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Commission

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II

(Acts whose publication is not obligatory)

COMMISSION

COMMISSION RECOMMENDATION

of 6 May 1991

concerning the harmonization within the Community of research and technological development databases

(91/337/CEE)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community,

Whereas the Commission, in close cooperation with the Member States, may take any necessary action in order to promote the coordination of national policies and programmes for research and technological developments;

Whereas the Commission considers that in order to strengthen the scientific and technological bases of European industry and make the Community more competitive internationally there has to be continuous and rapid exchange of information between Member States;

Whereas the Member States already have structures capable of meeting this need, in particular national databases for research and technological development;

Whereas Community initiatives have been taken in such related fields as the expansion of the dissemination of information on Community research and technological development, pressure for standards on information exchange via computers and telecommunications networks and the setting-up of an integrated European telecommunications network;

Whereas, however, databases set up on the basis of national requirements are not fully compatible with each other; whereas harmonization is necessary to meet Community requirements;

Whereas measures to this end must be adopted with an eye to the completion of the internal market by 1 January 1993;

Whereas the Scientific and Technical Research Committee (CREST) has been consulted,

HAS FORMULATED THIS RECOMMENDATION:

Article 1

Member States are hereby recommended to ensure that, progressively by 1 January 1993, bodies responsible for disseminating information on research and technological development activities at national level:

- 1) harmonize existing national databases in the field of research and technological development so as to attain the Community's objectives in this area and in particular to promote the coordination of policies and research and technological development programmes between Member States;
- 2) introduce into the databases referred to in point 1 information on scientific and technological research projects carried out in undertakings and research institutes in the Member States. The technical specifications for describing the projects are set out in Annex I;
- 3) adopt a multilingual and multidisciplinary common classification system for setting up the national

databases referred to in point 1. This system must be flexible enough to allow regular adaptation to changing science and technology requirements. The classification system referred to is set out in Annex II;

- 4) adopt, at a later stage, a dynamic, multilingual and multidisciplinary common thesaurus (structured language).

Article 2

1. Member States shall coordinate jointly the action referred to in Article 1.

2. They shall inform the Commission of any measures taken in execution of this Recommendation.

3. The Scientific and Technical Research Committee (CREST) shall monitor the implementation of this Recommendation and it shall hold a regular exchange of views on this matter at least every two years.

Article 3

This Recommendation is addressed to the Member States.

Done at Brussels, 6 May 1991.

For the Commission

Filippo M. PANDOLFI

Vice-President

ANNEX I

MANUAL

CERIF

Common European Research Information Format

Format developed on behalf of the planned network of European Research Databases

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CERIF***Common European Research Information Format*****1. Scope and use**

The Common European Research project Information Format (Cerif) ⁽¹⁾ is designed to provide a standard format for two major purposes:

1. to permit the exchange of records with information on research projects between the different member countries of the European Community;
2. to serve as the basis for the format for setting up the aimed network between research databases.

The Cerif has been designed with the aim of retaining the highest degree of flexibility for manipulating with a number of different types of research projects received from the different existing databases with information on research activities in their country.

Therefore a national research database agency may choose for local implementation any format or formats which are convertible by computer program to Cerif.

One goal in creating Cerif was to design a suitable format which might be used directly by national (or other) agencies starting up a database with information on research activities. The second goal was to facilitate research information data exchange.

This common format provides:

- a list of *essential data elements* (core data elements),
- a number of *optional data elements* which may be useful to describe items further according to the significance for the project.

These provisions allow the agencies to include non-standard elements which are considered useful within its system, even though if they are not used by other agencies, according to the practices of the agency which creates the record.

2. Definitions

Data element:

the smallest unit of information that is explicitly identified.

Field:

a portion of a record containing a particular category of data. A field may contain one or more subfields.

A field is characterized by:

- the kind: unique-key key non-key
 - a key field is a field on which a search possibility is required,
 - a unique-key field is a field on which on the one hand a search possibility is required, and on the other hand must be unique: it is not allowed to have two records with the same value in this field,
- the type: text decimal date,
- restrictions: must match to another field in another file or not,
- obligation: must be filled out or not.

File:

a number of records with the same record structure.

Record:

a collection of specifically defined fields.

Subfield:

a separately identified part of a field containing a defined element of information.

⁽¹⁾ The structure of this manual is based on the 'CCF: The Common Communication Format', General Information Programme and Unisist, Unesco, 1984.

3. Standards and references

The use of the standardized codes might be controlled by the use of 'must-match fields'.

3.1. Codes for languages used

Danish	DA
Dutch	NL
English	EN
French	FR
German	DE
Greek	EL
Italian	IT
Portuguese	PT
Spanish	ES

Source: ISO/DIS 639

3.2. Codes for countries

Source: ISO 3166

Member countries of the European Community

Belgium	BE
Denmark	DK
France	FR
Federal Republic of Germany	DE
Greece	GR
Ireland	IE
Italy	IT
Luxembourg	LU
Netherlands	NL
Portugal	PT
Spain	ES
United Kingdom	GB

For the European Community as a whole, an additional 'country code' is adopted:

European Community	EU
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Remark:

A list of the overseas areas, with their country codes, of the member countries of the European Community might be a useful tool to link the research activities carried out in the related countries.

3.3. Codes for the national currencies

Europe	ECU
Belgium	BEF
Denmark	DKK
France	FFR
Federal Republic of Germany	DEM
Greece	GRD
Ireland	IEP
Italy	ITL
Luxembourg	LUF
Netherlands	NLG
Portugal	PTE
Spain	ESP
United Kingdom	GBP

Source: ISO 4217-1978

3.4. Standard for addresses

No international standard was found for the formats of addresses.

4. Project definition

'A research project is any research or development activity with a specific objective, having a date of start and an expected ending date, carried out within a certain research unit, with or without a certain amount of external funds.'

The proposed dataset is divided in two main parts:

- a part which has to be formatted in a common way,
- a part to fill out other relevant information.

PART I. ESSENTIAL ELEMENTS: MAIN DATASET

- Title,
- Abstract (bilinguality of title and abstract will be recommended),
- Address (including name of the research unit, department, institute),
- Project director (definition: name of the 'holder' of the contract),
- Name(s) of the principal investigator(s),
- Starting date and expected ending date,
- Identification items:
 - free key words,
 - controlled terms (Research Thesaurus: optionally) ⁽¹⁾
 - codes of a classification scheme ⁽²⁾ (Research Classification Scheme: recommended),
- Funding directly related to the project:
 - funding source,
 - budget yearly, optionally: breakdown into personnel, functioning, equipment,
- Personnel: number of full-time equivalent (FTE) researchers.

