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SMEs and Community activity

in research and technological development

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I. Background

Requests from the Council

The Commission prepared for the Council meeting (industry) of 28 May 1990 a working paper entitled "Small and medium-sized enterprises and Community activities in the field of research and technological development" (COM(90) 168 final). This outlined where SMEs stood in relation to Community research programmes at the time and set out the progress achieved and the adjustments to be made to secure greater SME participation in the different programmes.

In its conclusions, the Council welcomed the working document, urged the Commission to intensify its efforts to promote SME participation in these programmes and requested a regular report on participation by the various categories of SME in R&TD programmes.

It is now necessary to inform the Council of the action taken in response to its conclusions. Such is the purpose of this report, which also meets the request from the European Council, meeting in Lisbon on 26-27 June, that encouragement must be given to "increased participation by small and medium-sized enterprises in Community programmes".

Article 130 of the Maastricht Treaty of 7 February 1992 assigns four objectives to the Community's action:

- * to speed up the adjustment of industry to structural change;
- * to encourage an environment favourable to initiative and to the development of undertakings, particularly small and medium-sized undertakings;
- * to encourage an environment favourable to cooperation between undertakings;
- * to foster better exploitation of the industrial potential of policies of innovation, research and technological development.

Article 130f states that the Community shall have the objective of strengthening the scientific and technological bases of Community industry and encouraging it to become more competitive at international level and for this purpose shall encourage undertakings, including small and medium-sized undertakings, research centres and universities in their research and technological development activities.

Thus, Community R&TD policy provides SMEs with a framework for increasing their international technological competitiveness.

More recently, on the occasion of the discussion of the note on the management of the programmes transmitted by vice-president Ruberti, the Council of Research Ministers of the 30th of June 1993 insisted on the fact that "procedures and tools for programme implementation should as far as possible be simplified and harmonised in order to facilitate participation by SMEs, and to allow for smooth, transparent and timely implementation of the Framework Programme" and "welcomes in this respect the circulation by the Commission of information bulletins on a regular basis".

Enterprise policy

In the light of the decisive role played by SMEs in the economic development of the Community as a whole, there should be a greater coherence between R&TD policy and actions focusing on SMEs. On this last point, the Council adopted on 14 June 1993 a new multiannual programme of Community actions which is intended to reinforce these main guide-lines and to ensure the continuity and the consolidation of policy on enterprises, particularly SMEs. This programme includes an important aspect relating to the improvement of SMEs' access to Community programmes.

As a result, a more effective coordination will be possible with the actions implemented under the fourth Framework Programme where it is stated that "SMEs are able to make a significant contribution to the innovation process and should play a substantial role in the implementation of Community RTD activities" and that, "therefore, particular attention should be paid to the specific needs of these undertakings in order to facilitate their access to information, encourage them to take part in Community programmes and enhance their ability to exploit their results".

Subsidiarity

Reinforcing Community measures to assist SMEs under research, technological development and technology dissemination programmes does not conflict with the principle of subsidiarity. Participation in a Community programme, which requires at least two partners from two different countries, enables SMEs to create a network of international contacts and increase their competitiveness on the Community market by cooperating with the elite in a given technological sector. This objective can be better achieved at Community level on account of the greater variety of possible partnerships. Compared to purely national projects, research projects carried out in the framework of a Community programme offer supplementary advantages.

In its efforts to promote the participation of SMEs in the fourth framework programme, the Commission will take into account the experiences gained at national level.

The question of subsidiarity with regard to technological research and development, at Community level, was discussed in detail in the documents "Research after Maastricht" (SEC(92) 682) and "The principle of subsidiarity" (SEC(92) 1990).

II. Introduction

Whether they produce goods or provide services, for instance in the field of subcontracting, SMEs are highly sensitive to technological changes affecting their technical and competitive environment. Often faced with great difficulties when it comes to framing and implementing the technological choices necessary for their development, they usually have to cooperate with outside bodies possessing the requisite know-how (research centres, support centres or other firms) if they are to achieve their full potential.

In order to cater to some extent for this latent need for cooperation and technological progress, the Commission has opened Community R&TD programmes to SMEs and is carrying out measures to disseminate new technologies.

Despite these developments, Community research is still geared more to public-sector laboratories and large firms, on account of the principle of pre-competitiveness. Most programmes are chiefly concerned with high-level research which very few SMEs can undertake. Thus, there are only a few thousand SMEs throughout the Community which are technologically capable of participating in a Community research programme.

