection of results	0.4
I.4.	Promotional activities	5.3
Total Expenditure until 1 January 1994 >		41.8
Above expenditure as percentage of budget >		75

Table 2

ACTIVITIES WITHIN INTERFACE II		Cost (MECU)
1	Studies, surveys, evaluations	0.6
2	Promotion, awareness, seminars, etc.	0.4
3	Directories, databases, documents	0.05
Total Expenditure until 1 January 1994 >		1.05
Above expenditure as percentage of budget >		37

Table 3

ACTIVITIES WITHIN INTERFACE III		Cost (MECU)
1	Studies, surveys, evaluations	0.4
2	Promotion, awareness, seminars, etc.	0.3
3	Directories, databases, documents	0.05
4	Contribution to TA within the EU	0.3
Total Expenditure until 1 January 1994 >		1.05
Above expenditure as percentage of budget >		41

2. FINDINGS AND RECOMMENDATIONS OF THE MID-TERM REVIEW

2.1. VALUE in Context

Economic development in the whole of Europe will depend greatly in future on the application of well-defined R & D strategies, the promotion of successful innovations and the availability of appropriate technologies. These will be a pre-requisite to creating jobs and ensuring the well-being of all European citizens. R & D and the promotion of innovation are therefore essential activities in fulfilling these aims.

The RTD culture is fairly well-established in Europe : EC-funded RTD currently represents about 5% of all R & D conducted within the European Union. In contrast, however, the culture of utilising the results of this RTD, i.e. the exploitation and dissemination of the outcome of RTD, is not that widespread. The VALUE Programme, which should play a decisive role in promoting the utilisation of RTD and hence in aiding the dynamic economic development of Europe in future, has a budget allocation of only 1% of all EC-funded RTD - far too small to have any real impact.

VALUE I (1989-1993) and VALUE II (1992-1994) were pilot programmes during the Second and Third RTD Framework Programmes. They made it possible to design relevant methodologies and tools to help transform R & D results into real economic activities.

A global policy to ensure these essential activities should now be formulated, adopting a broader strategic vision to include a far greater effort and political commitment. A major initiative, targeted at the promotion of innovation for which the funding would be clearly distinct from the funding of R & D and thus from the Fourth Framework Programme, should be considered in the medium term.

In the meantime, the specific programmes should be invited to work closer with VALUE in order to improve the effectiveness of the promotion of RTD results. In addition, VALUE should concentrate more on SMEs via a more "demand pull" or "bottom-up" approach. Indeed, VALUE's main task is to design appropriate processes to assist SMEs solve the technical problems that they face by calling upon the technical capabilities of R & D labs, wherever these are located in Europe.

2.2. Strategic Perspectives

1. The major issue behind VALUE concerns the very nature of the results of RTD programmes, given the overall objective of promoting innovation throughout Europe. Conventional wisdom assumes that RTD yields results which may be directly or indirectly exploitable through some

adaptation and development processes. However, this is unfortunately seldom the case. It must be recognised clearly that RTD programmes essentially contribute to strengthening the "existing knowledge base" in the teams conducting the work. Making the best use of RTD results thus primarily means exploiting the enriched "existing knowledge base" in order to solve problems encountered throughout the many loops of the innovation processes taking place within and among companies and R & D centres.

2. Both VALUE I and VALUE II were designed with a big agenda without adequate political and financial support. It must be emphasised that the exploitation of RTD results, technology transfer and more generally the promotion of innovation are essential to European economic competitiveness and as such require significant funding, not just a small percent of RTD budgets.

3. VALUE may be considered a back-up initiative, should the participants of an RTD programme not exploit their results in the usual way. However, little or no attention was paid in VALUE to "upstream" or "ex ante" integration of business perspectives into the RTD programmes, i.e. before the RTD project was funded and launched. Is it normal or inevitable that over 50% of RTD projects fall in the "Candidates for Value" category while only about 20% lead to "Autonomous" exploitation by the consortia which conducted the RTD?

4. VALUE fulfils a function which is directly related to other existing activities.
 - National policies, methodologies and tools exist to promote technology transfer and innovation within most countries and at regional level. This includes exploitation of publicly funded R & D.
 - SPRINT aims at promoting "cross-border" technology transfer and innovation.
 - VALUE addresses community funded RTD only.

VALUE might thus have been designed around existing tools stemming from national or SPRINT initiatives, as a communication action towards:

- existing technology transfer agents and their networks;

- existing value added networks of information providers;
- the management team of the specific programmes (ESPRIT, BRITE-EURAM,) in the Commission.

The integration of SPRINT and VALUE into a single programme should strengthen the effectiveness of both the VALUE and SPRINT initiatives. More co-operation between the specific programmes and VALUE would be appropriate.

5. VRCs were created as a decentralised tool for VALUE. They offer a unique opportunity to promote innovation and technology transfer towards SMEs, adopting a bottom-up approach and taking into account the diversity of national and regional cultures encountered in Europe. VRCs should thus be both strengthened and optimised. Along these lines, an in-depth evaluation of the VRCs was performed.
6. VALUE should be extended to include not only Community funded RTD results but also relevant technologies requiring transfer/exploitation throughout the multiple and complex loops of the innovation process. This would therefore require VALUE to deal also with all other types of RTD results e.g. nationally funded.
7. SMEs should be a definite priority for Community programmes and especially for the promotion of exploitation via the VALUE Programme. VRCs have an important role to play in this process. The panel recommends that the Commission halt the continual creation of new offices, guichets or similar entities. Decentralisation is clearly appropriate but without co-ordination it leads to wasteful overlaps and duplication.
8. The VALUE approach, initially created in a "technology push" type of mode, should become more demand-oriented or "market pull" based. From that perspective, the concepts behind the experiment currently under way between VALUE and the Structural Funds to satisfy SME needs would seem appropriate. This clearly relates to the "ex ante-upstream" type of reasoning mentioned above.
9. VALUE has been involved directly in exploitation projects covering activities such as marketing studies, business plans, search for industrial partners, tests under industrial conditions, prototyping, patent support, licensing, participation in exhibitions, etc. Shouldn't VALUE's role focus on organising/integrating/promoting/linking, helping to match needs

and skills, working more as a catalyst and designer of processes than as a direct player?

Undertaking specific projects may, however, be useful to:

- demonstrate the exploitation mechanisms as well as utilise outstanding R & D results in Member States or Community regions having little experience in exploitation/insufficient pertinent national schemes;
 - serve as examples of concrete outputs of the VALUE Programme whenever an illustration is required by the public (displaying function);
 - keep the VALUE team up-to-date with respect to the difficulties of real life innovation processes;
 - analyse across these projects, to learn from such experiments.
10. How do VALUE/SPRINT/the Fourth Framework Programme/Structural Funds relate to one another from the above viewpoint? More specifically, should not VALUE and VALUE/SPRINT be related increasingly to the structural initiatives of DG XVI, or even to the Industrial Policy of DG III or the SME actions of DG XXIII? The current pilot initiatives, e.g. with DG XVI, hint clearly in this direction.
11. From such a perspective, the purely administrative funding approach adopted recently of 1% of the specific RTD programmes supposedly devoted to dissemination activities may only be effective if co-ordinated by VALUE.
12. There is a clear need, in parallel to the RTD action, to develop an effective strategy for the promotion of innovation, technology transfer and the exploitation and dissemination of RTD results and knowledge.
- 2.3. Promotional Activities**
13. Under this action line scientific information arising from Community RTD activities was disseminated by means of publications, information sheets and articles.

14. The FLAIR-FLOW project, a co-ordinated action supported jointly by VALUE and FLAIR, was particularly effective in aiding dissemination of results from European Food R & D. Dissemination took place using various means, the most important being the one-page technical documents in layman's language which were widely circulated.
15. Other important activities under this action were the publication of "Innovation & Technology Transfer News-Letter", "Euro-abstract Catalogues" and "CORDIS Up-date".
16. Horizontal activities which proved very helpful are the RTD Help Desk and the establishment of Cooperation Network, representing a very good synergistic initiative between VALUE and other EC initiatives and funding sources, e.g., regional funds handled by DG XVI.

2.4. Utilisation of Results

17. Exploitation of results is a major action, lying at the heart of the VALUE Programme. 94 projects out of 373 proposals were selected for financial support of actions such as marketing studies, business plans, search for industrial partners, tests under industrial conditions, prototyping, patent support, licensing, participation in exhibitions, etc. Around 40% of the contracts are concluded with SME companies.
18. Although exploitation is a lengthy process, it is clear by now that a substantial proportion of the projects essentially supported during VALUE I could lead to significant results in the near future. The various instruments of assistance available enable VALUE to accommodate better proposers' needs.
19. The source of the VALUE exploitation scheme is only a fraction of what is produced in the individual Member States of the European Union. The exploitation action therefore should not be limited to Community RTD alone but should be expanded to include all available European RTD results.
20. In order for VALUE to have a major impact on the exploitation of RTD results, the budget needs to be of a different order of magnitude. However, even then, collaboration should be sought with national and international exploitation schemes and potential financing bodies (DG XVI, DG XII, EUREKA, CRAFT, national and regional supporting organisations, etc).

21. The delay caused by the Commission procedures for selection and conclusion of project proposals is too long, hence inefficient and needs to be reviewed in future.

2.5. Methods and Tools

Value Relay Centres

22. The network of VALUE Relay Centres is an interesting initiative that might become the necessary bridge between the European specific RTD programmes and users' needs, especially those of SMEs. It could have important synergistic effects with the national RTD programmes and could act as a transnational European platform for effective dissemination and cross-fertilisation of RTD efforts.
23. Its short operational history indicates a non-homogeneous situation among the different VRCs, some already producing good results while others appearing to lack clear action plans. A revision of the current situation is recommended in order to improve the performance of VRCs in some countries.

CORDIS

24. CORDIS is now in its full pilot operational phase and is quite a well known EC initiative, valued by RTD people within the EC and abroad. Together with its success emerges also the need for further improvements, e.g. higher speed in data collection, continuous data updating, more coherent abstracting of primary information in order to obtain more accurate record characterisation (e.g. SIC codes) and better data quality and consistency.
25. These improvements in data presentation and consistency in both on-line and off-line CORDIS products, combined with the VALUE Management Team policy to utilise new technological options, present an opportunity for CORDIS to become very attractive also to users inexperienced with on-line searches and to satisfy simultaneously the increasing demand for well-presented, easily accessible and manageable information. Multi-media CD-ROMs and Context Driven Applications are examples of future technological options within the reach of CORDIS.
26. The recently launched software interface "Watch-CORDIS" demonstrates the above VALUE team policy. The merits of this new product could be enhanced significantly by enabling access through it to the CORDIS CD-ROM data as well.

- 27. Much should be done in training intermediaries and end users in using CORDIS fully. A better training policy and practice is needed, given that promotion and training should be envisaged as complementary push-pull activities.
- 28. Publication of sub-sets of CORDIS data should not be considered an indispensable but redundant system. In fact, there is a need for reformulating the strategy for CORDIS publications from the viewpoint of their actual usefulness and promotion of CORDIS and its products.
- 29. Promotion of CORDIS should be increased but within an overall marketing strategy. Such a strategy should be formulated before the end of VALUE II, so as to provide a clear direction for CORDIS promotion during the next Framework Programme.
- 30. The usefulness of CORDIS would be increased greatly by substantially upgrading the content and quality of information on the RTD programmes, RTD projects and other pertinent databases and by incorporating additional EC documentation, e.g. synopses of submitted RTD proposals, abstracts of European Parliament papers dealing with RTD and more general issues of science and technology. Such an upgrading would give it an EC-encyclopaedic character which would have many multi-faceted beneficial effects across the EC.
- 31. CORDIS is already accessible via several Wide Area Networks, while there is also interest by intermediary organisations in distributing electronically sub-sets of CORDIS. However, before using new options for a more dynamic penetration of CORDIS by distributing sub-sets of CORDIS to other hosts, or even relocating CORDIS from ECHO, a multitude of major policy and technical issues require clarification.
- 32. In conclusion, a clear overall CORDIS strategy is urgently required, particularly given the limited funds envisaged for VALUE and SPRINT initiatives within the Third Activity of the next Framework Programme. This is needed not only for optimising the service but also for securing its future. The issue of decentralisation or commercialisation of CORDIS should be the cardinal consideration in such a strategy.

Legal Protection of Results

- 33. Because of its importance and relatively low cost, the protection of RTD results is an essential part of the VALUE scheme. Patent evaluation of all JRC and some selected Framework Programme research results is executed by the VALUE patent team. Drafting of patent claims, writing patent

specifications and patent filing applications are undertaken by professional patent lawyers.

34. Very few patents until now have been granted on patent applications under VALUE. 72 cases have been filed, essentially from BRITE/EURAM and the Life Sciences programmes. Exploitation of RTD results takes years and although no patents taken by the Commission under the VALUE programme have yet been commercialised, several cases of exploitation are under way.
35. The work of the VALUE patent team could be improved through greater involvement by the programme project officers and RTD project partners.

2.6. Interfaces II and III

36. The activities of Interfaces II and III are new to VALUE and could have a significant impact. However, the importance attached to them by the Commission is insufficient with respect to the magnitude of the tasks involved.
37. The Commission's strategic approach and planning have benefited the implementation of the actions. Nevertheless, a clear administrative identity is required urgently for the management team of these tasks, to facilitate its work in approaching the target groups and in developing their activities, not only outside but inside the Commission.
38. Since there is a general lack of awareness about the new issues (Research-Scientific Community/Research-Society Interfaces), the Commission should place greater emphasis on promoting these through campaigns aimed at target groups in the Commission itself as well as in the Member States.

This could involve synergy with Interface I activities, e.g. using VALUE Relay Centres as "distribution networks" for various Interfaces II and III activities.

39. The Commission should consider merging Interfaces II and III, directing more effort and resources, particularly human resources, towards Interface III, "Research-Society" actions.

3. THE FINAL EVALUATION MANDATE AND APPROACH

In accordance with Article 4, paragraph 2 of the Council Decision: "At the end of the action, an evaluation of the results achieved shall be conducted for the Commission by a Group of independent experts. The Group's report, together with the Commission's comments, shall be submitted to the European Parliament, the Council and the Economic and Social Committee".

The Terms of Reference of the Final Evaluation of VALUE II, given in Annex 2, further detailed the evaluation task by stipulating that:

- the panel will assess the extent to which the results achieved contribute to the objectives of VALUE II and that of the Third Framework Programme;
- this panel will also assess the efficiency and effectiveness with which the programme has been managed and promoted.

Finally, DG XIII-D asked the panel to reflect on strategic policy issues in relation to the dissemination and exploitation of RTD results and to technological innovation.

The work of the panel basically comprised:-

- critical review of pertinent EC documentation and activity reports;
- interviews with DG XIII-D officials and leaders of a few VALUE demonstration projects; and
- extensive discussions in four plenary meetings as well as in several meetings of panel member sub-groups that focused on particular action lines of VALUE II.

With respect to the evaluation approach followed, it is to be noted that:-

1. In view of the exploratory character of VALUE II, its results were assessed mainly on a qualitative basis. Quantitative indicators were used only for revealing or stressing qualitative features along particular lines of actions.
2. In view of the fact that the financial envelope of VALUE II rendered to its actions only a catalytic role, the approach for assessing the

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overall programme performance has been guided by the following basic questions:-

- were the initiatives designed by the VALUE Management Team sound and in line with the mandates for this programme?;
- did the VALUE Management Team develop, within the budgetary and other operational constraints of this programme, a coherent set of activities for demonstrating new tools and mechanisms that could facilitate the innovation process at some of its critical stages?;
- did these tools and mechanisms prove operative or adequate, even in the limited areas and contexts in which they were tested?;
- is the experience gained from the exercise useful for upgrading EC measures for the valorisation of RTD results?

