



**Fraunhofer** Institute  
Systems and  
Innovation Research

**The University-Industry  
and Research-Industry  
Interfaces in Europe**

**European Summary Report  
Report on the Federal Republic of Germany**

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on behalf of  
the Commission of the European Communities

**SPRINT**  
Strategic Programme for Innovation and  
Technology Transfer

**COMETT**  
Community Action Programme for Education  
and Training for Technology

The research-industry and university-industry  
interfaces in the European Community

Summary report

On behalf of: The Commission of the European Communities  
Strategic Programme for Innovation and Technology  
transfer (SPRINT)  
Community Action Programme for Education and Training  
for Technology (COMETT)

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## I. INTRODUCTION

### 1.1 Aims of the study

The Commission of the European Communities has a number of programmes (ESPRIT, COMETT, SPRINT, etc) aimed, amongst other things, at improving transnational cooperation between universities and public funded research centers on the one hand and industry on the other within the Member States in the fields of technological R&D, training and technology transfer.

These efforts are concentrated particularly on those bodies which act as interfaces between the public funded research organisations and industry; the industry liaison officer (ILO). They have sprung up over the last few years throughout the Community, but in different ways in the various Member States.

A better knowledge of these ILO's; who they are, how they work and what needs they have, will help the Commission in defining and carrying out its policies in these areas.

The Commission has therefore decided to conduct a study jointly handled by DG XIII - Telecommunications, Information Industries and Innovation - and DG V - Task Force HUMAN Resources, Training and Youth -, within the framework of the SPRINT and COMETT programmes of these agencies.

The study was carried out by a consortium of research institutes consisting of:

- \* Fraunhofer-Institut für Systemtechnik und Innovationsforschung (ISI), Karlsruhe, Federal Republic of Germany
- \* Centrale Management, Ecole Centrale Paris, France

- \* Programme of Policy Research in Engineering, Science & Technology (PREST), Manchester University, United Kingdom
- \* Center for Technology and Policy Studies - Netherlands Organization for Applied Scientific Research (STB-TNO), Apeldoorn, the Netherlands

## 1.2 Methodology

The creation of ILO-units is still a ongoing process in the various Member States. We can find ILO's at universities, polytechnics, as independent units funded by the government or as a unit of a public funded research center. As a result it is not possible to arrive at a single profile of a typical ILO-unit, equally applicable for all Member States.

In order to reach as many ILO's as possible the consortium has sent a written questionnaire to a large number of institutions of which could be expected that some kind of ILO-unit could be present. The questionnaire was sent to about 1200 addresses. In total 560 useful responses were received.

In addition to this written questionnaire about 100 experts interviews were held in the Member States in order to get additional information about the technology infrastructure in each member State. these interviews were either face-to-face or by telephone.

The results of the study are presented in three formats:

1. A directory of ILO's containing the following information:
  - Name of ILO-unit
  - Address, phone, fax
  - Name, position and professional qualifications of contact
  - Year of creation
  - Parent organisation of ILO
2. A national report for each Member State
3. Concluding report for the Community with conclusions and policy recommendations

## II. CONCLUSIONS

### 2.1 International comparison

Due to the very heterogeneous types of ILO units that can be found within countries and the even more varied types between the countries it is not possible or worthwhile to make a international statistical analysis. In order to overcome this problem a matrix has been created. On the horizontal axe of the matrix one will find 11 Member States (For Luxembourg only one ILO has responded and it is not useful to include this unit in the matrix separately). On the vertical axe one will find the different aspects of ILO's themselves and aspects that may be of influence on their working environment such as governmental policy and recent policy issues.

The information and classification in the cells of the matrix are based on the data of the written questionnaire in combination with information collected in the expert interviews.

In order to improve the international comparison it is useful to create two subgroups: ILO's at universities and ILO's at non-university organisations. In doing so we have a reasonably homogeneous group of university ILO's and the a rather heterogeneous group of ILO's at non university organisations.

This way of presenting our data has two advantages. First it offers a quick overview on each aspect for the different Member States, which offers the possibility to draw conclusions and state recommendations on the single aspects of liaison activities or needs across the Community.

Secondly it presents a quick overview on the state of the art of the technology infrastructure in the individual Member States and the specific needs within the individual Member States.

