European Cooperation in the field of Scientific and Technical Research - COST -

Secretariat

Brussels, 29 January 2001

COST 328/00

DRAFT MEMORANDUM OF UNDERSTANDING

Subject :	Draft Memorandum of Understanding for the implementation of a European Concerted Research Action designated as COST Action G9 "Modelling Real Property Transactions"

Please find attached the abovementioned draft Memorandum of Understanding.

DRAFT

Memorandum of Understanding

for the implementation of a European Concerted Research Action designated as

COST Action G9

"Modelling Real Property Transactions"

The Signatories to this Memorandum of Understanding, declaring their common intention to participate in the concerted Action referred to above and described in the Technical Annex to the Memorandum, have reached the following understanding:

1. The Action will be carried out in accordance with the provisions of the document COST 400/94/Rev. "Rules and Procedures for Implementing COST Actions", the contents of which is fully known to the Signatories.

2. The main objective of the Action is to improve the transparency of real property markets and to provide a stronger basis for the reduction of costs of real property transactions by preparing a set of models of real property transactions, which is correct, formalised, and complete according to stated criteria, and then assessing the economic efficiency of these transactions.

3. The overall cost of the activities carried out under the Action has been estimated, on the basis of information available during the planning of the Action, at EUR 1,4 million at 2000 prices.

4. The Memorandum of Understanding will take effect on being signed by at least five Signatories.

5. The Memorandum of Understanding will remain in force for a period of 4 years, unless the duration of the Action is modified according to the provisions of the document referred to in Point 1 above.

COST ACTION G9:
"Modelling Real Property Transactions"

A. BACKGROUND

In European countries, the transfer of real property rights is mostly recorded at the land registry section of the courts. The identification of individual real estates is mostly achieved by national, cadastral systems, which consist of schematic, verbal descriptions and maps. The transfer of property rights includes the conveyance of title and mortgaging. The transfer processes are closely related to changes of the extension of the property, and to the formation of new parcel lots. The transfer processes have relations to the varying rate of house-building and wider business cycles. They may also be integrated with spatial planning, and other environmental purposes. Finally, the processes and the stock of real estates are used for the collection of a variety of fees and taxes and for the provision of statistics.

The term *land management* is a comprehensive expression for activities regarding land resources (cf. Larsson, 1996). The term *land administration* is more narrow and refers to "the processes of recording and disseminating information about the ownership, value, and use of land and its associated resources" (ECE/HBP/96).

International concern for these matters is of a rather recent date. The 1970s saw an emerging interest for the 3rd world countries and their development, including the development of land management. The World Bank and UN bodies, e.g. the United Nations Centre for Human Settlements UNCHS (Habitat), provide a frame for research and development in land management issues.

During the 1980s the international scope focused more on Europe, especially in terms of the European Union. In 1988 the surveying profession of the EU countries was represented at the EU Commission through the CLGE, "Comité de Liaison des Géomètre-Experts Européens". Heads of the mapping agencies in Europe have organised CERCO. As several mapping agencies are not concerned with land management issues, the agencies with cadastral and further land administration activities have organised themselves within Meeting of Officials on Land Administration (MOLA) that is set up under the auspices of the Committee on Human Settlements within UN-ECE. Recently, MOLA got permanent status as Working Party on Land Administration within UN-ECE, which "aims at promoting land administration through security of tenure, establishment of real estate markets in countries in transition and modernisation of land registration systems in the market economies". After the collapse of socialist economies, the concern for "countries in transition" motivated funding for research and development projects through the PHARE programme.

Around 1990, textbooks of an international scope were issued (Dale & McLaughlin, 1988; Larsson, 1991). Both textbooks use the term *Land Information* as a general term. This was in accordance with the term *Land Information Systems* that was adopted in 1978 by the International Federation of Surveyors (FIG) for one of their scientific commissions. The textbook by Dale & McLaughlin present a taxonomy of information systems where Land Information Systems is the term applied for systems related to large map scales (generally used for cadastral purposes), while Geographical Information Systems is the term applied for small map scale systems (mostly used by geographers).

The latter term became, however, the general term for the rapidly developing research field, cf. (Longley et al, 1999). Stubkjær surveys research in information systems development and research within geographical information science with a view to establish a theoretical basis for cadastral studies (1999).

