

IMPACT OF THE
TELEMATICS FOR LIBRARIES
PROGRAMME

under the
fourth framework programme



European Commission
Directorate-General for the Information Society

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EXECUTIVE SUMMARY

PricewaterhouseCoopers was invited by the European Commission to assess the impact of the Libraries Programme under FP4. A total of 49 projects (including accompanying measures) were financially supported under this programme, receiving 29 Million Euro in total. This report provides an integrated presentation of results and related findings.

The impact study maps the projects and their current and expected results against the programme objectives. This may serve as a baseline for future reference and evaluation.

It must be noted that many of the projects are not yet finished. A full assessment will only be possible once all the projects have been completed.

The study is based on a fact-finding phase, an opinion-finding phase and an analysis phase. A Study Committee consisting of three experts familiar with the programme was set up to assess the progress of the work and to advise on any related matters.

The analysis was based on interviews with key external experts, European Commission representatives, project co-ordinators, Telematics for Libraries National Focal Points (NFPs), Programme Managers (NORDINFO, eLIB, GLOBALINFO), and library associations (IFLA, EBLIDA).

An important effect of the Programme has been the further development of the human networks in the library world that were created under previous programmes. It helped establish relationships in Europe between libraries of various types, and with traditional and new partners. The role of projects in the area of standardisation is increasingly being recognised around the world.

Under the Programme, a wide variety of technical and service issues are being addressed, covering many library domains and specific professional domains. Although several promising products and services which form an interesting potential for future deployment are being developed, exploitation still requires strong attention in the Programme.

While the Programme succeeds in attracting participation from all Member States and several associated states, and many national representatives feel that it is having a positive impact on the national environment, the creation of synergies with national programmes could be improved.

The study presents some emerging issues for future considerations, addressing the content of the Programme, project management, synergies with national programmes and the approach to exploitation.

In conclusion, the Libraries Programme is widely acknowledged as having contributed – and continuing to contribute - to its goal: **The creation of a European Library space**. It does so by contributing to the technological developments and standards area in the library field, by improving co-operation amongst libraries in Europe and by improving library services to European citizens.

1. INTRODUCTION AND BACKGROUND

1.1. Background

Libraries have always played a central role in providing information for the citizens of Europe. In recent years, the availability of information has increased tremendously, particularly as a result of developments in the area of Information and Communication Technologies (ICT). As a consequence, the market for information has changed turbulently. Libraries will need to keep pace with the rapid developments of ICT in order to maintain their central position in the information chain. They will have to make full use of ICT in developing new services and improving their traditional tasks.

The European Commission has supported European libraries in their efforts to keep up with, and benefit from these rapid ICT developments. The Libraries Programme was one of the seven Telematics sectors under the Third Framework Programme (FP3) 1990-1993 and one of the thirteen sectors of the Telematics Applications Programme, under the Fourth Framework Programme (FP4) 1994-1998. Support for libraries continues under the current FP5 Information Society Technology Programme (1999-2002).

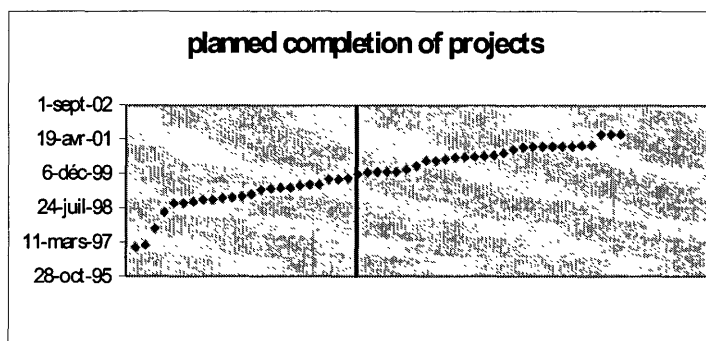
The European Commission has invited PricewaterhouseCoopers to assess the impact of the libraries Programme under FP4. Under this Programme 49 projects and accompanying measures were financially supported, receiving in total 29 Million Euro. This report sets out to provide an integrated presentation of results and related findings.

1.2. The impact study and its objectives

The impact study maps the projects and their current and expected results against the Programme objectives. This may serve as a baseline for future reference and evaluation. The major objectives of the impact study are:

- to assess the impact of the Programme, its action lines and projects;
- to identify and demonstrate the potential for replication and common technical problems;
- to identify key issues and lessons to be learned.

It must be noted that many of the projects are not yet finished. A full assessment will only be possible once all the projects have been completed.



It should also be noted that the impact assessment was made on the basis of a desk study and e-mail interviews. Site visits and discussions with project teams were not within the scope of the assessment.

1.3. Methodology

The study consisted of a fact-finding phase, an opinion-finding phase and an analysis phase.

The fact-finding phase started with the collection of Programme and project documentation, and interviews with those who played a key role in implementation of the Programme. This provided a reference point for our assessment of the Programme impact.

In the process of desk research, project fact sheets for each project were compiled. The factual information was synthesised and presented in a survey report, with the aid of graphs in order to provide an easily accessible overview.

The opinion-finding phase consisted of structured e-mail interviews with all project coordinators, NFPs, a selected number of key players and the Study Committee. The Study Committee consisted of: Prof. K.-D. Lehmann, Prof. M. Casey and Dr. A. Michard. In selecting these interviewees, attention was given to national balances. The results of these e-mail interviews were synthesised and presented in a discussion document illustrated as appropriate with graphical charts.

The analysis was based on discussions with key players and drafted by the project team. The draft was discussed with the European Commission and then finalised.

1.4. Structure of the report

The structure of this report is as follows :

- Chapter 2 of this report describes the historical, political and technical context of the Programme.
- Chapter 3 provides an overview of the content of the FP4 Libraries Programme. This overview is largely derived from the survey report.
- Chapter 4 discusses the impact of the Programme.
- Chapter 5 highlights expectations and barriers as expressed by National Focal Points and project coordinators.
- Chapter 6 presents issues for future consideration.
- Chapter 7 details the conclusions drawn .

2. PROGRAMME CONTEXT

2.1. Historical context

2.1.1. The programme beginnings

In 1984, the European Parliament drew political attention to the importance of libraries to the Community in a Resolution (known as the Schwencke Resolution) which called for action by the European Commission in this sector (Official Journal N C 117 of 30.04.1984). The Council of Ministers with responsibility for cultural affairs adopted a Resolution of 17 September 1985 on "Collaboration between libraries in the field of data processing" (Official Journal N C 271 of 23.10.1985). This Resolution acknowledged the importance of libraries in the European Community, both as a major force on the information market and as intermediaries to knowledge and culture. It invited the European Commission to take action to help libraries, which should be aimed, inter alia, at preparing a work programme in close collaboration with those responsible for libraries in the Member States.

The preparation of the Community action had two phases. An exploratory phase started in 1985 and concluded with a broad informal consultation on a discussion document that described a possible Plan of Action. A series of preparatory activities started in 1989-1990, using as template this draft Action Plan for Libraries. These included more in-depth consultations and investigations as well as a small number of test-bed pilot projects (ION, CDBIB, EDILIBE and EROMM).

Following these preparatory actions, a Libraries programme was established, as part of the Telematics Programmes, first under the Third Framework Programme (1991-1994) and subsequently under the Fourth Framework Programme (1994-1998).

2.1.2. Third Framework Programme

Libraries was approved as one of the areas of the Telematics Programme, with a workplan closely based on the Action Plan for Libraries, and given an indicative allocation of 22.5 million ECU, later increased to 25 million ECU, to cover the period from July 1991 to December 1994. In this period, 51 shared-cost projects, plus accompanying measures and studies were launched.

The first Community action devoted to libraries was designed to promote for the long term:

- The availability of accessibility of modern library services throughout the Community, taking into account existing geographic discrepancies in library provision.
- A more rapid but orderly penetration of new information technologies in libraries in a cost-effective way.
- Standardisation, because of its practical consequences and economic impact.

- Harmonisation and convergence of national policies with respect to the above.
- To facilitate user access, by optimum use and development of equipment and telematics systems, to the wealth of knowledge held in libraries while reducing the handicaps caused by disparate infrastructures across the Community.
- Short-term goals were defined to achieve the long-term objectives.

2.1.3. Fourth Framework Programme: Telematics for Libraries Programme 1994-1998

Under the Telematics Applications Programme in the Fourth Framework Programme, the libraries sector workplan continued to build upon the emerging results of the first 51 projects under the Third Framework Programme (1991-1994), whilst at the same time moving into important new areas. In particular, the new programme has emphasised libraries as key participants in the move towards an electronic information infrastructure. Information is being increasingly created, distributed, accessed and used entirely in electronic form and libraries have a central role in managing these flows of electronic information, and introducing users to new ways of working with electronic information. In designing the new Telematics for Libraries programme, special attention was given to the interdependency of individual libraries both on each other and the wider European information infrastructure. The programme supports the development of interlibrary networks, for example as a means of linking less-advanced libraries to the resources and services of more advanced libraries.

