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**A Comparative Analysis of Public, Semi-Public
and Recently Privatised Research Centres
Methodological Report**

Prepared by PREST, University of Manchester
on behalf of the project consortium

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A comparative Analysis of Public, Semi-Public and Recently Privatised Research Centres

Consortium Composition

PREST, University of Manchester UK, CSI, Ecole des Mines, France; SISTER, Sweden; RUSTEP, CSIC, Spain; and ECOTEC, UK; with support from Technopolis France & The Netherlands, CNR Italy, Atlantis Greece, L.Henriques, Portugal and Andrei Mougatov, AGUIDEL, France

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Introduction and Overview of the Methodology

The proposal for the project originally aimed to study a minimum of 40 major public or semi-public research centres in the European Union to analyse their specific features – status, organisation, research potential, performance and resources at their disposal. To continuously monitor the development of these centres in both cases using information collected directly or indirectly in order to assess their performance and the reforms which they have had to carry out in the public sector.

The project consortium decided at an early stage that the development of a picture of European public research centres would fill an obvious gap in the knowledge of European research performers. In particular, the non-university sector, including government institutes, private non-profit research centres and regional centres, had not been studied at an aggregate level. Building upon the knowledge of the consortium members of their own national systems, it was decided to take full advantage of the project opportunity and compile a full data set of European public research centres and to complement this with a set of 40 plus case studies of representative centres. A brief country report sets out the policy framework and context for each member state's database and case studies.

The methodology adopted by the Consortium comprised the compilation of a large database of all identified, relevant, research centres. These are research centres classed as being publicly owned, semi publicly owned or recently privatised. The interpretation of recently privatised is within the last ten years. The construction of the database involved determining appropriate fields, which could be considered as suitable indicators for the main comparative mission of the research.

In conjunction with the construction of the database of relevant indicators a schedule of case studies was initiated. The case studies were selected on the basis of the criteria applied in the Second European Report on Science and Technology Indicators (REIST 2), particularly size, geographical location and type of centre to produce a sample reflecting the diversity of means employed to implement public research policy in the EU countries.

The fieldwork of the project was far more extensive than initially envisaged in the proposal. This can be attributed to the development of creative ideas from project members as the research evolved.

This report describes the three elements of the study methodology; creating the database, the case studies and the country reports. It presents the analytical frameworks, which were used to interpret the database, and also relational mapping work, which was added to the project to provide a further dimension to the interpretation of the data.

The database

Data collection comprised three stages. The first stage made use of existing data sources. Published sources of data were gathered directly from the research centres. Secondly an Internet based 'pre-survey' was used to confirm and collect further

information on the identified research centres. In the final stage the data was printed and mailed to the research centre for validation.

Inclusion and Exclusion Criteria

At the start of this report it is important to qualify the inclusion criteria of research centres in the database. The research centres included in the database are national, not international and consequently pan European research centres such as the EMBL are excluded from the study. Importantly, also excluded from the study are university dependent research centres, that is, centres that are, effectively, integrated with the university research systems of the member states. A major example is the French CNRS, excluded because of its high level of integration with university teams. Social Science research centres have been included in the database.

There has been a period of time available to the consortium members to review the content of the database and on reflection some research centres were removed and others added.

The Country Reports

The objective of each country report is to contextualise the research centres selected for inclusion in the database. This helps to explain the database content. Each country report presents an overview of the organisation of research in the country and describes important recent policy initiatives impacting on the organisation of research.

Each country had to make firm decisions about the inclusion of research centres. Germany included 100% coverage of Helmholtz, and treated Fraunhofer etc. by entering institutes with the largest staff numbers to give 66% of Max Planck and WGL institutes. The Spanish team had a local problem in that several not for profit institutions are not really doing research are organisations for the purpose of attracting funding/promote research. Consequently they had to determine intuitively which centres were genuine research centres. Italy excluded CNR.

Database Construction

Details of the structure of the database are presented in the guidelines issued to research centres for the purposes of validation - [Annex I](#).

The software package Microsoft Access was chosen as the programme for the construction of the database. This software was selected, as it is widely available and importantly would regulate data entry by the members of the consortium to the set fields and response options. This facilitated a coherent data set suitable for comparison.

Initially a topology of possible indicators of comparison was generated during the first consortium meeting. This produced in a list of classificatory variables, which was circulated amongst the consortium for testing against actual sources of information i.e. Annual reports, Web sites. Consequently a revised list resulted and this became the first version of the database. The database was then tested more thoroughly and

further amendments included during the second consortium meeting. The final version of the database was then agreed.

The final version of the database is presented with this report on the compact disk. The database comprised nine forms and 131 fields, for the collection of data. The selection of the fields was the product of the original project brief and further elaboration by the project consortium during the project meetings. The project aimed in the first instance to develop indicators categorised according to various broad classes such as resources, outputs, competencies, activities, commercial orientation and organisation. The preliminary list of indicators provided in the contract has been covered by the development of the database and the case study reports.

The first form in the database is concerned to gather contact details of the organisation and to identify the sources used for data gathering. These were predominantly annual reports and research centre web sites. Given that many of the research centres have changed significantly in terms of organisational form, ownership type, accountability, funding sources and other factors since their original inception, the year of creation field had to be specifically determined. The earliest date of original foundation was decided to be the appropriate year of creation.

Form two focuses upon identifying the ownership, accountability and governance of the research centre. The inclusion of these categories will allow the identification of trends of change in the legal identity of organisational forms. This is significant, as the trends will reflect the particular policies of the relevant countries.

Discussion about the definitions of the selected terms was essential for the purposes of comparison across the selected study countries, as the meaning of specific legal terms can vary across countries. In addition there are country specific legal entities that had to be considered, for example patient associations. The final appropriate options decided upon as representing the research centres across Europe are shown clearly in [Annex I](#).