Regarding the legal issues, both textbooks address registration of rights in real property and mention the main sections of the land registry: the property identification section, the proprietorship section, and the encumbrances section, including mortgages and easements. It appears that the authors take an information system, rather than a legal view of the issue.

The two textbooks introduce economic and feasibility issues in terms of rational analysis of problems, assessment of benefits and costs, decision on Land Information project, implementation, and monitoring. The established system will in turn improve the decision-making. Both textbooks refer to a paper by G. Feder for a World Bank seminar in 1986. The reasoning goes that titled land provides security to farmers as well as to lenders, which will trigger more investment. The increased investment provides for more variable input use, which in turn gives higher output, higher income, and higher prices on land.

In many developing countries, real property rights are not "embodied in universally obtainable, standardised instruments of exchange that are registered in a central system governed by legal rules" (de Soto, 1993). The establishment of formalised titles in land and provisions of the needed infrastructure has, therefore, become the main objective of many development projects (Williamson, 1996). However, indications have been observed "that issuing titles in a systematic manner to peasants is perhaps not the best way to give security of tenure" (ECA/NRD/CART.9/MOZ.3, 1996).

In developing as well as in industrialised countries the costs of transfer of real property rights depend on the efficiency of public administration. It is an open question to which degree the systems and the processes can be privatised with economic benefit. The transfer process is complex; professions like lawyers or notaries, geodetic surveyors, and valuators support the owners, as well as the authorities, with their expertise. Research that addresses these issues is emerging, e.g. from the point of view of formal modelling (Frank, 1996), benchmarking (Steudler, Williamson, Kaufmann & Grant, 1997), or with a view to chart the interrelated technical, legal, and organisational aspects (Zevenbergen, 1998). This research supports the position that presently there is an insufficient understanding of the instruments (in a broad sense) which are necessary and sufficient for establishing and sustaining markets in real property rights.

While the problem is global, there is good reason to address the problem through the proposed European *action*. For example, in some European countries notaries must be involved in property transactions, while in other countries this is not the case. Similarly, subdivision of land is tightly regulated in some countries, but this is not generally the case. These examples suggest that the potential for improving efficiency of transactions and of market operations is far from being exploited. This is likely due to the fact that the transaction processes are complex and difficult to delineate from other societal activities. The transactions are regulated by rules, but the observance of rules may fluctuate as the norms and cultures permit. In order to establish an initial, proven understanding of this field it is appropriate to restrict the field of study to selected European countries. Even a neighbouring pair of countries, e.g. Denmark and Sweden, or Austria and Slovenia, has remarkable differences, which makes it a challenge to elicit a common set of concepts and models.

Furthermore, projects have been launched with European support in Greece and Portugal, with a view to improve their land registration and recording of title. It is important that these investments become integrated with the usual procedures of transfer of property rights. Also, a better understanding of the property transactions will support the countries in transition in their process of establishing and improving property markets. Finally, the European dimension of the education of the professions is increasing. The *action* will support the development of basic and common elements of the education.

The *action* is addressing a multi-disciplinary field, which needs a certain consolidation of a developing cooperation. COST seems to offer the best framework for a focused cooperation. Existing "neighbouring" COST actions include A14 Government and Democracy in the Information Age. However, the proposed *action* has objectives, which clearly distinguish it from other actions.

B. OBJECTIVES AND BENEFITS

The main objective of the COST action is to improve the transparency of real property markets and to provide a stronger basis for the reduction of costs of real property transactions by preparing a set of models of real property transactions, which is correct, formalised, and complete according to stated criteria, and then assessing the economic efficiency of these transactions.

The detailed information will be presented in such way as to include a formal description of the underlying data. For selected European countries a comparative analysis of the economic efficiency of transactions involved in the transfer of property rights will be presented, supplemented by an exploratory analysis of relations between transaction costs and national practices regarding land management, education and governance.

The models of real property transactions must satisfy the criteria of validity from an information modelling, ontological perspective, as well as from a legal perspective. The transactions regard inter-organisational business workflows, which are stating or changing property rights and parcel lots.

The essential effects, intended and non-intended, of the real property transactions are likely to differ among the countries being investigated. The comparative analysis of the economic efficiency of transactions will include an identification of these effects and an assessment of their impact on the economic efficiency, including an assessment of the value of transaction information for further purposes.

Statements will be made on the real property transactions, which affect land management, specifically regarding the transition of land use from rural to urban. The statements will identify threats to the transparency that is at stage during the transition process.