Action lines

The work-programme has been structured in three action lines, plus a number of accompanying activities and complementary measures. The original action lines were:

- A. Network-oriented internal library systems
- B. Telematics applications for interconnected library services
- C. Library services for access to networked information resources

The sector therefore operates at three interlocking levels: the library itself (line A); the collective resource that the library community represents (line B); and the emerging world of networked information (line C). The main emphasis of the sector is on line B.

Priorities

The priorities of the Programme were defined as:

- projects and applications based on real needs and requirements, leading to concrete results with practical and visible demonstrators and capable of replication and multiplier effect;
- focus on systems and applications integration into new library service areas and on the integration of existing and emerging technologies into demonstrable applications;

- consolidation and exploitation (e.g. by transfer, further development) of results from the current libraries Programme in order to build on the impetus developed by the start-up actions;
- continuing emphasis on commitment to open standards;
- human resource issues, knowledge and skills transfer, and organisational issues remain critical to the successful implementation of the change needed if disparities in level of service, across all types of libraries throughout the EU, are to be reduced;
- scope for links with other programmes and with other sectors in the Telematics Applications Programme (e.g. education and training, research, language engineering , information engineering , urban and rural areas, disabled and elderly people) where common problems or user communities exist for services or where libraries can be used as test grounds for results;
- new alliances with: traditional partners (e.g. publishers, distributors) or with new partners (providers of distance learning, new networked information providers, network service providers, etc.) and even with other "memory organisations" (in order to arrive at common solutions in areas of common interest such as preservation and access).

Call topics

The three action lines were further sub-divided by call topics (subsequently slightly refocused):

Action Line A: Network-oriented Internal Library Systems

- Call Topic 1:** Integration tools and interfaces for library systems in the local network.
- Call Topic 2:** Tools and methods for the creation and use of library materials in electronic form.
- Call Topic 3:** Development and testing of tools for the management of library services in an electronic environment.

Action Line B: Telematics Applications for Interconnected Library Services

- Call Topic 4:** Creating and testing interconnected library services, integrating applications for at least two different library service functions.
- Call Topic 5:** End-user access to inter-library network resources and services.
- Call Topic 6:** Services for the acquisition and supply of materials to libraries.
- Call Topic 7:** Development of new scenarios and models for distributed libraries and associated services to users, in preparation for potential implementation projects.

Action Line C: Library Services for Access to Networked Information Resources

- Call Topic 8:** User services based on resource discovery and retrieval.
- Call Topic 9:** Test-beds for library mediated access and services based on networked information resources.
- Call Topic 10:** Tools for use of retrieved networked information resources.
- Call Topic 11:** User applications supporting unified access to combined networked information and library-based resources.
- Call Topic 12:** Integrating library services with distance learning.

Programme management and project monitoring

The Libraries Programme was managed by Unit E4 of the European Commission DGXIII, later renamed to Unit E2, and since 1999 by Unit D2 of DG Information Society. Projects are monitored by a Project Officer in this Unit on an on-going basis. Additionally, projects are reviewed on an annual basis by two independent experts in a review meeting normally in Luxembourg. The review reports that result from these meetings evaluate the project on the following aspects:

- Compliance with objectives and workplan, including usage of resources and impact of previous review recommendations (if applicable).
- Approach, methods and results.
- Management, dissemination and concertation.
- Exploitation potential.

2.2. Political context

Only fourteen years, yet years of fundamental change in this area, have elapsed between two strategic declarations by the European Parliament in favour of libraries. The first declaration is the "Schwencke resolution", of 1984.

The second resolution was passed in 1998 and was devoted to the role of libraries in the Information Society. It focused strongly on the social, educational and economic role of libraries and encouraged European countries, as well as the European Commission, to promote actions to stimulate this role.

Between these two resolutions there is a great distance, much more than a decade may bring, during which the context, cultural policies and technologies have further developed.

During this time, the Maastricht treaty was enacted and a new attention was paid within the European Union to the European cultural identity. Moreover, there was a considerable development in computer technologies and standards and a strong focus on the value of information and on related services.

Towards the end of the eighties, the interest of the European institutions in the role of libraries was formalised and the '85 resolution of the Council of Ministers of Culture was put into effect through the start of the Libraries programme. The goal was not to create and impose a supranational electronic library but to encourage environments where national and regional networks of libraries and services could co-operate and interact and where the national policies could find added value from European Community initiatives based on the subsidiarity principle.

On 23 October 1998 in Strasbourg, the European Parliament adopted almost unanimously Mrs Rynänen's report on the Role of Libraries in the Modern World. The report, drafted as an initiative of the Parliament's Culture Committee, called on the European Commission and the Member States to support a number of measures in regard to consolidating the growing role played by libraries in organising widespread access to knowledge. In response the Commission undertook to begin

work on a Communication stimulating concertation on all the important aspects affecting modern library services and citizen's access to them and addressing a number of specific issues for libraries including lifelong learning, copyright, literacy, regional information services and public library collaboration on access to knowledge. It would also lead to more focus on R&D activities involving libraries under the Fifth Framework Programme.

2.3. Technical context

The technical environment that the Libraries programme was operating in, has seen some very fundamental changes between 1994 and 1998. The single most important factor was the explosive growth of the Internet and the World Wide Web in these years. The start of the Programme practically coincided with the formation of the World Wide Web Consortium (W3C) by Tim Berners-Lee. In these years, the Web has changed from an environment for scientists and networking specialists to a mass medium. It now forms a common platform for user-oriented services – and the Libraries Programme has managed to follow suit.

In the Web environment, the period covered by the Telematics for Libraries Programme has also seen attempts to solve the problem of information overload on the Web by providing searching and indexing services. Libraries have taken up a role to bring their specific expertise to the Internet, for example through the initiatives of the Dublin Core group. The Dublin Core activity started in 1995 in the US and has since grown to a global platform, in which the European library community is well represented.

This is not to say that all services and products are being based entirely on Web technology. Technical solutions that already existed before the Web still have their role to play. Specifically, the development of ISO SR, and its US variant Z39.50 and the ISO ILL standards, led by the library communities in North America and Europe, has continued to cater for specific interworking solutions for library applications.

3. PROGRAMME CONTENT

3.1. Introduction

Under the FP4 Telematics for Libraries Programme, 49 projects (including accompanying measures) were funded. In this chapter, we present factual information collected from these projects, in the following order:

- paragraph 3.1: Project overview
- paragraph 3.2: Participant overview
- paragraph 3.3: Support actions and publications

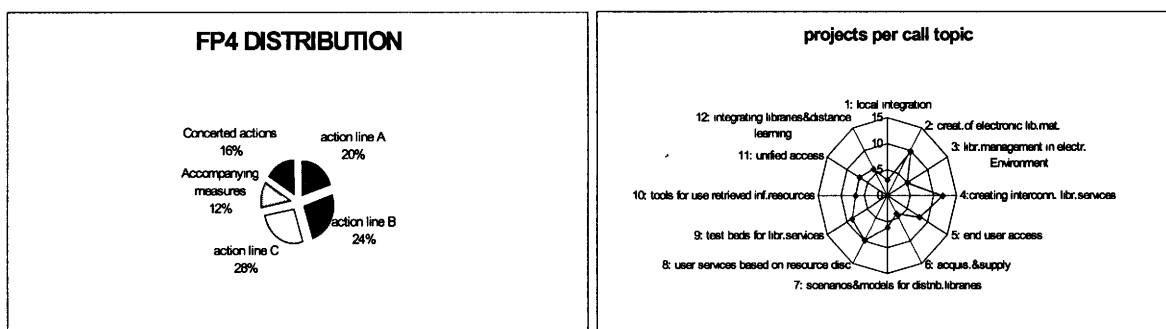
3.2. Project overview

The following graphs show the distribution of FP4 projects over Action Lines and call topics. The complete list of FP4 Projects is attached in **Appendix 1**.