III. FINAL EVALUATION OF VALUE II

1. INTRODUCTION

The Mid-Term Review of VALUE II covered the period from programme start - May 1992 - until March 1995. The Review was made available to the EC in May 1994 and was presented to the VALUE II Management Committee in June 1994.

Hence the present final evaluation looked in particular at the progress made during the last six or seven months of the programme's life. Obviously the work carried out within this closing period has been in many respects the continuation of activities launched previously. However, the findings and recommendations of the Mid-Term Review (Section II.2 earlier) influenced progress, as can be deduced from the adjustments made by DG XIII-D to several on-going activities and the reflections of the VALUE Management Committee on corresponding issues.

For reasons of coherence, clarity and completeness of the overview and evaluation of VALUE II throughout its duration, this report integrates the findings of the Mid-Term Review with those relating to the work carried out since May up until December 1994. Therefore, each action line of the programme is considered below in a unified manner.

2. ACTION LINE I.1a : VALUE RELAY CENTRES NETWORK

2.1. Introduction

In this section the panel differentiates between the status of the Value Relay Centres (VRCs) of the VALUE Programme and the new Relay Centres (RCs) of the Third Activity, involved in the innovation actions under DG XIII policy. The panel believes this distinction could be useful for future innovation activities, be these ones that are made directly with entrepreneurial companies or ones which aim to create an overall climate favourable to innovation.

Moreover, the panel considers that there is a great need for coherence within the various technology-related networks promoted by the Commission and believes that the current competitive atmosphere between these networks is not the optimum method of promoting innovation. It helps neither the image of the network actors nor the task of European innovation.

2.2. Overall Comments

There is no doubt that the recognised difficulty in translating R&D results into marketable products/services, including the corresponding production processes, is a weakness that needs to be addressed urgently and in such a way that it should be considered as a strategic issue, given the importance that variables such as "reduced time to market" and "shorter product life cycles" assume in today's supra-national competitive environment.

The VRCs, together with the Exploitation Projects and CORDIS, constitute the main tools developed by VALUE for addressing the aforementioned weakness.

Taking into consideration the Mid-Term Review and the recent evaluation of VRCs, the panel concludes that, in general, both the analysis and recommendations made in these documents still remain valid. The Executive Summary of the VRCs Evaluation, included in this report as Annex III, gives an overview of the methodology and performance of the VRCs.

The basic conclusions of the aforementioned evaluation are that:

- During their pilot operation in 1993 and 1994, VRCs carried out a wide range of effective and, in many cases, innovative activities. These, although of a quite experimental character, satisfied to a large extent users' expectations.

- VRCs offered upstream and downstream services, e.g. services for proposal preparation, search for partners, sensitising clients to exploitation options for RTD results, etc. Downstream activity, however, has been hampered by the known difficulty of financing exploitation projects.
- VRCs networking was rather limited, but in some cases good cross-border collaboration has developed.
- Overall, VRCs succeeded in advancing the valorisation of Community RTD results across the Member States, despite the rather low EC funding level for most of these centres. This positive impact was to a large extent due to the commitment and enthusiasm shown by all people involved - both in the VRCs and in the VR-Service in Luxembourg.

In view of the findings of the detailed evaluation of the VRCs, we expand below in the present report by presenting some general reflections on the Relay Centres concept which is pertinent to the currently unfolding Third Activity as well.

The RCs and their network could assume a greater role in acting as the main bridge between SMEs' technological requirements and the research efforts of European, national and sectorial programmes.

The horizontal nature of the network could serve as an integrating force via strong representation of SMEs' needs throughout the varying stages of the political decision-making process. At the same time the network could constitute a valuable source of information, reflecting knowledge of the field, in particular in those instances where such information might be crucial, given the diversity within regions and industries towards innovation activities.

RCs could trigger RTD institutions to show more concern integrating some business orientation at an early stage in their research aims, by exposing and confronting these with a "real world" image, if "downstream" activities are pursued in an effective manner, and an effort is made to approach the two types of agents.

The RCs' facilitator and catalyst role could be that of a decoding agent in both directions. Moreover, with their own dynamic inclusion in local and Community networks, they could be used as exploratory vehicles for the further design and testing of new tools. In connection with this, it should also be noted that RCs and other EC networks like EICs, etc. should take notice of each other's existence. This would avoid confusion and create synergy.

2.3. Operational Aspects

Being close to the market, the RCs are able to enhance the transectorial transfer of technology, if they adopt a truly proactive "demand-pull" approach. Furthermore, dynamic networking between RCs could improve transnational technology transfer.

The RCs must adopt a pro-active attitude in the sense that the focus of their work should be innovation and technology transfer rather than dissemination and exploitation issues.

The RCs must, therefore, focus more on helping SMEs to foster innovation strategies and for that VRCs will need to draw on any available source of novel technologies, not only Community ones, or even on mature technologies if these are to be used in innovative contexts.

The RCs should have some of the characteristics of innovation agencies, with a European scope. This implies that RCs need to utilise the competencies of other Centres operating under different EC programmes, in order to transform the RCs into windows of opportunities for local companies to access European networks of institutions, projects and experts on innovation.

In such a framework it is important that the RCs inform the other programmes about their strategic position in order to enable these programmes to take advantage of this and co-ordinate within the RC network the dissemination effort of particular research findings, in order to increase the global effectiveness of European innovation efforts.

A most significant, and positive, aspect is the diversity of actions and processes that are being undertaken now by the different VRCs. This leads one to assume that an operational decentralised approach will prove of strategic advantage in fulfilling the goals of the programme and that cross-fertilisation actions will encourage each individual RC to stretch its own positioning in the near future.

2.4. Organisational Aspects

Future support is required to reinforce the autonomy and flexibility as well as the identity of the RCs to prevent absorption by the host - possible not only by draining or diverting the RC financial resources, but also by using its human resources to accomplish the tasks of the host organisation.

One way to prevent this is to sustain an effective network mode of operation between the RCs, not only by means of an effective support and

induce "per se" an immediate and perceivable shift in the behaviour of relevant agents and key actors, as well as in the occurrence of generalised innovation processes.

The success stories disseminated among potential users of R&D results, especially in the less developed regions, and used for demonstration purposes, were powerful motivators for improving industrial performance.

RCs could play a more important mediating role in future between SMEs and producers of EC-funded RTD, as well as other national and international non-EC funded RTD generators, but they should also play a determinant role in matching the capabilities of RTD institutions with the actual needs of SMEs in terms of their problem-solving weaknesses.

Through their inclusion in local and global networking activities, RCs could diffuse state-of-the-art knowledge and skills in different areas of scientific and technological knowledge, which constitutes "per se" an excellent contribution to the industrial development of regions, especially for those with weaker innovation systems.

The success of exploitation projects and eventually a faster translation into marketable innovative products could be expected from those RCs that are part of a developed network and from technology-oriented regions or industries; whereas in less structured and solid innovation systems and in regions where the SMEs and local RTD institutions are less aware of these goals, vehicles and processes, the RCs' role might be initially less rewarding, fulfilling and visible but nevertheless probably of greater importance and contribution in the longer term.

2.6. Recommendations

During the current initial stage of the new RCs network the temptation to standardise procedures and especially structures must be avoided, since by their very nature, effective networks are those that can adapt and transform constantly.

There is the risk that a RC could concentrate its efforts on those SMEs that have already had some experience with a VRC and these would then tend to become regular "customers", especially if some significant success was achieved or if they had a more technologically-oriented corporate culture. This would be a comfortable and successful situation from the RC's point of view, but would have the drawback of diverting the RC's efforts and available resources from those that have not yet been attracted or exposed to the purposes and processes of the programmes.

Eventually, the RC might become a "centre of excellence" for a limited number of companies or RTD producers that at a given stage could and

indeed should upgrade their connections with private agents or have established their own networking activities. A certain degree of control could be used in order to redirect the RC back to its original aims.

The cornerstone of the success of any RCs experiment is basically and inevitably dependent on the commitment, skills and expertise of the people involved, in becoming effective brokers between business and technology. Synergies could be achieved through the utilisation by the RCs of the old SPRINT networks, given the complementary nature of their activities.

The VR-Service acting as a permanent monitorin, guiding and supporting feedback system, could enhance its efforts for a more active networking of the RCs as well as for a better cohesion in their operations across Europe.

In order to facilitate and promote an effective networking, the number of RCs should not be significantly greater than that currently in existence.

The experts who assessed the performance of the VRCs detected different strategies, sets of action and orientations between VRCs. In a future evaluation, it might be possible, indeed necessary, to broaden the three attribute groupings for RCs - substantial, valuable, and useful - in order to reveal also aspects like those just mentioned.

The most important asset of each RC is its own personnel. Their managerial, technical and entrepreneurial skills are the key issue of all operations. Any measures taken to secure and expand this asset are, therefore, vital to success.

3. ACTION LINE I.1b : BASIC SERVICE : COMMUNITY RESEARCH AND DEVELOPMENT INFORMATION SERVICE (CORDIS)

3.1. Introduction

CORDIS is an acronym for the Community Research and Development Information Service. It was initiated in 1988 with the following objectives:

- to satisfy the need for timely and accurate information, initially on the Framework Programme; eventually to be extended to other Community Research and Technological Development (RTD) Programmes and their results;
- to provide wider awareness of such Community programmes and their objectives, thus facilitating the development of Community consciousness;
- to allow for expanded programme benefits through better interaction and co-operation among the participants;
- to help promote the co-ordination of policies and programmes carried out at national level.

In 1989, CORDIS was subsumed into VALUE as an essential element of the Community endeavour to disseminate and exploit results of Community research programmes. CORDIS was put at the disposal of the public as an experimental service in December 1990 with the first three databases: RTD-Programmes, RTD-Projects, RTD-Publications.

Important improvements have been made during VALUE II and now CORDIS can be fully exploited.

3.2. The Current Situation

The CORDIS Databases

The actual database consists of 9 individual databases in English (except for RTD News which is also available in German), which are updated according to their news value (see Table 1). At present, CORDIS covers over 137,000 documents about non-confidential matters.

Table 1 : CORDIS Databases, Update and Record Count

Database Name	Update	Record Count *
RTD-NEWS	Daily	4,412
RTD-ACRONYMS	Fortnightly	4,638
RTD-COMDOCUMENTS	Fortnightly	805
RTD-PROGRAMMES	Fortnightly	393
RTD-PROJECTS	Fortnightly	23,008
RTD-PUBLICATIONS	Fortnightly	69,203
RTD-RESULTS	Monthly	11,541
RTD-PARTNERS	Fortnightly	17,992
RTD-CONTACTS	Fortnightly	4,726
* Total 1st. March '95		137,788

RTD-News: the latest news announcements on all aspects of Community RTD activities.

RTD-Acronyms: acronyms and abbreviations relating to Community RTD.

RTD-COMDOCUMENTS: comprehensive summaries of the Commission's initiatives on research matters to the Council of Ministers and to the European Parliament, as part of the legislative process.

RTD-Programmes: all Community-funded research and research-related programmes.

RTD-Projects: individual contracts and studies and the organisations involved within the various Community-funded programmes.

RTD-Publications: bibliographical information and abstracts on publications, reports and scientific papers arising from Community research activities as well as other scientific and technical documents published by the Commission.

RTD-Results: results and prototypes arising from Community and other RTD research that are awaiting commercial exploitation as well as information on research projects needing further developments.

RTD-Partners/EOI: potential suitable partners for participation in the Community RTD programmes and projects and for participation in the commercial exploitation of RTD results.

RTD-Contacts: main contact points (named individuals) on both national and European level able to provide information, advice or assistance on RTD activities.

The Information Collection Process

Information is collected in different ways:

- Regular direct contacts and collaboration agreements with specific programmes and other data providers.
- Use of internal databases as information sources.
- Use of electronic information tools.
- Extraction of information from various documentary sources.

For this data collection, CORDIS has installed a Brussels-based CORDIS Information Collection Unit. This consists of a dedicated team of information collectors with specialists for each database. For the majority of the databases the teams have active contact with individuals and different programmes from within and outside the Commission. For some other databases, such as Comdocuments, the activities involve abstracting published documents. A number of contractors also work on the CORDIS service.

CORDIS has prepared a guide called "USING CORDIS TO PROMOTE YOUR PROGRAMME", providing suggestions and detailed directives on how the RTD programmes can deliver information for CORDIS.

Accessibility of CORDIS

CORDIS is accessible in different ways:

- Off-line through a CD-ROM published quarterly and containing all CORDIS databases in compressed form (7,000 subscribers free of charge);

The on-line service (14,000 subscribers free of charge) is hosted by ECHO (European Commission Host Organisation) in Luxembourg and is accessible through:

- Direct Dial (PSTN): X.25 (e.g. Datex-P, Transpac); Europanet, etc.
- Internet.

There exist different ways of information retrieval:

- Watch-CORDIS (Windows Access to Central Host; Windows-based graphical user interface; Off-line preparation of queries; automated log-on/log-off).
- Menu system (Easy-to-use information retrieval system).
- CCL (Common Command Language; standardised, efficient search language).
- Information about CORDIS is published in several ways, the most important being CORDIS focus (extracts from RTD-news, published every two weeks); Euroabstracts (printed equivalent of RTD-Publications, published monthly); Innovation & Technology Transfer (latest information about RTD in the European Union, six issues per year), available free of charge from DG XIII on request.

Publicity and demonstrations were made at different happenings like EC-programme proposers days, technology exhibitions etc. CORDIS is also promoted in periodicals like: Euromanagement News, R&D in Europe (EG Liaison), etc.

Users of CORDIS

Among the actual 14,000 users of CORDIS one can cite:

- national administrations (13%);
- industrial companies (24%: of which 25% big companies, 25% medium sized companies, 50% very small companies);

- research centres (18.5);
- educational institutes (26%);
- focal points (e.g.: VRC's) (8%);
- consultants, information brokers and others (10.5%).

Funding

The CORDIS project was funded by the following VALUE II funds:

1992:	4,720,003 ECU
1993:	5,887,394 ECU
1994:	2,760,683 ECU
TOTAL:	13,368,080 ECU

The following internal EC staff worked for CORDIS: 3 A grades, 1 B grade, 2 C grades.

CORDIS' Quality Approach

To attain sufficiently high quality of the databases, CORDIS has adopted a quality procedure, through:

- Improved infrastructure of information collection.
- CORDIS data provision guidelines.
- Continuous review and improvement of data acquisition procedures.
- CORDIS data quality plan (specific scope of each CORDIS database, data quality targets for Data Collection / Data Management, achievement of data quality targets).
- Implementation of improved data verification tools:
 - Problems detected early.

- Regular feedback to data providers
- Quality measurements

QUALITY PARAMETERS	DIFFICULTIES
Timeliness	Obtain the information as soon as it becomes available at the source.
Completeness	Obtain all the necessary data (e.g. texts, dates, addresses).
Currency	Never ending job.
Coverage	Be aware of all available information.
Accuracy	Unequal quality of source information.
Consistency	Information received from variety of sources and in several forms.

3.3. Evaluation and Strategic Issues

At the end of 1994 the recommendations formulated during the Mid-Term Review were still valid. Since then, progress has been observed.

On top of these recommendations the panel wants to comment on the following items:

Lack of an Integrated EC Policy RTD Information Provision

The lack of coherence in information handling within the EC research programmes is striking. Some examples are illustrative:

- There exist two public accessible databases: CORDIS and ARCADE, and it is totally unclear how far the one is complementary to the other. The least one can say is that this leads to confusion among potential users (where to go for what information) and, keeping in mind what CORDIS has cost so far, to loss of money;
- Not all RTD programmes have specific research results available in time. Some RTD programmes only publish general results of the total programme, others provide individual information of the total programme, others provide individual information on project results;
- Some programmes seem to be capable of providing information electronically to CORDIS, others only provide hard copies (which is far less cost-effective);
- Some DGs (like DG XII) have one main source of information (i.e. AMPERE but this is neither complete enough, nor up-to-date), in other DGs the sources are very varied.