SME participation in Community research has nevertheless increased in recent years, as demonstrated in document SEC(92) 675 "Evaluation of the second framework programme for research and development (1987-91)". But it is difficult to distinguish precisely the role they play in projects financed by the Community (as leaders, partners or subcontractors). In the statistics, no differentiation is made between independent SMEs and the subsidiaries of large firms. The volume of appropriations granted to high-tech SMEs under Community R&TD programmes is less than would correspond to the number of SMEs involved.

The dissemination of new technologies in industry and services is the task assigned to the Value programme as regards the exploitation of the results of Community research, and to the Sprint programme as regards technologies developed outside the Community framework and the promotion of an environment favourable to innovation.

These programmes are intended to help as many Community SMEs as possible to modernize and become competitive.

This report analyses the progress made in integrating SMEs into the Community research process since 1990, lists the measures recently begun and sets out various prospects in order:

- to attract the most efficient technological SMEs towards the leadership of Community research projects or research partnerships with other operators;
- to attract an increasing number of SMEs developing and using new technologies towards technological partnership with growth enterprises, research centres or technology centres, whether within the framework of Community support or not;
- to increase the distribution of the results of Community research to a greater number of SMEs in their capacity as users;
- to increase the dissemination of new technologies and their use by all SMEs in order to accelerate their modernization.

III. SMEs in the context of research

The first report produced for the Commission by the recently created European SME observatory has confirmed that SMEs are very far from big industries in terms of research activities. It also underlined that the level of innovation of SMEs can better be measured by their ability to produce innovations rather than by their actual research activities.

On the basis of comparisons carried out in Europe and in the United States, it seems that SMEs are more productive than big industries in terms of R&TD : SMEs produce twice more innovations per employee and 3.5 more new products per dollar invested (american data) in research than large companies. They generate the majority of radical innovations and technological breakthroughs.

Nevertheless, those general considerations should not dissimulate the fact that SMEs are not an homogeneous group and that, regarding research and technology, different categories of firms follow different strategies.

- **Three distinct profiles**

Schematically, we can distinguish three different types of SME (SMEs being defined by the European Investment Bank as having fewer than 500 employees, fixed assets amounting to less than ECU 75 million and not more than one third of their capital held by a large firm):

- (i) high-tech SMEs with scientific and technological research potential;
- (ii) SMEs whose competitiveness depends on access to new technologies;
- (iii) SMEs whose products and processes make little use of recent technology.

Most of the technological SMEs in group (i) above are involved in research since technology is a key part of their operations. Accordingly:

- their products or processes have a high technology content;
- they have clearly identified research teams;
- their workforces include a large proportion of engineers and technical staff;
- they have organized access to scientific and technical information;
- they cooperate with laboratories or other firms in designing and/or testing their products and processes.

Such SMEs are priority targets for research programmes on account of their growth potential.

SMEs in groups (ii) and (iii) above are, to varying degrees, industrial enterprises whose technological skill, financial basis and management potential rarely enable them to carry out research. Such firms, however, are one of the main sources of employment in the Community economies and must be able to access new technologies if they are to modernize.

Their participation in Community technological cooperation, as partners or users, may well make it possible to achieve:

- improved competitiveness in the medium term through the introduction of new products and/or know-how;
- better understanding of their technological and competitive environment, hence better strategic management of their operations;
- a network of contacts in different countries that will act as technological and commercial springboards for the firm's development.

Whether as active participants in Community research or as users of new technologies, SMEs require a special effort from the Commission. By involving the most efficient of them in its programmes, the Commission will open up a new dimension for SMEs, which will develop their know-how and gain access to new markets. By intensifying its measures for the dissemination of innovation and by setting up a system for accessing information about the results of its programmes, it will offer the widest possible access to the spin-off.

- **The challenge of greater SME participation in Community research after completion of the internal market**

SMEs in industry are faced with the growing need to internationalize their operations since the single market will to a large extent be open to imports from non-member countries whose products, once allowed into a Member State, will be able to move freely throughout the Community.

To retain their independence on markets undergoing concentrations triggered by large firms and compensate for stiffer competition resulting from completion of the internal market, SMEs will have to step up their innovation and modernization efforts.

Community industry holds a leading position in sectors such as chemicals, mechanical engineering, telecommunications and construction materials. At the same time, Community enterprises occupy market niches in branches of industry in which Community leadership is being challenged by non-Community countries (electronics, motor vehicles, textiles). Cross-border technological cooperation and its commercial spin-off will contribute greatly to strengthening Europe's position in world trade.

Quality assurance, European standardization and certification, automation, new logistical techniques and technological progress in general will enable SMEs (and particularly those engaged in subcontracting) to find their place in the process, by developing a comparative advantage in order to stay competitive. To that end, they should cooperate with other industrial firms, support services or research centres.