Action Line A: Network-oriented Internal Library Systems

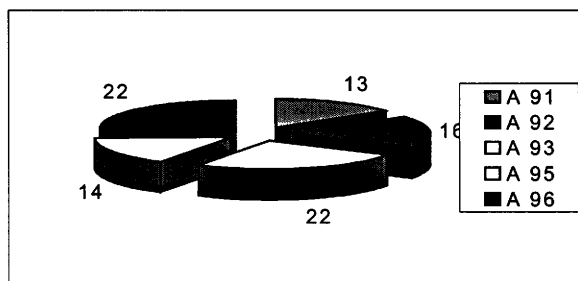
Action Line B: Telematics Applications for Interconnected Library Services

Action Line C: Library Services for Access to Networked Information Resources



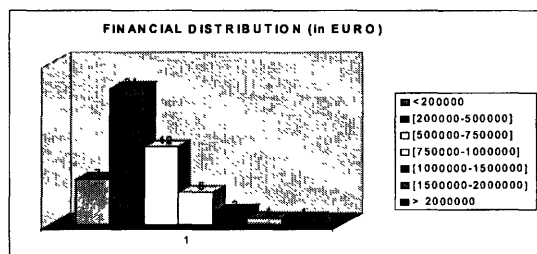
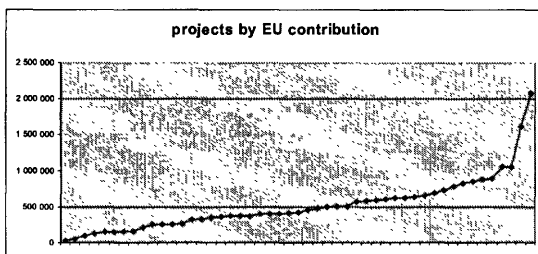
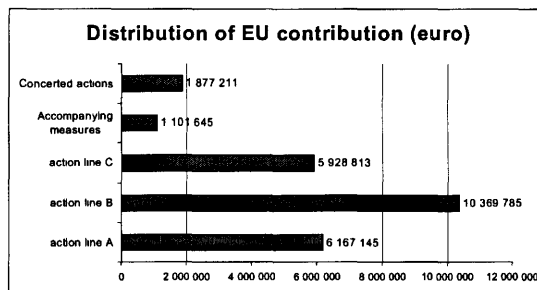
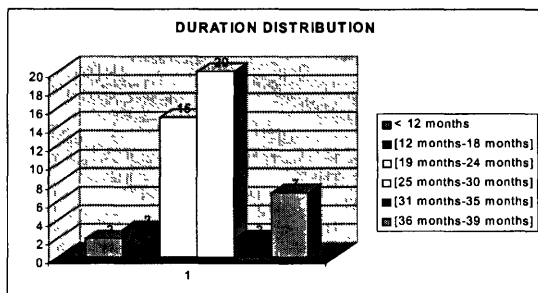
3.2.1. Distribution of selected projects per Call for Proposals

Under the Third and Fourth Framework Programmes, of the 520 proposals received, 87 RTD projects were eventually selected for funding. In addition, the Commission funded concerted actions (3), accompanying measures (14) and studies undertaken on the Commission's initiative (23). The chart below shows the distribution of these activities:



3.2.2. Duration and budget distribution

- The average size of the EU contribution to projects is 520.000 Euro.
- As can be seen from the graph below, the contribution to two projects significantly exceeds the average contribution.

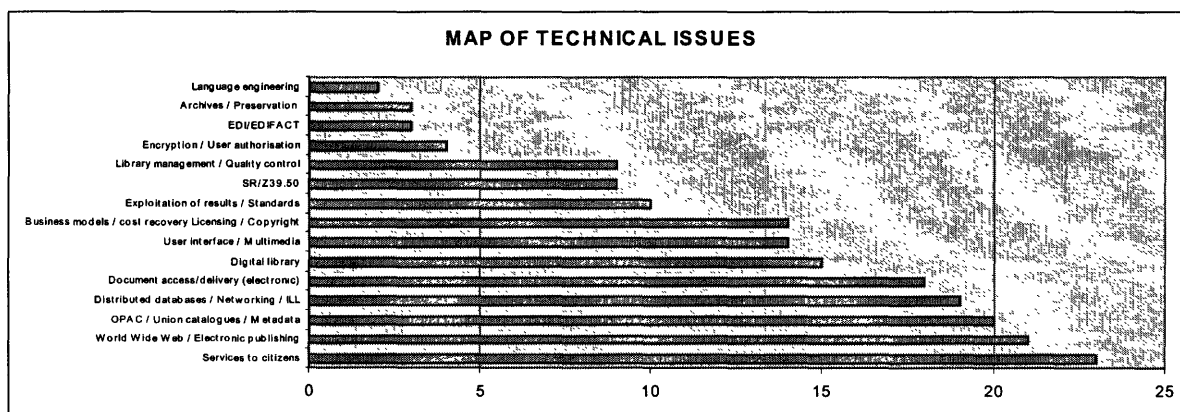


3.2.3. Technical issues

The project sheets published by the European Commission provide a set of key words.

The following chart is intended to give a very rough map of issues throughout the FP4 Programme. It has been produced by iterative merging of key words.

«Services to citizens» is a cluster covering a wide range of services, including services to disabled people, training services, public library services.



The technical issues which are addressed during the FP4 Programme can be classified by the following clusters:

Networking and interconnecting systems. A number of projects deal with interoperability between systems, including ILL and Z39.50 profiling (e.g. MALVINE, UNIVERSE, ONE II). The concept of a 'single point of contact' for distributed libraries is very important, as it improves the accessibility of distributed libraries, EDIFACT for messaging between libraries and booksellers/publishers (IMPRESS, EXCEL); and document delivery networks and standards for their interconnection.

Bibliographic record formats and metadata. In FP3, a core of results provided tools which aimed at improving international record exchange, including: format conversion tools (e.g. UseMARCON, ONE), character set conversions to UNICODE (CHASE), sharing of authority records and conversions to UNIMARC (AUTHOR), converter between Greek and Latin alphabets (HELEN). CoBRA+ consolidated previous work started in 1993 (CoBRA) to extend its focus beyond national bibliographic services to include collection based issues, particularly those concerned with electronic publications and related service developments in national libraries. Particular emphasis was placed on resource access and sharing, user needs and the use of communications networks to achieve these aims. In FP4, serials (CASA) and electronic publications (BIBLINK, EULER) have been the subject of RTD projects which overall under FP4 have seen an increasing focus on metadata, on emerging standards and on links between these and traditional bibliographic record formats.

Imaging or digitising materials in libraries. Small-scale experiments, especially with digitising rare materials from original documents, have been undertaken in projects such as DEBORA. Other projects (e.g. DIEPER and LAURIN) looked at setting up, describing and providing access to image-based materials. A key aspect of many of the projects has been the development of appropriate user interfaces and tools to support the retrieval, browsing and selection of images. Also important are the technical documents describing the problems of applying the technologies to library materials and the lessons learnt during the project.

Toolkits and user interfaces. A number of projects are developing software toolkits to enable users to access their local library services from a single user interface, often incorporating Z39.50 clients. Amongst on-going and future projects, results in this area will extend to developing a single interface to different libraries and to networked resources (CANDLE) and facilities for the visually disabled (TESTLAB).

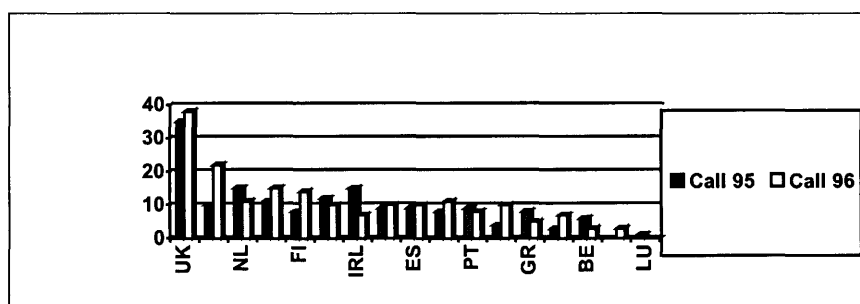
Decision support, management information and performance measurement tools. A cluster of projects under FP3 developed software capable of being interfaced with existing library automation systems and under FP4 this has extended to dealing with electronic library services (EQUINOX). The CAMILE concerted action brought together experience and expertise in library management through the partnership of four FP3 Libraries Programme projects working in the area of decision support in libraries. It is anticipated that such co-operation will lead to long term consensus, the development of common approaches and ultimately the development of new standards.