A coherent and well-defined approach seems highly desirable in order to make an information policy successful. This is of course not the responsibility of one single DG, but must be assured at the highest level.

The Information Provided

The coverage of the 3 RTD framework programmes (essentially projects and results) is very heterogeneous. In general project description is better covered than project results. In some cases a very high degree of coverage is attained (e.g. the project description for the industrially oriented programmes and mobility of the Third Framework Programme), while for other programmes it is very low (energy, life sciences, environment for the same item). On project results only 33%, 38% and 6% of the first, second and Third Framework Programme respectively are covered. This means that the major part of the results covers research done some seven years ago. Means should be found and procedures be established to shorten this delay drastically and to enable more up-to-date information to be delivered.

The information provided could be expanded with:

- more detailed information on project results: scientific, technical, the markets it addresses, the type of products involved, patents taken, scope for transfer of technology, the importance for SMEs, etc. In this context it is suggested to expand those databases with information on patents taken within the framework of the EC research projects;
- information on national RTD programmes and national (or regional) RTD databases;
- statistics on past calls: number of projects and total budget introduced, success rates, etc.
- financial information on accepted projects.

Whether the content of the information provided by CORDIS is sufficient is not clear and could not be analysed by the panel. In order to have a clear picture on the subject a market analysis should be conducted. What information should be provided depends essentially on market demand (also see below *CORDIS in the Medium and Long Term*).

The Catalytic Role of CORDIS

In providing information accessible to all kinds of users, CORDIS plays a catalytic role in the dissemination of information about RTD programmes, projects and project results towards all kind of users. Information which is normally not or very difficult to find can now be retrieved within a very short time and by almost everyone with only a basic training.

The Impact of CORDIS

Although detailed information is not available, with 14,000 subscribers CORDIS is thought to have a significant impact already on RTD activity in Europe. From the limited information available we can conclude that CORDIS is used mostly in the context of EC project proposal preparation: RTD proposers check whether a given subject is already treated in the context of the EC RTD programmes. This follows clearly from the very high activity during the January-February 1995 period during which the activity was three times higher than usual.

It is not clear to what extent CORDIS has an impact on technological innovation in industry, essentially for SMEs. From the number of industrial subscribers to CORDIS (24%) we have to conclude that only a very limited number of European companies (3,360) use CORDIS. Although companies are in many cases assisted through information brokers, consultants, VRCs and other intermediaries, and although not all companies are able (lack of human resources, lack of skills) to use CORDIS, the 3,360 industrial subscribers is only a tiny fraction of the European industrial world. So even at last year's growth rate of 100%, much effort is still needed in order to increase substantially the number of subscribers. In view of this the promotional activity of CORDIS should be increased essentially towards companies, as research centres and education institutes already constitute the majority of users. Promotion through techno-economic journals, the use of pertinent associations, etc. as already stipulated during the Mid-Term Review should be increased.

The User Friendliness of CORDIS

The user friendliness of CORDIS has been increased enormously during the last few years through the introduction of state-of-the-art menu based retrieval procedures, such as the CD-ROM and later on-line through the introduction of the Windows based system WATCH CORDIS. Working with CORDIS can easily be learned in 1 to 2 hours as it is to a large degree self-explanatory. However, in some cases and for some kinds of people it might be advantageous to provide a tutorial with a demo, showing how information can be retrieved from the system. This could be provided on-line as well, be downloaded through INTERNET, as well as on CD-ROM.

It is unclear to what extent the fact that the information is provided only in English is a handicap and to what extent other languages should be introduced. Again a market study should clarify this potential problem.

The Quality Control of CORDIS

The quality control procedure adopted by CORDIS since 1994 was a necessary step which had to be taken to ensure sufficiently timeline, complete, accurate and consistent data.

The Link Between CORDIS and Other RTD Databases

CORDIS only provides information about the RTD programmes of the European Commission. However, for those looking for information concerning high technology or for experts (companies, R&D institutes or universities), this is not enough, since most research in Europe is executed in national and regional R&D programmes. Databases concerning national or regional research results apparently are not easily accessible. It would therefore be extremely interesting to find in CORDIS information on national research programmes and national RTD databases and even find signposts when browsing through the CORDIS information. In this respect one could also do something on COST, EUREKA and ESA. An integration of other databases into CORDIS seems not feasible or even necessary, given the existence and accessibility of this information.

CORDIS in the Medium and Long Term

The viability of CORDIS in the medium and long term is of concern. The evaluation panel believes that three important elements will determine CORDIS' future:

- market needs;
- cost control;
- evolution of information technology;

These issues are intimately linked and any medium and long term strategy for CORDIS should be based upon them. Of these issues, the first is considered to be by far the most important.

Any strategy should be compatible with market demand. CORDIS should in the first place offer the kind of information the market wants. CORDIS was set up at a time when information technology and information services were still in their infancy. Consequently, CORDIS has adapted itself over the years to become, technologically speaking, a state-of-the-art service. This approach did not, however, necessarily take into account broad market needs. The approach so far can be considered more technologically than market driven and leaves us with uncertainty about the market requirements.

Modern technology will, in several years' time, probably change the whole picture of information provision and information access. Electronic Document Delivery, which has already been started through the INTERNET access, is a new and exciting way and is already a step in that direction. However, the evaluation panel believes that the whole system of information flow from those who generate it (mostly the RTD partners) to the centralised access will be changed completely and will have a tremendous impact on the whole process.

Quite a lot has been spent on bringing CORDIS up to the current operational level and its upkeep continuously requires large amounts of money. Although the amounts necessary may remain available for some time, the evaluation panel is of the opinion that a plan for cost control and cost reduction is of the highest importance. The economies made could be used for improved services, better awareness or even for other types of actions within the context of technology transfer and validation. The cost charged for CD-ROM as from the second half of 1995 can be considered a move in the direction of cost reduction, although it is questionable whether this will have an optimal result when disconnected from a more general approach. Also the free-of-charge accessibility of CORDIS through INTERNET should be reviewed in the light of possible US charges for their databases.

It is therefore recommended that in the medium term an integrated in-depth study be made composed of the following items:

- **the demand side:** the impact of the service should be measured and the users surveyed. Such a market study should also cover the most appropriate marketing policy to be followed in terms of money charged for services.
- **technological evolution:** in order to find out how the information provision could look like in about 5 years' time and how CORDIS could adapt to it. This study should also take into account the relationship to national or regional RTD databases.
- **cost control:** essentially for the operation of CORDIS, while maintaining high quality and service. This plan should be based on an in-depth assessment of the actual process for the creation and maintenance of the databases and should contain the steps to be taken in order to cope with the technological changes of the near future, to ensure a significant and lasting cost reduction over the coming years.

3.4. Conclusion

Over the last few years CORDIS has become a very important tool for the retrieval of information about the research efforts originating from the European Commission, and its usage is not limited to programmes, projects and results, as described in its 9 databases, but extends to more general research such as state-of-the-art studies, main RTD actors in a given technical field etc. This is made possible through an easily accessible system and a user-friendly enquiry system. CORDIS can be considered an example for national and regional instances of how information about research can be put at the disposal of users.

However, in order for CORDIS to ensure a sufficient impact and guarantee its survival in the long term it is recommended that in-depth studies be made with a view to the medium and long term, on the demand side, on the cost control and cost reduction process, and on technological evolution. In addition, CORDIS should increase its promotional activity to convince essentially the SMEs to make use of the service.

CORDIS also has a role to play in bringing national and regional RTD databases closer to potential users in a harmonised way. In this perspective one could think of financial support actions to make their information available to the whole European scientific and technical community and to create links with the CORDIS database.

4. ACTION LINE I.2 : UTILISATION OF RESULTS

4.1. Form and Purpose of the Activities

This action line, which directly supports valorisation of specific research results, is designed to contribute to the main objective of the programme. This is to facilitate the exploitation of Community RTD results in the interests of improving the international competitiveness of Europe's industry.

The approach is intended to compensate for the fact that, although the RTD project contracts envisage that industrial partners to those projects will exploit the results of research, three-quarters of them do not in practice do so. Even in the remaining quarter of projects they often only exploit some of the results. Opportunities for spin-off are also frequently ignored. The VALUE programme also recognises that some RTD projects do not lend themselves to immediate exploitation, though they reinforce competences which may, at a later date, be used advantageously in various innovative ways; moreover, much RTD project work takes place in organisations, such as universities, which are not oriented towards exploitation.

To these ends the programme supports three main types of activity under this action line:

- practical training activities related to the exploitation of results and technology transfer;
- presentation of the results of such work at conferences, exhibitions and other public events;
- particular projects which valorise research results by taking them forward to the stage of demonstration or the transfer of a working technology to new users in a sector or country different from the original.

The stated objectives for this part of the programme are rather general. More specific and verifiable objectives could help to focus projects on the trade-off between the demands of technical excellence, innovativeness and exploitation prospects. They would also be helpful both at the selection stage and in subsequent evaluation. For example, they should indicate the relative priority to be accorded to technological advance and commercial potential and the time-scales to be attempted.

4.2. Administrative Arrangements

The arrangements for operating this part of the programme continue those adopted under VALUE I and through the early stages of VALUE II though there have been some detailed improvements in approach since the Mid-Term Review of the present programme. For example, the budget for supporting technology validation and transfer projects has been raised to 84 MECU for four years and technologies from any origin (not just Community-supported research) are now eligible.

There have been two calls for proposals under VALUE II and another is current under the Fourth Framework Programme. These have so far given rise to 373 proposals of which 94 were accepted for support. Total budget allocated is 7.6825 MECU. Individual project costs range from a few k ECU for preparatory expert work to several hundreds of k ECU for larger prototyping projects. As pointed out in the Mid-Term Review these are very small amounts compared with those devoted to the RTD itself, less than 5%, especially recalling that exploitation is a more expensive activity by at least one order of magnitude.

We described the procedures involved in calling for and appraising proposals in our Mid-Term Review report. These have not changed significantly. So far as we can tell the Commission have operated the arrangements efficiently. We note that Commission officials regularly monitor projects. We encourage them to bear in mind that the costs of doing this are justified only to the extent that they do not exceed the amounts they save by averting failures. We are also conscious, however, that more than one project participant remarked to us that officials' advice, from the perspective of a wide experience of projects, had been extremely valuable.

4.3. Findings

We have examined several of the current projects. These have not been selected on any statistical basis. Nor have we had the opportunity to see a large enough number for them to be regarded as a representative sample or to examine them in great depth.

Nevertheless, it is clear that several, and perhaps many, are of high technical quality. In the future some, though not all, should lead to important exploitation activities which would have been lost without VALUE.

In some cases there is a lack of commercial realism. While it is accepted that a major justification for many of the projects is to include non-commercial bodies, such as universities and state-owned institutions, it is important that at least one main participant has a truly commercial attitude and the interest to make the project's output marketable.

Successful innovation requires a combination of developmental and commercial skills which must be optimally promoted. It is important also to ensure that the IPR arrangements are designed to be as conducive as possible to exploitation. For example, patents might either be jointly owned or in the hands of the partner most likely to carry out the actual exploitation.

4.4. Discussion

There are three main evaluation issues relating to this action line. The first is whether the rationale for it is valid and whether the approach and stated objectives adopted to meet that rationale are appropriate to it.

The second issue involves judging whether, assuming the broad approach is justified, it has achieved an effective impact.

The third issue concerns the efficiency with which the activity has been managed. On this we have touched above.

Turning to the broad rationale for the action line, it is clearly important that research should be exploited to the optimum extent, though it will not necessarily be appropriate to exploit all research within the same time-scale. Some results may, of their nature, take many years to deliver benefits. Moreover, not all the returns to research accrue from direct applications. Some, for example, may come from more general improvements in knowledge and understanding.

It is possible that supporting development projects is a less cost-effective means of technology transfer than diffusing research results by direct information distribution through publications or databases. This latter approach is less costly and broader based, whereas project support involves concentrating significant amounts of money on a limited number of quite narrowly specific projects. Even if the returns on some such projects are high - which is by no means always the case - it is necessary to allow for a quite high failure rate. Moreover, the amount of support which can be provided is extremely small in relation to total expenditure on such projects. Sceptics contend that this means that such project support can have only the most marginal effect.

The argument for project support rests on the assumption that it has a multiplier or gearing effect because it can be directed to key cases which will act as demonstrators as well as providing experience and learning opportunities. Moreover, on the principle that people are the best technology and innovation vectors, support to collaborative projects creates contacts which may be fruitful beyond the particular project both at the time and in the future. The reality, immediacy and depth of project based examples make them more likely to engender enthusiasm for

technological innovation than the distribution of relatively superficial and generalised information.

The evidence to resolve this controversy decisively does not exist. We are, however, impressed by two basic principles. The first of these is that technology transfer and, more especially, innovative attitudes, are best diffused via personal contacts. Secondly, appropriate technological solutions are more likely to be generated by demand from the bottom up than by top-down dissemination.

We think that project support should have a place in a programme such as VALUE II because it conforms, at least to some extent, to these principles. It can create real contacts. And the work can, and should, arise from proposals by those directly connected with the market place.

Moreover it is not an 'either..... or' issue but one concerned with the relative amounts of resources to be devoted to each kind of activity. The VALUE II programme already has information transfer components. We see no reason to extend these at the expense of project support, indeed, if anything we would change the balance in the opposite direction. But project support must be genuinely user and market led; and it must build on, and develop synergies with, the other forms of promotion.

4.5. The Impact of the Projects

In the light of the principles set out above it is essential to maximise the demonstration and technology generation effect of the projects supported. Although progress has been made in this direction, we think more might be done.

At present projects are demonstrated at, for example, exhibitions and at relatively brief workshops. We welcome this, but we encourage the Commission to develop such activities in more depth. Emphasis should be placed not only on communicating project results but on the processes that have led to them. The projects might be the basis for case studies in innovation seminars lasting for a day or two rather than an hour or two. It would not be unreasonable, as a condition of support, to oblige collaborators to participate in these and to demonstrate both the particular project (preferably on site) and the benefits to be gained from similar innovative action. The projects should be used as vehicles for demonstrating the innovation process and the innovation mentality. The chief benefit would be from the contacts involved, for the 'vectors' of innovation are people.

It is essential, however, that the projects be set up with great care. We are impressed with the technical quality of most of those we have seen. This is naturally vital. But prospects of eventual exploitation are also crucial and, although these are taken into account, we are not sure they always get

so much attention when selecting and setting up projects. We have already suggested that one of the justifications for project support is that it is to some extent market generated. This implies that at least one of the partners in every case should have some commitment to exploitation if the project is successful.

We recognise that emphasis on exploitability should not lead to supporting commercially safe proposals while ignoring innovative but more risky ones. The panel believes this may be achieved by the increased emphasis on user-driven consortia that we have suggested. The more precise objectives we have called for should also ensure that proper relative weights are placed on innovativeness and exploitability. Support should be carried as close to the market as the pre-competitive principle allows.

Two factors could improve the opportunities for uncovenanted spin-off applications. In the first place the selection process should seek whenever possible to support technology with 'generic' potential - "technologies diffusantes". Secondly, we have been told there is already a tendency to support fewer, but larger projects. If this is necessary to maximise the opportunities for exploitation we would support some further development in this direction.

4.6. Conclusions and Recommendations

We support the concept of project support but think its nature should take more account of the specific considerations which justify it. These are, primarily, the opportunities it provides to bring researchers, innovators and potential exploiters together in a collaborative environment. It is also important that the work involved is user and market led.