Matrix 1: University liaison units\*\*\*

Liaison aspect	Country										
	Belgium	Denmark	France	Germany	Greece*	Ireland	Italy**	Netherl.	Portugal	Spain	U.K.
1 Government support	Little	Little	Little	Finish.	None	Emerging	Regional	Finish.	Little	Emerging	Little
2 Recent policy issues	None	Promotion	Explor.	None	None	Some	Coming?	None	Testing	Testing	None
3 Development stage	Mature	Emerging	Emerging	Mature	Weak	Emerging	Weak	Mature	Emerging	Emerging	Mature
4 Motives	Expl. Gen. F.	Expl. Support	Expl.	Expl. Demonst.	Expl.	Expl. Demonst.	Support Expl.	Expl. Gen. F.	Support	Support	Expl.
5 Main activities	Research	Techn.T.	Research	Techn.T.	Research	Techn.T.	Techn.T.	Research Techn.T.	Training Techn.T.	Training Research	Techn.T.
6 Main function	Contract	Window/ Catalyst	Catalyst	Window	Window/ Supplier	Catalyst	Catalyst	Supplier	Window/ Supplier	Window/ Contract	Window
7 Main client group	L. man.	L+SME man	SME man.	SME man.	Govern.	SME man.	SME man.	Med. ser.	L+SME	SME man SME serv	L.+M. man.
8 Training needs	Low	Low	Low	Low	High	Medium	Low	Low	Low	High	Medium
9 International orientation	High	Medium	Low	Low	High	Medium	Low	Low	High	High	Low-med.
10 Reasons for join- ing a European Organisation	Inform. Contacts	Contacts Inform	Contacts Inform.	Inform. Contacts	Inform. Contacts	Contacts Inform.	Contacts Inform.	Contacts Inform. Repres.	Exchange experience	Exchange experience	Contacts Inform.

\* No typical ILO units in Greece, but units that perform some ILO activities.

\*\* Most ILO units in Italy are not (mainly) university based but collaborate with universities and other research bodies.

\*\*\* The abbreviations used are explained in the following paragraph.



## 2.2 University liaison units

1. In most member states the governmental support is minimal or has even stopped. E.g. in Germany a pilot-scheme for university has just been terminated. In Italy there is some support from regional authorities. Only in Ireland and Spain the support from the government is growing. The financial support in Denmark will come to an end in 1990. We can conclude that in most Member States the university liaison units are supported by their government in the initial phase but this financial support has been for a restricted time period. In France the support for university ILO's is discontinuous, executed on a isolated case-by-case basis.
2. In classifying the development stage of the liaison units a distinction is made the emerging and the mature stage. Units are classified as mature if most or all universities have had an existing liaison unit for the last few years. The classification "emerging" means that most units have only just recently been created, but that their number is growing and that their position is being strengthened. Notable is the fact that we find the emerging stage in the southern countries as well as in Denmark and France. The Italian situation is classified as weak because there are just a few university ILO's and they are not very active.  
  
The size of the university ILO's is very divers and varies from 1 fulltime employee to 15 or more .
3. In countries with mature ILO-units there are no recent policy issues concerning these units. In Denmark there is a promotion act (until 1990) supported by the Ministry of Education. In France the recent policy issue is to establish the scope and methods of the ILO-activities. In Ireland some initiatives have been developed in the field of technology transfer and innovation

policy. The situation in Italy is not yet clear but the new Ministry for Universities and Research may develop some policies to reduce the gap between the industrial demands and the academic world. Finally Portugal and Spain are testing which policy will offer the best technology transfer infrastructure.

4. The respondents were asked to rate the importance of 4 motives for the ILO's existence:

- Support for the industrial orientation of teaching and research
- Demonstration and promotion of the parent organisations economic usefulness
- Exploitation the of the parent's organisation research capacity
- Generation of complementary funds

For the mature ILO's the exploitation (indirectly a way of generating complementary funds) and the fund generating motives are very important. These will even become more important in the future. In countries where the ILO's are emerging, the support of the industrial orientation is quite important, but a shift to generating funds is expected in the future.

5. Most liaison units are active in the field in technology transfer. Attracting research is considered as an important activity but actually there is not much time spent on this. According to most experts the university ILO's have a very minor role in intermediating for contract-research. Training is an important activity in France, Spain and Portugal.

6. In the study five main ILO functions were distinguished:

1. The "monitor" of industrial needs and support of the industrial orientation of academic teaching

2. The "window": supplying systematic information on the research capabilities, resources, etc.
3. The "catalyst": the match making between industrial demands and the parent organisations capacities
4. The "contractor": negotiating and filing of contracts on behalf of the research organisation
5. The "supplier": offering services mainly based on the ILO-unit's own resources.

Internationally these functions are quite divers.

7. The main client group is classified on the basis of time spent on each target group. Most units target on small and medium sized manufacturing firms. In Belgium the university ILO's spend most of their time on large manufacturing firms and in the Netherlands on the medium sized services firms.
8. Only the Belgium units are highly internationally orientated. Notable is the fact that most units that are emerging are fairly internationally orientated. The possible reason is that they expect to learn their business more quickly and are looking for international opportunities.
9. There is little evidence of unfulfilled training needs. Many ILO's are following courses in the field of economic assessment, communication, patent law and technical auditing. Very few respondents stated that there was a lack of courses. Spain is an exception because the ILO's do not see an opportunity to pursue training in the field of marketing and patent rights and the two respondents in Greece have training needs in all fields. Most respondents felt a need for industry training courses and visits abroad, but the placement in industry is sometimes difficult and the visits abroad are often seen as too expensive.