3.3. Participant overview

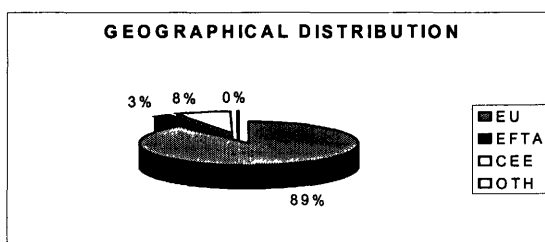
3.3.1. Geographical distribution

In the Libraries Programme under the Fourth Framework Programme, the distribution of retained participants was as follows:

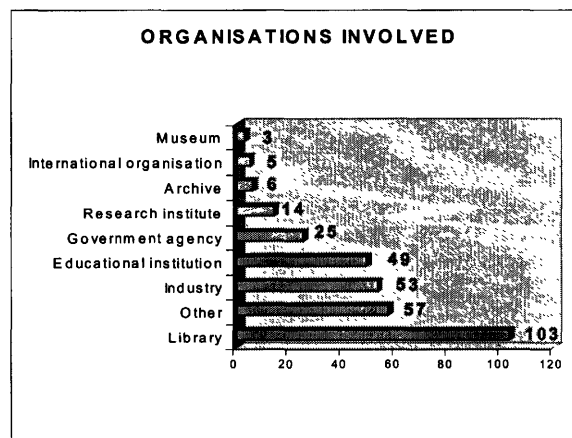
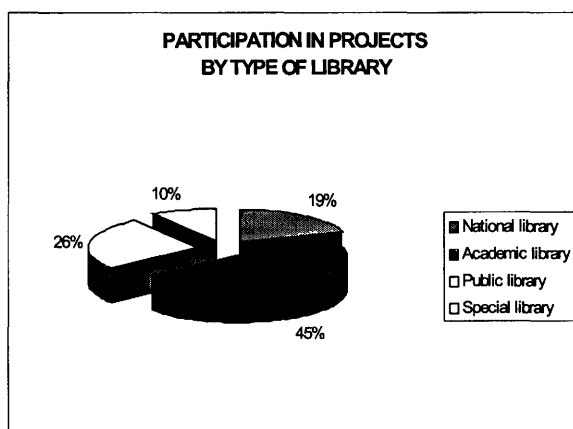
	UK	DE	NL	FR	FI	DK	IRL	IT	ES	SE	PT	AT	GR	NO	BE	CH	LU
Call 95	35	10	15	11	8	12	15	9	9	8	9	4	8	3	6		1
Call 96	38	22	11	15	14	10	7	10	10	11	8	10	5	7	3	3	
Total	73	32	26	26	22	22	22	19	19	19	17	14	13	10	9	3	1



The UK dominated and with a well-balanced participation from other countries. Note the increased participation by Germany between the first and the second Call for Proposals.



3.3.2. Distribution by type of organisation involved



3.3.3. Integration of CEE Associated States

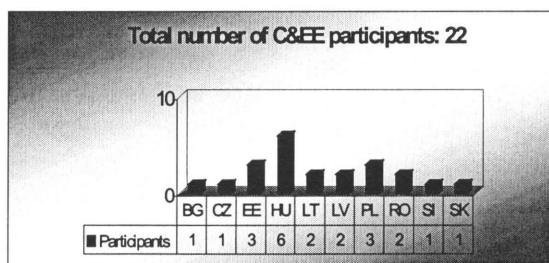
The Fourth Framework Programme (1994-1998) contained a new and specific action line for international co-operation, within which the countries of Central and Eastern Europe (as well as the New Independent States) were a priority objective.

The momentous political changes which took place at the beginning of this decade suddenly made it possible to consider a much closer co-operation with the libraries of Central and Eastern Europe. It became immediately apparent that libraries as gatekeepers of, and gateways to information could play an important role in the transition of these societies to democracy as well as to a market economy. It was also clear that libraries, in both the European Union and Central and Eastern Europe, would benefit from a co-ordinated effort at European level leading to a more affective use of resources and to contribute to create a pan-European and modern library infrastructure.

In June 1994, the European Commission organised, in collaboration with the Council of Europe, a conference on "Library Development in Central and Eastern Europe: from assistance to co-operation. An investment for the future". Participants from all over Eastern, Western and Central Europe were invited to look at bilateral and multilateral programmes in the library area and put forward recommendations for future action.

Following these recommendations, DGXIII/E-4 initiated actions in order to underpin the definition of a future strategy. These actions focused on the 10 countries that had signed an Association Agreement with the European Union, namely: Estonia, Latvia, Lithuania, Slovenia, Poland, Czech Republic, Slovakia, Hungary, Romania and Bulgaria.

Initial country visits to the 10 accession countries were followed by state-of-the-art studies, expert meetings and technical conferences. For the first time, libraries and partner institutions from Central and Eastern Europe were encouraged to submit proposals to participate in research projects and support actions within the Fourth Framework Programme. This participation was well prepared in advance by a series of information days and workshops to promote and raise awareness on the Libraries Programme and to provide information on the modalities of participation. The results were very encouraging: as a result of the 1996 Call for Proposals, a considerable number of new funded projects and actions included one or more partners from the C&EE "accession" countries. Moreover some of the existing FP4 projects were granted an extension to Central and Eastern European countries to ensure that their results could also benefit the libraries in these countries.



3.4 Support actions, studies and publications

From 1991 to 1998, **87** RTD projects involving more than 400 organisations throughout Europe were funded. At least half of these institutions were university computer science departments specialising in IT and library science.

In addition, **22** accompanying measures, platforms and feasibility studies were funded.

Since 1991, **24** studies were carried out and **25** workshops were organised.

While the main emphasis has been on soliciting RTD projects, the Calls for Proposals have also led to activities more closely related to the policy-oriented strand of the Programme. Accompanying measures, designed to provide platforms for fostering discussion and awareness of European or global issues have been effective in the following areas:

- copyright problems in the library context (ECUP+);
- harmonisation of digital library activities at the level of national libraries (CoBRA+);
- standards of relevance to the libraries world (EFILA+and EFILA 97);
- the role of public libraries in the information society (PUBLICA).

Some were intended to facilitate the uptake of project results of general interest:

- the actions IMPRESS and EXCEL for instance, which help to promote EDI formats developed and tested within project EDILIBE;
- the EXPLOIT accompanying measure which aims at drawing attention to the overall results of the Libraries Programme, and to encourage their pan-European exploitation.

Others were meant to strengthen work on specific issues:

- CAMILE, a concerted action that bundles activities started under four separate projects in the fields of library management and performance measurement;
- LIBECON2000 will provide reliable figures on library resourcing and usage in Europe, west and east, which will be published as a *Millennium Study* before the end of the year 2000.

In order to gather information on the library field in Europe, the Libraries Sector has also carried out a number of studies and activities. The earlier publications were related to the preparatory work under the Third Framework Programme. The objective then was to start a process of change in order to modernise libraries and their services. The more recent publications come under the Fourth Framework Programme which, building on the results already achieved, takes the process one step further towards a truly European-wide approach to networked library services. During FP4, specific studies were carried out on various topics such as: Library Economics in Central and Eastern Europe; Librarian training in Information and Communication Technologies: a Typology of Needs and Deliverables; Public Libraries and the Information Society; and State-of-the-Art of Information Technologies in Libraries in the Nordic Countries.

A full list of publications is attached in **Appendix 2**.

4. IMPACT

4.1. Introduction

The goal of this study is to assess the impact of the Programme. The Programme can have various types of impact. When assessing the impact, attention was given to:

- the stakeholders' groups that might benefit from the Programme
- direct and indirect impact
- impact on both an individual level and a sectoral level
- the nature of the impact (temporary or structural/lasting, leverage, impact on key issues)
- the impact on Programme priorities

The stakeholders on which the libraries Programme might impact are primarily the library community (consisting of various types of libraries), the private sector (publishers and other content providers), and the user community. The impact of the Programme on each of these groups is discussed in this chapter under 'general impact'.

The Programme will have direct impact on project participants when it helps them achieve the project goals. An important indicator of the direct impact on participants is the number of services or projects that were developed as a result of the Programme. There can also be an indirect impact. Participants may benefit indirectly through learning effects gained during the course of the project. In addition, organisations that were not directly involved in the Programme might benefit as a result of technology transfer e.g. symposia, demonstrators, use of business plans developed under the libraries Programme.

The Programme not only impacts individual organisations but may also have an impact on the sector as a whole. Individual projects may lead the sector in new directions. Furthermore, in the case of the libraries sector it is particularly important to observe the contribution made by the Programme to cooperation between the organisations making up the libraries sector (the networks), and between the libraries sector and the publishing sector.

It is important to consider the nature of the impact, (i.e. the extent to which the Programme is able to create structural and lasting changes), and whether the Programme is able to create a leverage effect, e.g. by providing 'seed capital', by linking project partners that will further their cooperation also beyond the scope of this libraries Programme. Another important aspect is the presence of the Libraries Programme in the major topics that the sector has had to deal with, e.g. the copyright issue. The analysis of the impact on the sector is particularly important in view of the weak position the European libraries sector has had in the past in comparison to the libraries sector in the United States.

It is equally important to look at the impact in the light of the objectives of the Libraries Programme. To measure this we used priorities as described in section 2.1.3.:

- Projects and applications based on real needs and requirements.
- Creation of demonstrable applications through focusing on the integration of systems and emerging technologies into libraries service areas.
- Consolidation and exploitation of results from FP3.
- Continuing emphasis on commitment to open standards.
- Human resources issues, knowledge and skills transfer and organisational issues.
- Scope for links with other programmes and other sectors.
- New alliances with traditional partners or with new partners.