We, therefore, recommend that more specific, verifiable objectives be set for this part of the programme which will both guide those selecting and setting up projects and assist in focusing the projects as they proceed. To this latter end each project should also have specific verifiable objectives, relating to those for the action line and emphasising exploitation. All projects should include, as main partners, an organisation with some commitment to exploitation and the project should be set up to encourage this.

With rather similar objectives in view we recommend that the tendency to supporting larger, even if necessary fewer, projects should be extended. In particular projects should be selected wherever possible to cover generic technologies likely to have a high gearing and spin-off potential.

The main emphasis should be placed on demonstrating not just the results of the projects but the innovative attitudes behind them. This

should be borne in mind at all stages from project selection onwards and in European, national and regional contexts.

5. ACTION LINE L3 : LEGAL PROTECTION OF RESULTS

5.1. Findings

Objectives

With this action line the Commission had as its main objectives:

- the patenting and protection of Commission owned RTD results stemming from JRC research;
- the protection of results stemming from Commission RTD Programmes, where the contractor is the owner and where the partners are not capable or not willing to take out patents. For budgetary reasons the latter case is most common with R&D centres and SMEs;
- support, advisory or financial, to partners of Community RTD projects for conducting patent screening and patent applications; and
- public awareness campaigns and training on methods and procedures for protection of RTD results.

Past Achievements

Since 1960 more than 2,400 inventions have been developed into patent applications under the auspices of DG XIII Patent Section. Of these, 520 patent files are still in force, with about 10,000 individual patents due to secondary extensions of priority filings in all relevant countries. 463 patent applications are not yet granted and thus require continuous supervision. 17 software registrations for copyright have been deposited and 251 trademarks registered.

Of the patent applications, the vast majority originates from research performed at the JRCs, but in the years 1991 to 1994, 221 inventions resulting from cost-shared actions under the VALUE programme have been filed as patent applications. Of these, 71 patents have been awarded so far. The financial support for patent applications for projects related to the VALUE programme was discontinued at the end of 1994.

The maintenance and expansion (expansion only in the case of JRC patents, since VALUE has been disconnected) of this portfolio constitutes the daily management work of the Patent Section.

Current and Future Activities

Emergence of patentable inventions at the JRC institutes will be fostered within the framework of the new competitive activities of the JRC. While patent assistance under VALUE has not been reinforced in the current Third Activity programme, new initiatives have been prepared. As a pilot action, selected proposals to the Projects part (Technology Validation and Technology Transfer Projects) of the programme will all be subjected to a quick check in collaboration with the search division at the European Patent Office (EPO) in The Hague. The new scheme has been labelled "Quick Scan" and will allow contractors to assess the novelty of their technologies on the basis of the expert check by EPO examiners.

Also within the framework of the Projects scheme, a systematic *Patent Build-up Scheme* is elaborated. Due to ignorance or unawareness many patent applications, in the first twelve months after a priority filing, are not developed further in order to allow for a broader and more substantiated secondary filing in all important markets. It will be a key goal to sensitize contractors to the importance of the priority year and the opportunities for substantiated secondary filings.

Awareness raising for utilisation of the unique patent system also as an information tool (avoid re-inventing the wheel, diagnose early technological trends, check what the competition is working on) will complement these activities. In connection with this, various training tools are being prepared together with the EPO as well as awareness actions by the Commission alone.

The researchers (in particular new staff) at the JRC institutes in Ispra and elsewhere are a special focus regarding *education in IPR matters*. Training courses have already been designed by external experts and will be taught under supervision of the Patent Section. Education, information and awareness will be extended more decidedly towards the administrators and also the contractors of other specific programmes. Advice on IPR matters is continually given to all parties requesting it in the course of EU funded research and development.

5.2. The Panel's Assessment

The overall outcome from what has been tried out or undertaken in the IPR field within the framework of the VALUE programmes is relatively meagre. This opinion of the panel is corroborated by the following two observations:

- The number of patent applications filed and patents awarded (221 and 71 respectively) seems very limited in comparison with the total number of projects and RTD results stemming from the VALUE programmes.
- We have found very little evidence of any systematic penetration of the research community by the Patent Section, for example in the form of seminars or promotion campaigns, in order to increase general knowledge about IPR matters among researchers.

In relation to the first observation a possible explanation of the low patent activity recorded is that patent applications are filed by RTD partners directly, something that the Patent Section does not keep track of. Another explanation is of course the fact that the Section discontinued its financial support to VALUE projects for patenting costs in the autumn of 1994. No reason for this was given to the panel, but possibly it was due to a general lack of financial resources within the Patent Section.

As concerns the second remark the panel has noticed organisations by various VRCs of seminars where IPR issues have been emphasised. These seminars could be seen, however, as separate events rather than as forming part of a well thought-out and consistently implemented strategy. The panel is inclined to interpret the absence of such a strategy as a combination of lack of initiative and lack of resources on the part of the Patent Section.

5.3. Conclusions and Recommendations

Considering the great importance of IPR matters in connection with RTD projects there is a need for a radical change in the present organisation and operations of DG XIII Patent Section. The panel welcomes the initiatives taken recently and partly presented above (see *Current and future activities*), which indicate that a new, more suitable approach in relation to IPR matters is about to be launched by the Patent Section. A prerequisite, however, to these initiatives being carried out successfully is a combination of more resources, financial as well as human, and more commitment.

A few specific ideas for consideration by DG XIII Patent Section and other pertinent EC bodies are presented below:

1. Awareness campaigns on the patenting and protection of RTD results should be extensive and continuous. Concise brochures and other low cost publications, distributed as widely as possible in universities, research institutions etc, represent a simple and cost-effective tool for disseminating basic facts on IPR issues.

2. Making, under appropriate provisions, patent costs eligible expenses within EC RTD projects would definitely lead to a wider protection of IPR.
3. A systematic registration and monitoring not only of patents granted, but also of patent applications, licensing agreements and other kinds of collaboration contracts emerging from EC supported RTD projects would lead to a more efficient dissemination and faster exploitation of RTD results. Obviously, such data would also be a valuable input to assessments of the innovative content of EC RTD activities. In this connection, a CORDIS database dedicated to patents, trademarks, copyrights, licences and other indicators of EC RTD results, would be a useful tool. Currently, such data are very rare in CORDIS.
4. Several VRCs have responded to their clients' need for advice on IPR matters. The new Relay Centres of the Third Activity should expand on this decentralised activity. In addition, an Electronic Bulletin Board System or a WWW site set up by the Patent Section in DG XIII could prove instrumental in aiding the exploitation of RTD results and creating a general snowball effect on IPR matters across the whole RC network.
5. The incentives for patenting differ rather widely across the Member States. This situation puts up barriers to the protection of RTD results by international consortia. In addition, the rather uncertain prospect of any economic benefit to the researcher from a patent leads him to choose the publication route which gives him at least academic credit. Before solving the complex legal aspects of this problem, there could be ways and incentives in EC RTD projects for encouraging "patenting first and publishing after". Such measures would create a better and more positive environment across the EU for fostering and protecting innovation.

Certainly the ideas presented above are indicative and do not exhaust the issues and measures that ought to be considered by the EC for protecting and promoting innovation.

6. ACTION LINE I.4 : PROMOTIONAL ACTIVITIES

The principal goals along this line were:-

- to disseminate as widely as possible information on Community supported RTD activities and their results; and
- to promote the specific VALUE initiatives for facilitating the valorisation and exploitation of Community RTD results.

A wide spectrum of promotional activities has been undertaken to achieve these aims. These activities can be grouped in the following three archetypes:-

- publications (brochures, periodicals, information sheets, etc.)
- events (organisation of participation in conferences, workshops, seminars, fairs, etc.)
- services (networking, provision of information, etc.)

A few indicative examples of promotional activities are:-

1. The "Innovation and Technology Transfer Newsletter", addressed to research and industrial partners, consultants on technology transfer, information brokers, decision-makers, etc.
2. The periodical "CORDIS Focus", addressed to a wide audience of actors, intermediaries and multipliers of Community RTD.
3. The "Euro-Abstract Catalogues", addressed in particular to researchers and documentalists.
4. The FLAIR-FLOW project aiming at the co-ordination of the dissemination of RTD results emerging from Food RTD projects supported by VALUE and FLAIR.
5. The "VALUE Information-Press-Service" (Vips), compiling and disseminating each month to many journalists in Europe extended journalistic information and selected RTD Community results.
6. The "RTD-Help-Desk", a service for responding to public queries about Community research activities.

In addition to the above specific examples as well as to the other centrally undertaken promotional activities, we should also mention those implemented via:

- the multitude of decentralised initiatives which are part of the everyday work of the 27 VRCs; and
- the continuous and expanding presence of CORDIS within the Union and recently worldwide too through its screen on the World Wide Web.

The total amount spent on promotional activities until 1 January 1994 was 5.3 MECU, which was equivalent to approx. 13% of the total expenditures of VALUE II so far. It appears to the panel, however, that this significant promotional effort resulted from a step-by-step line of action based on individual decisions rather than from a well thought-out and well-integrated promotional strategy. A possible consequence of this is that there has developed only limited awareness among important target groups about the links between individual activities and calls for proposals and the overall objectives and ambitions of the VALUE programme.

Consequently the panel suggests a more powerful promotion of the Third Activity in the future based on:

- (i) an analysis of the needs and perceptions of different target audiences and the results of previously carried out promotional activities under VALUE.
- (ii) a coherent promotional strategy across all three objectives of this Activity, and
- (iii) a strong and clearly identified connection between promotional efforts related to individual activities and the principal common elements of the overall promotional strategy.

7. INTERFACES II AND III : RESEARCH-SCIENTIFIC COMMUNITY AND RESEARCH SOCIETY

7.1. Introduction

The so-called "Interfaces II and III" were a minor part within the VALUE II Programme, representing approximately 13% of its budget. They were conceived as a necessary complement to the main activity of the Programme which was to promote the application of Community RTD results by enterprises and was defined as "Interface I Research-Industry" where the bulk of the budget was spent.

The aim of Interface II was to contribute to an interdisciplinary reflection in relation to the research environment, including methodology and other issues of a social, financial and managerial character. Interface II activities were, among others, several studies contracted, some seminars and expert workshops, launch of an Interfaces Bulletin and the annual Interfaces Conferences.

The aim of Interface III was to identify and study the impact on society of the new scientific and technological knowledge acquired as a result of Community research activities covering three main areas: Assessment of the Social Impact of S&T (mainly supporting the European T.A. infrastructure), Communication with the Public and Analysis of the Public Demand. The main outcomes of Interface III, besides several studies contracted and seminars organised, were a very interesting proven and tested Awareness Scenario Workshop Methodology and a large set of material and support actions addressed to the refinement of tools and information of the European Technology Assessment expertise.

Prior to any further analysis, the panel wishes to express its concern about the dismantlement of this activity at the end of the VALUE II Programme as, in its view, these lines of activities should be neither marginalised nor abandoned. To be successful, innovation definitely needs social adaptation, accompaniment, training, awareness to lead to final acceptance and proper use. Barriers and threshold levels for technology acceptance may vary from country to country but transnational considerations and lessons learned at a European level will be of great importance. In addition, in the field of innovation the EU's main goal of integration and cohesion requires an in-depth consideration of the various aspects (economic, social, cultural) in the different regions in Europe.

Innovation is essentially combinatory and thus needs to draw upon various disciplines, sub-technologies and expertise. Not only did Interfaces II and III address these issues with too meagre resources but such a global approach no longer even exists within the Third Activity.

7.2. General Comments

The panel considers very relevant the objective of reconciling the general public with research activities and technological development, these being also necessary to reinforce interdisciplinary activities through the various existing research communities. However, the minimal resources allocated to the Interfaces on the margins of a small programme like VALUE II could not satisfy such an important challenge.

As indicated in the Mid-Term Review report the whole activity lacked a clear identity in front of one of its main target users - i.e. the European Commission. The job was mainly conceived, co-ordinated and to some extent performed by a reduced task force of only two enthusiastic Commission officials, whose dedication has to be largely recognised. They had the organisational support of an external Management Unit and the advisory support of an "ad hoc" Think Tank Group (TTG).

The Council Decision took place in May 1992, the resources and staff assignment in late 1992 and the constitution of the working team in April 1993, but at the end of 1993 the first versions of the Fourth Framework Programme, including some restrictions in the scope of the Interfaces action line, obliged a significant re-tuning of their on-going activities.

These time schedule considerations and the fact that the first concrete outputs of Interfaces II and III appeared at the end of 1994 might explain why the scope and potential results of this line have not been sufficiently understood within the VALUE Management Unit and also misconceived when defining the whole Fourth Framework Programme and particularly the "Third Activity". A clear effect of this is the allocation of the so-called "socio-targeted research programme" within DG XII.

The launch of this new activity took longer than expected, mainly for administrative reasons and therefore the allocated budget was not consumed during the first two years. The general restrictions on expenditure in 1994 did not take into account this fact and the VALUE II Management Committee cut the overall budget from the 7 MECU foreseen at the beginning of the programme for this task to 5.7 MECU.

7.3. Findings and Results

The first period of activity was driven by an intensive reflection process (TTG, Experts' Working Seminars, ...). Then the whole task was conceived with a clear modular structure which allowed for quick adaptations to the recommendations of the Mid-Term Review panel (i.e. shifting the priority to Interface III : Research-Society activities) and the orientation of the future Fourth Framework Programme.

In general terms it has been a tool-oriented concept, the outcome of which led to workable goods and manuals. Its background and goals were service-oriented, acting sometimes in a cathartic role (passive concept) and at other times in an enzymatic way (dynamic concept). The Interfaces Team had a clear vision of the importance of the methodologies for the dissemination of results and the importance of targeting clusters of opinion leaders.

Altogether about 40 projects were launched, resulting in a similar number of reports although their usefulness and possibilities for application are not homogeneous.

The most important outcome was about half a dozen useful tools in the fields of Technology Assessment, Awareness and Science and Technology communication issues.

A very good appreciation of some of them, especially the Awareness Scenario Workshop methodology, has been confirmed by relevant European and national institutions. To complement the figures given in Chapter II.1 earlier (Overview of VALUE II) the budget committed up to mid-1995, including the last call for proposals for studies, is 2.45 MECU for Interface II and 3.3 MECU for Interface III.

Of the total expenditure for Interface III, 0.8 MECU has been used to develop the European Awareness Scenario Workshop methodology as follows:

1993: Survey, initial idea evaluation and first presentation event	0.15 MECU
1994: Test with European dimension (4 cities and final conference) plus first materials	0.27 MECU
1995: Test in a real project context (including final workshop and conference)	0.10 MECU
European training (2 pilot sessions plus material packages in EU languages)	0.28 MECU
TOTAL	0.8 MECU

Before the end of this year about 15 European cities will have used this tool with a recognised impact at political, citizen and media levels, which provides certain confidence about the value of the money spent. Prospects are on-going for offering the methodology to some countries in the Far East and Latin America.

7.4. Recommendations

The panel feels strongly that the social and cultural dimensions of innovation, as well as the interdisciplinary nature of technological development, are very important and judges very positively the initial approach carried out within the Interfaces II and III action lines.

The panel recommends that the research on the tools, as launched in the last two years, be continued further in order to better achieve the goals of understanding impacts, communicating research orientation and applications of results, contributing to a deeper interdisciplinary atmosphere, etc.

Nevertheless, the issue of Interface III should be viewed more from a bottom-up (i.e. no innovation without taking into account the social and cultural dimensions, etc.) rather than a top-down perspective (i.e. Science and Technology need to be explained to the general public, etc.).

The panel would encourage the Third Activity Management Team towards promoting more widely exploitation of the tools, such as the Awareness Methodology; the efficiency of this in matching social needs to technological results has been demonstrated and it has contributed to a global European culture of innovation and promotion should include, in particular, informing other EC and Member States services of the existing expertise.