The main benefit of the *action* is that governments, professions, and holders of property rights get a better basis for reducing the costs of the transactions of the markets of real estates.

The developed models can be used for drafting new ordinances, and for education. The outcome of the comparative analysis can be used for improving the efficiency of the procedures. The provided description of various effects of property transactions can serve as inspiration for other countries, also by addressing the issue of transparency of real property transactions.

The COST *action* provides added value: The *action*'s outcome in terms of models and analyses is urgently needed by the European countries in transition, for shaping their institutions of real property. The experience gained by the early participation of Slovenia and Latvia within the network will assist other countries in their transition efforts. Furthermore, the COST *action* will support Ph.D.-studies by providing a much-needed international research framework and a basis for Ph.D.-level courses.

The proposed *action* supports wide collaboration. A Canadian group will contribute by eliciting the structural differences between the English-Commonwealth Common Law tradition and the continental European Civil Code tradition. Research will be provided by Dr. Barry Smith, Buffalo, NCGIA, USA, in the field of real property ontologies and research outcome shared.

C. SCIENTIFIC PROGRAMME

1. State of the art

The proposed network will draw upon recent research from the diverse views of formalisation, law, and economic theory.

An early example from the perspective of *formalisation* is: "An object-oriented, formal approach to the design of cadastral systems" (Frank, 1996). Frank presents a simplified ontology of a cadastral-land registry unit by means of a functional programming language.

Formal, applied and geographic ontologies have been researched at the Cognitive Science Center, University of Buffalo, USA. "The Metaphysics of Real Estate" (Smith & Zaibert, 1997) develops upon the fact that real estate is a complex, historical product of interactions between human beings, legal and economic institutions and the physical environment, as it is used and occupied. The perspective includes the treatment of land property in industrialised nations as well as land allocation in tribal cultures. In Europe, the Intelligent Systems Group, at the Center for Computing Technology, University of Bremen, has developed "Ontologies for Geographic Information Processing" (Stuckenschmidt, et al 1999).

The issue of formalisation of real property transactions may be addressed from the perspective of spatial and temporal object databases. This line of research has been pursued by several European research projects, e.g.:

- "DISGIS - Distributed Geographical Information Systems. Models, Methods, Tools, and Frameworks" ESPRIT Project Nr. 22.084,
- the "CHOROCHRONOS" training and mobility research network, ERBFMRXCT960056,
- the ESPRIT4 project: "Uncertainty, Knowledge Maintenance, and Revision in Geographic Information System", Nr. 27781, and
- the project "Spatial and Temporal Object Databases", which is supported by the UK Engineering and Physical Sciences Research Council.

However, the proposed research will focus on the modelling of inter-organisational, business transactions, rather than on the investigation of the management of spatial and temporal information for object databases, but the *action* will benefit from the outcome of the mentioned projects, especially the CHOROCHRONOS network.

The perspective of *law and rights in real property* has recently been addressed by a group of professors in "Nordic Academic Views on Real Estate and Cadastre" (Mattsson, Sevatdal, Stubkjær, Viitanen, 1999). An extensive presentation in English of the Swedish property markets appeared in the series European Urban Land and Property Markets (Kalbro & Mattsson, 1995). Similarly, the Finnish market is described in (Viitanen, Vuorio, Yli-Laurila, & Anttila, 1997).

In the 1970s the computer-inspired formalisation was reflected in legal circles. The distinction by (Eckhoff & Sundby, 1975) between different types of rules and norms (rules of behaviour, rules of authority, stated norms, internalised norms), and their treatment of "legal systems" still seem of importance. Strömholm treats the "legal system" in a historical context, presents the efforts of systematising the legal rules (1974), and thus provides a basis for understanding the differences between continental European civil code and Anglo-American common law. These different legal structures are both present in Canada, and are researched at the Land Law Lab of the Centre for Research in Geomatics, Université Laval (Québec), and the Centre for Property Studies, University of New-Brunswick.

The concept of property rights has different notions with respect to legal theory and *economic theory* (Sevatdal, 1999). Departing from works of D C North (1990) and W R Scott (1995) he suggests a set of concepts, including "institution", which support the analysis and understanding of ownership, tenure, and public regulation of real property in a state. Similarly, the role of the individual and the rational choice is at stage, e.g. in "Aristotle, Menger, Mises: An Essay in the Metaphysics of Economics" (Smith, 1990).