4.2. General impact

The Libraries Programme is widely recognised for its work, both inside and outside Europe. The major result is that in the last fifteen years the European library community has been able to establish strong links between libraries of all types (national, academic, public and special), across the Member States, associated states and accession countries.

The Libraries Programme has brought together libraries and their partners around specific subjects and practical research, investigating the role and the opportunities for libraries in the Information Society. Particularly, there are enhanced links with information providers (e.g. Silverplatter, FIZ, INIST, Blackwell). Relations with library automation vendors (e.g. Fretwell-Downing, Dynix, Aleph) and national bibliographic utilities (e.g. Pica, Danish Library Centre, BIBSYS) have continued, although their numbers seem to decrease. A dialogue with publishers (e.g. Elsevier, Kluwer) is visible in a number of projects. These relationships are not just the result of the Telematics for Libraries Programme under FP4, but are due to the continuity of the work started with the exploratory phase (1985-1988) and followed by practical work in the preparatory actions (1989-1990) and the Libraries Programme under FP3 (1991-1994).

In a world where technologies evolve in an exponential way, RTD projects are essential components in the mastering of new technologies at a European level. As underlined by Michel Melot, (Président du Conseil Supérieur des Bibliothèques), "*Time spent working on a global scale, is invaluable and an essential investment in the long run... Dialogues initiated in RTD projects continue to the benefit of everyone*".

The Programme has allowed new co-operative service offerings to be researched and demonstrated - for example in community information, domain-specific information and in relation to specific document types. Through the experimentation with international, co-operative services in demonstration environments, libraries throughout Europe are able to compare their approaches. They are finding common

problems that require compatible solutions, while at the same time taking into account the cultural diversity of the user community and national environments.

The impact of the Programme on products available to libraries has mainly been indirect. Some library vendors have been able, through their participation, to further develop their systems. They will have benefited from the direct co-operation with library partners from their market target group. Other products that have emerged were Z39.50 client products that have attracted international interest, such as ZNavigator from CaseLibrary. Interest from outside Europe is highlighting the potential of Protocol toolkits (e.g. the ONE toolkit that was originally developed for a national project in Germany and subsequently further developed under the Libraries Programme).

Components made up of software building blocks (Z39.50 tool kits, EDIFACT parsers, format converters such as UseMARCON) and of functional architectures and specifications are necessary to build interoperable systems and services at lower cost. It should be noted that within the framework of the French Union Catalogue (hosted by Bibliothèque Nationale de France), significant building blocks produced in projects EDIL, ELITE and ONE were re-used.

A negative effect is created on the impact of the Programme, by the problems that are encountered in defining realistic exploitation and business plans and in transforming prototypes into sustainable products and services.

This problem is mainly due to the fact that many of the projects are centred around subsidised institutions (i.e. the libraries themselves) who have only started in the last decade to develop a more business-oriented perspective on their activities. On the other hand, similar programmes have had the same experience, for example the eLib programme in the UK and the Digital Libraries research programme of the National Science Foundation in the US.

4.3. Impact related to programme priorities

4.3.1. Projects and applications based on real needs and requirements

The projects funded under the Programme form a mix of real needs and interesting ideas for a more distant future. The latter could be thought of as based on potential future needs. Participants have come in with their projects on the basis of their specific needs.

Most projects have succeeded in involving their user community (i.e. participants from scientific institutes, professional societies, market players and end-users) and have incorporated detailed analyses of user requirements. Many of these activities express expectations that solutions found for their specific user group can be transferred to a wider community. To achieve this, it would be necessary to look in more detail at the commonalities between the various specific user groups.

Accompanying measures have brought interest communities together around specific issues (national libraries, approaches to copyright problems, the role of public libraries, music collections, EDIFACT) which have arisen as common issues in the

project work under the Libraries Programme. These accompanying measures, as well as the studies that were conducted, have helped in identifying needs in these various areas and in setting boundaries for solutions.

4.3.2. Creation of demonstrable applications by focussing on the integration of systems and emerging technologies into library service areas

The Programme has covered a number of new service areas (newspaper clippings, manuscript collections, community information, and domain-specific information) that enable libraries to use information and communication technology to provide more services to their user community. These activities have mainly concentrated on specialised areas. As a consequence, their impact is mostly visible in their specific domain.

New technologies associated with the World Wide Web (search engines, metadata, Java) have been successfully incorporated into the projects and widely demonstrated. Also existing technologies such as SQL, Z39.50 and ILL have been further developed, applied and demonstrated in the Programme.

4.3.3. Consolidation and exploitation of results from FP3

The Programme has given the opportunity to participants from FP3 to continue and extend their research started under the previous Programme. This has, in many cases, taken the form of adding more services to the results of FP3 and of extending the user groups.

Examples can be found in the inheritance relations between FP3 and FP4. A number of projects have led to follow-on projects in FP4 (ONE-2, ELISE II, Decomate II) and more than one-third of participants in FP3 have continued to be involved under FP4, at the same time allowing new subjects and new participants to come in.

More than 40 % of the projects from the FP4 Programme have an explicit link with the FP3 Programme. Many products of FP3 projects have been taken as a starting point for the developments in FP4. Examples are:

- the Cactus Server from CaseLibrary used in CANDLE
- the ONE toolkit further developed in ONE-2 and used in MALVINE
- the CHASE and UseMARCON software components used as a basis in ONE
- the application of UseMARCON in BIBLINK
- the EQLIPSE modules further developed in EQUINOX
- the promotion of the standards resulting from the EDILIBE projects by the IMPRESS and EXCEL Accompanying Measures
- the market analysis for exploitation of the results of PLAIL in LISTED
- the DALI and EUROPAGATE software used as a basis for UNiVerse
- the CANAL/LS Server used in VILIB

4.3.4. Continuing emphasis on commitment to open standards

This area has seen a major shift of focus during the lifetime of the Fourth Framework Programme, from formal standardisation (e.g. the ISO OSI reference model for network services and protocols) to a more practical approach (which underlies the development of the Internet).

Projects in the Programme have been able to respond to this changing environment. There is wide application of practical standards such as the Z39.50 Information Retrieval protocol and the Dublin Core Metadata Element Set. Moreover, projects in the Libraries Programme have contributed to these activities which started as informal initiatives and moved to a more formal status after demonstration in practical situations.

Therefore, it can be said that the Programme has achieved more in this area than just continuing the emphasis on commitment to open standards. There is a visible and increasing contribution from the European library community to the development of open standards, thereby influencing the direction of standardisation needed to meet European requirements.

The role of the Libraries Programme in this sense is now widely being recognised, especially in the United States. It is unfortunate to note that EFILA did not live up to expectations that it would bring together more clearly the various European requirements and would increase the impact of standardisation activities, especially in the area of ILL.

Practical examples where activities under the Libraries Programme have taken the lead in the standardisation effort are:

- The profile work in ONE-2, integrating the Finnish and the CENL profile, the Australian UCP profile and the German ILL profile plus the Danish DanZIG profile.
- The development of the GEDI (Group on Electronic Document Interchange) recommendations, financially supported by the European Commission, and the subsequent demonstrations in EDIL, ELITE and UNiverse. As an example of impact outside the Programme, these recommendations were integrated in the Call for Proposals of the new system for the French University libraries.

4.3.5. Human resources issues, knowledge and skills transfer and organisational issues

By involving new Programme participants in relationships with more experienced participants (also from the CEE countries) the Programme has contributed to these issues. In this extended co-operation, many librarians, researchers and professionals have become involved in 'learning-by-doing' exercises.

Further knowledge and skills transfer has been achieved through concertation meetings, for example on issues related to exploitation, metadata, library statistics and digitisation.

In the area of organisational issues, through the technical and service issues addressed, many of the participants have become aware of the need to rethink and

reengineer their operations. The results of such changes cannot be seen in the short term and would require further in-depth investigation after a longer period of time.

4.3.6. Scope for links with other programmes and other sectors

The Programme has given opportunities for these links through cross-participation in other European Commission programmes (participants involved in other areas). However, these links (e.g. with other Telematics sectors and national programmes such as eLib in the UK) have not been formalised at the programme level. A co-ordinated approach in this area could contribute to increased impact.

Many projects have operated on the borderlines between library services and other domains, e.g.:

- Education and training: CHILIAS, DEDICATE, DERAL, ELVIL, ELVIL2000, HERCULE, ILIERS, LISTED.
- Disabled people: MIRACLE, TESTLAB.
- Language engineering: VILIB, TRANSLIB.