10. The most important reason for joining an European organisation is the exchange of information and facilitating (international) contacts. Mainly the Dutch ILO's feel a need for representation and professional enhancement. Very few respondents consider training facilities as an important objective for a European organisation.

Matrix 2: Non-university liaison units\*,\*\*\*

Liaison aspect	Country									
	Belgium	Denmark	France	Germany	Greece**	Italy	Netherl.	Portugal	Spain	U.K.
1 Government support	100%	None	Medium	None	None	Regional	High	(EEC)	Growing	Little
2 Recent policy issues	Decentr.	None	Eval.	None	None	None	Reg. IC's	Testing	Testing	Regional
3 Development stage	Mature	Divers	Mature	Mature	Weak	Emerging	Emerging	Emerging	Emerging	Emerging
4 Motives	Expl. Support	Expl.	Expl.	Expl. Demonst.	Gen. F.	Support Expl.	Support	Gen Ec support	Expl.	Expl. Gen.F.
5 Main activities	Techn.T.	Techn.T.	Research Techn.T.	Research Techn. T.	Research Techn. T.	All	Techn.T.	Techn.T. Training	Training Research	Training Techn.T.
6 Main function	Supplier	Window/ Catalyst	Supplier Catalyst	Window	Window	Catalyst Supplier	Supplier	Supplier	Supplier	Supplier
7 Main client group	SME man.	L+SME man	SME man.	SME man.	SME man. Governm.	SME man.	SME man.	L+SME man	L+SME	S. serv.
8 Training needs	Low	Low	Low	Low	High	Low	Low	Low	High	Low
9 International orientation	Medium	Medium	Low	Low	High	Low	Low	High	High	Low
10 Reasons for join- ing a European Organisation	Contacts Inform.	Contacts Inform.	Contacts Inform,	Contacts Inform.	All	Contacts Inform.	Contacts Inform.	Exchange experience	Exchange experience	Contacts Inform.

\* In Ireland are no non-university ILO's

\*\* In Greece are no typical ILO's. The matrix is based on two units that perform some ILO activities.

\*\*\* The abbreviations used are explained in the following paragraph

### 2.3 Non-university liaison units

1. The governmental support for the non-university ILO's differs a lot between the different countries. Portugal is counting on support of the Community and in Italy the support is dependent on the regional authorities.
2. In some countries new policies have been introduced. In Belgium there is a tendency to decentralize the responsibility to the Walloon and Flemish governments. In France the government intends to evaluate the effectiveness of its policies. In the Netherlands a network of regional InnovationCenters has been created. Portugal and Spain are testing the best policies for technology transfer. In the United Kingdom there is a tendency to regionalize the responsibility.
3. In most countries the number of non-university ILO's is increasing.
4. Exploitation of the parent organisation's capacities is in almost every country a main motive but due to the high level of governmental support in most countries the motive of supporting the industrial orientation is quite important. The demonstration and promotion of the parent organisations economic utility is important in Germany. In the United Kingdom, where the governmental support is low, generating funds is particularly important. In Portugal the ILO's are part of a general economic support strategy.
5. Most ILO's are active in technology transfer. Training is an important activity in Portugal, Spain and the United Kingdom. Research is a main activity in France and Spain. In Italy the ILO's are active in all fields.

6. The main function for non-university ILO's is not as diverse as for university ILO's; most act as a supplier.
7. In most countries small and medium sized manufacturing firms are the main clients of the ILO's. In Denmark, Portugal and Spain the large manufacturing firms are also a main target group. In the United Kingdom The main clients of the ILO's come from the small firms in the service industry.
8. As for the university ILO's, the international orientation is low in most countries but high in Portugal and Spain.
9. The unfulfilled training needs are as low as for university ILO's, with Spain as the exception.
10. The reasons for joining a European organisation are the same as for their colleagues from universities: exchange of information and the facilitation of contacts. Representation and facilitate training are considered as not important. funding opportunities.