The Commission can encourage technological progress in SMEs to enable them to enjoy a comparative advantage on the international stage. In this context, the framework programmes for R&TD will constitute major assets for the Community in helping its enterprises by emphasizing the dissemination of new technologies among SMEs.

- **The situation in the outlying regions**

Objective 1 and 2 countries and regions are ill-prepared for taking up the new challenges of the large market. The removal of intra-Community frontiers, which will facilitate the movement of increasing volumes of low-technology imported products, and rising average living standards can be expected to erode the comparative advantage they have enjoyed owing to their low wage costs.

Their efforts should therefore focus on modernizing and diversifying their economies towards growth areas where technology plays a more important role. Effective convergence of the European economies hinges largely on the ability of the assisted regions to narrow the industrial productivity gap with the more highly developed ones.

Boosting economic efficiency in the assisted regions necessarily involves support for SMEs in these regions, which make up virtually the entire industrial and services base there and suffer from real regional handicaps:

- the remoteness of the Objective 1 countries and regions confines SMEs in a relatively isolated position that holds back their expansion;
- the lack of qualified personnel hampers the modernization of SMEs' technologies and know-how;
- there is a blatant disproportion between public-sector research and research carried out in-house by firms. The number of researchers employed by public administrations thus greatly exceeds the number of research staff in firms, with most SMEs not having any researchers at all;
- techniques for financing innovation, such as venture capital, are markedly underdeveloped and do not always correspond to the culture and way of thinking of the region concerned.

To overcome these obstacles, the Commission has set up schemes to boost the development of the regional economies and SMEs with assistance from the structural Funds:

- to put an end to SMEs' physical isolation, the ERDF has financed communications infrastructures such as roads and airports, while the Star and Télématique programmes have improved telecommunications infrastructures and the extent to which they are used by SMEs. The European Social Fund has financed continuing training schemes for SME employees;
- to bring SMEs in the assisted regions out of their technological isolation, the Stride programme has helped in setting up technology parks and research infrastructures there that can be used by SMEs. Stride has also made it possible to encourage SMEs in these regions to take part in Community R&TD programmes;
- to assist the development of appropriate structures for financing innovation in SMEs, the Commission has launched an overall review of financial engineering techniques and taken specific measures, in the venture capital field particularly.

The Commission's communication on R&TD, innovation and cohesion (COM 93-203 final) has described how the coherence between the activities of the fourth framework programme and those of the Structural Funds can be reinforced (the need for such a coherence has been taken into consideration in the new regulation of the Structural Funds). This synergy between the Structural Funds and research activities will contribute towards a true policy of cohesion by developing the potential of the regions and relating them to the European research area. The objective of cohesion is now taken into account in R&TD programmes and expenditure on research has been included in the Community support frameworks.

IV. SMEs in Community programmes

- R&TD programmes

The participation of SMEs in the different Community R&TD programmes varies and reflects their interest in research projects capable of exploitation in the short to medium term. Almost completely absent from the fundamental research programmes, they have a higher profile in industrially oriented programmes.

In the follow-up to the Council conclusions of 28 May 1990, which stipulated that the Commission must "clarify the definition of SMEs in this and other frameworks", the Commission tabled a report on the definitions of SMEs used in the context of Community activities (SEC(92) 351 of 29 April 1992). The report stressed that the Commission must endeavour to collect more detailed data on the size of firms participating in R&TD programmes, distinguishing the categories with 50 and 250 employees as well as 500.

This statistical effort has not yet produced very significant results. The only criterion used to define the enterprises is the number of employees with only two categories : over 500 or less than 500 employees.

Between the first of January 1987 and the 31st of December 1991, 1140 enterprises employing less than 500 employees participated in Community R&TD programmes for industrial technologies, environment, life sciences and technologies, and energy. These enterprises represented 11 % of total participants and benefited from 13 % of the total budget allocated.

For the information and communications technologies, data is only available for the ESPRIT programme. In 1990, SMEs represented 32 % of all participants in the programme, against 19 % in 1988.

As an example, following are indicative levels of participation for the principal R&TD programmes (programmes where enterprises with less than 500 employees represent more than 5 % of all participants) :

Contracts signed between 01/01/87 and 31/12/91

	N° of SMEs	%	% of budget
BRITE	159	26	27
EURAM	33	14	12
BRITE EURAM 1	371	25	25
AERONAUTICS	31	11	7
AGRICULTURE & INDUSTRY (ECLAIR)	68	26	27
AGRO-INDUSTRY (FLAIR)	12	12	9
BIOTECHNOLOGY (BRIDGE + BAP)	35	6	3
BIOMASS ENERGY	17	35	29
ENERGETIC SYSTEMS & MODELS	20	38	37
SOLAR ENERGY	14	20	24
RADIOACTIVE WASTE 1	19	14	10
RADIOACTIVE WASTE 2	30	15	11
JOULE (ENERGY)	70	10	12
MARINE SCIENCES	18	7	9