The sources of income screen proved quite problematic and are probably the weakest sets of data gathered for the purposes of the comparative study. All figures had to be converted into Euros and this means that within the data there are differences in dates used for conversion and consequently variations in conversion rates. For the UK a consistent conversion rate of 1.62 was employed, however the dates of available income data from the research centres varies. For other countries a consistent conversion rate may not have been used.

Nonetheless the differences are not significant enough to discount the validity of the 'big' picture representations of research centre funding extrapolated from the data.

The form linkages and financial relations identifies the relationships that the research centre has with other organisations. The strength and nature of the relationship is identified. Part of the objective of the use of these indicators was to explore the variety of interactions between the multinational research centres and the national research centres.

The other sections of the database gather information based on the structure and location of the organisation and the activities carried out by institute. For activity the standard OECD Frascati definitions for research were employed together with other variables employed to take into account activities that are more difficult to classify using only the OECD research typology, for example diffusion and extension activities.

Data was also gathered on sectors that the research centre addresses and areas of scientific capability. In both cases the standard OECD classifications were employed. The final screen asks for the number of staff in the organisation and seeks to identify research staff and doctoral students. The mission statement of the organisation is also included.

The final database represented 15 countries and contained 771 records of information from national research centres.

Data Validation

Once the project research teams had compiled the records of information about each research establishment a process of validating the data was entered into. Each record was printed individually and sent out to the relevant research centre. The table below indicates that this process of in-house compilation and then request for validation produced a high response rate. This response rate was much higher than could have been expected had a survey style method been adopted whereby the research establishment would have been asked to provide the required data in the first instance.

All research centres in the database have been given the opportunity to check data entered. Consequently an assumption has been made that where a response has not been received then the data is correct. This leads the project team to have a high level of confidence in the data contained within the database.

Country	No of records	Percentage Records returned
Austria	31	42%
Belgium	31	68%
Denmark	48	67%
Finland	36	75%
France	105	44%
Germany	76	60%
Greece	52	62%
Holland	49	40%
Ireland	6	100%
Italy	66	84%
Luxembourg	4	50%
Portugal	46	100%
Spain	90	90%
Sweden	48	81%
UK	83	53%
Total	771	

The table above indicates the final status of the database in terms of records that were actually returned by the research centres: -

Evaluation of database construction

The construction of the database was an evolutionary process, which has meant that design considerations took second place to content in terms of the team's priorities. This has meant that there are inconsistencies in the presentation of the interfaces and weaknesses in navigation around forms, which inhibit user friendliness. However as the data has now been gathered future work on the database could improve upon the human computer interface elements of the database.

There have been a large number of comments and thoughts about the database content and what could and should have been included. Some of the more important suggestions for future development of the database are considered below.

The identification of the year of creation of the organisation could be expanded to allow space to document the important transformations. For the name of the research centre an additional field could be included for the name in the native language.

One of the most problematic classifications has proven to be ownership. In France the team commented that increasingly institutions belong to more than one source. A decision had to be made to select the majority owner. In addition Technopolis commented that private companies such as TNO and WUR gain the majority their contracts from government and should not be classed as strictly private but then again are not government owned. Further thought needs to be given to the options available for the ownership classification and additional fields introduced that will allow a larger more explanatory range of variables.

The collection of funding source data should be more rigorous. A specific financial year for data should be selected. Only that year should be considered. A valid exchange rate for each country should be determined and only that rate used for specific currency conversions. With many countries now only using the Euro as the unit of currency this will make such data gathering more straightforward in the future. Gathering of financial data proved to be the most difficult aspect of data collection. A number of research centres refused to provide the figures required.

It was suggested that in the functions category of fields a field for corporate venturing should be included. This is perhaps more relevant to former public research centres which have become private sector organisations. The number and size of start-up companies owned and sold over the last 5 years by the research centre was not a field included in the database but was an issue discussed in the case study interviews.

The human resources fields could be further elaborated to enhance clarification. Qualified research staff should be qualified permanent research staff and doctoral students are those working on their PhD under the guidance of the institute.

To summarise comments received from research centres and from members of the consortium using the database the basic structure is fundamentally sound. Further elaboration is required for certain fields in order to facilitate more detailed analysis

and to ensure that truly comparative data is gathered. This could be achieved in part by enhancing the detail available in the guide for data gathering. Fundamentally the aim of the compilation of a database of indicators for comparison of major national/European institutes has been achieved. The project team also gathered data sufficient to portray a good representative coverage of other types of research centre including new and emerging research centre types. Key institutions are included in the database and this has been validated with independent observers in each country, for example the French teams worked with the French Statistical Agency in order to ensure complete coverage.

Method of Analysis

The analysis of the data gathered for the database was carried out in two ways. The data was imported to the statistical analysis package SPSS and the spreadsheet package Excel and used by the PREST team to produce category totals and cross tabulations. The resulting output is discussed in the Analysis report and in the REIST Indicators chapter.

In addition the French partners seconded Andrei Mogoutov to produce a number of relational network diagrams. This is an experimental methodology arising from a recognised requirement to develop new methods of interpreting the gathered data.

Relational Mapping of EUROLABS Data Base: Method, Software and Application

Andrei Mogoutov, Aguidel

The relational mapping approach (RESEAULU Project) was initially developed for the exploration and analysis of heterogeneous data collections with internal links between items (social networks, socio-technical networks), with textual information (text collection, including comments and open questions) and with time-dependant data (historical and biographical data)¹. This annex presents the principles of RESEAULU software for data transformation and mapping. It will use real data from the Comparative Analysis of Public, Semi Public and Recently Privatised Research Centres project, to illustrate the different steps of analysis.