PART II. ADDITIONAL NOTES: OPTIONAL DATA ITEMS

One should also include some information if essential for the research project; e.g. concerning:

- incorporation in programmes, links with other projects,
- cooperation with other institutes,
- results (e.g. the number of publications) already produced by the research project,
- special equipment whose mention is essential for a proper understanding of the project's scope.

5. Data structure: List of data elements ⁽³⁾

This chapter constitutes a complete reference list of the essential (obligatory) and supplementary (optional) data elements.

Definition of the two categories:

1. 'Essential' data (or 'core' data): any data element so designated must be included in the description if it is known or derivable from the information supplied by the research project. (It may happen that an essential data element is absent.)
2. 'Supplementary' or 'optional' data:
 - any data element so designated is regarded as being relevant and worthy of inclusion in the record describing the project,
 - the data element is not, however, an absolute requirement for a complete and unambiguous description and its inclusion is, therefore, optional, at the discretion of the individual information system.

⁽¹⁾ Recommended Research Thesaurus (list of controlled terms): Annex II.

⁽²⁾ Recommended Research Classification Scheme: Annex I.

⁽³⁾ Mainly based on the 'Reference manual for machine-readable descriptions of research projects and institutions', General Information Programme and Unisist, Unesco, 1982.

It should be noted that a data field which is rated as 'essential' may include optional subfields. The detailed data element definition will indicate what constitutes the essential portion of each field.

Some users may find that information which is regularly included in their own descriptions is not present among the essential and supplementary data elements listed in this chapter. In this connection it should be clear that this document is not intended to be restrictive: it is expected that users will define additional data fields for local use, as well as harmonizing the 'core' data according to the basic set of common data elements as given in this document.

For the practical dataset several options are possible:

- fixed field lengths or variable field length,
- fixed field definition (may be used only once for each record) or repeatable fields.

In this manual the most flexible option has been taken, without any preliminary restriction:

- variable data field lengths,
- repetition of data fields is allowed.

Depending on the technical characteristics of the systems in use modifications should be made in such a way that the data fields are compatible.

1. ESSENTIAL DATA ELEMENTS

1. ADMINISTRATIVE LABELS

Field 00: Database owner

- Data description:
a code and/or the name of the database owner (or inputting organization) is necessary for the identification of the information origin,
 - Field description
 - Name: 'Database owner',
 - Key field,
 - Any character may be used,
 - Obligatory,
 - Not repeatable.
- The possibility might be foreseen of adding this field automatically.

Field 01: Date of last updating of the record

- Data description:
the date of the last updating of the record should be entered in this field according to the format ISO 2014 (YYYYMMDD, where YYYY = year, MM = month, DD = day).
 - Field description
 - Name: 'Updating date',
 - Key field,
 - Date field (all numerical — YYYYMMDD),
 - Obligatory,
 - Not repeatable.
- Might be automatically generated.

Field 02: Level of completeness code

- Data description:
a code defining the completeness of the record. The following codes are used:
 - A = all obligatory elements (core data elements) and optional elements are provided,
 - B = all core data are provided,
 - C = Less than the core data are provided.

- Field description:
 - Name = 'Completeness of record',
 - Key field,
 - Only the codes defined in the previous data description are allowed,
 - Obligatory,
 - Not repeatable.

2. DATA ELEMENTS RELATING TO THE RECORDING OF THE RESEARCH PROJECT

Field 10: Provided for future usage — character sets used in the record

Field 10 is provided to enter the code for the character set used in the records. Since this should be the same over a whole national research database, it might be filled out automatically when necessary.

Field 11: Record control number

- Data description:

the record control number identifies the record access;
- Field description:
 - Name: 'Record control number',
 - Unique key field (not repeatable and obligatory),
 - The record control number may include any character.

Field 12: Project identifier

- Data description:

the project identifier identifies the project and should be entered according to the requirements of the database organization or the information network in which it is participating (national). This identifier should be preceded by the two-character code of the country which provides the record (required to avoid duplication of record control numbers by several countries),
- Field description:
 - Name: 'Project identifier',
 - Unique key field (not repeatable and obligatory),
 - The project identifier may include any character.

Other reference numbers may be entered in other (local) fields.

Field 13: Original working language of the record

- Data description:

Field 13 is intended for entering the original working language of the record (the language in which the information in the record is written).

The language should be entered in the form of a two-letter language code (ISO/DIS 639 — see point 3.1. of this manual),
- Field description:
 - Name: 'Original working language',
 - Key field,
 - Two-letter code,
 - Obligatory,
 - Not repeatable.

Field 14: Other languages of the record

- Data description:

Field 14 is used to record the supplementary working languages of the record (the languages in which a translated title and abstract of the project are available). Translation of the title and abstract in at least one additional Community language which is commonly used in the discipline of the recorded research project, is strongly recommended.

The languages in which the information is available should be entered in the form of a two-letter language code (ISO/DIS 639 — see point 3.1. of this Cerif-manual),

- Field description
 - Name: 'Additional working language',
 - Key field,
 - Two-letter code,
 - Obligatory,
 - Repeatable — In databases where repetition of fields is not possible, the additional languages used should be entered in such a way that the codes for the different languages in use are separated by a semi-colon.

3. DATA ELEMENTS RELATING TO THE RESEARCH PROJECT CONTENTS

This part of the core data set contains fields for entering:

- title and abstract in more than one Community language,
- names of project director and principal researcher(s),
- starting and expected ending date of the project.

Two general remarks concerning the data elements related to title and abstract:

1. Mention of the languages used:

since the data elements containing information on the activities related to the research project in principle may be given in any of the nine official languages of the European Community, all these data elements are coupled with a subfield in which the two-letter code of the language used should be entered.

2. Searching on title and abstract:

for database systems which allow 'full text searching', it is recommended that title and abstract be full-text-searchable fields.

Field 21: Project title in original language

— Data description:

the official title of the project (in the original language as indicated in field 13) should be entered. The title may include any character.

Special instruction: the text of the title should be typed without breaking words at the end of a line,

— Field description:

Subfield 21.1::

- Name: 'Original language',
- Subfield 21.1. = Field 13,
- Two-letter code,
- Obligatory;

Subfield 21.2:

- Name: 'Original project title',
- Obligatory.

Field 22: Project title — other language(s)

— Data description:

Field 22 is provided for entry of the translated title(s) of the project, together with the two-letter code of the language used.

The title may include any character.

Special instructions: the text of a title should be typed without breaking words at the end of a line.

At least one translated title is recommended. Field 22 (as the whole consisting of subfield 22.1. and subfield 22.2.) is repeatable, i.e. translation in more than one of the other Community languages may be entered;

— Field description:

Subfield 22.1.