These figures are based exclusively on the number of employees (less than 500). They must be regarded with caution and should be considered to be significantly less for the following reasons :

- because of their legal structure, their status as subsidiaries or the nature of their activities, most of the enterprises referred to here cannot be considered to be independent SMEs where the managers/owners are truly responsible for the management and the strategy of the company. Taking into consideration the concentration process affecting European industry, it is vital to emphasize the need to support independent SMEs.
- the data available do not take into account of the role played by enterprises in the projects : are they prime contractors, partners, users/testers or simple participants without significant roles other than to increase the chances of selection by the Commission ?

In view of this insufficient statistical situation, the Commission will devote special attention to contractual and statistical tools that can give a reliable picture of SME involvement in Community R&TD programmes. Thus, efforts will be made:

- (i) to clarify the definition of an SME: enterprises with an independent economic and legal structure, run on a commercial basis, with fewer than 500 employees, over one third of whose capital may not be held by an organization employing more than 500 people;
- (ii) to distinguish between the different types of SME participation in R&TD programmes, using the three categories introduced in chapter III :
 - the number of SMEs taking part in the different programmes as prime contractor;
 - the number of SMEs taking part in the different programmes as partners or subcontractors.

Furthermore, the cooperatives and associations which correspond to the definition of SMEs also require a statistical effort within Community R&TD programmes as a number of them participate in several programmes but their precise quantity is still unknown.

- Dissemination and exploitation of new technologies

Most SMEs, while not pioneers of European technology, are viable enterprises which create wealth and employment. They may not participate directly in Community research but must be able to benefit from technological progress in order to develop harmoniously. To facilitate their access to technology, the Commission has implemented two specific programmes: Value and Sprint.

Value

Following the conclusions of the Council (industry) on 28 May 1990, the Commission has continued to implement the Value programme to promote the effective utilization of Community R&TD results. Value has set up networks of small and large firms, universities, consultants and other parties involved in technology transfer in order to bring into contact the supply of and demand for technologies developed in the context of Community research. Value also affords Community research contractors, and SMEs in particular, specific assistance in protecting, utilizing and disseminating their research results.

In 1993 the Value programme will explore the possibility of launching a pilot scheme on engineering Community research results (new processes and technologies improving competitiveness) to assist industrial SMEs. Furthermore, the VALUE programme undertakes specific activities for industrial SMEs in order to facilitate the transfer of technical and scientific knowledge and the use of the results of Community research by SMEs. Value Crossroads Days will also be organized so as to promote the results of Community research among SMEs (in particular those targeted during a Euromanagement audit). The EUROTECH capital programme will be associated to those events.

The EC relay centres will have the task of promoting Community R&TD programmes (information on the programmes, calls for tender, assistance in the preparation of proposals,...) and the dissemination and utilization of scientific know-how and the results it generates. Through this network, the Commission intends to act as a driving force for more intensive use of the results of Community research, which are under-used by industry and in particular by SMEs, by ensuring a flow of scientific and technological information in a form which is usable and tailored to the needs of specific targets: research centres, businesses, universities, etc., at regional and national level.

Another facet of the Value programme, the Cordis information system, centralizes the key data on R&TD programmes and their results. It enables Community users to access such information more easily. Through networks of qualified intermediaries such as the Euro Info Centres or the future EC relay centres, Community research results will thus be disseminated more effectively to a greater number of SMEs.

Sprint

The purpose of the Sprint programme is to promote the transfer and the absorption of new technologies - whether or not the product of Community research - by industry, paying particular attention to SMEs. Accordingly, Sprint supports measures for disseminating new technologies among SMEs. These include:

- (i) industrial demonstration projects for the transfer of innovation within the Community;
- (ii) transnational networks of research or technology promotion organizations whose purpose is to disseminate information on new technologies and to promote their effective adoption by groups of enterprises;
- (iii) the financing of technological performance and transnational investment forums to facilitate the financing of innovation;
- (iv) the Science Park Consultancy Scheme, to increase the efficiency of such structures as incubators of new enterprises of a technological character, assist local development and encourage regional, national and international networking;
- (v) networks of technology brokers and liaison services, to promote cross-border technological cooperation between enterprises;
- (vi) dissemination of innovation management methods (design, quality, value analysis and the Mint integrated approach);
- (vii) setting up a "European Innovation Observatory" in order to improve knowledge of the mechanisms of innovation and to encourage dialogue amongst regional, national and Community levels in support of innovation.

The inclusion of the Sprint programme in the fourth framework programme in the field of R&TD should give a new boost to the programme's initial impetus by making more resources available.