The project database consists of public non-university research centres of the 15 European countries. It contained at the beginning of 2002 some 771 entries with over 100 items per institution (including country, manpower, sectors addressed, domains of activities and main disciplinary competences).

RESEAULU software works in two main stages using different algorithms: (i) constructing association matrixes, (ii) mapping of specific relations.

¹ www.aguidel.com

1- The construction of association matrixes

The starting point is the simple cross tabulation of data collected. Table 1 presents the sectors addressed by the 771 institutions crossed per country of affiliation of these institutions.

This data is transformed in 3 steps: (i) weighted matrix, (ii) construction of matrix of expected values, and (iii) association matrix.

Table 1: Observed frequencies for sector distribution by country

Country	Agriculture	Defence	Government/ Public Services	Health	Industry	Natural Resources, Energy, Environment	Services, Infra- structure	Total
Austria	21	2	26	19	25	27	20	140
Belgium	12	4	16	13	16	19	9	89
Denmark	13	4	43	15	26	19	12	132
Finland	9	2	32	6	21	15	10	95
France	52	15	32	43	63	53	18	276
Germany	11	4	13	24	30	29	20	131
Greece	13	3	8	17	26	16	22	105
Holland	19	6	18	23	34	26	15	141
Ireland	4	1	5	4	2	3	2	21
Italy	28	1	9	26	29	18	10	121
Luxembourg	1		1	2	2	2	2	10
Portugal	12	7	19	12	29	26	14	119
Spain	14	6	18	13	65	25	18	159
Sweden	9	5	26	10	40	16	15	121
UK	31	7	22	25	15	26	20	146
<i>Total</i>	<i>249</i>	<i>67</i>	<i>288</i>	<i>252</i>	<i>423</i>	<i>320</i>	<i>207</i>	<i>1806</i>

Step 1 is optional. It takes into account specific criteria characterising items observed. The software offers to associate to any item a vector of numerical properties. For instance in this case, we have chosen a very simple vector based only on the number of staff per institution, because the number of institutions does not take into account their relative size, it thus gives more relative importance to countries who have numerous small size institutions compared to countries which have large multi-sectoral institutions (e.g. FhG in Germany).

It works the following way: the total of each record (that is the number of sectors addressed by one institution) is equal to its staff. The distribution is equal per sector since we have no information about their relative importance (in other variables where the latter is known, the ventilation depends on the degree of involvement).

Table 2: Weighted matrix for sector distribution by country

Country	Agriculture	Defence	Government/ Public Services	Health	Industry	Natural Resources, Energy, Environment	Services, Infra- structure	Total
Austria	888	256	770	1024	795	1263	692	5689
Belgium	841	62	963	973	2057	1043	592	6533
Denmark	946	354	2947	1093	2656	1645	859	10504
Finland	1345	80	3268	839	2374	2586	803	11299
France	6553	5403	9613	14680	12925	12272	6771	68220
Germany	4535	2649	1593	15573	14363	22044	7339	68099
Greece	1027	37	172	639	1631	1124	1697	6330
Holland	2675	519	3036	4040	4622	4307	1468	20670
Ireland	540	3	661	540	16	137	16	1917
Italy	1761	116	405	7092	2773	2893	2292	17336
Luxembourg	10		10	77	50	50	50	250
Portugal	1137	509	1430	727	1873	1875	843	8397
Spain	2587	642	3593	2901	5811	3797	3764	23098
Sweden	263	440	1161	355	2107	779	523	5631
UK	8134	7767	10065	12590	3790	7950	3083	53381
Total	33246	18844	39693	63149	57849	63771	30800	307354

Step 2 builds the matrix of the expected values corresponding to the 0 hypothesis of the complete statistical independence of the rows and columns of the table. The value of each cell is replaced by the combination of corresponding marginal values (i.e. multiplication of the totals of the corresponding row and column divided by the general total).

Table 3: Matrix of expected values

Country	Agriculture	Defence	Government/ Public Services	Health	Industry	Natural Resources, Energy, Environment	Services, Infra- structure	Total
Austria	615	348	734	1168	1070	1180	570	5689
Belgium	706	400	843	1342	1229	1355	654	6533
Denmark	1136	644	1356	2158	1977	2179	1052	10504
Finland	1222	692	1459	2321	2126	2344	1132	11299
France	7379	4182	8810	14016	12840	14154	6836	68220
Germany	7366	4175	8794	13991	12817	14129	6824	68099
Greece	684	388	817	1300	1191	1313	634	6330
Holland	2235	1267	2669	4246	3890	4288	2071	20670
Ireland	207	117	247	393	360	397	192	1917
Italy	1875	1062	2238	3561	3262	3597	1737	17336
Luxembourg	27	15	32	51	47	51	25	250
Portugal	908	514	1084	1725	1580	1742	841	8397
Spain	2498	1416	2983	4745	4347	4792	2314	23098
Sweden	609	345	727	1156	1059	1168	564	5631
UK	5774	3272	6893	10967	10047	11075	5349	53381
Total	33246	18844	39693	63149	57849	63771	30800	307354

Step 3 builds the association matrix. It calculates the normalized difference between observed and expected values using the following formula $(O-X)/\text{SQR}(X)$ where O is the observed value and X, the expected one.