Recently, the International Society for New Institutional Economics framed a call for collaboration on "The Economics and the Governance of Intellectual Property Rights" (NEWSLETTERS, January/February 1999). The present proposal investigates a field of property rights, too, and copyright to geographic information is surely an issue (cf. Meixner & Frank, 1997). Thus, the research design suggested, and outcomes of the proposed research may be considered a basis for collaboration.

2. The research issue: Modelling Real Property Transactions

A view of the problem domain may serve as structure for investigation of the elements of the domain.

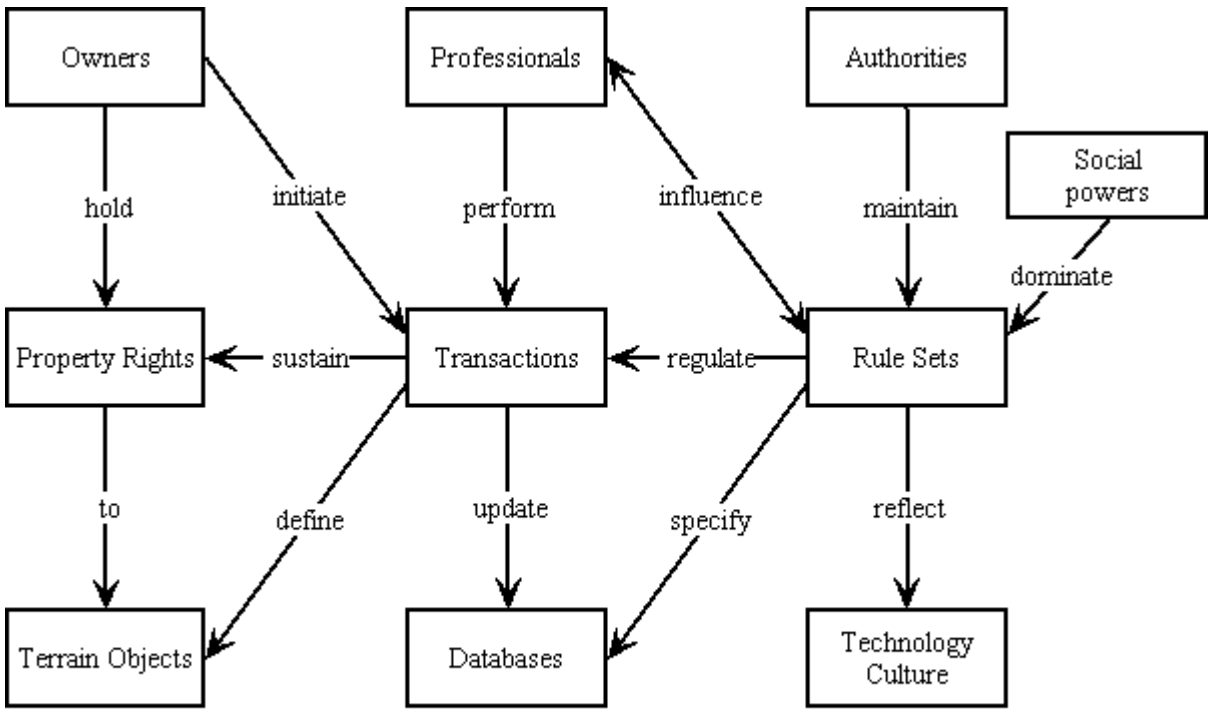

Figure 4: A view of the cadastral problem domain (Stubkjær, 1999)

Depending on previous efforts in the field of modelling within the participating countries, the following activities seem appropriate:

- Description and comparison of the national variety of forms of land tenure in a way that relates to the major transaction types, and description of these transaction types (conveyance of title, mortgaging, compulsory acquisition, as well as subdivision, etc.)
- Description and comparison of national land databases (or datasets, if not yet computerised), and updating information flows
- Establishment of taxonomies of technical terms
- Quasi-formal modelling based on the above investigations
- Development of formal methods that are feasible for modelling property transactions with a national scope. Provision for semantic translation between different datasets will be made, with a view to the following comparative analysis. The effects of the property transactions shall be taken into consideration, with a view to assess the economic efficiency of the transaction processes.
- Application of the developed methods on few, selected countries: probably Denmark, Sweden, the Netherlands, Austria and Slovenia, and maybe further country(ies). Investigation in quantitative terms of the transactions, and of the content of databases/-datasets.