V. Specific measures to assist SMEs

If the involvement of SMEs in Community R&TD programmes remains modest, this is usually because of their lack of resources. But this alone does not suffice to explain the small number of SMEs involved in Community research. The difficulty of obtaining precise and timely information on current calls for proposals, the pre-competitiveness criterion and the complexity of administrative procedures do not assist SMEs and have prompted the Commission to tailor R&TD measures specifically to the needs of SMEs.

Several measures relating to specific aspects of the involvement of SMEs in Community research have been taken and are the subject of a sizeable coordination effort. Thus:

- **Introduction to R&TD programmes**

Feasibility awards

In its conclusions of 28 May 1990, the Council "... welcomed the Commission's pilot actions adapted to the needs of SMEs such as Craft and the Brite-Euram feasibility awards and, if their evaluation is positive, agreed to consider their extension to all relevant programmes on a permanent basis".

Since 1989, feasibility awards under the Brite-Euram programme have helped 383 SMEs to enter into contact with potential partners and gauge the high standard required for taking part in the Brite-Euram programme.

The Commission has since incorporated feasibility awards on a wider scale in the new Brite-Euram II programme by financing up to 75% of the cost of preparing a research project, up to a ceiling of ECU 30 000. Some ECU 6.3 million have been earmarked for these awards for the duration of the programme.

Specific training in the field of aeronautics

A pilot scheme has just been launched in the framework of the accompanying measures of the "Industrial technologies and new materials programme - Aeronautics field". It is aimed at enlarging the participation to Community funded aeronautic research projects by giving SMEs increased possibilities to work together with the major aeronautics companies and research bodies. It is particularly aimed at training young researchers through "jobs" and should contribute to the diffusion of knowledge acquired during Community research projects in the field of aeronautics; The Community will support the travelling and subsistence expenses of the researcher and will give specific support to SMEs.

Esprit exploratory measures

The Esprit call for tenders of 1990 introduced, in addition to the existing procedures, a new form of activity known as "exploratory measures": lasting for a short period (about a year), these are intended to explore a promising sector which will probably be the subject of a subsequent call for proposals with a view to carrying out full-scale projects. In all, 66% of the organizations participating in such measures are SMEs. In addition, SMEs are exceptionally active in the approximately 50 subject-based working parties.

Euromanagement R&TD audits

The Commission reasserted its determination to support SMEs in their quest for technological competitiveness by launching in 1991 the Euromanagement - R&TD audits pilot scheme.

The scheme consisted in identifying a sample of 657 SMEs, which are participants in or potential users of the results of Community research programmes, analysing their specific needs and helping them prepare research proposals.

The intervention of 47 technology advisers selected by invitation to tender has made it possible not only to clarify the profile of the European SME with a view to participation in Community research, but also to stimulate a significant number of individual enterprises in relation to European technological cooperation. Each Euromanagement audit took place within the firm, lasted a total of five days and was financed 50-50 by the Commission and regional public bodies or SMEs themselves.

Questioned afterwards on the value of such an approach, the vast majority of SMEs involved voiced their satisfaction at the Commission's "step forward" towards meeting their expectations and helping them overcome their difficulties in the research and technology field.

The Euromanagement advisers have identified nearly 1 000 R&TD projects among SMEs, and as of the beginning of 1993 nearly 120 research proposals were being prepared or have been submitted to the Commission in response to calls for proposals under the third framework programme. The Euromanagement pilot scheme is being evaluated by a panel of outside experts in order to draw the necessary conclusions from experiments carried out by the 657 SMEs involved so far. The Commission has made an active approach here to SMEs to pave the way for better mutual understanding of the opportunities and risks.

Mint

Administered in decentralized fashion by national or regional operators on proposals from the Member States, Mint (Managing the integration of new technology), which was launched under the Sprint programme, supplements similar schemes in the Member States and is adapted country by country according to requirements in order to promote the absorption of new technology by SMEs through recourse to consultants specializing in innovation management, especially technological auditing, design, value analysis and transnational technological cooperation between enterprises. Following an audit carried out under Mint, an SME can be directed towards the means of regional, national or Community support which is most appropriate for its requirements.

Information on R&TD programmes

The Council "considered that continuing attention should be given to improving the situation for SMEs as regards information on Community R&TD programmes".

In response, the Commission has tried to broaden the scope of Community R&TD policy by bringing new SMEs into the programmes and to step up information and awareness campaigns. A considerable effort has also been made to harmonize and simplify information and tendering procedures for the various research programmes.