Table 4: Association matrix of sectors and countries

Country	Agriculture	Defence	Government/ Public Services	Health	Industry	Natural Resources, Energy, Environment	Services, Infra- structure	Total
Austria	11.0	-5.0	1.3	-4.2	-8.4	2.4	5.1	2.2
Belgium	5.0	-16.9	4.1	-10.0	23.6	-8.5	-2.4	-5.1
Denmark	-5.6	-11.4	43.2	-22.9	15.3	-11.4	-6.0	1.6
Finland	3.5	-23.3	47.4	-30.6	5.4	5.0	-9.8	-2.5
France	-9.6	18.9	8.6	5.6	0.8	-15.8	-0.8	7.6
Germany	-33.0	-23.6	-76.8	13.4	13.7	66.6	6.2	-33.5
Greece	13.1	-17.8	-22.6	-18.3	12.7	-5.2	42.2	4.2
Holland	9.3	-21.0	7.1	-3.2	11.7	0.3	-13.2	-9.0
Ireland	23.1	-10.5	26.3	7.4	-18.1	-13.0	-12.7	2.5
Italy	-2.6	-29.0	-38.8	59.2	-8.6	-11.7	13.3	-18.2
Luxembourg	-3.2	-3.9	-3.8	3.6	0.5	-0.2	5.1	-1.9
Portugal	7.6	-0.2	10.5	-24.0	7.4	3.2	0.1	4.5
Spain	1.8	-20.6	11.2	-26.8	22.2	-14.4	30.1	3.6
Sweden	-14.0	5.1	16.1	-23.6	32.2	-11.4	-1.7	2.7
UK	31.1	78.6	38.2	15.5	-62.4	-29.7	-31.0	40.2
<i>Total</i>	37.5	-80.6	72.0	-59.2	47.9	-43.9	24.7	-1.7

Traditionally, the most positive values (e.g. in this case over 10) translate the most specific associations between items: UK and defence, Germany and natural resources and the environment, etc. A symmetric reading can be made about negative figures: Italy has far less involvement of its non-university public research in Government services and Defence. However there are strong limitations to such manual interpretation, this explains the software has a specific mapping interface.

2- The mapping of specific relations

The RESEAULU approach is object-oriented. The data is considered as a set of objects in a two dimensional space. Each object (that is one row or one column: e.g. France or Defence) is characterised by 2 aspects: its properties and its links.

- Properties: in our example, its size is linked to its weighted frequency (in table 2), and its shape depends on its origin (either row or column). There can be more complex sets properties like using colour for visualising the inclusion into clusters (such as those arrived through multivariate data analysis, etc.).

- Links: The association matrix provides the basis for the visualisation of links. Only the most specific couples (i.e. cells of the association matrix) are selected. The selection can be automatic or manual, which is taking into account the 15, 20, 30 or 50% of the most specific links. In this case we use the second option, between 15 and 30% depending on the number of objects. Additionally links can be differentiated (levels of thickness or colour) depending upon their observed weighted frequency (in table 2).

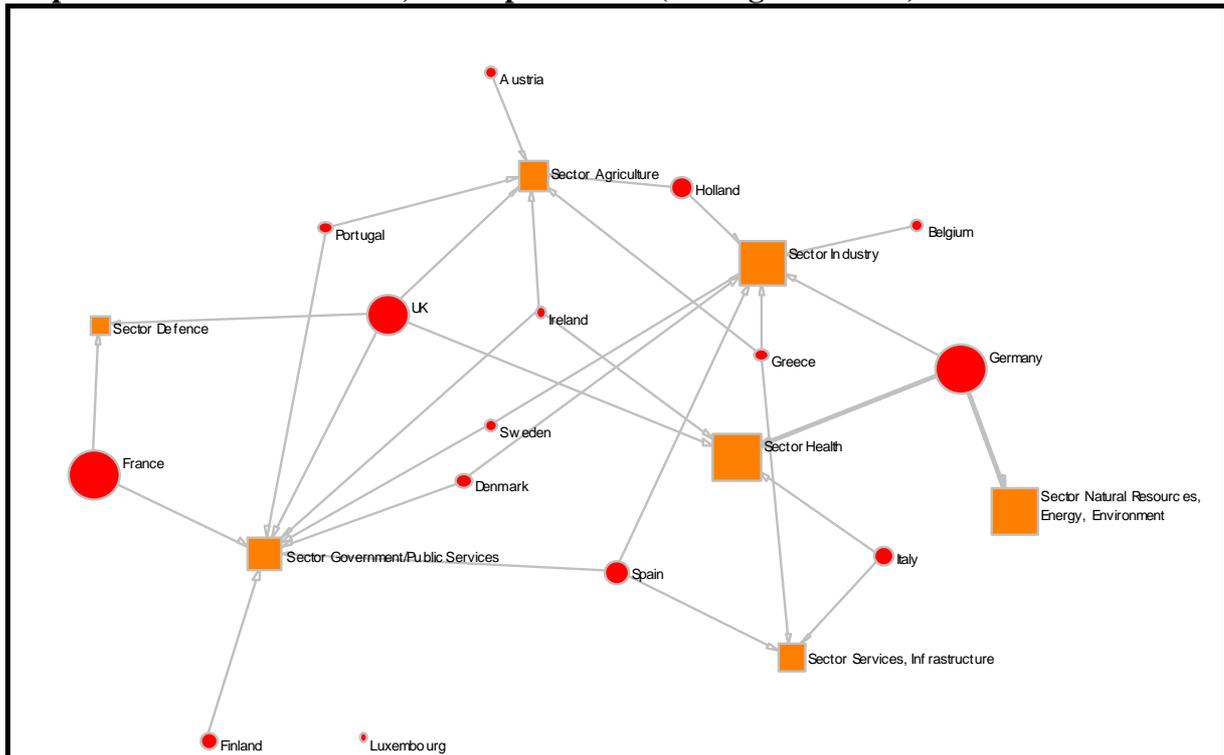
The RESEAULU algorithm optimises the positioning of objects in a two dimensional space focusing on the existence of “strong” ties.