- Name: 'Language of translated title,'
- Two-character code (ISO/DIS 639),
- Obligatory for each translated title;

Subfield 22.2.

Translated title of the project should be entered. The title may include any character.

- Name: 'Translated title,'
- Obligatory (at least one additional title).

Field 23: Project abstract in original language

— Data description:

The abstract of the project in the original language should be entered in Field 23.

The abstract may include any character.

Special instructions: the text of the abstract should be typed without breaking words at the end of a line.

— Field description:

Subfield 23.1.:

- Name: 'Original language',
- Subfield 23.1. = field 13,
- Two-letter code,
- Obligatory;

Subfield 23.2:

- Name: 'Original abstract',
- Obligatory.

Field 24: Project abstract in other language(s)

— Data description:

translated abstract of the project (in one or more Community languages other than the original language) should be entered. The abstract(s) may include any character. At least one translated abstract is recommended.

Special instructions: the text of the abstract should be typed without breaking words at the end of a line.

Field 24 (as the whole consisting of subfield 24.1. and subfield 24.2.) is repeatable, i.e. translation in more than one of the other Community languages may be entered;

— Field description:

Subfield 24.1.

- Name: 'Language of translated abstract',
- Two-character code (ISO/DIS 639),
- Obligatory,

Subfield 24.2.

- Name: 'Translated abstract',
- Obligatory (at least one additional abstract),
- Repeatable (subfield 24.1. together with subfield 24.2.).

Field 31: Project director

— Data description:

the name should be entered of the person who is the project leader (the person asking for and responsible for the research contract).

If details on the qualifications etc. of persons are to be provided in the files, one should create additional fields near to the common data fields to enter them.

The name should be entered in its full form when known. The name should be entered family name (surname) first, followed by personal names (forenames), for example: Browne, John Henry. The family name should be followed by a comma and each forename should be preceded by a space.

If family name and initials only are known, the initials should be entered followed by a full stop in place of a full forename. Initials are not separated from each other by a space, but a space must occur between any initial and a family name or part of a family name (e.g. a prefix).

Titles which are part of the name (Sir, Lord, etc.) should be entered in parentheses following the forenames or the initials.

Titles or additions to names which are often used in addresses (e.g. Mr, Mrs, Prof., Dr) *may* be entered in the same way.

Titles representing qualifications such as degrees or membership of learned societies, or military honours (e.g. MA, PhD, FLA), should *not* be entered.

Remark:

Certain names may cause problems because it is not always clear which part of the name is the family name and which the forenames. This category includes double-barrelled names and names containing prefixes such as de, del, de la, van, von, etc. No international standard governing the entry of names in computerized information systems exists. In such cases the *national standards* may be used.

— Field description

- Name: 'Project director',
- Key field,
- Obligatory,
- Not repeatable.

Field 32: Principal researcher(s)

— Data description:

the name(s) of other researcher(s) involved in the research projects. If several names, the name of the project leader should be entered first.

This name might be the same as the name in field 31 (project director).

If details on the qualifications etc. of persons are to be provided in the files, one should create additional fields near to the common data fields to enter them.

The name should be entered in its full form when known. The name should be entered family name (surname) first, followed by personal names (forenames), for example: Browne, John Henry. The family name should be followed by a comma and each forename should be preceded by a space.

If family name and initials only are known, the initials should be entered followed by a full stop in place of a full forename. Initials are not separated from each other by a space, but a space must occur between any initial and a family name or part of a family name (e.g. a prefix).

Titles which are part of the name (Sir, Lord, etc.) should be entered in parentheses following the forenames or the initials.

Titles or additions to names which are often used in addresses (e.g. Mr, Mrs, Prof., Dr) *may* be entered in the same way.

Titles representing qualifications such as degrees or membership of learned societies, or military honours (e.g. MA, PhD, FLA), should *not* be entered.

Certain names may cause problems because it is not always clear which part of the name is the family name and which the forenames. This category includes double-barrelled names and names containing prefixes such as de, del, de la, van, von, etc.

No international standard governing the entry of names in computerized information systems exists. In such cases the national standards may be used;

— Field description:

- Name: 'Principal researchers',
- Key field,
- Recommended,

xxx Skeleton, muscle system: see B 580,

- Repeatable — in databases where repeating of fields is not possible, eventually repeating should be entered in such a way that the different names are separated by a semi-colon.

Field 40: Starting date of the project

— Data description:

Field 40 is used to record the starting date of the project. The date should be entered in accordance with ISO 2014. The day, month and year should be entered in the form YYYYMMDD.

The month may be entered as 00 if it is not known precisely. The day may always be entered as 00;

— Field description:

- Name: 'Starting date',
- Key field,
- Date (all numerical — YYYYMMDD),
- Obligatory,
- Not repeatable.

Field 41: Expected ending date of the project

— Data description:

Field 41 is used to record the expected ending date (completion date) of the project. The date should be entered in accordance with ISO 2014. The day, month and year should be entered in the form YYYYMMDD.

The month may be entered as 00 if it is not known precisely. The day may always be entered as 00.

In the case of 'free research projects' (carried out on the initiative of the research group and with own funds) no expected ending date might be known. In this case one should enter the 'expected ending date' as: 99990000;

— Field description:

- Name: 'Expected ending date',
- Key field,
- Date field (all numerical — YYYYMMDD),
- Obligatory,
- Not repeatable.

4. RELATING TO THE RECORDING OF THE CONTACT ADDRESS

Field 50 and Field 51 are used to enter the name of the institution where the research is conducted, the address, the country code and the acronym or other abbreviated form or institution name. These fields are obligatory.

Field 50: Name of the research unit

— Data description:

Field 50 is provided for entering the name of the institution (or performing organization), i.e. the research group carrying out the project.

Where several levels of the organization exist, the name of the lowest-level unit within the organization that is concerned with the research should be mentioned in any case. The name of the units should be entered from the largest to the smallest. For large and complex organizations, intermediate levels, the inclusion of which does not add significant information to the entry, may be omitted, provided always that the most specific unit is entered and that the entry provides an unambiguous identification of the organization.

It is obligatory to enter the full name of the institution in subfield 50.1., even if an abbreviated form of the name is entered in subfield 50.2.

The name of the institution should always be entered in its official or working language.

Perhaps an additional field could be foreseen for entering the name in the second working language.

The field with the name of the institution is provided to enter the names of the several levels of the institution concerned, in several subfields:

Field 50.1.: name of the institution (parent organization),

Field 50.2.: name of the parent organization: acronym,

Field 50.3.: name of the department (intermediate levels),

Field 50.4.: name of the research unit (most specific):

Field 50.5.: name of the research unit (most specific): acronym;

— Field description:

Subfield 50.1.