Thus, SMEs have been the subject of special information measures under research programmes such as Brite-Euram or Esprit. In addition, the 210 Euro Info Centres located across the Community, each constituting a source of information close to businesses on the ground, have increased their role as regards disseminating information on Community R&TD. Already, nearly 15% of the queries dealt with by the EICs relate to R&TD.

The Commission now wishes further to improve the quality and reliability of the services provided by the EICs in their role of guiding SMEs active in the R&TD field. Thus, with the development of the Cordis databases as part of the Value programme (dissemination and exploitation of the results of Community research), the Commission is studying the possibility of enabling the EICs to receive electronically the application forms for each of the R&TD programmes, in the Community's working languages. This would enhance the quality of the information and guidance they provide for businesses.

- **Research**

Craft

Alongside its efforts to open up Brite-Euram II to SMEs in the third framework programme, the Craft programme makes it possible to support cross-border SME groupings which commission research projects tackling their specific technical problems from research centres possessing the appropriate skills. Geared to benefiting as many firms as possible, it should afford a large number of SMEs easier access to new technologies and manufacturing processes, thereby strengthening their competitiveness. The total budget for the Craft programme is ECU 57 million.

One year after the publication of the CRAFT call for tender, SMEs show a growing interest in this new action. 248 projects were submitted of which 128 (representing some 491 SMEs) were approved for step 1. 45 projects (gathering 383 SMEs) have already been selected for step 2. In the light of this first year of operations, the efforts towards SMEs should be reinforced to make them aware of the potential of new technologies and to help them to elaborate projects and identify partners.

- **Dissemination and exploitation of research**

Value SME pilot scheme

SMEs have an important role to play in the Value programme, chiefly as recipients of technology transfer. To boost the impact of Value on SMEs still further, the Value SME pilot scheme launched in 1991 consequently offers exploratory awards (with a view to concluding an agreement) and technology exchange awards. The encouraging results obtained in 1991 and 1992 have led to a reconduction of the measure in 1993.

OPET

SMEs are the main targets of the Commission in the THERMIE programme ("promotion of energetic technologies in Europe") where about 200 targeted actions of diffusion are undertaken annually, using a network of 40 organisations ("OPET") providing access to energy related technologies developed under THERMIE to interested SMEs.

Esprit clubs

In tandem with the exploratory measures, the Commission has launched the Esprit clubs, which give hundreds of SMEs a privileged vantage point for observing the development and results of a programme. They are able to look for active partnerships with large firms, research centres or other SMEs and join the European technological cooperation drive.

These significant advances in information technology could encourage the Commission to support the creation of networks of SMEs belonging to major sectors of industry or technology so as to promote the exchange of information and technological cooperation between them and with their environment (large firms and research centres in particular).

- Partner-search and financing

BC-Net

To meet the growing demand for technological partnership among SMEs, BC-Net is experimenting with a subnetwork composed of existing BC-Net advisers specialized in research and innovation. They offer a specific service to firms looking for partners in the technological cooperation field within the network of BC-Net advisers, which comprises 650 intermediaries whose task is to help SMEs look for partners with a view to all kinds of cooperation in the commercial, technical, financial and other fields. Offers of and requests for cooperation are dealt with confidentially by advisers who use a computerized matching system provided by the Commission.

Venture capital

Through schemes such as Venture Consort (to participate in the financing of SMEs through the support to transnational syndicates of specialised investors), Eurotech Capital (to stimulate investments in transnational high-tech projects, through a network of venture capital operators committed to invest globally 170 MECU in such projects), Seed Capital (supporting the creation and the management, through reimbursable advances, of 24 seed capital funds investing in new innovative businesses - the programme generated 130 investments in the same number of new businesses which created some 1400 jobs), the cross-border investment forums held under the Sprint programme and the Technology Performance Financing scheme recently launched under the same programme, the Commission has channelled a growing volume of private or semi-public funds into risk capital investment in innovative firms, always ensuring that projects financed have a cross-border dimension.

Examination of the synergies between Community research activities and Community venture capital instruments has begun, in particular as regards the Value and Sprint programmes. This work should be brought to fruition in order to help provide the necessary financial support for utilization of the results of Community research and to define the best leverage effect those programmes could have to stimulate private investors to support high-tech SMEs.

In the course of 1991, the Value programme also launched the Technology Venture Capital Training Initiative in collaboration with the Eurotech Capital programme in order to promote venture capital among SMEs. Three seminars were organized, bringing together nearly 300 SMEs. This effort will be continued.

VI. Prospects under the fourth framework programme in the field of research, technological development and demonstration

With a global maximum budget of 11,625 MECU, the proposal of the Commission concerning the fourth framework programme comprises four activities:

	<u>ECU million</u>
1. Implementation of R&TD programmes	9 450
2. International cooperation	790
3. Dissemination and optimization	600
4. Stimulation of training and mobility of researchers in the Community	785

SMEs will be eligible for all these activities, especially Activities 1 and 3 which respectively emphasise the access to research programmes and to the results of research activities.