The initial binary matrix of links can be represented without deformation only in a multidimensional space. To minimize the deformation of the final map in a two dimensional space, the software uses a dynamic positioning simulating the interaction between objects. It does so through a three step optimisation process: (i) global initial positioning of the object vis-à-vis all the other objects in the space; (ii) micro-optimisation of the positioning of the object vis-à-vis the other objects to which it is directly connected (“network neighbours”); and (iii) meso-optimisation of groups of

highly connected objects (“clusters”). The optimisation process depends on explicit rules defining symmetry properties, structural equivalence of points inside the structure, centrality and “betweenness” of objects.

The final map has no axes. The orientation of the map is determined by the three most connected or largest objects (in our examples the largest). It provides a triangular vision of the space with the first on the left side, the second on the right, and the third largest on the top.

Map 1: countries and sectors, most specific ties (cutting level 30%)

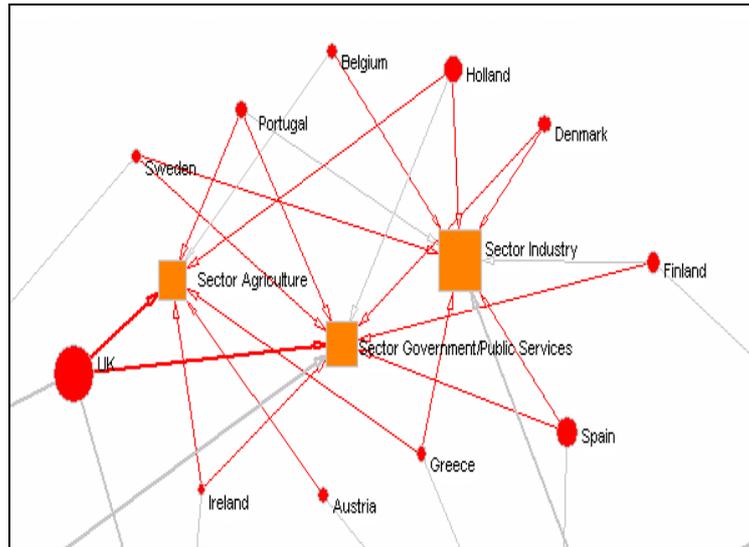


There are three complementary levels of interpretation: local, global and intermediate.

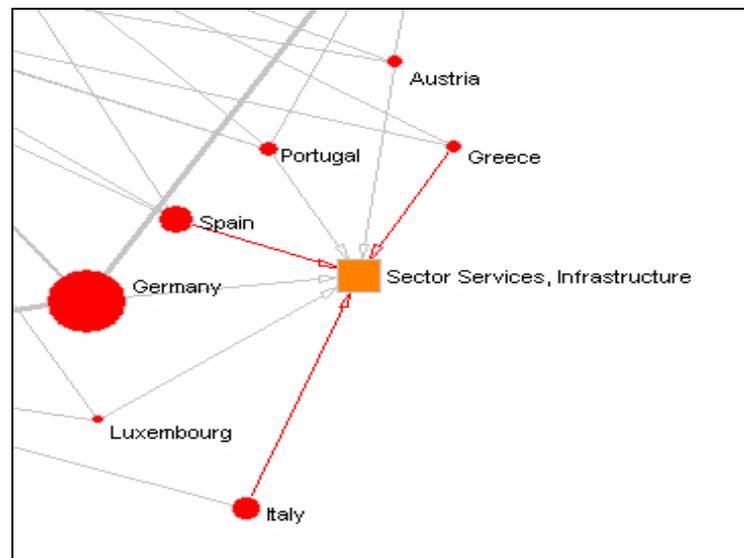
- At the local scale, the analysis deals with individual objects and is focused on drawn ties only. For instance Spain witnesses three sectors to which it is connected (industry, Government services and infrastructure), that is three sectors on which the Spanish non university public research institutions focus more that what could be expected if they followed the average European profile (that is the profile of the 15 countries together).
- At the global scale, the analysis deals with the poles that structure the space. It focuses on major oppositions in the relational profile of objects. For instance, France and Germany have opposite “privileged” relations with on one side defence and government services, and on the other Germany with industry, health and natural resources. While Spain, Sweden and Denmark, associating government services and industry, connect both poles.
- At the intermediate scale, the analysis focuses on given poles. For instance, Agriculture builds a pole of countries, which apart from this privileged connection, have all different profiles.

One of the interests of the method is to adapt the degree of specificity to the level of analysis. A strong degree of specificity (like the one used here: 30%) enables to develop global visions of the relative positioning of countries in the space of sectors. Increasing the cutting level to 40% as is proposed in map 2 for sectors Agriculture, Industry and Government/Public Services, enables to learn more on a pole, while a cutting level of 50% enables to visualise the full specificity of an object (cf. map 3 on Services/Infrastructure sector, red arrows correspond to strong ties).

Map 2: countries and sectors, most specific ties (cutting level 40%).



Map 3: countries and sectors, most specific ties (cutting level 50%)



Case studies

A complete list of completed case studies is shown in [Annex No 2](#)

The selection of case studies was based on a number of criteria. Representation of the member states was an important objective. In addition, representation of different types of research centre was also considered important. These included recently privatised research centres, hybrids and emergent non-government research centres. Research centres were also selected, which 'fit' into a number of clusters of activity that are considered of specific interest.

The full text of the 49 completed case studies will be presented presented in a separate volume.

The consortium devised a case study template and each case study contains the following details

1. Structure & History
2. Situation Today – the important points what is significant about each of these.
 - Structure, Organisation, Location, Mission, Outputs
 - Finance, Finance
 - Personnel
 - Relations with environment (linkages)
 - Commercialisation
3. Analysis of key dimensions and changes. Revisit section 2 & explain.
4. Synthesis and Conclusions. What is important and to be remembered about this case study?