Finally, the panel expresses its concern for the apparent abandonment of these action lines within the Third Activity and hopes that this situation will be reconsidered and reinstated or continued with appropriate resources and with a clearer recognition of its benefits at Commission level. Resources foreseen for accompanying measures could be used synergistically for that purpose.

IV. STRATEGIC ISSUES

1. BACKGROUND

In relation to the strategy of VALUE, much has already been said in the Mid-Term Review about the historical strategy of the VALUE I and II programmes.

The panel felt that there was no need to duplicate this and that it was more appropriate to identify the lessons from past experience and concentrate on discussing future strategies.

VALUE I and II, as well as SPRINT, were clearly experimental programmes designed to spearhead new ways of dealing with RTD results dissemination, technology transfer and innovation.

The VALUE programme objectives were the dissemination and optimisation of Commission funded RTD results. The SPRINT programme was more general, operated outside the RTD framework, and had specific objectives in the field of promotion of innovation. Yet the complementarity of the two programmes and some overlap in their means and tools were clear enough for the Mid-Term Review panel to support the idea of a merger between SPRINT and VALUE. This merger was implemented for the Fourth RTD Framework Programme and the corresponding Third Activity is now under way. The integration of both programmes is a commendable step towards creating a tool better adapted to the overall goal of promoting innovation.

The Commission is currently planning a Green Book on Innovation, encompassing the many challenges faced by European firms as well as the variety of experience gained throughout the Union and at Commission level in promoting innovation, technology transfer and the creation, absorption and diffusion of technologies by enterprises. This indicates clearly that innovation is regarded as a major issue.

In this context, the VALUE II final evaluation panel wishes to contribute to the current policy thinking around the general issues attached to innovation, technology transfer and exploitation of RTD potential.

2. STRATEGIC CONSIDERATIONS

In its efforts to improve the well-being of citizens throughout the Union, the Commission aims to implement the internal market, increasing the competitiveness of firms at both a European and global level, and reinforcing the social and economic cohesion of the Union.

In so doing, strengthening European science and technology and promoting innovation, the transfer of technology and the dissemination and valorisation of RTD results are regarded as complementary means contributing to industrial competitiveness.

2.1. It is not enough to Invest in RTD

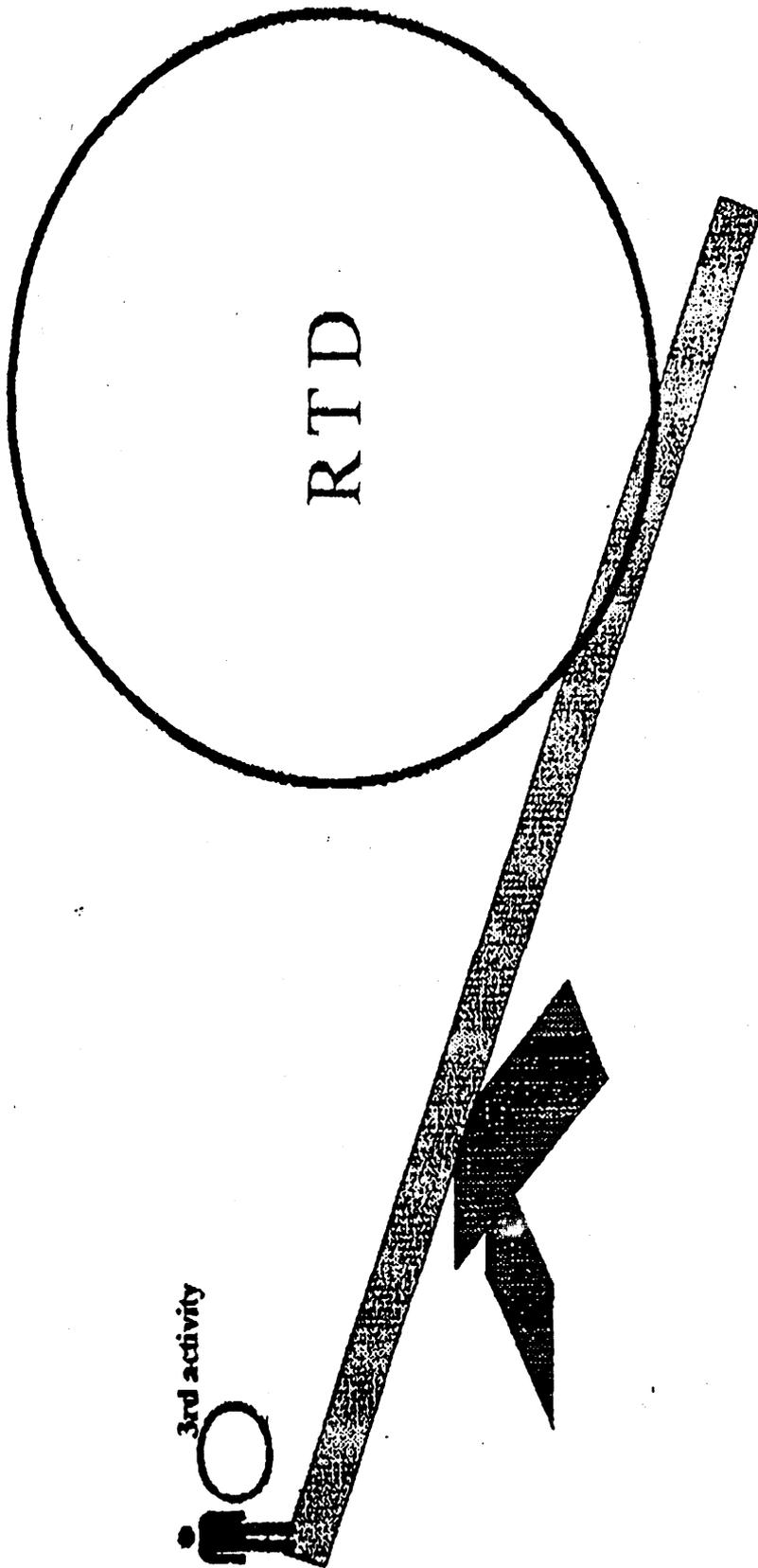
It should be stressed that past experience has shown that investments in science yield no clearly perceived direct returns in technological development and economic growth. The processes at work are rarely linear. R&D expenditures certainly help but to what extent, under what circumstances and in what time scale are still much debated questions.

As an example, it is a well known fact that the creation of RTD programmes is monitored by large companies and major research organisations. SMEs are too small to be part of the corresponding lobbies and in fact participate relatively very little in Community RTD programmes. This is in clear contradiction to the explicit objective of Commission policy defining SME competitiveness as a top priority. In any case, this clearly favours policies which pro-actively help public RTD programmes benefit industry. VALUE type schemes are thus both legitimate and useful.

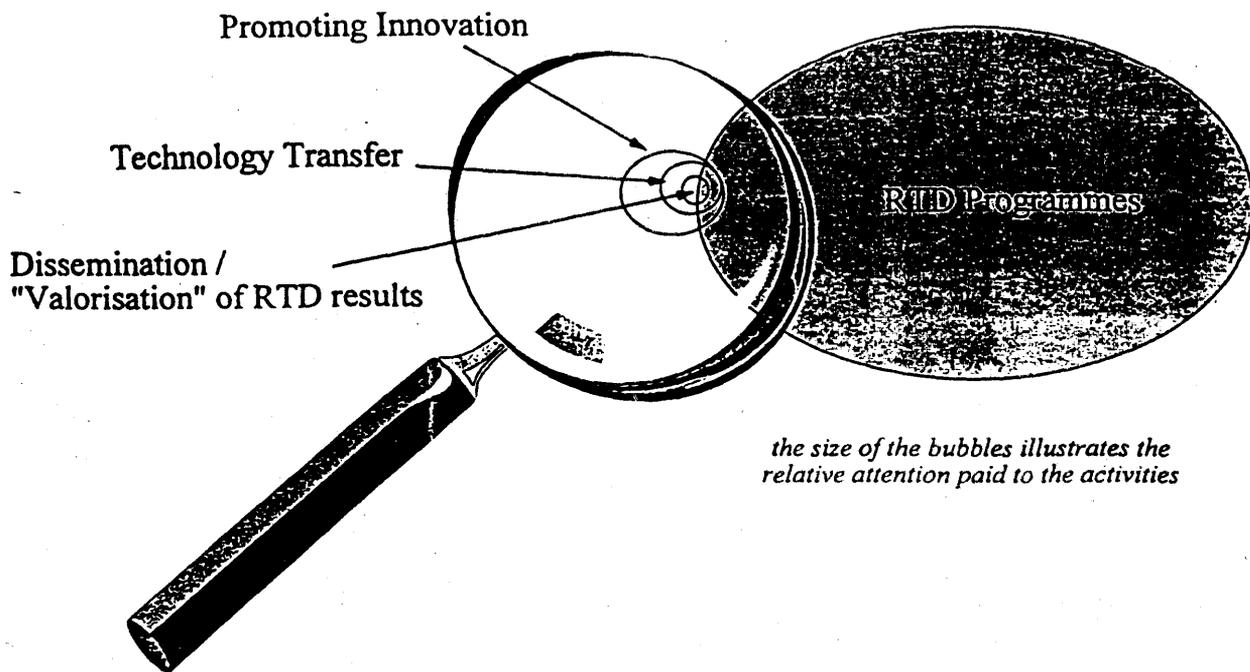
Conversely, the promotion of innovation does not simply correspond to active transfer of R&D results to firms. Much more is involved, including creating an environment favourable to innovative activities, promoting an infrastructure of actors and means, helping firms solve the problems which they encounter throughout the many loops of the innovation process, generating adequate sources of funding, etc.

2.2. RTD / Innovation Policy: the Imbalance

Figure 1 below shows how promotion of innovation and RTD activities are related to technology transfer and the dissemination and utilisation of RTD results. It also shows the relative importance of the resources usually allocated to innovation policy compared with those to RTD. Of course, RTD programmes also contribute to human knowledge and thus should not be justified for purely utilitarian reasons. Nevertheless, the increasing importance of industrial competitiveness and the scarcity of resources may lead to some questioning of the balance of funding and the attention given to innovation on the one hand and RTD activities on the other.



Leveraging RTD for innovation?



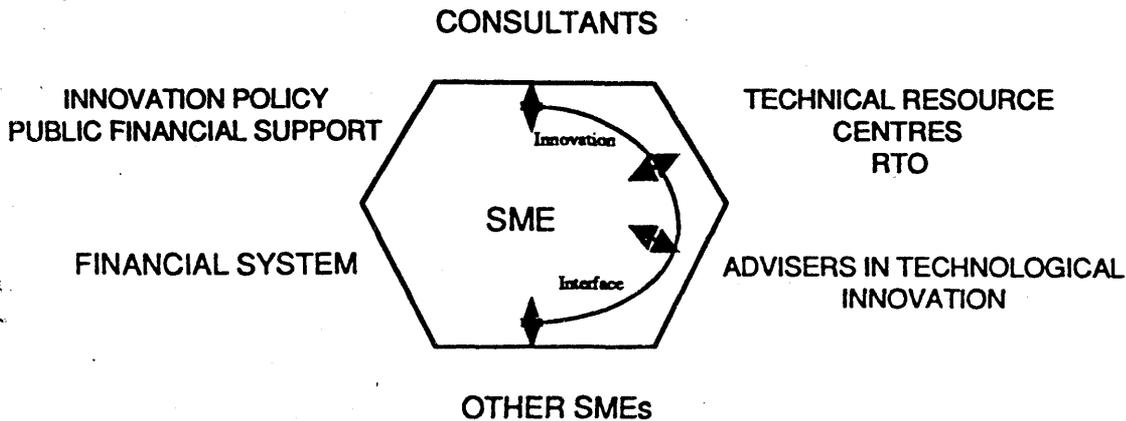
The panel feels that some cultural change has already taken place in the RTD community. Some researchers still keep ignoring downstream considerations and view dissemination and valorisation as constraints now put upon them by the specific programmes. They even worry about research money being taken away from their research. Some others, however, have become aware of the importance of the role of RTD in nurturing innovation processes in industry through ad hoc processes. They understand that natural spill-over from research projects into the economy does not take place automatically. Nevertheless, the relative emphasis is still on RTD per se, not on innovation.

2.3. Innovation is not just a Spill-over of RTD

Innovation in a company, especially an SME, relies on the synergistic combination of a variety of factors: some perception of a market need only partially satisfied, some recognition of technologies which might be useful, some development capability, the managerial ability to run a project, the availability of a network of partners in the environment (suppliers, engineering, consultants, professionals, educational institutions, i.e. "technische Dienstleister"), the capacity to find adequate funding as well as to train existing human resources and/or hire new competence, the will to adapt the organisation accordingly, etc.

This view is similar to the illustration in the SPRINT final evaluation report and shown here as Figure 2 below.

SME PARTNERS



As can be easily understood, the “technology push” approach behind VALUE can fulfil at best only a very small part of the innovation agenda.

2.4. Recognising Innovation as a Risky Business for the Firm

The firm is the place where innovation really occurs. Innovation is a means to an end, namely competitiveness. It is a risky business for the firm trying to transform a need perceived in the market place into an opportunity. Firms do not enter innovation processes for fun, nor because it would be considered smart. Innovation involves a painful and complex process for the firm pressurised by a competitive environment, especially for SMEs.

Whenever an innovation policy is designed, these simple elements should be kept in mind.

2.5. From Technology-Push to Demand-Led Policies

Seen from an RTD policy perspective, the dissemination of results is an important task as it aims to make scientific and technological progress accessible to firms.

Seen from the promotion of innovation perspective, the best way to achieve this is to adopt a demand-led approach. However, the philosophy behind the framework programme and thus VALUE was more “technology push” oriented. While recognising that both RTD activities and innovation promotion are necessary and complementary, the panel advocates the latter perspective of innovation promotion rather than supply of RTD results.

As a matter of fact, one objective of a programme like VALUE and now the Third Activity is to contribute to changing the culture of both RTD players and firms so that they understand each other increasingly and thus join forces through collaborative ventures and projects. In this respect a small programme like VALUE could be considered as the catalyst of a change process. A good example of this is the co-ordinating role now played by the Third Activity for the specific programmes, helping RTD actors pay more attention to downstream concerns, utilisation of results and effective innovation. Moreover, this view essentially confirms in a positive manner that VALUE has been a programme with little resources and a big agenda.

2.6. Generating a Variety of Expertise rather than "Off-the-Shelf-Technology"

It should be stressed that whenever technology is the missing link, the innovating company will be looking less for "that piece of technology" as if it were available off-the-shelf, but rather for some technical expertise to solve the problem encountered, and in a timely and cost-effective fashion. What RTD activities generate is not so much directly usable results but enhanced competence. RTD should be considered less as a supplier of technologies and more as source of scientific and technical expertise. In addition, most innovations actually combine a set of sub-technologies requiring a variety of competences. The necessary division of science into disciplines is thus inappropriate to the jigsaw nature of real life innovations.

At the outset of programmes, therefore, innovation cannot be expected to follow naturally, as a simple continuation of RTD activities. This thus leads to the horizontal nature of VALUE, integrating the programmes and operating as a technology broker.

2.7. Innovation Extends beyond Technology

Whenever the promotion of innovation is related to RTD programmes, this relationship tends to identify VALUE-SPRINT/Third Activity with technological innovations; yet there is an increasing awareness of the not purely technical aspects of innovation: organisational and social dimensions tend to play a very important role in innovation. Some argue that these "soft" aspects even constitute barriers to change in many cases and thus should be treated with much more care. The panel feels that separating these aspects from the Third Activity (e.g. the targeted socio-economic research programme) will result in dealing solely with the body (hardware matters) on the one hand and "soul" on the other. The panel would suggest reconciling and integrating both sets of dimensions.