A number of concertation events, such as the metadata and digitisation workshops, have explicitly invited participants in other sectors to attend and present. In one specific case (ILSES/NESSTAR), explicit links were formalised between projects in Telematics for Libraries and Information Engineering.

4.3.7. New alliances with traditional partners or with new partners

The Programme has allowed the continued involvement of traditional partners (vendors, publishers, and information providers) as participants and sponsors to further research the developments of business relations in the electronic environment. New partners such as professional societies, archives and collecting societies have also been involved. The museum community is currently involved in the project ONE-2 that aims at defining an interoperable profile between Memory Institutions.

It is worth mentioning the ECUP+ and CECUP initiatives which have expanded and strengthened the work achieved through ECUP and bring together librarians, information providers and publishers to discuss special agreement on copyright issues. In TECUP, various models of practical implementations are tested, based on the results of ECUP.

4.4. Impact on other programmes

4.4.1. National perspective

For the NFPs, the Libraries Programme has had significant impact at national level and synergies with national programmes have been achieved.

For **Belgium** and **Greece**, more could have been achieved.

For **Denmark**, sufficient synergies in the work related to standards, copyright and digitisation were achieved.

For **Spain**, the Programme contributed to influencing local and regional programme agendas.

For **Finland**, there were no co-operative library development projects before the Libraries Programme, and it had a great impact on national programmes. Transfer of information was observed in both directions.

For **Ireland**, the libraries Programme stimulated the start of a real Libraries Programme in Ireland and led directly to the setting up of a National Policy on Libraries and Information Services Project.

For **Italy**, the Libraries Programme created a new awareness of the importance of innovative and multimedia library services, and in this field, influenced the national policy (Mediateca 2000 – Digital Library).

For the **Netherlands**, the Programme stimulated libraries to participate in research programmes. Originally most libraries did not have a research tradition. The general perception is however that that influence remains confined to the main research and public libraries, such as the university libraries, the Royal Library, Pica and the main public libraries of Amsterdam, Utrecht, Den Haag and Rotterdam.

The requirements of the Programme were cumbersome, bureaucratic, time-consuming for smaller libraries. Besides it must be said the impact is especially positive when the problems as stated in the Programme were exactly in line with the research or practical problems of the proposers. For the Dutch situation it can be safely stated that it evoked or at least stimulated several programmes at the national level. Furthermore it stimulated research in research institutions and universities.

For **Sweden**, impact and synergies have been achieved and issues raised by the projects EDUCATE, DEDICATE and EQLIPSE for Sweden have been taken up nationally.

For **Norway**, the Libraries Programme has contributed to greater focus on library research in general and impact and synergies have been achieved. Issues raised by ONE and NEDLIB have been taken up nationally.

However, for **France** the Libraries Programme was felt to be very research-driven. Impact and synergies are less clear-cut although know-how transfer has been achieved and some building blocks have been reused in national projects. Digitisation issues raised by the Libraries Programme have been taken up nationally.

For the **UK**, the Libraries Programme has not had a significant impact on the whole country, but it did make an impression in some areas. Some organisations that were successful in achieving funding under the Telematics for Libraries Programme were also successful in achieving funding under national programmes and from other sources. Individual organisations may therefore feel there has been some synergy. However, synergy between the Libraries Programme and other programmes was not obvious from the perspective of the UK National Focal Point.

For **Switzerland**, as a non-EU country, most libraries did not feel concerned with the Libraries Programme.

Important aspects that have been mentioned are the awareness raising and information transfer resulting from the Libraries Programme, an indication that the Programme has good visibility in most countries.

Perceived impact from the Libraries Programme in national environments appears to be very much dependent on the starting point in a particular country. At the one extreme there is the perception in the UK, where there is a strong national programme, that the Libraries Programme had only a marginal effect. At the other extreme, in Ireland there was no co-ordinated programme; there the Libraries Programme is considered to have been instrumental to the establishment of a national programme.

In other environments, the Libraries Programme is felt to have contributed to focusing national activities, especially in areas where the Programme was in line with priorities of the libraries community in that country.

4.4.2. International perspective

The respondents from JISC and GlobalInfo expressed the opinion that the Libraries Programme has had an impact on the library communities in the UK and Germany, and provided impetus to regional and local initiatives. Experiences and products from the Libraries Programme (the ONE software was mentioned explicitly) have been used in these national programmes.

However, the synergy with national initiatives is considered to have been insufficient. One respondent suggested that linkages should be encouraged, giving opportunities to share and learn from each other.

According to the respondents, the Libraries Programme has contributed to the goal of achieving a European Library Space, by improving co-operation amongst libraries in Europe, establishing improved services to European citizens, and through technological development. In the opinion of one of the respondents, this contribution was relatively small and could be improved.

4.5. Products and services

4.5.1. Overview: potential products and services

A table of potential emerging products and services from FP4 is attached in **Appendix 3**.

4.5.2. Products

Many of the FP3 RTD projects supported by the Libraries Programme, have resulted in software packages (or modules) being used when implementing library automation. These software packages are often made available for other implementors as freeware or shareware. For FP4, we only potential and expected

products can be mentioned because the Programme is not yet completed i.e. it is still running.

4.5.3. Services

→ Broker services and portals

A number of projects have addressed the issue of providing unified interfaces as a one-stop-shop service to specific resources. Balticseaweb is concerned with information related to the marine environment in the Baltic Sea region, Decomate II with economics, EULER with mathematics, and ELVIL with legal resources. LIBERATOR provides access to regional community information, whereas PRIDE and TOLIMAC concentrate on authentication issues in accessing general information resources.

The relationship between libraries and education has always been important. In the new electronic environment, libraries need to make sure that they retain that role. To address this, several projects have developed services in the educational field, with the objective of either training librarians in the new technological environment (DEDICATE, LISTED) or focusing on specific user groups (children and teenagers: CHILIAS, HERCULE, VERITY; users in remote areas: DERAL).

→ Digitisation and digital collections

With the technological possibilities of digitising material, there is also an increasing need for co-ordination of the digital collections, especially where the originals are available in multiple copies in different institutions.

The LAURIN project brings together a number of newspaper clipping archives with the aim of co-operation in selecting and giving access to digitised newspaper clippings. DIEPER aims to establish co-operation between libraries that hold electronic copies of scientific journals.

These projects aim to build a virtual library for these specific material types, with the explicit inclusion of publishers and rights holders.

→ Distributed catalogues and document delivery

Work on linking distributed catalogues is continuing, and a number of projects put additional focus on services for document delivery. The resources under consideration are distributed across multiple libraries to which users can then have access. This involves work on distributed union catalogues, on managing access and on acquiring the authority to use materials and resources, as well as on the delivery of the resources. ELISE II builds a service for images, ONE-2 enhances access to national and regional catalogues with document ordering facilities, while MIRACLE and TESTLAB concentrate on access to and delivery of materials for use by visually handicapped users.

→ Indexing, bibliographic and metadata

In the electronic environment, there is an increasing need for the establishment of co-ordinated agreements for description of resources. On the basis of such agreements, services that are applicable across Europe can be developed. Some project therefore concentrate on the establishment of such standards and build services that demonstrate the applicability.

BIBLINK defines a standard description to be used in exchanges between national bibliographic agencies and publishers, NEDLIB looks at standards of description to enable a co-ordinated approach in long-term archiving of deposit materials, while MASTER establishes a description standard for manuscript collections.

➔ **Licensing / publisher interface**

The issue of the licensing of electronic material has become a major concern for many projects. One specific project in the Telematics for Libraries Programme, TECUP, aims to bring together the various experiments and proposed solutions in a range of other projects under the Programme.

TECUP is based on European Copyright User Platform (ECUP) and the Copyright Awareness Campaign for Librarians, which aimed to be a true European platform of dialogue in the field of the copyright.

It maintains links with various projects in the Libraries Programme, including CANDLE, Decomate II, DIEPER, LAURIN, NEDLIB and PRIDE, and aims to analyse, define and evaluate a wide range of practical mechanisms for access to electronic information.

5. EXPECTATIONS AND BARRIERS

Many projects under Telematics for Libraries still have a considerable amount of work to do. By addressing some of the comments on barriers presented below, the European Commission may still be in a position to enhance the overall impact of the FP4 Programme, and may be able to improve conditions for participation in future programmes.

From project perspective

⌘ About half the project co-ordinators who responded see no barriers to participation in the Programme. Almost all of those who do see barriers, point to financial and administrative issues.

⌘ In the first place, writing a proposal is not easy and takes a lot of resources. It can sometimes dissuade potential participants from even trying.

⌘ Several remarks were made on the fact that the project participants have insufficient expertise in project management issues, which in the complex environment of international partnerships are all the more crucial in order to ensure successful running of a project.

⌘ Language problems are mentioned from France, Italy and Spain, showing that it requires more effort for them to write reports in English.