- Name: 'name of the parent organization',
- Any character is allowed,
- Key field,
- Not repeatable,
- Obligatory if applicable;

Subfield 50.2.

- Name: 'name of the parent organization: acronym',
- Any character is allowed,
- Key field,
- Optional;

Subfield 50.3.

- Name: 'Research unit: intermediate levels',
- Any character is allowed,
- Key field,
- Not repeatable (the names of the several intermediate levels of the research institute should be entered from the largest to the most specific level higher than the research unit, possibly separated by a semi-colon);

Subfield 50.4.

- Name: 'Research unit (most specific)',
- Any character is allowed,
- Key field,
- Not repeatable,
- Obligatory;

Subfield 50.5.

- Name: 'Research unit (most specific): acronym',
- Any character is allowed,
- Key field,
- Not repeatable.

Field 51: Address of the institution

— Data description:

the address or location of the institution should be entered in Field 51 in the complete form required for the user to make contact with the research group. However, an incomplete address may be entered when no fuller information is available.

Other useful details such as telephone, facsimile and telex number may be entered in Field 60.

To fulfil the several conventions in the different countries each national database should contain the addresses following the national PTT conventions.

Since it is the aim to provide the database users with a contact address the addresses may be entered in such a way that all the required information is available. The input format may be organized following the local needs (e.g. split into several fields as street, number, postcode, place). Only the output is important: the address should be presented to the user in such a way that he gets the right and unambiguous information to make contact with the research group. (It is not the objective to recommend the use of an address format which is suitable for mailing lists.);

— Field description:

Subfield 51.1. : Address

The address may be entered according to the requirements of the country involved.

The address must be entered following the national PTT convention, and must contain all elements which are necessary (street and number in the street, postcode, place — town).

- Name: 'address',
- Any character is allowed,
- Non-key field,
- Not repeatable,
- Obligatory;

Subfield 51.2. : Place (town)

There is a user need for a searching possibility on the place (town).

Therefore, perhaps in an additional field, the indication of place should be entered in the natural language of the place, as a key field.

- Name: 'place',
- Key field,
- Obligatory,
- Not repeatable;

Subfield 51.3. : Country code

- Name: 'country code',
- Key field,
- Two-letter code (ISO 3166 — see point 3.2. of this manual),
- Obligatory,
- Not repeatable.

Additional fields can be created according to national needs (e.g. providing fields for entering the region, etc.).

Field 60: telephone, facsimile and telex

— Data description

an option can be taken for entering the telephone and facsimile number as used within the country;

— Field description:

Subfield 60.1. : Telephone number

A telephone number must be entered as such: the country number preceded by a plus-sign, followed by the local zone number, followed by the telephone number, e.g. + 32 2 512 91 10 as international telephone number, which means (02) 512 91 10 within the country.

If the mention of an extension is necessary, it should follow the number, preceded by an indication that it is an extension, e.g. + 32 2 512 91 10 ext. 324.

- Name: 'telephone number',
- Non-key field,
- Any character is allowed,
- Recommended;

Subfield 60.2. : Facsimile number

similar to subfield 60.1

- Name: 'facsimile number',
- Non-key field,
- Any character is allowed,
- Optional;

Subfield 60.3. : Telex number

- Name: 'Telex number',
- Non-key field,
- Any character is allowed,
- Optional;

Subfield 60.4. : Provided for electronic mail address (future usage)

In view of the international harmonization of electronic mail addresses, this subfield is provided for entering such addresses.

Non-standardized electronic mail addresses should be included in (local) fields additional to the common dataset.

- Name: 'Electronic mail address',
- Non-key field,
- Any character is allowed,
- Optional.

5. DATA ELEMENTS RELATING TO RESEARCH IDENTIFICATION (INDEXING AND RETRIEVING)

Three levels of searching are foreseen by Fields 70 to 72:

- Field 70: Free key words,
- Field 71: Controlled terms (Common Research Thesaurus),
- Field 72: Disciplines (codes of the Common Research Classification Scheme).

Field 70: Free key words

— Data description:

free key words can be entered to indicate the work of the research projects. The key words may be determined by the researchers, by the inputting organization or by automatic extraction from title and abstract.

To allow the searchers to use free key words as a searching instrument, it is necessary for them to know in which language the key words are recorded. To cover this need the language code (see ISO/DIS 639 — two-letter code) should be entered in another subfield;

— Field description (subfields):

subfield 70.1. : Free key word

- Name: 'key word',
- Key field,
- Optional;

subfield 70.2. : Language of key word

- Name 'language of key word',
- Key field,
- Two-letter code,
- Obligatory if subfield 70.1. is filled in.

Field 70 (as the whole of subfield 70.1. and 70.2.):

- Optional
- Repeatable.

Field 71: controlled terms (only terms of the Research Thesaurus are allowed)

— Data description:

the use of the thesaurus is recommended to overcome the problems generated by the use of all the Community languages, in particular for the user of the information systems.

In this field only terms of the *Research Thesaurus* may be added. A list of this thesaurus is annexed to this manual. If another thesaurus is used, one should enter the controlled terms of the locally used thesaurus in another field (see note below).

The Research Thesaurus may be used either in text form or in code form, since the terms may be converted automatically into the associated codes.

To avoid difficulties for the user, which may arise from the use of accents, controlled terms should be entered upper case.

One requirement must be fulfilled when the thesaurus is used in text form without the associated codes, that all the terms are mentioned in the same language. In this case the language used should be mentioned.

However it is recommended to use the codes associated with the terms (subfield 71.1.). To control the input, one could provide automatically for filling up subfield 71.2. to display the term which is associated with the code mentioned in subfield 71.1.;

— Field description:

Field 71 consists of several subfields: One should use Subfield 71.1. (encoded terms) and/or subfield 71.2. together with subfield 71.3.

Field 71 (the whole of the subfields 71.1., 71.2., 71.3.) is repeatable.

Subfield 71.1. : Encoded controlled term

- Name: 'encoded controlled term',
- Key field,
- Repeatable,
- Optional (but recommended);

Subfield 71.2. : Controlled term

- Name: 'controlled term',
- Key field,
- Optional;

Subfield 71.3. : Language of controlled term

- Name: 'language of controlled term',
- Key field,
- Necessary if subfield 71.2. (term) is used where subfield 71.1. is not,
- The codes must be entered following the ISO/DIS 639 standard (two-letter code).

Important note:

For the use of terms of another thesaurus one should provide another (local) field: terms from different thesauri may never be mixed! Field 71 is reserved for controlled terms from the common European Research Thesaurus (Annex II).