Activity 1 Access to the specific programmes

Activity 1 covers the implementation of research, technological development and demonstration programmes by promoting cooperation with and between enterprises, research centres and universities. SMEs will thus be able to participate as actors (when they have research capabilities of their own) or as users (when they participate in projects where the research is being carried out by other operators).

In conjunction with technology promotion and better dissemination of technology, new programmes in the field of information and communications technologies will enable SMEs to take part in better targeted clusters of projects and derive greater benefit from Community programmes.

In the field of industrial technologies, research by and for SMEs will be promoted through specific procedures like CRAFT, feasibility awards or "technology promotion".

Concerning Life Sciences and Technologies, training bursaries and special arrangements for the participation of SMEs (on the model of the CRAFT programme) will be implemented.

Finally, the fourth framework programme will pay particular attention to encouraging access to Community programmes by SMEs through extending the approach whereby a rapid response can be given to their spontaneous proposals (technology stimulation).

Activity 3 Access to the results of research activities and technology transfer

This activity focuses on facilitating the access of SMEs to the results of research activities. It will therefore be relevant for a wider population of firms (including those who do not have research activities) which need to incorporate new technologies in order to maintain their competitiveness.

The share of resources allocated to exploitation and dissemination activities is significantly greater than in the third framework programme.

Activity 3 covers in particular :

- **the diffusion and exploitation of the results of Community activities in research, technological development and demonstration**

This first area covers all activities aimed at making greater use of, or establishing :

- * a European infrastructure for dissemination and utilization of research results;
- * specialist services and direct assistance to promote transnational utilization of R&TD results, which are targeted on SMEs in particular;
- * strategic and interdisciplinary discussions about the effectiveness of the transfer of R&TD results

- **Technology transfer**

Emphasis will be placed on improving the quality and efficiency of innovation support services and the take up of new technologies by industry, and especially SMEs. This will be achieved by setting up networks and supporting transnational pilot projects, making firms aware of the best practices with regard to the management of technological resources, better knowledge of mechanisms and strengthening the coordination of policies and appropriate instruments.

- **European environment for funding technology transfer**

This area concerns the improvement of the European environment for funding technology transfer with the aid of indirect measures such as the establishment of links between the funders and owners of technological projects, continuation of the experimental system of performance related funding of technology, support for the establishment of effective mechanisms for the mobilization of private capital and investment "exit", analysis of the most appropriate legal structures and the promotion thereof.

It also covers the establishment of a fund for technology take-up by SMEs. This instrument will be compatible with the arrangements set up by the Member States and will be adapted on the specific national situations. It will be managed and promoted on a decentralized basis, by public-sector or private-sector intermediaries in the individual Member States. It should be designed so as to mobilize a maximum amount of resources from the financial intermediaries. The fund will cover loan guarantees, interest-rate subsidies, measures to encourage venture capital, and managerial and technical assistance activities.

These activities will be implemented in close cooperation with other Community actions in the field (Eurotech capital, European Investment Fund, Enterprise policy, other similar initiatives under the Structural Funds for the less favoured regions in particular).

VII. Conclusions

Organizing more effectively the involvement of SMEs in Community research as participants or users of the results is a priority with a view to ensuring that Community investment in R&TD is cost-effective. Accordingly, better integration of SMEs into R&TD programmes could produce a second generation of Community R&TD projects which reflect market trends and needs more accurately and make a more effective contribution to boosting the Community's international competitiveness.

The Commission will therefore continue to intensify activities and expand information networks on Community research and its exploitation, ensuring where possible that the subjects of forthcoming calls for proposals are published in advance to enable SMEs to prepare for them. In the context of its policies to assist enterprise and technology transfer, the Commission will consider intensifying its activity with regard to information on and the promotion of technological cooperation and research.

It will continue its efforts to create consistency and synergy between its various measures to assist SMEs, and its efforts to simplify tendering and project management procedures, taking account of the difficulties encountered thus far by SMEs. Concerning the management of R&TD programmes, the Commission will give itself the resources to evaluate SME participation precisely according to their profile (see chapter III), using valid indicators such as the numbers of prime contractors, partners and subcontractors and the budget allocated to each of these categories.