2.8. Adopting a Variety of Approaches and Promoting Experience Sharing Across Borders

While dissemination/valorisation of RTD results implies the management of concrete projects and the establishment of highly visible tools (e.g. the Relay Centers), the promotion of an environment favourable to innovation and the enhancement of technology absorption by enterprises may lead to Community activities which appear less tangible but still real since they contribute mainly to managerial practice and cultural changes among RTD actors and firms. The panel thus suggests combining both approaches with real, down-to-earth projects on the one hand and more organisational contribution on the other.

In addition, the diversity of experience gained throughout the Union and at Commission level favours experience sharing across borders and thus Commission involvement.

Different regions of Europe may save much time and energy by exchanging information, etc. among themselves, including with more advanced regions and countries where national schemes have been tested over the years. These activities could therefore reinforce the economic and social cohesion of the Union. In addition, it is felt that both the aim and scope of an innovation policy should combine the local/regional level and the continent-wide perspective.

2.9. Reaching SMEs in a Decentralised Way

Furthermore, it is well known that these activities of innovation promotion benefit SMEs only when they take place in their local environment.

The promotion of innovation needs to be adapted to each context. Promoting innovation is as complex a process as innovation itself. Approaches, tools and instruments should thus match the characteristics of each country, sector, type of firm, etc.

This leads to the adoption of a centralised perspective for such activities as well as to close co-operation with regional initiatives where the Community clearly has a role in promoting the exchange of best practices as well as in supporting local/experimental projects.

2.10. Co-ordinating Initiatives

Promoting innovation throughout the European social and economic fabric involves many different activities. While part of the RTD framework, the Third Activity already co-operates on regional policies in

the context of structural funds. Industrial policy, financing or education, inter alia, are also clearly linked with this Activity.

In addition, it is important to stress that the innovation process in Europe will only succeed (and therefore the competitiveness of European companies will only be upgraded) if all possible instruments (such as industrial, export, third country aid policies, etc.) at both the EU and Member States levels are utilised, in combination with the full potential of European technology.

Innovation impacts directly and indirectly in many respects on the Union's citizens, affecting their way of life, their environment, employment conditions, etc.

Conversely, as discussed earlier, innovation requires a variety of ingredients, not just a supply of technologies. The panel thus strongly supports the on-going co-operations between the Third Activity and other Community initiatives as they make it possible to demultiply the resources of the Third Activity while bringing adequate expertise to the corresponding functional domains of action of the Community.

3. RECOMMENDATIONS

The panel strongly advocates a major initiative dedicated to the promotion of innovation. This initiative should not be regarded simply as an appendix to RTD activities. This initiative should work at increasing the awareness of companies throughout Europe about the potential benefits of innovation, the ways and means to proceed, the risks attached, the support that may be available in time and the best managerial and organisational practices stemming from past experience. This initiative should be awarded significant funding. The panel considers that 10% of the RTD budget is a much more relevant order of magnitude than the amounts allocated to past actions.

Four major lines of action, both direct and indirect measures, should be envisaged to promote innovation throughout the Union while minimising the risks involved for individual firms:

- measures for facilitating innovation inside companies;
- measures to promote a climate favourable to innovation (infrastructure, networks e.g. science parks, financial tools, etc.);
- measures to stimulate the search, scanning, identification and recognition of market needs by firms, thus creating innovative opportunities;

- measures to help firms integrate the social and cultural dimensions of innovation, so that the social embedding of new activities into society can be pursued in an interactive, real time mode.

New thinking and thus new actions on innovation need to emerge to make sure that the Union benefits from the corresponding expected gains in competitiveness.

Innovation requires flexibility and speed. The panel emphasises that the management of measures designed to promote innovation should rely on flexible and time-efficient procedures. The panel suggests that the Commission consider specifically streamlined administrative procedures, adapted to the requirements of innovation.

The panel points out the risk of having the Third Activity within the RTD framework as it gives the wrong impression that innovation could be considered basically a technical matter and a downstream addendum to RTD activities. The panel suggests strongly that this initiative should be recognised clearly as a top priority and wishes to raise political awareness in the Community.

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ANNEXES

ANNEX I

VALUE II

Council Decision

29 April 1992

II

(Acts whose publication is not obligatory)

COUNCIL

COUNCIL DECISION

of 29 April 1992

on the dissemination and exploitation of knowledge resulting from the specific programmes of research and technological development of the Community

(92/272/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 130q (2) thereof,

Having regard to the proposal from the Commission (1),

In cooperation with the European Parliament (2),

Having regard to the opinion of the Economic and Social Committee (3),

Whereas Article 130g (c) of the Treaty states that the Community, complementing the activities carried out in the Member States, is to carry out activities for the dissemination and optimization of the results of activities in Community research, technological development and demonstration;

Whereas the second paragraph of Article 130k of the Treaty stipulates that the Council shall define the detailed arrangements for the dissemination of knowledge resulting from the specific programmes;

Whereas the Treaty establishing the European Coal and Steel Community stipulates that the Commission is to carry

out activities in the coal and steel sector which do not form part of the Framework Programme for research and technological development, the results of which must be disseminated and used by means of suitable separate activities, using the resources of the ECSC 'operating budget';

Whereas, by its Decision 90/221/Euratom, EEC (4), the Council adopted a third Framework Programme for Community activities in the field of research and technological development (1990 to 1994), specifying, *inter alia*, the activities to be pursued for developing the scientific knowledge and technical know-how needed by the Community and providing that the detailed arrangements for the dissemination of the knowledge gained, in particular the definition and the implementation of the centralized action, should be the subject of a Council Decision;

Whereas, pursuant to Article 4 and Annex I of Decision 90/221/Euratom, EEC, the amount deemed necessary for the whole Framework Programme includes an amount of ECU 57 million for the exploitation and dissemination of knowledge resulting from the specific R & D programmes;

Whereas the Euratom Treaty contains detailed provisions for the dissemination of information which apply, *inter alia*, to nuclear research programmes;

(1) OJ No C 53, 28. 2. 1991, p. 39.

(2) OJ No C 13, 26. 1. 1992, p. 75; and Decision of 8 April 1992

Whereas the decisions relating to the research and training programmes in the fields of controlled thermonuclear fusion (1990-1994) and nuclear fission safety (1990-1994), together with the activities undertaken by the Joint Research Centre in the field of nuclear research, envisage that the amount estimated as necessary as the contribution of these programmes to the present centralized action for the dissemination and exploitation of results is ECU 6,57 million;

Whereas the dissemination of knowledge and exploitation of results should be dealt with in a coherent manner;

Whereas it is necessary to ensure the coherence of schemes for disseminating the knowledge resulting from specific programmes in the Framework Programme; whereas such coherence must be based on general rules which guarantee the protection of the legitimate interests of the public and private contracting parties and of the rights linked to the obtaining and exploitation of the results, as well as their exploitation in conformity with the Community's interests, in particular with respect to its economic and social cohesion;

Whereas, in order to improve the insertion of Community research into a broader context and to optimize the utilization of the knowledge which results from it, it is important that the centralized action should both intensify its emphasis on the research-industry interface and widen its scope to the research-science and research-society interfaces;

Whereas it is desirable to cooperate with existing networks for the dissemination and the promotion of innovation and to encourage new networks where these do not exist;

Whereas links with complementary mechanisms for downstream exploitation should also be developed, in particular with the Eureka initiative;

Whereas, in the context of this action, an assessment should be made of the economic and social impact as well as of any eventual technological risks;

Whereas basic research in the field of the dissemination and exploitation of R & D knowledge must be encouraged throughout the Community;

Whereas, in addition to the specific programme concerning human resources and mobility, it is necessary to encourage research workers in the context of this

Whereas Decision 90/221/Euratom, EEC provides that a particular aim of Community research must be to strengthen the scientific and technological basis of European industry and to encourage it to become more competitive at international level; whereas it also provides that Community action is justified where research contributes, *inter alia*, to the strengthening of the economic and social cohesion of the Community and to the promotion of its overall harmonious development, while being consistent with the pursuit of scientific and technical excellence; whereas the present action is looked upon as contributing to the achievement of these objectives;

Whereas small and medium-sized enterprises (SMEs) should be involved to the maximum extent possible in this action; whereas account should be taken of their special requirements, without prejudice to the scientific and technical quality of the programme;

Whereas, in accordance with Article 130g of the Treaty, the Community's activities aimed at strengthening the scientific and technological basis of European industry and encouraging it to become more competitive include promoting cooperation on research and technological development with third countries and international organizations; whereas such cooperation may prove particularly beneficial for the development of this action;

Whereas the Scientific and Technical Research Committee (Crest) has delivered its opinion,

HAS ADOPTED THIS DECISION:

Article 1

1. The dissemination and exploitation of knowledge shall be carried out as part of the specific programmes and by means of a centralized action.
2. The centralized action, as defined in Annex I, shall ensure overall coordination and coherence in the field covered by the Framework Programme. It is adopted for the period running from 29 April 1992 to 31 December 1994.

Article 2

1. The amount of Community expenditure deriving from the levies on the funds estimated as necessary for the execution of the specific programmes, with a view to the implementation of the centralized action established by this Decision, is estimated at ECU 57 million, including expenditure on staff and administration amounting to ECU

2. An indicative allocation of funds is set out in Annex II.

3. If the Council takes a decision pursuant to Article 1 (4) of Decision 90/221/Euratom, EEC, this Decision shall be adapted accordingly.

Article 3

Detailed rules for the implementation of the programme and the amount of the Community's financial contribution are set out in Annex III.

Article 4

1. In the course of the second year of the implementation of the action, the Commission shall review it and send a report on the results of its review to the European Parliament, the Council and the Economic and Social Committee; the report shall be accompanied, where necessary, by proposals for amendment of the action.

2. At the end of the action, an evaluation of the results achieved shall be conducted for the Commission by a Group of independent experts. The Group's report, together with the Commission's comments, shall be submitted to the European Parliament, the Council and the Economic and Social Committee.

3. The reports referred to in paragraphs 1 and 2 shall be established having regard to the objectives set out in Annex I to this Decision and in accordance with Article 2 (4) of Decision 90/221/Euratom, EEC.

Article 5

1. The Commission shall be responsible for the implementation of the action.

2. A work programme shall be drawn up in accordance with the aims set out in Annex I and updated where necessary. It shall set out the detailed objectives and types of projects to be undertaken, and the financial arrangements to be made for them. The Commission shall make calls for proposals for projects on the basis of the work programme.

Article 6

For the execution of this action, insofar as it relates to the specific programmes based on Article 130q (2) of the Treaty, the Commission shall be assisted by a committee of representatives of the Member States and

The representative of the Commission shall submit to the committee a draft of the measures to be taken. The committee shall deliver its opinion on the draft within a time limit which the chairman may lay down according to the urgency of the matter. The opinion shall be delivered by the majority laid down in Article 148 (2) of the Treaty in the case of decisions which the Council is required to adopt on a proposal from the Commission. The votes of the representatives of the Member States within the committee shall be weighted in the manner set out in that Article. The Chairman shall not vote.

The Commission shall adopt the measures envisaged if they are in accordance with the opinion of the committee.

If the measures envisaged are not in accordance with the opinion of the committee, or if no opinion is delivered, the Commission shall, without delay, submit to the Council a proposal relating to the measures to be taken. The Council shall act by a qualified majority.

If, on the expiry of a period of three months from referral of the matter to the Council, the latter has not acted, the proposed measures shall be adopted by the Commission.

Article 7

- 1. The procedure laid down in Article 6 shall apply to:
 - the preparation and updating of the work programme referred to in Article 5 (2),
 - the contents of the calls for proposals,
 - the assessment of the projects proposed and the estimated amount of the Community's contribution to them, where this amount exceeds ECU 150 000,
 - departures from the general rules set out in Annex III,
 - any adaptation of the indicative breakdown of the amount set out in Annex II,
 - the measures to be undertaken to evaluate the action,
 - measures for implementing the rules laid down in Article 8.

2. Where, pursuant to the third indent of paragraph 1, the amount of the Community contribution is less than or equal to, ECU 150 000, the Commission shall inform the committee of the projects and concerted actions and of the outcome of their assessment. The Commission shall also inform the committee of the implementation of the

Article 8

For the execution of this action, insofar as it relates to the dissemination and exploitation of knowledge resulting from the specific programmes based on Article 130a (2) of the Treaty, hereinafter referred to as "knowledge", the following rules, while respecting pre-existing rights, shall apply:

(a) the knowledge resulting from work undertaken directly or the cost of which is wholly supported by the Community shall in principle be the property of the Community.

The knowledge resulting from work under a shared-cost contract shall be the property of the contractors who carry out the work. They shall agree between themselves on particular arrangements for such ownership;

(b) knowledge which could be used in an industrial or commercial application, if its nature justifies such a measure, shall be protected in any appropriate form to the extent required in the light of the interests of the Community and its co-contractors and in accordance with any applicable legislation or convention;

(c) the Community and its co-contractors shall be required to exploit the knowledge in their possession, or have it exploited, in conformity with the Community's interests and taking full account of the objective of strengthening the international competitiveness of European industry and the economic and social cohesion in the Community;

(d) knowledge belonging to the Community shall be made available to its co-contractors and to interested third parties established in the Community who undertake to exploit it, or have it exploited, in conformity with

the Community's interests. Such provision of knowledge may be subject to appropriate conditions, particularly concerning the payment of fees.

All contractors shall make the knowledge in their possession, together with any information necessary for its use, available to the co-contractors and to interested third parties under contractually defined conditions, provided that the interests of the Community and the legitimate interests of its co-contractors are safeguarded;

(e) the Commission shall ensure that knowledge suitable for dissemination according to the contractual terms is disseminated or published either by the Commission itself or by its co-contractors, without any restriction other than those imposed by the need to safeguard intellectual and industrial property, confidentiality or legitimate commercial interests.

The Commission shall lay down the arrangements for implementing the rules laid down in the first subparagraph of this Article, in accordance with the procedure described in Article 6.

Article 9

This Decision is addressed to the Member States.

Done at Luxembourg, 29 April 1992.

For the Council

The President

Luis VALENTE DE OLIVEIRA

ANNEX I

OBJECTIVES AND TECHNICAL CONTENT

The general aim of the centralized action for the dissemination and exploitation of knowledge resulting from Community research activities, carried out under this action, is to give specific added value to the R & D activities which are the subject of the third Framework Programme for 1990 to 1994. On the one hand, it provides the necessary continuity for some of the measures carried out under the Value programme; on the other, it introduces new topics concerned particularly with the repercussions of research and technological development activities and their results on society as a whole.

This centralized action is to be conducted in accordance with the following guiding principles.

(a) Horizontality

Measures to publish and utilize research results must apply to the whole range of Community R & D activities, covered by the Community Framework Programme, irrespective of the nature of programmes, the persons involved and the administrative authorities responsible. This criterion will be implemented through coordination and liaison between RTD specific programmes and the centralized action.

(b) Internal complementarity

The centralized action will coordinate and supplement the measures taken under the specific RTD programmes. It will also concentrate on activities requiring special infrastructure and skills (computerized information systems, a network of 'relay nodes', etc.) or special capabilities for transferring know-how to fields of activity in other disciplines.

(c) Subsidiarity

The centralized action will build on the synergies between decentralized (public and private) and Community R & D activities and is designed, in conjunction with other Community measures and in cooperation with the national and regional authorities responsible, to establish a coherent mechanism for the utilization and transfer of the technologies and the know-how obtained from research and technological development, using, wherever possible, the existing structures in Member States.

As far as the content of the present action is concerned, those measures already launched to forge closer links between research and industry will be supplemented by other new measures designed to forge closer links between research and society and between research and the scientific community. These are measures which reflect the new scientific and technological objectives and constraints set by society and its institutions, and the increasing interest in the interdisciplinary approach to research and technological development activities. At this stage, and now that its activities are more developed, this centralized action will incorporate these new topics into its conceptual and operational framework.