To enter the terms from another nationally used thesaurus creation of a Field 73 is recommended.

Field 72: Common subject classification codes — Common European Research Classification Scheme

— Data description:

Field 72 is provided to enter a classification code applied to the research project in accordance with the common classification scheme (Annex I).

For any other classification scheme individual services may wish to use, including 'in-house' unpublished schedules and local adaptations of published schemes, additional (local) fields should be added to the common set of fields (see note below);

— Field description:

- Name: 'classification code',
- Key field,
- Repeatable,
- Obligatory.

For local use one might add an extra field with a verbal description of the classification code as a tool for controlling inputs in Field 72.

Important note:

For other classification schemes other fields must be used: codes from different schemes may never be mixed! Field 72 is reserved for codes from the common European Research Classification scheme (Annex I).

To enter the codes from another nationally used scheme creation of *Field 74* is recommended.

6. RELATING TO THE 'CRITICAL MASS' OF THE RESEARCH PROJECT

The 'critical mass' of a research project is determined by the financial and personnel background.

(a) Data elements relating to the financial support

Fields 80 and 81 are used for details relating to the financial support of the research project.

- Field 80: Name and code of the funding organization,
- Field 81: Amount of the financial support and budget breakdown.

If a project is funded by different sources Field 80 and Field 81 might be repeated.

Field 80: Financing source

— Data description:

the name of the organization supporting the research project should be entered in the first subfield of Field 80.

A structured list of codes indicating financial sources may be made up to allow encoding of and searching on research financing sources.

A code indicating the financial support should be entered in subfield 80.2.;

— Field description:

Subfield 80.1. : Name of the funding organization

- Name: 'Name of the funding organization',
- Any character is allowed,
- Key field,
- Obligatory,
- Repeatable (together with field 80.2. and Field 81);

Subfield 80.2. : Code for the funding organization ⁽¹⁾

The code of the organization mentioned in Subfield 80.1. must be entered.

This code is required for several purposes:

- to group research funded under the same heading for e.g. statistical analysis. As such an automatic search on government funded research or on privately financed research should be possible,
- the codes can also be used to make the link with the address of the organization, which might be added in additional files to the research database.
- Name: 'code for funding organization',
- Any character is allowed,
- Key field,
- Recommended,
- Repeatable (together with Field 80.1. and Field 81).

Field 81: Amount

— Data description:

the total amount of the financial support for the entire project should be entered in the national currency in Subfield 1.

The total annual amount of the financial support should be entered in the national currency in Subfield 2.

The budget breakdown (the composition of the budget) should be entered in Subfields 81.3. to 81.5. The annual amount of the personnel costs and the working costs should be entered. The equipment budget should be entered as foreseen for the entire project (since this budget is mostly used with the starting of the project).

The national currency should be entered in subfield 81.2. (ISO 4217). This code could be automatically linked with the country code (Field 51.5.).

It is possible to express the budget in ecus (in this case ECU must be entered in Field 81.2.)

— Field description:

Subfield 81.1. : Total amount for the entire project

- Name: 'Total amount',
- Essential data element,
- Key,
- Decimal,
- Repeatable (together with Field 80 and the other Subfields 81.x.)

Subfield 81.2. : Currency

- Name: 'Currency',
- Essential data element,

⁽¹⁾ Each of the Member States might use their own acronyms or codes for the funding organizations, in a consistent way.

- Key,
- The currency used may be the national currency, or ecu, and should be entered following the standard ISO-4217-1978, which is described in point 3.3. of this manual. (No repetition in several currencies is allowed.);

if available, the following information should be added ⁽¹⁾:

Subfield 81.3.: 'Average amount per year',

Subfield 81.4.: 'Personnel cost' (annual),

Subfield 81.5.: 'Working cost' (annual),

Subfield 81.6.: 'Equipment cost' (total equipment budget foreseen for the entire project);

Subfields 81.3. to 81.6. are:

- Optional (but recommended if available),
- Key fields,
- Decimal,
- Repeatable (together with Field 80 and the other Subfields 81.x).

(b) Relating to the personnel

Field 82: Number of researchers

— Data description:

Field 82 is used to enter the number of full-time-equivalent researchers working on the research project.

Rule:

the number of full-time equivalent researchers should be entered as:

'full time equivalent researchers'/'period in months.'

To avoid confusion some *examples* are given below:

- 1 person for three months is written as:
'1' in subfield 82.1.,
'3' in subfield 82.2.;
- 3 persons for one month is written as:
'3' in subfield 82.1.,
'1' in subfield 82.2.;
- 12 persons for two years is written as:
'12' in subfield 82.1.,
'24' in subfield 82.2.

The average of FTE per year can easily be calculated with the formula:

$$\text{average FTE/year} = \text{Subfield 82.1.} \times \text{Subfield 82.2./12}$$

— Field description:

- Name 'full time equivalents',
- Numerical field,
- Two subfields:
Subfield 82.1.: Number of full time researchers,
Subfield 82.2.: Period in number of months,
- Obligatory,
- Not repeatable.

A third subfield might be given automatically:

Subfield 82.3.: 'Average of FTE per year'

$$\text{Subfield 82.3.} = \text{Subfield 82.1.} \times \text{Subfield 82.2./12}$$

⁽¹⁾ For the definitions, see Frascati Manual 1980 — 'The measurement of scientific and technical activities, a proposed standard practice for surveys of research and experimental development.' Edited by the OECD, 2 rue Pascal, 75775 Paris Cedex 16, France, in 1981.

II. OPTIONAL ELEMENTS

Optional elements are foreseen to record some information which is not indicated in the first part of the dataset, but which might be essential information related to the project considered.

Fields 91 to 95 are foreseen to enter possible additional essential information.

Field 99 is provided for indicating the kind of information which is added for the recorded project in one of the fields from 91 to 95, if any. This is to allow a display of the presence of additional information for the user.

Fields 91 to 95: Additional information

This part contains five fields which may contain any character. The information covered by Fields 91 to 95 should contain any information which is seen as really essential for the project.

Note:

the fields of Part II may only be entered if there is special information which is considered to be essential for the user to understand the research project.

This should be information on:

- the incorporation of the project in a research programme,
- cooperation,
- interim results,
- special equipment,
- others.

Field 91: Related to research programmes

Field 91 is provided for entering if the project is incorporated in a research programme, or if there are close links with other projects.

If a project is part of a research programme (e.g. one of the European Community programmes) the name of the programme should be mentioned in Field 91.

Subfield 91.1. : 'research programme: name',

Subfield 91.2. : 'research programme: acronym'.