The descriptions are based on studies of literature and occasionally visits and interviews to clarify the operation of the ever-developing technical systems. Descriptions are circulated between participating countries, with a view to increase completeness and correctness from a legal point of view.

The formalisation effort includes a survey of available techniques and facilities, and an assessment of different approaches from the point of view of an academic teacher. The assessment may draw upon specialised facilities. Techniques, which appear useful in a teaching process, should be given high priority. Several participants of the *action* research are expected to learn the formalisation techniques as part of the *action*, and to develop teaching material during this process.

Modelling is a central activity in information systems development. The modelling activity of the *action* intends to develop a framework for future information systems through a comparative analysis of the existing, cross-organisational transactions and the databases regarding real property.

The investigation on the amount and costs of property transaction will take place, when the modelling effort has been used to delineate the transactions from related social activities. The methodology for national acquisition of evidence, and for international comparison will be described further, based on the outcome of the modelling.

The comparative analysis is followed by an explorative analysis of the causes of economic efficiency. Has the efficiency of property transactions changed recently, and for what causes? Has public participation in spatial planning a bearing on property transactions, e.g. by enhancing transparency of the land development process? These and similar questions may be rephrased into proposals for research, which can draw upon the developed models, and which can answer the questions.

3. Methodological considerations

The main effort of the *action* is to describe, in an objective way, the transactions regarding property rights, that is routine, ongoing activities. Using the land surveyors' measurement of a residential house as an example: The task is not to set out a house to be built or to measure a house to be extended. The task is to measure the house as it is. However, this is only a trivial task on the surface. According to conventions, the surveyor measures the projection of the outer surface of the walls on a levelled plane, (which is not visible), and not along the oblique lines of the terrain, which are visible. The objective measurements of the surveyor imply a deviation from what seems most obvious.

The modelling effort of the *action* attempts to be as objective as the land surveyors' mapping of a house. However, the modelling effort includes a normative or creative element, when you select the model that "fits best" with evidence provided by different countries. An answer to this problem seems to be to search for basic regularities, in analogy with the sentence that the shortest distance between two points is measured along the line between them.

The assessment of the efficiency of different real property systems will be based on the development of an economic model of the systems, which contain the most important variables that determine the resource costs of the various systems. These variables will be derived from the analytical apparatus of transaction costs and property rights economics, as well as from case studies. Efficiency differences will be identified by comparing the importance of some of the variables along with differences in their values. Data on the values of the important variables will be obtained from publicly available databases, from interviews, and from observations. The validity of the operationalisation of the theoretical constructs in the transaction costs and property right theories will be assessed by means of discussion with relevant colleagues and interviews with informed respondents.

D. ORGANISATION AND TIMETABLE

A Management Committee (MC), R&P, Chapter 8 will supervise the implementation of the COST *action*.

The research work will be organised as follows: Working groups are set up in the fields of Ontology, Real Property and Cadastral Law, and Transaction Costs, respectively. A further working group may be formed during the second year of the *action*. The working groups report to the MC.

The proposed *action* will be brought to the attention of the Working Party on Land Administration under the auspices of the Committee on Human Settlements within UN-ECE (former MOLA) with a view to exchange information, and consider formal liaisons.

The inaugural meeting includes presentation of and deliberations on the overall working plan, its relation to complementary research, and the setting of success criteria (Protocol, 8).

A workshop will take place every year, accompanied by an MC meeting.

The first workshop will detail the overall programme of the *action*, improve the mutual understanding among representatives of the participating disciplines, and include presentation of modifications, which are submitted by competent bodies (R&P, 9a). The outcome will be a confirmation of the overall working plan, including staffing and terms of reference of the mentioned three working groups.

The second workshop will provide the frame for drawing upon complementary research that relates specifically to the present COST *action.*

The outcome of the working groups will provide the basis for modifications of working plans, including the delineation of content and environment of surveys regarding transaction costs, and of decisions regarding the establishment of a further working group.

A part of the workshop will frame discussions with university lecturers, especially from countries in transition, to test to what degree the proposed COST *action* comply with their needs, and to support their teaching efforts with information on recent research.

At the third workshop the outcome of transaction cost surveys will be presented. For the selected countries, an updated overview of their spatial planning and land management systems will be presented, as well as the part of their educational system, which relates to real property transactions. The outcomes and further presentations are integrated into a preliminary report on the overall findings of the *action*. The report is critically examined during the workshop. Representatives of taxation authorities will be invited, with a view to reduce the possible biasing effect of the diverse taxes and fees on real property.