From National Focal Points

⌘ Several NFPs point out that there is a perception in the field that involvement in the European Programme is very difficult and very bureaucratic. There are indications, however, that this view is not specific to the library area but extends to all areas of EU-cofunded research.

⌘ They are almost unanimous in their perception that financial issues are a major barrier, with one NFP adding the specific point that it is difficult to find matching national funding.

⌘ Many of the NFPs identify a lack of skill in the field related to proposing and managing projects, which would form a barrier preventing organisations becoming involved.

6. ISSUES FOR FUTURE CONSIDERATION

The responses to the questionnaires pointed to the following issues for future consideration:

⌘ Content issues

There are a number of sectoral projects that look at providing information in specific domains (education, legal information, socio-economic etc.). In many cases these projects foresee a potential widening of their scope to other domains. It might be useful to bring these projects together to discuss their approaches and look at overlap in user requirements.

⌘ Communications

To address the complaint that procedures are difficult, the European Commission could try to clearly explain why such procedures are in place and what their benefits are.

⌘ Project management support

As many organisations are public funded institutions where project management is not a core competence, it could be helpful to provide tools for project management, such as a template project handbook or examples of best practice. In addition, the provision of specialist knowledge and course material covering specific aspects (exploitation planning, publication strategy) could possibly help to decrease the perceived overhead.

⌘ Quality and impact management

The impact of projects could be helped by on-going monitoring of content and quality, perhaps through a closer relationship between reviewers and the projects.

⌘ Synergies

As the relationship between on the one hand, national priorities and initiatives, and on the other hand priorities and initiatives at a European level, seems to be a crucial factor for impact, there is a continuous need to stress the importance of the National Focal or Contact Points. They would have the role of translating the priorities of the European Commission for national environments, as well as acting as the eyes and ears of the Commission in drawing awareness to national developments.

Closer and more formal contacts with national programmes on possible alignment of objectives, priorities and approaches could be useful to increase the impact of the programme.

⌘ Exploitation

The European Commission might wish to focus more on exploitation issues in the proposal phase and to increase awareness of the market place.

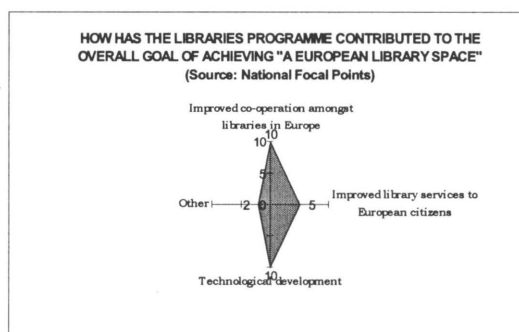
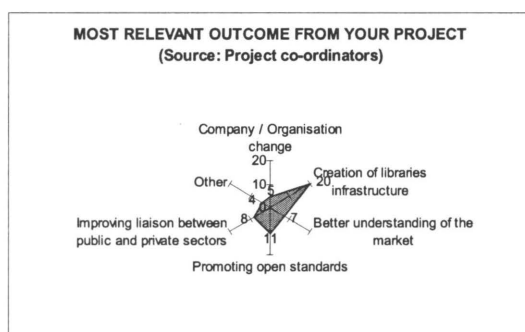
⌘ Emerging methodologies and standards

The European Commission should pay continuous attention to the emerging technologies and standards in the fast changing environment of the Internet, and encourage projects to implement and test these.

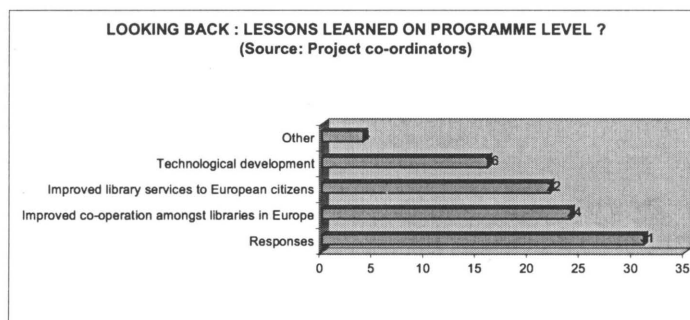
7. CONCLUSION

It must be stressed that conclusions can only be preliminary, since the Programme is on-going with only approximately half the projects having reached completion.

That having been said, the Libraries Programme is widely acknowledged for contributing to its goal: "The creation of a European Library space", as indicated by the responses to the questionnaire in this study. It does so by contributing to the technological developments in the library field, by improving co-operation amongst libraries in Europe and by improving library services to European citizens.



An important effect of the Programme has been that it has further developed the human network in the library world that was created under previous programmes. It helped establish relationships in Europe between libraries of various types, and with traditional and new partners.



The role of projects in the area of standardisation (with most notable examples Z39.50, Dublin Core and EDIFACT) is increasingly being recognised around the world. Since the start of the Programme, European organisations have moved from a following into a leading role in these areas of standardisation, at the same time adapting to the general trend from formal to informal standardisation in the area of Information and Communication Technologies.

In the projects funded under the Programme, a wide variety of technical and service issues are being addressed covering many library domains (e.g. manuscripts, children's materials, materials for the blind) and specific professional domains (e.g. legal, socio-economic, mathematical). There are several promising products and services that are being researched, and which form an interesting potential for future deployment.

However, it has also been identified that the impact of the results depends heavily on the approach towards exploitation. This is an area that requires strong attention in the Programme, as it can be considered a weakness at this point in time. As a result of the fact that many organisations involved in the Programme are publicly funded, not-for-profit institutions, there seems to be a lack of skills and experience in this area that was recently addressed through an exploitation workshop.

The Programme has succeeded in attracting participation from many libraries, but the participants represent only a part of the European library community: almost two-thirds of participants are national and academic libraries, with public libraries only accounting for 25%.

While the Programme succeeds in attracting participation from all Member States and several associated states, and while many national representatives feel that it is having a positive impact on the national environment, the creation of synergies with national programmes could be improved.

APPENDIX 1: FP4 projects

Projects	Actions Lines	Call Topics	Key words
Balticseaweb	C	8	Bibliographic databases; Document access/delivery (electronic); Geographic information; Geographic information system; Information retrieval; User interface
Biblink	B	6	Bibliographic records; Data exchange; Electronic publications and publishing; Metadata; National bibliographic services
Candle	B	6 bis	Document access/delivery (electronic); Library management; Serials; World Wide Web
Camile	CA	3	Performance measurement / indicators; Quality management; Standards
Casa	B	4	Bibliographic records; Distributed databases; Networking; Serials; SR/Z39.50; Union catalogues; World Wide Web
Cecup	AM		Copyright; Central & Eastern Europe
Chilias	A	2	Children's libraries Information skills; Multimedia; Public library services; World Wide Web
Cobra+	CA	2	Bibliographic records; Electronic publications / publishing; Metadata; National libraries
Debora		2	Document access/delivery (electronic); Rare books; World Wide Web
Decomate II	B	4-5 bis	Access control; Copyright; Current awareness services; Digital library; Distributed library services; Document access/delivery (electronic); Licensing; SR/Z39.50; World Wide Web
Dedicate + PECO	C	12	Central & Eastern Europe; Distance learning; Information skills; World Wide Web
Delicat	A	2	Bibliographic records; Client-server architecture; Library catalogues; Quality control; User interface
Deral	C	12	Distance learning; Public libraries; World Wide Web
Dieper	A	2	Bibliographic records; Digital library; Electronic publishing; Library catalogues; Quality control; Serials access; User interface
Ecup+	CA		Copyright; Document delivery; Licensing
Elisell	B	4	Digital library; Electronic library; Image banks; Networking; Remote image delivery; Z39.50
Elite	B	7	Distributed library services; Document access/delivery (electronic); Networking
Efila+	CA	4	Implementors forum; Interlibrary loan; Library automation applications; Standards; SR/Z39.50
Efila97	AM	4	Document access/delivery (electronic); Interlibrary loan; SR/Z39.50; Standards
Elvil + PECO	C	8, 9, 11	Distance learning; European legislative information; Multimedia; Thesaurus; Training; World Wide Web
Elvil 2000 + PECO	C	8-9-10 bis, 11, 12	Distance learning; European legislative information; Intelligent agents; Multimedia; Thesaurus; Training; World Wide Web
Equinox	A	3	Electronic library; Library management; Performance measurement / indicators
Euler	B	4-5 bis	Document delivery; Digital library; Dublin Core; Electronic publishing; Heterogeneous digital resources; Mathematics; Metadata; User interface
Excel + PECO	AM		Book trade; Central & Eastern Europe; EDI/EDIFACT
Exploit	AM		Central & Eastern Europe; Dissemination of results; Exploitation of results