Field 92: Related to cooperation

In Field 92 one should mention crucial cooperation with other researchers or institutes (the address of the other group and the kind of cooperation can be mentioned)

Field 92 is provided to enter essential cooperation within the research activities of the project.

It should be noted that it is not the purpose to list all the cooperative relations of the researchers or the research group involved: only the cooperation in the framework of the project considered in this record should be entered.

Field 93: Interim results

In Field 93 one should enter significant results obtained so far. Such results should be mentioned very briefly.

For example:

- The number of publications arising from the project so far,
- Any patents obtained,
- Any prototypes that have been constructed.

It must be clear that it is not the purpose to get lists of results other than those obtained within the project considered in this record. The aim is to provide this additional information to the user, to let him know what is going on. If the publications or other results are briefly mentioned here, the interested user can contact the project leader directly to get more details.

Field 94: Special equipment

Special equipment, mention of which is essential for the information user to understand the scope of the project should be entered very briefly.

For example: 'an NMR-spectrometer equipped with gradient coils is used'

It is not the aim to include in this field a list of all special equipment available in the research centres, but merely to give additional information which might be necessary for understanding the project activities described in title and abstract.

An additional database giving an inventory of research equipment available in Europe might be constructed at a later date.

Field 95: Other relevant information

Other information which might be considered to be necessary to be available to the user should be entered in Field 95.

- Fields 91 to 95 are optional fields,
- Any character is allowed.

Field 99: Indication of the kind of additional information

To create a searching instrument for this additional information, a field is added containing information on the contents of Fields 91 to 95.

If additional items are entered, it is required to indicate which kind of information is added.

— **Data description:**

The kind of information can be indicated by an associated code, as given below. Only numbers are allowed.

Codelist for the indication of the nature of extra information included in the record:

- Programme 1,
- Cooperation 2,
- Results 3,
- Equipment 4,
- Other 5;

— **Field Description:**

- Name: 'type of additional information',
- Only numbers are allowed (see previous codelist),
- Key field,
- Obligatory if any of fields 91 to 95 exist,
- Repeatable (for cases with comments of several kinds). In databases where repetition of fields is not possible, items should be entered in such a way that separate values are separated by a semi-colon.

E.g. in a case where additional information is added in Field 91 (programme information) and in Field 95 (other additional essential information) one should enter in Field 99: 1:5.

DATA ELEMENT INDEX

Codes used

- R: Repeatable
K: Key field
U: Unique-key field (the entering of two identical values is not allowed)
S: If possible, full text search would be recommended
(S): One might foresee a full text searching possibility, but this is not required
P: Reserved for future use or for well defined additional local fields

I. Essential data elements

1. Administrative labels

- | | |
|---|---|
| Field 00: Database owner | K |
| Field 01: Date of last updating of the record | K |
| Field 02: Level of completeness code | K |

2. Data elements relating to the recording of the research project

Field 10: Provided for future usage — character sets used in the record	K	
Field 11: Record control number	U	
Field 12: Project identifier	U	
Field 13: Original working language of the record	K	
Field 14: Other languages of the record	K	R

3. Data elements relating to the research project contents

Field 21: Project title in original language		
— Subfield 21.1.: Original language (= Field 13)	K	
— Subfield 21.2.: Original project title	S	
Field 22: Project title — other language(s)		R
— Subfield 22.1.: Language of translated title	K	
— Subfield 22.2.: Translated title	S	
Field 23: Project abstract in original language		
— Subfield 23.1.: Original language (= Field 13)	K	
— Subfield 23.2.: Original abstract	S	
Field 24: Project abstract in other language(s)		R
— Subfield 24.1.: Language of translated abstract	K	
— Subfield 24.2.: Translated abstract	S	
Field 31: Project director	K	
Field 32: Principal researcher(s)	K	R
Field 40: Starting date of the project	K	
Field 41: Expected ending date of the project	K	

4. Relating to the recording of the contact address

Field 50: Name of the research unit		
— Subfield 50.1.: Name of the parent organization	S	
— Subfield 50.2.: Parent organization: acronym	S	
— Subfield 50.3.: Research unit: intermediate levels	S	
— Subfield 50.4.: Research unit (most specific)	S	
— Subfield 50.5.: Research unit (most specific): acronym	S	
Field 51: Address of the institution		
— Subfield 51.1.: Address		
— Subfield 51.2.: Place (town)	K	
— Subfield 51.3.: Country code	K	
Field 60: Telephone, facsimile and telex		
— Subfield 60.1.: Telephone number		
— Subfield 60.2.: Facsimile number		
— Subfield 60.3.: Telex number		
— Subfield 60.4.: Provided for electronic mail address (future usage)	P	

5. Data elements relating to research identification
(indexing and retrieving)

Field 70: Free key word		R
— Subfield 70.1.: Free key word	K	
— Subfield 70.2.: Language of key word	K	
Field 71: Controlled terms (Research Thesaurus)		R
— Subfield 71.1.: Encoded controlled term	K	
— Subfield 71.2.: Controlled term	K	
— Subfield 71.3.: Language of controlled term	K	
Field 72: Classification code (Research Classification Scheme)	K	R
Field 73: Provided for other thesauri than the Research Thesaurus	P	
Field 74: Provided for other (locally used) classification schemes	P	

6. Relating to the 'critical mass' of the research project

(a) Data elements relating to the financial support

R

Field 80: Financing source

— Subfield 80.1.: Name of the funding organization

K

— Subfield 80.2.: Code for the funding organization

K

Field 81: Amount

— Subfield 81.1.: Total amount for the entire project

K

— Subfield 81.2.: Currency

K

— Subfield 81.3.: Average amount per year

K

— Subfield 81.4.: Personnel cost (annual)

K

— Subfield 81.5.: Working cost (annual)

K

— Subfield 81.6.: Equipment cost

K

(b) Relating to the personnel

Field 82: Number of researchers (full time equivalents)

— Subfield 82.1.: Number of full time scientists

K

— Subfield 82.2.: Period in number months

K

— Subfield 82.3.: 'Average of FTE per year'

K

II. Optional elements

Field 91 to 95: Additional information

— Field 91: Related to research programmes

(S)

— Field 92: Related to cooperations

(S)

— Field 93: Interim results

(S)

— Field 94: Special equipment

(S)

— Field 95: Other relevant information

(S)

Field 99: Type of additional information

K

R

6. References

- 'CCF: The common communication format'; Peter Simmons and Alan Hopkinson, General Information Programme and Unisist, Unesco, Paris 1984.
- 'Reference manual for machine-readable descriptions of research projects and institutions'; Harold Dierickx and Alan Hopkinson, General Information Programme and Unisist, Unesco, 1982.