One of the objectives of the analysis report will be to a synthesis of the case studies and the major transformations emerging.

The objective of carrying out the case studies was to validate the use of the public data and web sites and to ask about the research centre's strategies and future directions. It was also an important opportunity to collect data not available from public sources such as discussion of publication and patenting patterns.

Project Dissemination

This project has to date resulted in the following outputs.

- A Methodology Report to the sponsor incorporating 40 case studies. ? country reports and a database of 771 records of data on research centres.
- An Analysis Report to the sponsor
- A chapter for the REIST Indicators Report

A number of papers which are a result of the research carried out and are currently in the process of being written:-

For Presentation at the ISA in Brisbane Australia July 2002: -

- The Evolution of Public Sector Laboratories in Europe, *Deborah Cox, Katharine Barker and Luke Georghiou*

- The Relationship Between Public Sector Laboratories and Universities in the United Kingdom, *Luke Georghiou, Katharine Barker and Deborah Cox*
- “Forskningsinstituten: Det glesa landskapet” [Research Institutes: A Sparse Landscape] Paper published in the book *Det nya forskningslandskapet [The New Research Landscape]*. Nya Doxa. SISTER No 5, 2002, *Martin Hällsten and Ulf Sandström*

Lessons for future work

In order to capitalise upon the project outputs the database could be uploaded to a Web site and employed as an information resource. The research centres themselves could then consult the records and feedback to the host with updated data. The database would then become a dynamic resource presenting an up to date picture of the research centres in Europe.

The alternative is to leave the database as a static ‘picture in time’. The transformation from static to dynamic would be inexpensive in comparison to the utility of the information that would then be publicly available.

Annex I - Guidelines for validating the EUROLABS database

The Guidelines below provide details of the database structure

This note constitutes guidelines for those validating database entries for their institute. It is organised according to the screens as they appear in the database, with notes:

- explaining the meanings of the various fields; and
- where necessary, listing the possible entries where options are offered.

Screen 1: Organisation

The first section of the database is concerned with location and contact details of the institute and, as such, is reasonably self-explanatory.

The screenshot shows a web-based form titled 'Eurolabs Database' with a menu bar (File, Edit, View, Insert, Format, Records, Tools, Window, Help) and a toolbar. The main content area is titled 'Eurolabs table 1' and contains the 'Organisation' form. The form is divided into three main sections: 'Organisation', 'Contact Person's Details', and 'Sources used to find the information'. The 'Organisation' section includes fields for Country (a dropdown menu), Name of Organization (a large text box), Year of creation (a text box with a small calendar icon), Acronym (a text box), Address of corporate centre (a large text box), Telephone number, Fax number, Email Address, and Parent Organisation (all text boxes). The 'Contact Person's Details' section includes Contact Person Name, Position, Email, and Phone (all text boxes). The 'Sources used to find the information' section includes Web Address (text box), Annual Report/Accounts rec'd (checkbox), Year of Annual Report (text box), and Other documentation (text box). There are 'Save Data' and 'Page 2' buttons at the bottom right. The form is highlighted in yellow. At the bottom of the window, it says 'Record: 1 of 1'.

Parent Organisation

This field refers to laboratories that are owned either by Government or by another organisation

Year of Creation

The entry for this field should refer to the earliest date when the institute was originally founded.

The section – ‘Sources used to find information’, does not require any entry by the research centre. It is for the EUROLABS project team only.

Screen 2: Ownership and Governance

This screen refers to the ownership of the institute and the nature of its governance.

Options for **Ownership type**:

- Central Government
- Regional or Local Government
- Not for Profit Foundation
- University
- Private Sector

Options for **Governance**:

- Accountable to shareholders
- Branch of Government
- Independent public organisation or Agency
- Accountable to foundation or regulator

Ownership

Name of Organisation:

Ownership:

Government:

Not for Profit Foundation:

If Privatised state Year:

Other ownership type-specify:

Governance and Accountability

Governance/Accountability:

Comment:

BACK

Page 3

Comment box please clarify, particularly if the categories do not adequately describe your organisation

If your organisation does not fit into any of the specified categories, use the **Other Ownership** field

Options if owned by a **Not For Profit Foundation**:

- Professional Association
- Technical Centre
- Trust
- Patient Association

Options if owned by **Government**:

- National
- Regional
- Local
- Combination

Screen 3: Sources of Income

This screen deals with the institute's sources of income. Sources are typically diverse for any given centre, although it is not uncommon for a single source to predominate.

All figures given are in Euros using an exchange rate of (*insert country specific exchange rate*) and are for the year 1999 unless otherwise stated. Please complete the fields as thoroughly as possible – either in Euros or their local currency, with the choice of denomination indicated. Where necessary, we can make the conversion into Euros.

Government grant/core funding is defined as a regular allocation which is intended to support the institute, but which is not highly specified in terms of the research to be performed. It might cover salaries of permanent staff, for example, or cover a core programme of research, which the institute determines.

Subset of Government
Indicate contribution of funding received by national government and that of regional government where applicable.

All other includes for example, sales of publications, technical services or products.

Please use the box to comment on the figures provided. Identify the financial year used for data provided.

Public sector contracts: This refers to funding, which might be awarded regularly (or not) in return for specified services or research programmes. The contracts might be awarded by single tender or competitive tender and may be multi-annual.

Screen 4: Linkages

This screen is concerned with the relationships that the institute has with other organisations.

The drop-down boxes allow an evaluation of the strength of the relationship with a given organisation - Major, Minor or None. The tick boxes are provided in order to acknowledge a relationship that has a financial basis. The comment boxes allow for clarification of any relationship. An example is shown below.