Projects	Actions Lines	Call Topics	Key words
Harmonica	AM	1, 7, 8	Bibliographic records; Multimedia; Music libraries; Networking; Standards
Hercule	C	8-9-10 bis	Children's libraries; Multimedia; Public library services; World Wide Web
Ifla-EU	AM		Dissemination of results; Exploitation of results
Iliers	A	1	Library catalogues; Multimedia; Public library services; Services for children; Training; User interface; World Wide Web
Ilses	C	8, 9, 11	Distributed databases; Information retrieval; Metadata; Social science datasets; World Wide Web
Impress	AM	6	EDI/EDIFACT; Standards
Laurin	A	2	Copyright; Digital newspaper clippings; SR/Z39.50; Thesaurus; World Wide Web
Libecon + PECO	AM		Library economics; Performance measurement / Indicators; Statistical database
Liberation	C	11	Charging / cost recovery; Electronic library; Electronic publications & Publishing; Hypermedia; World Wide Web
Liberator	C	8-10 bis, 11	Public library services; Regional information services; World Wide Web
Listed	C	12	Adult independent learners; Copyright; Distance learning; Lifelong learning; Public library services
Malvine	B	4-5 bis	Distributed databases; Document access/delivery (electronic); Manuscripts; Networked resources – access; OPAC; SR/Z39.50; World Wide Web
Master + PECO	A	2	Document access/delivery (electronic); Manuscripts; SGML; Standards; Union catalogues
Miracle	B	4-5 bis	Braille; Distributed library services; Music libraries; Visually disadvantaged
Nedlib	A	2, 6 bis	Archives; Copyright; Deposit collections; Electronic publications; Preservation
One 2	B	4-5 bis, 6 bis	Document access/delivery (electronic); Interlibrary loan; OPACs; SR/Z39.50
Pride	C	8-9-10 bis	Cost recovery; Digital library; Electronic resources; Interlibrary loan; Selected dissemination of information; User authorisation
Publica + PECO	CA		Information Society; Public library services
Tecup	B	7 bis	Licensing; Business models; Document access / delivery (electronic); Publisher-library co-operation
Testlab	A	2, 11	OPACs; Public library services; Visually disadvantaged user requirements
Tolimac	A	3	Encryption; Library management; Networked resources – access; Smart cards
Universe	B	4	Distributed library services; Document delivery; Electronic library; Interlibrary loan; SR/Z39.50; Union catalogues
Verity	C	8-9-10 bis	Electronic library; Electronic resources; Information skills; Intermediary services; Public library services; Young people
Vilib	C	8-9-10 bis	Information retrieval; Multilingual searching; Natural language processing

APPENDIX 2: List of publications from 1994-1998

- *Convergence in the digital age: challenges for libraries, museums and archives: proceedings of a seminar held in Amsterdam on 13-14 August 1998*. Luxembourg. 1999. ISBN 92-828-8162-8.
- *Les bibliothèques publiques et la Société de l'Information*. J. Thorhauge, G. Larsen, H.-P. Thun, H. Albrechtsen. 1998. ISBN 92-828-5270-9.
- *Las bibliotecas públicas y la Sociedad de la Información*. J. Thorhauge, G. Larsen, H.-P. Thun, H. Albrechtsen. 1998. ISBN 92-828-4250-9.
- *Library economics in Central and Eastern Europe*. P.D.C. Ramsdale, D. Fuegi. 1997. ISBN 92-828-1562-5.
- *Public libraries and the Information Society*. J. Thorhauge, G. Larsen, H.-P. Thun, H. Albrechtsen. 1997. ISBN 92-828-0505-8.
- *International Conference on Library Automation in Central and Eastern Europe, Budapest, 10-13 April 1996; conference proceedings*. 1997. ISBN 92-828-0305-8.
- *State-of-the-art of information technologies in libraries in the Nordic countries*. NORDINFO. 1997. ISBN 92-827-8727-3.
- *Deposit collections of electronic publications*. J.S. Mackenzie Owen, J. van de Walle. 1996. ISBN 92-827-7643-3.
- *Technical briefings for systems librarians: Client server architectures in libraries; Search and Retrieve (SR) over X.400: Document File and Retrieval (DFR) and the Internet*. J. Ashford (ed.). 1996. ISBN 92-827-7644-1.
- *Modèles pour la fourniture de services bibliographiques en Europe*. M. Lenart. 1996. ISBN 92-827-7888-6.
- *Knowledge models for networked library services*. J.S. Mackenzie Owen and A. Wiercx. 1996. ISBN 92-827-5838-9.
- *Library performance indicators and library management tools*. S. Ward, J. Sumsion, D. Fuegi, I. Bloor. 1995. ISBN 92-827-4901-0.
- *Chipcard use in libraries and information webs. recommendations to create intelligent libraries in Europe*. J. Akkermans, A. Davies. 1995. ISBN 92-827-4602-X.
- *Business analysis of the library systems market in Europe*. KPMG. 1995. ISBN 92-827-4687-9.
- *Artificial neural networks for information retrieval in a libraries context*. J. C. Scholtes. 1995. ISBN 92-827-4690-9.
- *Copyright on electronic document delivery*. P. Bernt Hugenholtz and D.J.G. Visser. 1995. ISBN 92-826-9565-4.

- *Library development in Central and Eastern Europe: from assistance to cooperation - An investment for the future: proceedings of a workshop held in Strasbourg 3-4 February 1994.* R. Roberts (comp.). 1994. ISBN 92-826-2657-1.
- *Retrospective conversion: conversion of card catalogues in German university libraries. - Methods, procedures, costs.* Survey by Deutsches Bibliotheksinstitut, Berlin (1993). Translated by the European Commission. 1994 92-826-9468-2.

APPENDIX 3: Emerging products and services

PROJECT	PRODUCTS	SERVICES	PROJECT	PRODUCTS	SERVICES
Balticsea web		Resource sharing and networking between libraries in Baltic Sea countries	Impress	Acc. measure	
Biblink		Specifications of services for linking publishers and national bibliographic services	Laurin	Software for digital clippings: LibClip	Pilot services related to digital clippings
Candle	Software modules for management functions: rights management, distributed access and security		Libecon 2000 + PECO	Acc. measure	
Camile	Acc. measure		Liberation	Tools for linking Internet and CDROM	
Casa	Software modules for co-operative archive of serials and articles: Euro CASA server; national CASA servers; community CASA server prototype		Liberator		Web services related to regional information services - RIS
Cecup	Acc. measure		Listed		Distance learning
Chilias		Web services for children in libraries	Malvine	Software module: retrieval manager allowing parallel, multi-site searching and navigation at the collection level, via metadata.	
Cobra+	Acc. measure		Master PECO	Software for the creation and use of library manuscripts in electronic form	Services based on manuscripts in electronic form

PROJECT	PRODUCTS	SERVICES	PROJECT	PRODUCTS	SERVICES
Debora	Tools for digitizing vulnerable library materials		Miracle		Services allowing libraries to access and download Braille music in digital form
Decomate II		Web services related to economics content	Nedlib		Metadata specifications for digital preservation services
Dedicate + PECO		Distance Learning	One 2	Z39.50 tool kits	Distributed access services
Delicat	Software for quality control of bibliographic database		Pride	Software modules for setting up a directory of services in a library environment	Adding value to networked information services delivered through libraries
Deral		Distance education in rural areas via libraries	Publica + PECO	Acc. measure	
Dieper		Web services related to access and retrieve of digitizing materials in a distributed environment	Tecup		Services specification and test for dealing with copyright issues
Ecup+	Acc. measure		Testlab		Web services for visually disadvantaged user in libraries
Elise II		Demonstrates an operational image retrieval service based on a heterogeneous set of networked image banks located	Tolimac		Specification and prototyping of services related to access control through chipcard
Elite		Specifications and prototyping of integrated library services	Universe	Client software for use by librarians in interlibrary loan and document delivery	Large scale demonstrators for global, open distributed library services

PROJECT	PRODUCTS	SERVICES	PROJECT	PRODUCTS	SERVICES
Efila+	Acc. measure		Verity		Web services for teen ageers in libraries
Efila97	Acc. measure		Vilib	Tools for multilingual serarching	
Elvil + PECO		Web services related to law and politics content			
Elvil 2000 + PECO		Web services related to law and politics content			
Equinox	Tools for library performance measurement and quality management system				
Euler		Web services related to mathematics content			
Excel + PECO	Acc. Measure				
Exploit	Acc. Measure				
Harmo-nica	Acc. Measure				
Hercule		Web services for children in libraries			
Ifla-EU	Acc. Measure				
Iliers	Multimedia library information system				
Ilses		Web services related to socio-economic information			

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This report provides integrated presentation of results and related findings of the assessment of the impact of the Telematics for libraries programme under the fourth framework programme.



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