ANNEX II

SCIENCES CLASSIFICATION ⁽¹⁾

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⁽¹⁾ On the Belgian national level the SPPS, the FNRS/NFWO and the IWETO of the Flemish Community make joint use of it.

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H 105 Bibliography

H 110 Paleography, bibliology, epigraphy, papyrology

Philosophy H 001

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H 125 Philosophical anthropology

H 130 History of philosophy

H 135 Phenomenology

H 140 Philosophical logic

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H 260 History of science

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xxx *History of technology: see T 100*

xxx *History of social sciences: see S 100*

xxx *History of biomedical sciences: see B 100*

xxx *History of language: see H 355*

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H 270 Social and economic history

xxx *For a classification into periods: see from H 210 to H 250*

H 271 Political history

H 280 Local and regional history, historical geography since the Middle Ages

H 290 Colonial history

xxx *For a classification into periods: see from H 230 to H 250*

H 300 History of law

xxx *History of religions: see H 180 and H 190*

- H 310 Art history
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- H 580 Scandinavian languages and literatures
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- H 610 Hamito-Semitic languages and literatures
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- S 180 Economics, econometrics, economic theory, economic systems, economic policy
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- S 182 Actuarial science
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- S 211 Sociology of science
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- S 213 Social structures
- S 214 Social changes, theory of social work
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- P 120 Number theory, field theory, algebraic geometry, algebra, group theory
- P 130 Functions, differential equations
- P 140 Series, Fourier analysis, functional analysis
- P 150 Geometry, algebraic topology
 - xxx *Topological groups: see P 120*
- P 160 Statistics, operations research, programming, actuarial mathematics
 - xxx *Actuarial science: see S 182*
- P 170 Computer science, numerical analysis, systems, control
 - xxx *Biomathematics, cybernetics: see B 110 and B 115*
- P 175 Informatics, systems theory
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- P 180 Metrology, physical instrumentation
 - xxx *Medical instrumentation: see B 140*
- P 190 Mathematical and general theoretical physics, classical mechanics, quantum mechanics, relativity, gravitation, statistical physics, thermodynamics
- P 200 Electromagnetism, optics, acoustics
- P 210 Elementary particle physics, quantum field theory
- P 211 High energy interactions, cosmic rays
- P 220 Nuclear physics
 - xxx *Nuclear technology: see T 160*
- P 230 Atomic and molecular physics
 - xxx *Laser technology: see T 165*
- P 240 Gases, fluid dynamics, plasmas
 - xxx *Liquid and solid helium: see P 250*

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- P 260 Condensed matter: electronic structure, electrical, magnetic and optical properties, superconductors, magnetic resonance, relaxation, spectroscopy
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- P 351 Structure chemistry
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- xxx Cosmic rays: see P 211*
- xxx Remote sensing: see T 181*

BIOMEDICAL SCIENCES B 000**General biomedical sciences B 001**

- B 100** History and philosophy of biomedical sciences, theoretical biology, general aspects of evolution
- B 110** Bioinformatics, medical informatics, biomathematics biometrics
- B 115** Biomechanics, cybernetics

Biophysics B 002

- B 120** Molecular biophysics
- B 130** Physiological biophysics
- B 140** Clinical physics, radiology, tomography, medical instrumentation
- B 145** Nuclear medicine, radiobiology
 - xxx Radiopharmaceutical technology: see T 411*
 - xxx Genetic effects: see B 220*
 - xxx Biochemistry, metabolism: see P 004*
 - xxx Proteins, enzymology: see P 310*
 - xxx Nucleic acids, protein synthesis: see P 320*
 - xxx Bioenergetics: see P 330*
 - xxx Lipids, steroids, membranes: see P 340*
 - xxx Biopolymers: see T 390*

B 190 Clinical chemistry

- xxx Hormones: see B 370 and B 480*
- xxx Endocrinology: see B 480*
- xxx Serology: see B 500*

B 191 Plant biochemistry

- xxx Biotechnology: see T 490*
- xxx Fixation of nitrogen: see B 433*

B 200 Cytology, oncology, cancerology

- xxx Pathological anatomy: see B 520*

B 210 Histology, cytochemistry, histochemistry, tissue culture**B 220** Genetics, cytogenetics

- xxx Clinical genetics: see B 790*
- xxx Animal breeding: see B 400*
- xxx Plant breeding: see B 390*

B 225 Plant genetics**B 230** Microbiology, bacteriology, virology, mycology

- xxx Fixation of nitrogen: see B 433*
- xxx Plant parasitology: see B 250*
- xxx Parasitology (human and animal): see B 240*

B 235 Protozoology**B 240** Parasitology (human and animal)**B 250** Entomology, plant parasitology

- xxx Phytopathology: see B 390*

B 260 Hydrobiology, marine biology, aquatic ecology, limnology

Ecology B 003**B 270 Plant ecology**

xxx Aquatic ecology: see B 260

xxx Paleocology: see B 300 und B 330

B 280 Animal ecology**Botany B 004****B 290 Systematic botany, taxonomy, morphology, phytogeography, chemotaxonomy. Physiology of nonvascular plants**

xxx Physiology of vascular plants: see B 310

B 300 Palaeobotany, phylogeny, palynology**B 310 Physiology of vascular plants****Zoology B 005****B 320 Systematic zoology, taxonomy, zoogeography****B 330 Palaeozoology, phylogeny****B 340 Animal anatomy, animal morphology**

xxx Growth (animal): see B 350

B 350 Development biology, growth (animal), ontogeny, embryology**B 360 Animal physiology**

xxx Biochemistry: see P 004

xxx Developmental physiology: see B 350

B 361 Physiology of invertebrates

xxx Biochemistry: see P 004

B 370 Endocrinology of invertebrates

xxx Endocrinology of vertebrates: see B 480

B 380 Animal ethology and psychology**B 381 Human ethology****Agronomics B 006****B 390 Phytotechny, horticulture, crop protection, phytopathology**

xxx Plant genetics: see B 225

B 400 Zootechny, animal husbandry, breeding

xxx Veterinarian medicine: see B 750

B 401 Aviculture**B 402 Aquaculture, pisciculture****B 410 Soil science, agricultural hydrology**

xxx Pedology: see P 510

B 420 Nutrition

xxx Food technology: see T 430

B 430 Sylviculture, forestry, forestry technology**B 431 Tropical agriculture****B 432 Ornamental plants****B 433 Fixation of nitrogen****B 434 Agrochemistry****B 435 History of agriculture**