## 2.4 Conclusions

- A. The governmental policies for technology transfer show a great variety between the Member States. In some countries the university liaison unit is just emerging in response to new governmental support schemes, while in other countries this support already has been stopped. In Belgium, Germany and France the non-university ILO's are already in a mature phase and receive only little support. But in the Netherlands there has been a complete change in policy which resulted in the creation of a new regional network of InnovationCenters.
- B. There is no relationship between maturity of university and non-university ILO's. E.g. in France the non-university liaison units are in the mature phase and at the universities they are just emerging. In the United Kingdom it is just the other way around. Only in Belgium and Germany are both types mature.
- C. In the initial phase the main motives for the university ILO's are support for the industrial orientation, demonstration of the economic utility of the parent's organisation and, less extensive, the exploitation of opportunities. As the ILO become more mature, the motives shift towards more intensive exploitation of opportunities and the generation of additional funds. This is stimulated by declining support of the government. This shift towards the fund generating motive is less for the non-university ILO's because they sometimes are partly or fully financed by their government (E.g the technological advisory services in Belgium, InnovationCenters in the Netherlands are fully financed).
- D. University ILO's play only a minor role in contract-research. Although total figures are not available we estimate that no more 10% university research is intermediate by ILO's.



E. Most university ILO's spend a great deal of their time on marketing activities (the "window" function). The contracting function in which the ILO negotiate (research) contracts on behalf of the university is only very important in Belgium and Spain. For the Community as a whole the ILO function is mainly a marketing function. In some cases the unit becomes a consultancy unit with it's own consultants. Both functions (marketing and consultancy) do not actively increase the volume of interaction between academic research and industrial needs.

The non-university ILO units function mainly as consultants or intermediary between industrial demands and their parent organisations capabilities.

F. In almost all countries manufacturing SME's form the main target group for both types of ILO's. In some countries there attention is also focused on large manufacturing.

G. There is no need for additional training that can not be met by already existing training courses (with Spain and Greece as notable exceptions). Some ILO's does feel a need for more financial support for visits abroad or training in industry (no opportunities).

H. Exchange of information and facilitation of contacts are the most important reasons for joining a European organisation. Representation, professional enhancement and training are not considered very important.

I. We can conclude that the ILO's do have a need for exchanges in which they share information and experiences, make useful contacts and get a feeling for the industrial world. This type of exchange programme do not have to be international. It may be quite worthwhile to stimulate this on a national or even local level.

J. Finally we must conclude that technology transfer is a push market. Most national policies are undertaken without a thorough study of the target groups for technology transfer. Generally it is assumed that there is a need, but there is hardly any empirical evidence of this and, if so, if there is any preferences among potential users for a particular infrastructure for technology transfer.

### III RECOMMENDATIONS

1. Some ILO's have developed methods of intermediating between research and industrial applications that are clearly exemplary "best practice". However, diffusion of such methods to other ILO's, particularly across national borders, is slow. It is therefore recommended that a number of "best practice" cases of ILO's - either as organisation or particular activities are identified and analysed to serve others as examples. Such case histories can serve the information exchange between ILO's or even be the basis of an "ILO-manual".
2. ILO's express a great need for information exchange and the facilitation of contact. At the national and local level the stimulation of the information exchange between ILO's should be the concern of the national policies. However, considering the great variety in ILO activities in the Community, it can be quite useful for ILO's to learn from the experiences in other Member States. In this respect we recommend that the Commission set up a International Exchange Programme, which will stimulate the opportunities for ILO's to become acquainted with international developments in their field. In this programme three activities can be stimulated:
  - a. Seminars especially directed at ILO activities. Topics for these seminars may be the different types of approaches in the Member States, new developments in the field of technology transfer or shared difficulties for ILO's and how to overcome these problems.
  - b. Stimulation of working visits at similar units in other countries.
  - c. Exchange of industrial liaison officers between units in

different countries. This exchange can be from experienced ILO's to the non-experienced or vice versa.

3. There appears to be a need for structured way of communication between the ILO's and DG XIII for example a regular newsletter (like "Innovation and Technology Transfer" of DG XIII or the T.I.I. newsletter), towards and among the ILO's. First this a way to inform the ILO's about the activities as recommended above. Secondly it must contain information of other Community activities that are of interest to the ILO's. Finally it facilitates the possibilities for feedback from ILO's on activities of the Community.
4. ILO's are potentially a strong link between Community R&D programmes and local researchers and SME's. DG XIII should involve ILO's in the "marketing" of R&D stimulation programmes and explore ways in which the design of these programmes might contribute to the university-industry links and the role of ILO's in strengthening these links.
5. Although there seems to be a high need for a international contacts we do not advise the Commission to create a new representative organisation. The main objective for the expressed interest in such a organisation are the information exchange and the facilitation of new contacts. These objectives can be partly reached by the recommended Exchange Programme This can contribute to the effectiveness of the already existing representative organisations in this field.
6. Little is known about actual needs of SME's with respect to technological liaison services. In order to gain a better understanding of the expectations and requirements of industry concerning their collaboration with public research it is recommended that empirical research of the behaviour and needs of

firms with respect to industry-university services should be undertaken.

7. National policies with respect to ILO's are very divers. It would be very useful to organize a well-prepared seminar aimed at policy makers to encourage them to learn from each other's and perhaps to come to some sort of coordination of efforts.