Detailed objectives for the centralized action, including measurable targets and milestones, will be described in workplans, which will be submitted annually to the committee.

1. RESEARCH-INDUSTRY INTERFACE

The aim is to help to improve the international competitiveness of Europe's industry in accordance with the provisions of the Treaty by means of specific projects designed to maximize the impact of Community R & D activities on industry as a whole.

For this purpose, the networks and partnerships between companies and laboratories from the different countries which result from the Community R & D programmes constitute an important element of the mechanism set up for the dissemination and exploitation of their results.

protect their findings in certain cases where, for example, they lack the necessary expertise and are unable to obtain this through the usual national and commercial channels, and at the same time help them to exploit and promote such findings. The following measures are proposed:

1.1. New channels of information

(a) Network of relay centres

A network of relay centres will be set up to promote the dissemination and exploitation of Community R & D results, while taking into account, and building on, the existing structures in Member States designed for the same purpose. The relay centres will have special access to Community information, under the control of the Commission, and will have as their main task the tailoring and interpretation of this information to local needs, especially in relation to companies, particularly SMEs, universities and research institutes. The specific needs of the more peripheral and least-favoured areas of the Community will also be taken into account.

While giving full consideration to local needs and circumstances, the following activities, *inter alia* may be undertaken by the relay centres:

- the dissemination of information on Community programmes and calls for proposals,
- identification of opportunities for participation in Community R & D programmes, and general guidance to candidates in the preparation of proposals,
- facilitating the interpretation and dissemination of Community programme results for target audiences and local firms,
- promotion of the exploitation of the research results with potentially interested enterprises,
- assistance to organizations which have produced results in the identification of exploitation opportunities at a European level and market research possibilities,
- providing information on specialized agencies dealing with intellectual property and legal protection of results,
- providing information on possibilities for financial support.

Competent national authorities and the scientific, technical and industrial community will help the Commission to select the relay centres in the Member States and to define their specific tasks.

The relay centres will, at the outset, analyse current practice on dissemination and exploitation, identify new approaches, where necessary, and formulate a Plan of Action with specific targets.

1.1. (b) Basic Service

A user-friendly computerized information service called Cordis will become available in 1992. After 1992, and depending on the results of a detailed evaluation, the aim of the centralized action will be to update and expand the Cordis information service. The service could provide new functions and continue to expand using new sources of information, harmonize and/or integrate databases, use electronic storage devices (CD-ROM and video discs) and develop user-friendly systems for electronic data exchange in cooperation with related Community programmes.

The development of computerized methods does not exclude the use of more traditional methods such as the publication of bulletins and bibliographies which will provide wider access to information services.

1.2. Utilization of results

This activity, which was already started in the Value programme, should be extended to the new fields covered by the Framework Programme and developed in line with the results that become available in the years ahead. This means utilizing the research and development results of which the Community is the owner and, where needed, helping to utilize the results of research and development projects undertaken on a shared basis. In the latter case, the aim will be to help contractors who do not have sufficient expertise, in particular the universities, research institutes and SMEs, to take advantage of the results of research and development projects and to help them to use the Community R & D results made

The work to be undertaken could take different forms, depending on each specific case, as follows:

- identifying, controlling and appraising the results of research in order to develop and target utilization plans,
- finding licensees, including for the JRC and, more generally, parties interested in utilizing results,
- providing adequate financing support for studies or tests and experimental developments.

This work will be carried out with the help of outside experts and competent organizations in the Member States.

1.3. Protection of results

The protection of results belonging to the Community and management of the patents portfolio that it holds will be continued, as in the past, through systematic examination of the final reports and results obtained by the JRC. The activities described below, which have already been started in the Value programme, will be developed more intensively by the centralized action.

Those universities, research centres and SMEs which do not have access to patenting expertise will, on request, be provided with aid by the centralized action. It will supply expertise on patents and financial support limited to the costs of searches for prior claims to novelty and first patent applications.

Public awareness campaigns may also be organized on the importance of protection results for the research scientists participating in community R & D programmes.

1.4. Promotional activities

Promotion on the results could take the following form:

- financial support for organizations making an active contribution to the promotion of results and, in general, for organizations within a transnational network set up in order to facilitate, promote and coordinate access to Community programmes,
- organization of seminars, conferences and other means of communication, including in association with the respective bodies in the Member States and, in particular, with the 'relay centres',
- attendance of trade fairs.

Specific activities are planned to provide economic and social cohesion in regions where dissemination and utilization structures do not exist or are still in their infancy.

II. INTERFACE BETWEEN RESEARCH AND THE SCIENTIFIC COMMUNITY

The objective of the activities under this heading is to contribute to interdisciplinary reflection in relation to research, its methods, problems and impact. Such activities will be structured around the following four areas:

II.1. General context of research

The aim is to study the constraints and/or opportunities for the dissemination and exploitation of R & D activities applying the disciplines of law, political sciences, social and human sciences. Examples of topics to be considered could be:

- history and comparative analysis of public and private research structures,
- aspects of civil and public law, mainly in respect of intellectual property rights,
- international rules on scientific and technological information.

II.2. Communication of research

The objective is to improve the communication of research towards its various users, by obtaining a better understanding of communication patterns. Disciplines of a sociocultural nature will play an important role in this respect. Therefore, the

II.3. Economics of research

Macroeconomic instruments and business sciences must be used to determine the optimum use of resources to be channelled into research as part of general economic development objectives and company objectives. Taking account also of studies conducted in other contexts, the cost/benefit aspects of the cycle of research and development, and the economic obstacles to its exploitation, will be examined, in particular with a view to main optimal use of the financial resources allocated under the third Framework Programme.

II.4. Management of research

The overall objective is to promote knowledge of best practice in the management of R & D in order to contribute to better exploitation of results. Management studies will help with the organization of research and laboratory management. They can make a contribution to project management, administrative procedures and methods of management. Particular attention will be paid to subjects relating to decentralized management and making more efficient use of human resources in the departments which manage research. Comparative studies will be conducted on the different management models used by universities and industrial research institutes.

III INTERFACE BETWEEN RESEARCH AND SOCIETY

This heading covers measures designed to identify and study the impact on society of the new scientific and technological knowledge, acquired as a result of Community activities, especially where the interaction between science and technology, on the one hand, and society, on the other, is particularly critical. The aim is to spread scientific know-how widely through Europe in order to seek to ensure that changes in the contemporary approach to science are compatible with developments in society.

To this end, it should take its place in an efficient interactive process consisting of the following stages: research, research results, public perception and reaction, assessment of social impact, modification of research activities where necessary. In order to ensure that this procedure works effectively, close links will have to be forged across the board with the specific study programmes developed prior to the policy-making process. Wherever possible, activities will be based on the work of, and executed in close coordination with, existing organizations in the Member States. The centralized action will be in three parts.

III.1. Contribution to assessment of the social impact of science and technology

In conjunction with the more specific activities provided for in the individual specific programmes and with the activities of the Monitor programme, more general 'technology assessment' schemes will be developed. Those areas which will be specially monitored and studied are not only those which relate to the exploitation of new technologies affecting health, safety and the environment, but also ethical and legal questions relating to the exploitation of results.

III.2. Communication with the public

The centralized action will make use of channels of communication, particularly the mass media, to provide information for the public, building on existing structures in Member States. Where appropriate, use could be made of the relay centres mentioned under I.1. (a).

III.3. Analysing public demand and new requirements

In conjunction with other programmes concerned, including the Monitor programmes (1), the centralized action will provide studies and surveys designed to identify the latest social needs, through its direct contact with actual or potential users of the knowledge resulting from R & D programmes.

ANNEX II

INDICATIVE BREAKDOWN OF EXPENDITURE

(ECU million)

I. Research-industry interface	50
II. Research-scientific community interface	4
III. Research-society interface	3
	57 (*)

(*) Including expenditure on staff amounting to ECU 4 million and administrative expenditure totalling ECU 5 million.

The breakdown between different areas does not exclude the possibility that projects could cover several areas.

ANNEX III

RULES FOR IMPLEMENTING THE ACTION

1. The Commission will implement the action on the basis of the scientific and technical content described in Annex I. It will apply the accumulated experience and best practice of both European and international experts in this field.
2. The rules for implementing the action, referred to in Article 3, comprise projects, concerted actions and accompanying measures. Selection of projects must take account of the criteria listed in Annex III to Decision 90/221/Euratom, EEC and of the objectives set out in Annex I to this programme.

— Projects

The projects will be the subject of shared-cost contracts and Community financial participation which will not normally be more than 50 %. Universities and other research centres participating in shared-cost projects will have the option of requesting, for each project, either 50 % funding of total expenditure or 100 % funding of the additional marginal costs.

Shared-cost projects must, as a general rule, be carried out by participants established in the Community, for example universities, research organizations and industrial firms, including small and medium-sized enterprises. Contracts relating to shared-cost projects must as a general rule be concluded following a selection procedure based on calls for proposals published in the *Official Journal of the European Communities*.

— Concerted actions

Concerted actions consist of action by the Community to coordinate the individual activities carried out in the Member States. They may benefit from funding of up to 100 % of coordinating expenditure.

— Accompanying measures

The accompanying measures referred to in Article 7 will in particular be implemented through:

- the organization of seminars, workshops and scientific conferences;
 - internal coordination through the creation of integrating groups;
 - independent scientific and strategic evaluation of the operation of the projects and the action;
 - contribution to studies and enquiries.
-

MID TERM REVIEW OF THE CENTRALIZED ACTION (VALUE II)

The Council Decision of 29 April 1992 on the dissemination and exploitation of knowledge resulting from the specific programmes of research and technological development of the Community, foresees in Article 4, paragraph one that "in the course of the second year of the implementation of the action, a review of it by the Commission and foresees that a report on the results of this review be sent to the European Parliament, the Council and the Economic and Social Committee".

Due to the fact that VALUE II is in part a continuation of the VALUE I programme, and that the final evaluation of VALUE I takes place during the same period, the Commission services suggest that the same panel of independent experts evaluating VALUE I be asked to review VALUE II activities.

In compliance with Article 7, paragraph 1, sixth indent of the aforesaid Council Decision, Committee opinion is asked on this suggestion.

The proposed terms of reference for the mid-term review of Value II are attached (Annex I).

The Composition of the panel is also attached (Annex II).

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ANNEX II

Final Evaluation

Terms of Reference

TERMS OF REFERENCE OF THE FINAL EVALUATION OF THE CENTRALISED ACTION (VALUE II)

In accordance with Article 4, paragraph 2 of the Council Decision at the end of the action, an evaluation of the results achieved shall be conducted for the Commission by a Group of independent experts. The Group's report, together with the Commission's comments, shall be submitted to the European Parliament, the Council and the Economic and Social Committee.

To conduct this final evaluation, the Commission services will be assisted by a group of independent experts, hereafter referred to as the panel.

The panel will assess the extent to which the results achieved contribute to the objectives of the Centralised Action (VALUE II) and that of the Third Framework Programme (1990-1994) notably through:

- strengthening the scientific and technological base of European industry (including SMEs) so that it can become more competitive internationally;
- contributing to the dissemination and exploitation of results of Community RTD activities (towards SMEs in particular) thus demonstrating the added value of those RTD results;
- contributing to the implementation of the internal market, to the reinforcement of the economic and social cohesion of the Community and to the strengthening of European science and technology;
- complement the action of the Member States, particularly with regard to the setting up of a network of relay centres.

The panel will also assess the efficiency and effectiveness with which the programme has been managed and promoted.

This evaluation will take into account for each type of activity, the results achieved and their relation to the human and financial resources allocated to it. The new activities of VALUE II (Relay Centres and Interfaces II and III) will be reviewed more in depth. Qualitative or quantitative indicator will be used whenever possible.

The panel is invited to make recommendations to the Commission.

ANNEX III

**Executive Summary of the
Evaluation of the VRCs**

EXECUTIVE SUMMARY

In response to the recommendation of the Mid-term Review for Programme VALUE II, General Directorate XIII-D of the European Commission (EC) decided in October 1994 to proceed to a detailed evaluation of the VALUE Relay Centres (VRCs) by four external experts.

The EC decision stipulated also that:

1. *"the evaluation exercise should be flexible, easy to implement and have a rather qualitative than quantitative character.*
2. *each VRC should be visited and evaluated by one of the independent experts.*
3. *the heterogeneity and varied approaches used for the implementation of the Relay Centres place the same importance on all activities developed to date".*

The evaluation started in December 1994 and has been practically completed early February 1995. During this period, the evaluators:

1. visited all 27 VRCs and discussed with their principal staff their work;
2. studied the progress reports prepared by each VRC and collected ancillary information from the VALUE Relay Service Central Co-ordination Unit;
3. studied 1992 EC documentation on the concept and contractual tasks of VALUE Relay Centres;
4. analysed in various ways the data obtained from of the Users' Survey conducted by VALUE Relay Service Central Co-ordination Unit during the evaluation period;
and
5. held few meetings for discussing extensively the approach and other aspects of the evaluation exercise.

In view of the innovative character of the VRC exercise and the diversity of business environments in which this exercise unfolded during 1993 and 1994, the evaluators set themselves three principal targets:

First, to reveal whether each VRC:

- identified the needs of its operational environment,
- formulated a coherent strategy to meet somehow this demand,
and
- employed effectively its human and financial resources.

Second, to identify:

- the essential elements of the upstream, downstream, networking and promotional activities carried out by each VRC;
and
- the global operational features of the VRC-Network.

Third, to:

- give an overview of the methodologies and tools employed by all VRCs;
 - draw few general conclusions for the overall performance the VRCs;
 - recommend specific actions in relation to any major operational problems identified in the work of each VRC;
- and
- devise a common frame of reference for presenting the level of experience attained by each VRC during their pilot operation.

The outcome of the evaluators' work along the above three principal targets is presented in detail in the evaluation REPORT as well as in its confidential SUPPLEMENT, which addresses the latter two items of the above list.

The present Executive Summary summarises below several main points with respect to the overall operation of all 27 VRCs.

Criteria for the evaluation

The evaluators attempted to deduce a rough, but still quite informative, assessment of the overall performance of each VRC. The criterion for this assessment has been the experience both gained and contributed by each VRC in implementing the challenging tasks given by the VALUE II programme at national and EC levels.

Criteria for the evaluation of each VRC were the performance of the upstream and the downstream tasks according to the regulations of the contracts with the Commission. The performance can only be evaluated regarding the VRC and the host and the added VALUE of the VRC to the host's activities at the time of the analysis.

The analysis of the individual VRC has been done regarding the following parameters:

- Mission in its environment
- Organization of host
- Organization of VRC
- Strategy, methodology, customers
- Upstream activities
- Downstream activities
- Networking
- Promotional activities

When starting the network two years ago, the VRC system was completely new. Even now, it is still in the stage of dynamic foundation. Therefore, the evaluation criteria included the perspective of work of the VRC in relation to its host organization.

General comments

Start-up phase

- The innovative character of the VRC concept and the different interpretations of how to employ this concept across the European Union forced each VRC to devise an optimum response to the demand placed by its own business environment. Each VRC had to devise a specific strategy and to find methods and tools to work with.
- Each VRC went through a learning process in devising its methods and tools of work.
- Only a few of the VRCs systematically went through a preparatory stage. Many of the VRCs started their work straight away and start-up work (for example market analysis or staff training) was not done at all. There were various reasons for this: many of the VRCs were continuing work they had begun in the previous years. Many felt they had to satisfy the demands of the users straight away, as services of the VRC network had been promoted since the beginning of 1993 already.

Despite these basic limitations most VRCs proved quite imaginative while the work carried out by all of them reveals much enthusiasm and a lot of effort.