As regards measures aimed specifically at SMEs, Craft measures and feasibility awards granted under the Brite-Euram programme, and in view of the interest aroused by these measures, the Commission will prepare, in consultation with the operators concerned, guide-lines to improve and strengthen this type of measure under the fourth framework programme in the field of R&TD. In the light of the initial results, it already seems appropriate:

- to intensify the activity of the Craft network so as to keep SMEs better informed, help them to identify projects and find partners (measure already in progress);
- to simplify rules and procedures while continuing to place the emphasis on those SMEs which really need assistance on account of their limited or non-existent competence in R&TD and innovation;

- to study the advisability of integrating Craft measures and feasibility awards in a single procedure and of extending such measures to topics other than those in the Brite-Euram programme;
- to strengthen the links and complementarity between these measures and the Commission's other measures relating to SMEs.

In addition, the Commission will consider extending the principle of exploratory measures and SME clubs, as applied in the Esprit programme. It will step up its efforts to improve the dissemination of new technologies and their absorption by SMEs, and to expand the use of the results of Community research, in line with the Sprint, Value and Thermie programmes.

In the context of the fourth activity of the future framework programme (human capital and mobility) the Commission will study ways of more systematically encouraging the placing of young university researchers (including those who have left university at the most three years before) or researchers from public research centres in industrial SMEs, for a limited period, so as to create the basis for a "technological culture". Such researchers should be employed transnationally in order to reinforce the Community dimension as a major objective of the enterprise.

The Commission will continue to support the programmes to stimulate private venture capital investments in high-tech SMEs.

Lastly, the Commission will study ways of intensifying measures to assist research and innovation in SMEs in assisted regions as part of a long-term effort to make the structural Funds as effective as possible, in particular:

- by encouraging the development of European networks of technology centres located in assisted regions, for the benefit of SMEs;
- by stimulating not only the supply of, but also the demand for, technology in SMEs, which must be the focus of direct stimulation efforts;
- by encouraging a more active partnership between public research and private industry.

As a technological culture takes hold in SMEs in these regions, an increasing proportion of them will be able to benefit directly or indirectly from Community research activities.

These efforts of the Commission should enable SMEs to benefit more fully from the fourth framework programme for R&TD, since by applying for Community assistance to finance their technological effort and nourish their own growth they will be among the first to nourish growth and employment in Europe.

Conclusions of the Council (industry), 28 May 1990

The Council:

- (1) welcomed the Commission's working document on efforts to encourage greater participation of SMEs in Community R&TD programmes within the general objectives of these programmes;
- (2) requested the Commission to continue to work in consultation with Member States to clarify the definition of SMEs used in this and other frameworks;
- (3) urged the Commission to intensify its efforts to increase SME participation in these programmes;
- (4) welcomed the Commission's pilot schemes tailored to the needs of SMEs such as Craft and the Brite-Euram feasibility awards and, if their evaluation was positive, agreed to consider permanently extending them to all relevant programmes;
- (5) considered that continuing attention should be given to improving the situation for SMEs in the areas of information on Community R&TD programmes, the Commission's own administrative arrangements and procedures in relation to these programmes and the cost/complexity of preparing applications;
- (6) asked in this context that special consideration be given to the development of research infrastructures in the peripheral regions of the Community in the context of the structural Funds (for instance through the Stride programme) to allow for greater SME participation in Community research programmes in these regions;
- (7) took note of the Commission's intention, in implementing the 1990-94 R&TD framework programme, to propose enhanced measures for the dissemination and exploitation of results, with due regard to the specific requirements of SMEs;
- (8) requested the Commission to report periodically to the Council on the participation of different sizes or types of SME in R&TD programmes;
- (9) requested the Commission to step up cooperation with Member States in proposing measures relating to the activities of SMEs in the R&TD field.

Annex 2

Acronyms related to Community programmes

BC-NET	Business Cooperation Network
BRITE-EURAM	Research and development programme in the field of industrial technologies and new materials
CORDIS	Community Research and Development Information Service (databases)
CRAFT	Cooperative Research Action for Technology
ESPRIT	Research and development programme in the field of information and communications technologies
EUROTECH CAPITAL	Programme to stimulate the financing of transnational high-tech projects by venture capital operators
FLAIR-ECLAIR	Research and development programmes in the field of agro-industry and agro-food
MINT	Action of the SPRINT programme to stimulate the integration of new technologies by the enterprises
SME	Small and Medium sized Enterprise
R&TD	Research and Technological Development
SEED CAPITAL	Pilot scheme to support the creation of innovative enterprises using a network of seed capital funds
SPRINT	Strategic Programme for Innovation and Technology Transfer
THERMIE	Programme for the promotion of Energy related technologies in Europe
OPET	Organisations for the promotion of Energy related technologies
VALUE	Programme for the dissemination and exploitation of the results of Community scientific and technological research
VENTURE CONSORT	Programme supporting the formation of transnational syndicates of venture capital companies investing in small and medium sized enterprises.

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