xxx Agricultural engineering: see T 420

xxx Agricultural economics: see S 187

Medicine (human and vertebrates) B 007

xxx General biomedical sciences: see from B 100 to B 240

B 440 Human anatomy and morphology

xxx Animal anatomy and morphology: see B 340

- B 450 Development biology, teratology, ontogeny, embryology (human)
 - xxx Development biology, teratology, ontogeny, embryology (animal): see B 350*
 - xxx Dental development: see B 730*
- B 460 Physical anthropology
 - xxx Human genetics: see B 220*
- B 470 Physiology
 - xxx Biochemistry: see P 004*
 - xxx Neurophysiology: see B 640*
 - xxx Nutrition: see B 420*
- B 480 Endocrinology, secreting systems, diabetology
- B 490 Haematology, extracellular fluids
- B 500 Immunology, serology, transplantation
- B 510 Infections
 - xxx Microbiology: see B 230*
- B 520 General pathology, pathological anatomy
 - xxx Cancerology, oncology: see B 200*
 - xxx Nuclear medicine: see B 145*
- B 530 Cardiovascular system
- B 540 Respiratory system
- B 550 Gastro-enterology
- B 560 Urology, nephrology
- B 570 Obstetrics, gynaecology, andrology, reproduction, sexuality
- B 580 Skeleton, muscle system, rheumatology locomotion
 - xxx Orthopaedics: see B 600*
- B 590 Anaesthesiology, intensive care
- B 600 Surgery, orthopaedics, traumatology
 - xxx Neurosurgery: see B 640*
- B 610 Otorhinolaryngology, audiology, auditive system and speech
- B 620 Ophtalmology
- B 630 Dermatology, venereology
- B 640 Neurology, neuropsychology, neurophysiology
 - xxx Neurolinguistics: see H 361*
- B 650 Psychiatry, clinical psychology, psychosomatics
- B 660 Pediatrics
 - xxx Developmental biology, teratology: see B 450*
 - xxx Child psychiatry: see B 650*
- B 670 Gerontology
- B 680 Public health, epidemiology
 - xxx Social medicine: see S 290*
- B 685 Hospital science and management
- B 690 Occupational health, industrial medicine
- B 700 Environmental health
- B 710 Physical medicine, kinesitherapy, revalidation, rehabilitation
 - xxx Physical training, motorial learning, sport: see S 273*
 - xxx Orthopedagogy: see S 286*
- B 720 General practice, medical training
- B 725 Diagnostics
 - xxx Radiology, NMR, tomography: see B 140*
 - xxx Clinical genetics: see B 790*
 - xxx Nuclear medicine: see B 145*
 - xxx Radiopharmaceutical technology: see T 411*

- B 726 Clinical biology
 - xxx *Clinical chemistry: see B 190*
 - xxx *Serology: see B 500*
 - xxx *Pathological anatomy: see B 520*
- B 730 Odontology, stomatology
- B 740 Pharmacological sciences, pharmacognosy, pharmacy, toxicology
 - xxx *Clinical biology: see B 726*
 - xxx *Radiopharmaceutical technology: see T 411*
- B 750 Veterinary medicine: surgery, physiology, pathology, clinical studies
- B 760 Psychonomics
- B 770 Legal medicine
- B 780 Tropical medicine
- B 790 Clinical genetics

TECHNOLOGICAL SCIENCES T 000

- T 100 History and philosophy of technology
- T 110 Instrumentation technology
 - xxx *Physical instrumentation: see P 180*
- T 111 Imaging, image processing
 - xxx *Radiology, NMR, tomography: see B 140*
- T 115 Medical technology
 - xxx *Biomechanics: see B 115*
 - xxx *Medical instrumentation: see B 140*
- T 120 Systems engineering, computer technology
- T 121 Signal processing
 - xxx *Image processing: see T 111*
 - xxx *Systems theory: see P 175*
 - xxx *Cybernetics: see B 115*
 - xxx *Computer science: see P 170*
- T 125 Automation, robotics, control engineering
- T 130 Production technology
- T 140 Energy research
- T 150 Material technology
- T 151 Optical materials
 - xxx *Laser technology: see T 165*
- T 152 Composite materials
- T 153 Ceramic materials and powders
 - xxx *Amorphous materials: see P 265 and T 171*
 - xxx *Polymers: see T 390*
 - xxx *Metallic materials: see T 450*
- T 155 Coatings and surface treatment
- T 160 Nuclear engineering and technology
- T 165 Laser technology

Electronics and Electrical technology T 001

- T 170 Electronics
- T 171 Microelectronics
 - xxx *Computer science: see P 170*
 - xxx *Computer technology: see T 120*
 - xxx *Informatics: see P 175*
- T 180 Telecommunication engineering
- T 181 Remote sensing

- T 190 Electrical engineering
 - xxx Regulation: see T 125*
- T 191 High frequency technology, microwaves
- T 200 Thermal engineering, applied thermodynamics
- T 210 Mechanical engineering, hydraulics, vacuum technology, vibration and acoustic engineering
 - xxx Motors and propulsion systems: see T 455*

Construction technology T 002

- T 220 Civil engineering, hydraulic engineering, offshore technology, soil mechanics
- T 230 Building construction
- T 240 Architecture, interior design
- T 250 Landscape design
- T 260 Physical planning
 - xxx Town and country planning: see S 240*
- T 270 Environmental technology, pollution control
 - xxx Environmental chemistry: see P 305*
 - xxx Environmental health: see B 700*

Transport technology T 003

- T 280 Road transport technology
- T 290 Railway transport technology
- T 300 Water transport technology
- T 310 Air transport technology
 - xxx Construction technology: see T 002*
 - xxx Motors and propulsion systems: see T 455*
- T 320 Space technology
 - xxx Space science: see P 520*
- T 330 Military science and technology
- T 340 Mining
- T 350 Chemical technology and engineering
- T 360 Biochemical technology
- T 370 Carbochemistry, petrochemistry, fuels and explosives technology
 - xxx Motors and propulsion systems: see T 455*
- T 380 Natural oils, fats and waxes technology
- T 390 Polymer technology, biopolymers
- T 400 Fine chemicals technology, colours
 - xxx Agrochemistry: see B 434*
- T 410 Pharmaceuticals and related technologies
- T 411 Radiopharmaceutical technology
- T 420 Agricultural engineering, agricultural machines, farmhouse construction
- T 430 Food and drink technology
- T 440 Non-metallic mineral technology
- T 450 Metal technology, metallurgy, metal products
- T 455 Motors and propulsion systems
- T 460 Wood, pulp and paper technology
- T 470 Textiles technology
- T 490 Biotechnology
- T 500 Safety technology
- T 510 Chronology, dating techniques
- T 480 Technology of other products