The VRC organizations, their strategies, their operational tools, their learning curves up to the state of productive work in the sense of the task placed by DGXIII and their further development dynamics are rather heterogeneous. These parameters characterizing the foundation and further development of the VRCs depend on the support by their host organizations, their local environment, the VRC personnel as well as on the resources granted by DGXIII.

Tasks of the VRCs

On the basis of the VRC specifications drawn up by the Programme Management Committee and the DGXIII, a workprogramme was devised that includes the following five tasks:

- Promotion of Community RTD activities and the dissemination and exploitation of knowledge resulting from them
- Specific tasks for the start up phase
- Specific tasks for the launch
- Co-ordination at national level
- Network activities.

The first two tasks describe in some detail the main objectives set for the first 2 years. More specifically, the first task defined the core and optional VRC activities, while the second task focused on the preparatory work required for setting a VRC in motion.

In contrast to this, the description of the co-ordination at national level and of networking activities left ample room for initiative.

In the definition of the task, no clear preference is given to upstream or downstream activities. This remark is further supported by the fact that the Operational Plans devised by each VRC, initially approved and since then periodically put under scrutiny by the VRC Service Co-ordination Unit do not demonstrate any particular emphasis on downstream activities.

Therefore, it was concluded, that

- during the pilot phase each VRC was given the chance to devise an action plan that would best suit the needs of its operational environment.
- This bottom-up approach introduced a very flexible way to implement the work of the VRCs.

Support by the EC

Considerable financial and practical support has been given to the VRCs by the EC. A resource of particular importance is the VR Service. The main support instruments are:

- Information packages for the VRCs
- Level II and III sheets
- VACRO Days
- Training
- Networking
- Edition of calendar of events
- Information on EC research
- Mailing lists of Specific RTD
- Promotional Material
- Day to day follow up work
- Reporting

There are some areas, for example information on sources of financing exploitation projects others than those of VALUE II, where the information from the VRS could be improved in the future.

VR Service is a major constituent of the VRC system. It has been recognized by the VRCs and become an indispensable part of their work. However, VR Service was not subject of the present evaluation study.

Service fields of the VRCs

The essential elements of the upstream, downstream and promotional activities carried out by each VRC can be summarised as follows;

VRCs offered their services basically in the following areas:

- Proposal Preparation.

- Partner Search
- Sensitising Clients for RTD.
- Information on EC-RTD.
- Information on Exploitation Options
- Detecting Exploitation Demand.
- Sensitising Clients for Exploitation.
- Exploitation Project Preparation

VRC services have been usually provided via:

- Targeted mailings.
- Visits to companies.
- Phone Help Line.
- Venues, as e.g., Information Days, Technology Transfer Days, etc.

VRC services diffused information mainly via:

- Oral presentations at various venues.
- Brochures providing an overview of services offered.
- Flyers giving mainly the VRC contact details and a hint of its services.
- Articles in the general as well as specialised press (newspapers, etc.).
- Newsletters, published either the VRCs themselves or other organisations.
- CORDIS, national or in house developed databases.

Collecting and processing EC information proved a quite time consuming and costly business, in particular for VRCs far away from Brussels and Luxembourg. Translating of EC information material into native language turned out to be quite a heavy burden to small VRC teams.

The VRCs have to fulfil a variety of very demanding tasks. Co-operation with the customers requires much work, technical knowledge and experience. This is even more true, the more the VRCs are involved in project work (upstream RTD project work or downstream exploitation project work). Possibilities are limited by the small number of VRC staff members.

The VRCs tend to provide information activities, more upstream than downstream, rather than to do project work, be it on the proposal preparation or the exploitation project side of their tasks. This especially applies to VRCs which mainly worked in the upstream field as a host already.

In this connection, the VRCs proved to be good promoters of CORDIS. Increasing demand for CORDIS is closely linked with the exploitation and dissemination of CORDIS by VRC marketing.

- According to their limited resources, the VRCs have only about 6% of their capacity on an average in the field of project work for the exploitation of Community or other results.
- It must be thought about how this situation can be improved. Connection of the VRCs with partners contributing technological, company-specific know-how and

expert knowledge is an important aspect. Only some VRC host organizations possess the experience required, in a more or less convincing manner.

Consequently, relatively few concrete exploitation projects or success stories of VRCs were found. In many cases, exploitation projects had been prepared, but failed in the execution due to lacking funding.

- A number of exploitation projects have certainly been pushed by the VRCs. However, further development among the project partners was not pursued. The VRCs concentrating on downstream activities are still establishing feedback to their customers and project controlling.

In the field of information management, collecting and processing of EC information material has been a rather time-consuming and costly business for the VRCs.

- Generally, communication with the programme managers of the Specific Programmes has to be further improved, although closer contacts to the Commission officials or their partners in the National Contact Points have already been established.

The Specific Programme managers should ensure that their RTD projects are able to benefit from the VRCs' expertise and contacts. However, this can become a very demanding task. The VRCs' contribution can only be limited. This means that the VRCs have to be involved from the very beginning of RTD projects. The VRCs and their co-operation partners should be involved as exploitation specialists in the evaluation procedure of Specific RTD Projects. The VRCs should also be involved in "status seminars" of these projects in order to identify as early as possible downstream options of ongoing RTD projects.

In the 4th Framework Programme, the Specific Programmes will devote 1% of their budget to the dissemination and exploitation. The programme managers should be able to use some of this money to secure services from the VRCs.

Networking

Work conducted by DGXIII and the VR Service for establishing a VRC network having a clear identity in the EU and a close co-operation of the VRCs proved to be of crucial importance and very successful. Nevertheless, they are still at the beginning. Networking, at national or European scale, has not been vigorous. The few notable exceptions refer to national networking. A possible reason for this situation relates to the basically competitive character of much of the VRC work, while another reason hints to the need of great organisational effort that no VRC could afford alone.

There was good collaboration in some areas, notably in partner search for Specific RTD Programme proposals. Sub-networks of two or three often neighbour VRCs with border-crossing close co-operation can be observed. This certainly is a positive development.

For the future, measures and incentives should be planned for a closer co-operation of the VRCs.

Regional representation

Regional representation of the VRCs is of crucial importance. The main customers are industrial firms, in particular SMEs. In the field of project work, intermediaries (e.g. consultants, financial institutions, regional and national funding organizations, information agents) are beginning to be integrated.

- Those clusters of partners in innovation projects are of particular importance. They have to gather around a VRC. As few traces of these work-sharing structures can be noticed only, a system of partners sharing the work with the VRC and recognizing it as a reference and directing point should be supported in the future.
- Complete competence covering the entire state is of significance for determining the number of Relay Centres to be established in the next period. It is observed that in some states the existing VRCs can only work in a spotlike manner. The regions to be taken care of and the distribution and number of the industrial customers is too large. Furthermore, the capacity of the individual VRC is much too small in most cases.

Financing of the projects

One of the main problems for those VRCs, which are focusing on downstream project work, is the availability of budgets for their projects and their customers. Considerable efforts are made to bring in Community or national or private financial support schemes.

- With the Technology Transfer and the Technology Validation Projects the Activity III disposes of important tools to contribute to the financing of innovation projects.
- The VRCs should be integrated in these projects in order to ensure better success by their knowing of good partners and closer binding of innovative partners.

Methodologies and tools employed

A great number of methodologies and tools is employed by the VRCs. A detailed summary is given in ANNEX E of this report.

Obviously, each VRC went through a learning process in devising its methods and tools of work. However, across the divers experiments undertaken by all 27 VRCs, one recognises some common archetypes as well as few new ideas in the employed methodology and tools. Examples of detected new ideas are:

EVALUATION OF VALUE RELAY CENTRES

- The "Diagnostic Service" devised by FIST for identifying project RTD-results with a clear exploitation potential.
- The "virtual team" approach of the VRC at VDI/VDE for a cost effective way of utilising the expertise and manpower available in its host organisation.
- The VDI/VDE idea of a "Status Seminar" in order identify as early as possible downstream options of ongoing RTD projects.
- The sectoral and inter-regional working model employed by AIRE for utilising best networks for technology transfer in specific industrial sectors.
- In place of broad VACRO Days, events for smaller groups related to the same field of activity were organised. In the case of TTB, the events are hosted by companies, a fact that is particularly effective.
- The employment of electronic tools (flash-information, faxbases, multimedia presentations) as done by ANRT, CRENEST and TTB.
- The preparation of technology sheets targeted towards the needs of the VRC's clients by using CORDIS as done by SGPN I+D.
- The publication campaigns of technology offers as launched by ZENIT and ARC in major technical and business newspapers.
- The "Technology Scouts" in Danish Universities employed by PUF.

Overall performance of the VRCs

From the conducted Users' Survey it can be concluded that overall the VRC performance satisfied to a large extent the users' expectations along upstream activities. For downstream work the degree of satisfaction looks numerically small. However, in view of the fact that these latter activities are very user specific and much know-how based, the evaluators believe that the downstream performance has been also satisfactory.

More specifically, 71 ± 17 % of the 900 users who replied feel they benefited from the upstream activity of the VRC in their vicinity. The corresponding percentage for downstream is 36 ± 16 %.

Both findings are very positive result in view of the exploratory character of the whole VRC pilot operation.

The VRCs carried out a wide range of effective and, in many cases, innovative activities. They did this despite the fact that many of them lacked a clear overall strategy. On the whole, the VRCs worked more effectively in the upstream area. Downstream, much work was done, but a lot of VRCs were hampered by their lack of know-how and experience on many aspects of the dissemination and exploitation of RTD results.

The VRCs were only able to make limited progress towards becoming a coherent and cohesive network, despite the enthusiasm of the VR-Service. There was good collaboration in some areas, notably in partner searches, but most of the work was done by each VRC acting in isolation.

In general, the work and image of the VRC network could have been greatly improved if more funding had been available for the VRCs themselves and for the financing of exploitation projects. An increased level of funding would also enable the VR-Service to give better support and guidance to the VRC network.

Finally, during its two years pilot operation, the VRC network made overall very good progress. This was in large measure due to the commitment and enthusiasm shown by all people involved - both in the individual VRCs and in the VR-Service in Luxembourg.

Outlook for the future

The VRC network constitutes an extremely important element of the Third Activity in the 4th Framework Programme. It represents a completely new approach for the dissemination and exploitation of EU results and even national results in the future.

The two years of 1993 and 1994 were spent for setting up the system. VRC methodologies and tools were developed. Wide, valuable experience was gathered in all member states.

For the future success of the Relay Centres it will be of decisive importance that the respective VRC finds its individual position in its environment. It should be an initiator and catalyst of innovation processes in the networks of all partners required. VRCs will be able to do their own specialized work in a spotlike manner only. They are rather experts of communication and technology marketing. At the same time they are representatives of the EU with special reference to the possibilities of support by the EU.

Everywhere, the VRCs are supported by highly committed people. The work performed by them in the first two years has given rise to an increasing interest in industry, research and politics. Now, this achievement has to be further developed.

The VRCs have to be regional directing and co-ordination offices, helping the customers and in particular the SMEs to find solutions for their innovation problems. They are executive offices for EC innovation politics within the framework of Activity III and bridges to all funds offered by the Commission to the member states.

EVALUATION OF VALUE RELAY CENTRES

Several recommendations on strategic, operational or even simple practical issues, emerge from the experience gained by each individual VRC as well by the whole network. A few are summarised below:

- There should be closer co-operation with specific programmes in order to shift downstream work into the lifetime of an RTD project, not just after its end.
- VRCs should seek more intense collaboration and networking for a better use of resources, human and other, at regional, national and EU, particularly for downstream activities.
- VRCs should define a strategy for positioning themselves clearly in market niches of their business environment.
- DG-XIII-D should monitor more closely the overall performance of future Relay Centres for being able to provide them with a more effective support.

ANNEX IV**Acronyms and
Abbreviations**

ACRONYMS AND ABBREVIATIONS

BRITE	Basic Research in Industrial Technologies for Europe
CCITT	Comité Consultatif International de Téléphonie et Télégraphie
CORDIS	Community R & D Information Service
COSINE	Cooperation for Open Systems Interconnection Networking in Europe
CRAFT	Cooperative Research Action for Technology
CRO	Cooperative Research Organisation
DG	Directorate-General
DG XII	DG for Science, Research and Development
DG XIII	DG for Telecommunications, Information Industries and Innovation
DG XVI	DG for Regional Policy
DG XVIII	DG for Credit and Investment
DG XXIII	DG for Enterprise, Trade, Tourism and "Economie Sociale"
EC	European Community
ECU	European Currency Unit
EFTA	European Free Trade Association
ESPRIT	European Strategic Programme for Research and Development in Information Technology
EU	European Union
EURAM	European Research on Advanced Materials
EUREKA	Europe "a la carte" Cooperation in Advanced Technologies
Gbit/s	Giga (10⁹) bits per second
HEPnet	High Energy Physics network
IPR	Intellectual Property Rights
ISO	International Organisation for Standardisation
JRC	Joint Research Centre

kbit/s	Kilo (10^3) bits per second
Mbit/s	Mega (10^6) bits per second
MECU	Million ECU
OJ	Official Journal (of the European Communities)
OSI	Open Systems Interconnection
R & D	Research and Development
RACE	Research in Advanced Communications in Europe
RARE	Research Associés pour la Recherche Européenne
RTD	Research and Technological Development
SCREEN	Internal (confidential) DG XIII database on RTD projects
SME	Small and Medium-sized Enterprise
SPRINT	Strategic Programme for Innovation and Technology Transfer
STRIDE	Science and Technology for Regional Innovation and Development
TCP	Transmission Control Protocol
VALUE I	Community Programme for the Dissemination and Utilisation of Scientific and Technological Research Results
VALUE II	Community Programme of Centralised Action for the Dissemination and Exploitation of Knowledge Resulting from the Specific Programmes of Research and Technological Development
VRC	Value Relay Centre

COMMENTS OF THE MANAGEMENT COMMITTEE

In conformity with Article 7 of the Council Decision of 29 April 1992 on the dissemination and exploitation of knowledge resulting from the specific programmes of RTD of the Community (VALUE II), the Committee delivered a favourable opinion on the measures to be undertaken to evaluate the action at its meeting of 18 October 1994.

The Committee examined the final evaluation report prepared by the evaluation panel chaired by Mr. Friebe at its meeting on 7 November 1995 as well as the specific report on the Value Relay Centres and, as a conclusion of the exchange of views between its members, expressed the following comments :

General comments :

While underlining the importance of dissemination and exploitation of RTD results within the Community Framework programme, the Committee agrees with the panel, to consider that innovation is not just a spill-over of RTD. It should be regarded as a major issue for which adequate Community activities should be implemented, building on and complementing activities carried out at the national level.

The Value II programme, with modest resources, has developed and implemented new tools which have largely contributed to promote new attitudes towards diffusion and exploitation in the Fourth Framework Programme.

Relay centres :

The establishment of the relay centres network was a significant new action line of Value II to be further developed. This initiative contributes to bringing Community activities closer to local users and to matching the needs of SMEs with the technology supply.

RC in all the Member states should adapt to the national context and cooperate as much as possible with already existing networks and actors of the innovation system.

CORDIS :

Over the last few years, CORDIS has made significant progress and it has become an important tool for the retrieval of information about the research efforts originating from the European Community.

Its evolution should be based on a coherent and well defined approach and close links should be established between CORDIS and other Community information systems. Synergies with other RTD databases at national or European level should also be increased and the three recommendations of the panel implemented, i.e. an integrated in-depth study should be undertaken on the demand side, technological evolution and cost control.

Utilisation of results :

The committee considers that the Value projects had a high added value and side impact by developing an "exploitation" culture at Community level. They should be continued and developed in order to contribute to the promotion of an innovation culture at European level.

The Committee congratulates the panel for its excellent report as well as the panel who carried out the VRC evaluation and invites the Commission to take into account the above suggestions in the communication that it is to submit to the Council, the European Parliament and the Economic and Social Committee.

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