A fourth workshop may be needed, as the time frame for the transaction cost surveys is very narrow. Decision in this respect is made in the context of the preparation of the third workshop. The decision may imply that some activities of the third workshop is postponed to the fourth workshop, and/or that the third workshop regards two, named countries, while the fourth workshop regards the remainder group of countries.

Further MC meetings are held at a yearly basis, and generally half a year before the combined workshop/MC meetings. In the context of these MC meetings, PhD students may be invited to present their research plans, even if their research is not directly part of the *action*.

The working groups are expected to meet once at the outset of their work, and once for preparing the reporting of their mission. A further meeting may be arranged in connection with workshops and/or MC meetings according to decision at the inauguration MC meeting.

Members of the working group Ontology is expected to meet for 1-2 periods of 2-3 days at an appropriate research facility, in order to draft alternative ontologies, and to overcome the linguistic differences of sources of evidence.

Chairpersons of MC and working groups are expected to report the *action* at about one prominent conference a year, or at an MC meeting (or similar) of related research programmes. Contact with liaison bodies may amount to maximum one visit a year per body.

Dissemination of *Action* Outcomes

The methodological approach and research outcomes will be disseminated to university lecturers and to Ph.D.-students already in the context of *action* activities. The website of the project will be used to stimulate contact with other interested parties. Workshops will be publicly announced, and workshop content will reflect needs of the hosting country. The *action* will be co-ordinated with an ongoing Nordic effort of establishing rather permanent Ph.D.-level courses regarding Real Estate and Cadastre.

The formal models (ontologies) developed will be made available through the website to support systems development, teaching and comparative studies. More specifically, a planned web portal will 1) provide structured access to information resources of the domain, inspired by the portal established by the Knowledge Acquisition Community (ka2portal.aifb.uni-karlsruhe.de) and 2) include a reference library of the ontologies, which can be inspected by system developers (cf. the reference library at www.opengis.org for general purpose GISs). The portal content will be disseminated as widely as the respecting of copyrights permits.

Action partners have indicated the interest of consultant companies, who are, for example, supporting in various ways the establishment of markets in real estate within the countries in transition. *Action* outcome will be disseminated in a document that relates company interests with activities of the Internal Market DG at the closing of the *action* (e.g. similar to projects of the Information Society Initiative in Standardisation, http://www.ispo.cec.be/isis/).

Dissemination to relevant governmental agencies will, primarily, be done through the liaison with the Working Party on Land Administration (UN-ECE), and to other specialised units. Chairpersons are expected to report findings to professional societies, e.g. the International Federation of Surveyors (FIG), the International Real Estate Federation (FIABCI), and the International Union of Latin Notaries (IULN).

Finally, outcome in terms of 2 or 3 scientific articles will be submitted to peer refereed journals like International Journal of Geographical Information Science, Artificial Intelligence and Law, and International Journal of Human-Computer Studies, while national and comparative articles will be published in professional journals.

A timetable is presented below. Conference participation, and liaison visits are not shown

COST *action*: Modelling Real Property Transactions															
Year 1				Year 2				Year 3				Year 4			
Inaug MC				MC				MC				MC			MC
		Sem./ MC				Sem./ MC				Sem./ MC				Sem./ MC	
Wgon tos	Wgon tos	WGo ntos				WGo ntos									
Wgla w				WGla w				WGla w							
				WGco sts				WGco sts			WGco sts		WGco sts		

The duration of the *action* is estimated at 4 years.

E. ECONOMIC DIMENSION

Researchers of the following COST countries have actively participated in the preparation of the *action*, or otherwise indicated their interest: Austria, Czech Republic, Denmark, Finland, Germany, Hungary, Latvia, the Netherlands, Portugal, Slovenia, Spain, and Sweden.

On the basis of national estimates provided by the said representatives of these countries, and taking into account the coordination costs to be covered over the COST budget of the European Commission, the overall cost of the activities to be carried out under the *action* has been estimated, at 2000 prices, at roughly EUR 1,4 million.

A research group from Canada and two researchers from the USA have participated in preparation, and confirmed interest as well.

The total number of person months expected to be involved in the *action* is
170 (one hundred seventy).

The estimate is valid under the assumption that only the countries mentioned above will participate in the *action*. Any departure from this will change the cost accordingly.