EXAMPLE

A Major link is a link of considerable significance to the mission, activity or strategy of your institute. It might not necessarily be major in financial terms. A Minor link is of minor importance to the mission, activity or strategy of your institute in overall terms.

Screen 5: Structure

Screen 5 is concerned with the details of location and organisational structure of the institute.

Options for **structure**:

- Single unified organisation
- Headquarters of series of semi autonomous labs
- Branch in series of semi autonomous laboratories
- Other – please specify in comments box

Operating units refer to sub-units of a single unified organisation, which have their own budget lines and some degree of autonomy. They might be 'departments' or 'laboratories' within the institution.

Screen 6: Function and Outputs

Screen 6 refers to the type of activities carried out by your institute. Here, we have used the standard OECD Frascati definitions for research (see Adjunct below), together with other variables that take into account those activities that are more difficult to classify using only the OECD research typology. Examples include diffusion/extension activities, the provision of facilities to third parties, and certification/standards work. Please do provide comments to explain these entries to us.

Facilities - where specialised research facilities are available for users from outside the institute. These may be provided with or without technical support.

Diffusion/Extension refers to functions related to the transfer of technology and/or knowledge to users. It might include a specific mission of the institute to transfer knowledge to industry, a professional group or the public sector. It might include dissemination of outputs to users and/or non-academic activities (e.g. the public). It might include the support of spin-off companies or a science/technology park. It might include delivery of training, building upon the specific expertise of the research institute.

Certification/Standards work. This may include R&D aimed at underpinning the development of standards, certification services and/or participation by staff in standards, expert groups or negotiations.

Adjunct: OECD Frascati definitions

- **Basic research** is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view. Basic research analyses properties, structures, and relationships with a view to formulating and testing hypotheses, theories or laws. The results of basic research are not generally sold but are usually published in scientific journals or circulated to interested colleagues. Occasionally, basic research may be “classified” for security reasons.
- **Applied research** is also original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific practical aim or objective. The results of applied research are intended primarily to be valid for a single or limited number of products, operations, methods, or systems. Applied research develops ideas into operational form. The knowledge or information derived from it is often patented but may also be kept secret.
- **Experimental development** is systematic work, drawing on existing knowledge gained from research and practical experience, that is directed to producing new materials, products and devices; to installing new processes, systems and services; or to improving substantially those already produced or installed.

Screen 7: Sectors addressed

Screen 7 is concerned with the sectors of activity that the institute addresses. The sectors listed are taken from the standard industrial classification used by the OECD. Please elaborate further in the comments boxes assigned to each industrial sector.

Sectors Addressed		Name of Organisation	
Sector Agriculture	<input type="checkbox"/>	Comment Agriculture	
Sector Health	<input type="checkbox"/>	Comment Health	
Sector Defence	<input type="checkbox"/>	Comment Defence	
Sector Natural Resources, Energy, Environment	<input type="checkbox"/>	Comment Natural Resources, Energy, Environment	
Sector Industry	<input type="checkbox"/>	Comment Industry	
Sector Services, Infrastructure	<input type="checkbox"/>	Comment Services, Infrastructure	
Sector Government/Public Services	<input type="checkbox"/>	Comment Government/Public Services:	
Other sectors			

Please tick all sectors in which the institute is involved.

Screen 8: Areas of Capability

Screen 8 identifies the areas of (scientific) capability of the institute. We use a standard OECD typology to do this and refer to general fields as well as more specific sub-fields.

Note that where sub-fields are acknowledged as a capability, they should be indicated as being either 'Major' or 'Minor'

- Options for areas of S&T capability:
- None
 - Present but minor
 - Significant
 - Major for the institution

Defining Major and Minor. This should be done in terms of the size of research effort or expertise in the sub-field, compared to the overall activity of the institute.

Screen 9: Human Resources

Screen 9 asks for the number of staff in the organisation and seeks to identify research staff and doctoral students. The mission statement of the organisation is also included on this final screen.

No of qualified research staff may include research technicians.

Comment Human Resources - please elaborate here and add the year of the figures provided.

The screenshot shows a database form titled "Human Resources" with a yellow background. At the top, there is a text box for "Name of Organisation" and a red "STOP" sign icon. Below this are four input boxes for "Total Number of Staff", "No of qualified research staff", "No of temporary research staff", and "Number of Doctoral Students". To the right of these boxes is a large text area for "Comment Human Resources:". Below the input boxes are three large text areas for "Mission Statement full text", "Mission statement continued", and "Mission statement continued (3)". The form is part of a database window titled "Eurolabs Database - [Eurolabs table 2]" with a menu bar (File, Edit, View, Insert, Format, Records, Tools, Window, Help) and a toolbar. The status bar at the bottom shows "Record: 88 of 88".

Doctoral Students - Please estimate the numbers of doctoral students registered in or attached to your institute. They may work at your institute but be registered elsewhere for their degree. They may be on placements with your institute as part of their studies.

If you have any further questions or queries about validating the existing entries in the database, or adding to the entries please email: Deborah.Cox@man.ac.uk

Annex 2 – Case Studies

Austria		
Austrian Research Centre (ARCS) Seibersdorf A-2444 Seibersdorf Austria		
Belgium		
ITG Prince Leopold Institute of Tropical Medicine Nationalestraat 155 B-2000 Antwerp, Belgium	IPH - Scientific Institute of Public Health Juliette Wytsmanstreet 14 - B 1050 Brussels Belgium	CRB - Centre for biotech research Université Libre de Bruxelles rue des professeurs Jeener et Brachet 12 B-6041 Charleroi Belgium
Denmark	Finland	
RISÖ Risö National Laboratory Fredriksborgvej 399 Postboks 49 4000 Roskilde Denmark	VTT - Technical Research Centre of Finland Vuorimiehentie 5, Espoo P.O. Box 1000, FIN-02044 VTT	
France		
CETIM 52, avenue Félix-Louat BP 80 067 60 304 Senlis cedex France	INED 133, Bld Davout 75980 Paris cedex 20 France	AFFSA 23, avenue du Général de Gaulle BP 19 94701 Maisons-Alfort Cedex France
CNG - Centre National de Génotypage 2 rue Gaston Crémieux CP 5721, 91057 Evry Cedex France	CEMAGREF Parc de Tourvoie, 92163 Antony France	Bureau National de Metrologie 1 Rue Gaston Boissier 75015 Paris France
Germany		
GMD - Forschungszentrum Informationstechnik GmbH Schloss Birlinghoven D-53754 Sankt Augustin, Germany	Deutsches Krebsforschungszentrum (DKFZ) Postfach 101949, 69009 Heidelberg Im Neuenheimer Feld 280, 69120 Heidelberg Germany	Ifo Institut für Wirtschaftsforschung Poschingerstr. 5 D-81679 München Germany

Bundesanstalt für Züchtungsforschung an Kulturpflanzen Neuer Weg 22/23 D-06484 Quedlinburg Germany		
Greece		
National Agricultural Research Foundation (N.A.G.R.E.F) 19 Egialias & Chalepa, 15125 Maroussi Greece	FORTH The Foundation for Research and Technology - HELLAS P.O.Box 1527, Heraklion 71110, Crete, Greece	National Centre for Scientific Research "Demokritos" Agia Paraskevi Attikis, P.O. Box 60228, 15310 Athens, Greece
Italy		
ENEA Italian National Agency for New Technology, Energy and the Environment via Enrico Fermi 45, Frascati (Roma), 00044	INFN Istituto Nazionale per la Fisica della Materia corso Perrone 24, Genova, 16152 Italy	Istituto Nazionale per la Ricerca sul Cancro IST Largo Rosanna Benzi, 10 16132 Genova Italy
Istituto Elettrotecnico Nazionale "Galileo Ferraris" corso Massimo D'Azeglio 42, Torino, 10125 ITALY		
Ireland		
Economic & Social Research Institute 4 Burlington Road Dublin 4 Ireland	TEAGSAC 19 Sandymount Avenue Dublin 4 Ireland	National Metrology Laboratory Enterprise Ireland Glasnevin Dublin 9 Ireland
Portugal		
Instituto de Engenharia Mecânica e Gestão Industrial R. do Barroco, 174 , 4465-591 Leca do Balio Portugal		
Spain		
Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas - CIEMAT c/ Avda. Complutense, 22 E-28040 - Madrid - Spain	Instituto de Astrofísica de Canarias - IAC c/ Vía Láctea, s.n. 38200 - La Laguna Tenerife - Spain	Institut Municipal d'Investigació Mèdica - IMIM c/ Dr. Aiguader, 80 08003 - Barcelona - Spain

<p>Instituto Tecnológico del Calzado y Conexas - INESCOP Polígono Industrial Campo Alto Aptdo. Correos 253 03600 Elda (Alicante) Spain</p>	<p>Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria - INIA Ctra. de La Coruña, Km.7 28040 Madrid España</p>	<p>Institut de Recerca i Tecnologia Agroalimentàries - IRTA Passeig de Gràcia, 44-3^a 08007 - Barcelona Spain</p>
<p>CNIO: Centro Nacional de Investigaciones Oncológicas-Carlos III Ctra. Majadahonda-Pozuelo, Km 2. 28220 Madrid</p>	<p>Centro de Investigaciones Tecnológicas IKERLAN: Paseo Jose M^a Arizmendiarieta, 2. 20500 Mondragón (Guipuzcoa).</p>	
Sweden		
<p>SP – Swedish National Testing and Research Institute Sveriges provnings och forskningsinstitut. , Box 857, 501 15 Borås Sweden</p>	<p>IVF – Industrial Research and Development Corporation Argogatan 30, 432 53 Mölndal Sweden</p>	<p>VTI Swedish National Road and Transport Research Institute Statens väg- och transportforskningsinstitut 581 95 Linköping Sweden</p>
<p>NIWL National Institute of Work and Labour Arbetslivsinstitutet, Warfvinges väg 25, 112 79 Stockholm</p>		
The Netherlands		
<p>TNO Postbus 6030, 2600 JA DELFT Schoemakerstraat 97, 2628 VK Delft</p>	<p>Wageningen University & Research Centre Postbus 9101 6700 HB Wageningen, The Netherlands</p>	<p>Nmi - Institute for Metrology and Technology Schoemakerstraat 97 NL-2628 VK Delft P.O. Box 654 NL-2600 AR Delft The Netherlands</p>
UK		
<p>Biomathematics & Statistics Scotland James Clerk Maxwell Building, The King's Buildings, The University of Edinburgh, Edinburgh EH9 9JZ United Kingdom</p>	<p>National Physical Laboratory Queens Road, Teddington, Middlesex, TW11 0LW United Kingdom</p>	<p>Building Research Establishment BRE, Garston, Watford WD2 7JR United Kingdom</p>

<p>Imperial Cancer Research Fund 61 Lincoln's Inn Fields, London WC2A 3PX</p>	<p>Southampton Oceanography Centre Waterfront Campus, European Way, Southampton, SO14 3ZH, UK</p>	<p>AEA Technology 329 Harwell, Didcot, Oxfordshire, OX11 0QJ United Kingdom</p>
<p>National Foundation Educational Research The Mere Upton Park Slough Berkshire SL1 2DQ. United Kingdom</p>		

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