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**Abstract**

In this manual a standard directory record structure is proposed, for use in the preparation of databases of organizations, individuals and their research interests. The structure is designed to be, as far as is possible, independent of the software used. However it is anticipated that the main use will be with the Unesco Mini-micro CDS/ISIS software. Provision is made for additional fields for local needs.

## Foreword

This is the third volume in a new series called '**MIM Publication Series**'. The production of this series was agreed upon by the IODE Group of Experts in Marine Information Management (GE-MIM) during its Fourth Session (Washington DC, USA, 6-9 October 1993). There, it was observed that documents currently published as part of the IOC publications series do not reach all members of the target groups of MIM. It was also noted that documents prepared as working documents for the Group's sessions were not fully put to use as they were never distributed beyond the Group members. It was agreed that some working papers merit general distribution. The MIM Publication Series will provide MIM related papers with their proper identity within the IOC publications as separate volumes of IOC Manuals and Guides No. 30. The series may include manuals, selected working papers, strategy papers, working group reports, standards, directories, etc. The publications in this series are reviewed by a committee composed of experts with experience relevant to the topic of the publication.

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## 1. INTRODUCTION

At the third session of the Group of Experts on Marine Information Management, Wormley, UK, 27-30 April 1992, there was a discussion of the need for the continued development of directories and registers. Taking into consideration the resolutions formulated at past meetings, the Group expressed the need for the development of a standard directory record structure, and noted that regional directories such as those for the Western Indian Ocean (WIO) and Britain and Ireland (UKMERG) had already been produced using the Unesco Mini-Micro CDS/ISIS database software. It was recommended that IOC, in association with EURASLIC and IAMSLIC, should work together to develop a standard structure.

## 2. PURPOSE

- (i) To provide a standard directory record structure which can be used by national/ regional/ international groups, but which can be modified where necessary for local needs.
- (ii) To provide a structure which includes provision for details of institutions, their staff and their subject interests.
- (iii) To provide a structure which is, as far as is feasible, software independent, although it is likely that the most common implementation will be that using the Unesco CDS/ISIS software.
- (iv) To provide a structure which is independent of the form in which the directory exists, whether printed, on diskette, on CD-ROM, or online on a host. It should, however, allow for the preparation of the necessary indexes and tools for its use, and should use standard authority lists where possible.

## 3. THE ESTABLISHMENT OF A STANDARD DIRECTORY RECORD STRUCTURE WORKING GROUP

A small working group covering IOC, EURASLIC and IAMSLIC was set up to compare and contrast existing directory structures, and to recommend a standard structure. The membership of the group was:

Charles McFadden	(Virginia Institute of Marine Science (VIMS), Gloucester Point, USA)
David Moulder	(Plymouth Marine Laboratory (PML), Plymouth, UK (convenor))
Peter Pissierssens	(Intergovernmental Oceanographic Commission, (IOC), Paris, France)
Peter Reyniers	(Regional Co-operation in Scientific Information Exchange in the Western Indian Ocean region (RECOSCIX-WIO), Mombasa, Kenya)

This manual is the result of the cooperative effort of this group.

## 4. REVIEW OF EXISTING STRUCTURES

Two existing directory structures were used as a basis for the discussions:

### 4.1 UKMERG

The Directory of Marine and Freshwater Institutions, Scientists and Research Engineers in the United Kingdom and Republic of Ireland was prepared as a cooperative effort by a group of librarians from the Britain and Ireland Association of Aquatic Sciences Libraries and Information Centres (BIASLIC). The structure was developed to meet the need for a large directory of organizations, individuals and their research and development interests, and reflects the situation in the developed world, with a greater emphasis on the organization, and the necessity for sub-departments within an organization. The present version of the directory includes some 450 organizations and 2,400 individuals.

### 4.2 WIODIR

The Regional Co-operation in Scientific Information Exchange in the Western Indian Ocean (RECOSCIX-WIO), based in Mombasa, Kenya, has prepared WIODIR, a Directory of Scientists of the Western Indian Ocean Region. The project links together 16 institutions in the region, and the database holds information on all marine scientists of the co-operating institutions. The structure was developed to meet the need for a directory with a much greater detail for individuals and their research interests, and reflects the needs of the developing countries, where there is a greater emphasis on the individual, and his/her background, qualifications, training, publications etc. The present version of the directory includes 27 organizations and 244 individuals.

### 4.3 COMPARISON OF THE STRUCTURES

Both of the structures were developed using the Unesco CDS/ISIS software, and make provision for a common structure which can be used for different types of records, linked together through a sort code. There are therefore organization records, giving full details of the organization, and individual records, giving details of the individual, and linked to a particular organization by a sort code.

#### **Organization**

UKMERG allows for greater detail, including name, acronym, affiliation, address, phone, telex, fax, E-mail, subjects and description of activities. It also allows for departments and sub-centres. WIODIR adds fields for telegram, an ISO country code, and additional comments.

#### **Individual**

WIODIR allows for greater detail, including name, title, sex, education, job, function, environment, ASFIS codes, subjects, additional comments, personal contact, number of publications and references.

#### **General Comments**

UKMERG has a more detailed format for organization address. WIODIR adds fields for when and by whom the record was updated, and the record type.

#### 4.4 COMMON COMMUNICATION FORMAT (CCF)

The Common Communication Format (CCF) was developed under the auspices of Unesco in order to facilitate the exchange of bibliographic data between organizations. Initially CCF was limited to bibliographic data, but in recent years it has been extended to factual data, and there are now two formats, CCF/B for bibliographic data, and CCF/F for factual data, having relevant data elements in common. The aim is to provide a detailed and structured method for recording a number of mandatory and optional data elements in a computer-readable record for exchange purposes between two or more computer-based systems. The Standard Directory Record Structure is capable of producing CCF-compatible output.

### 5. REQUIRED ELEMENTS FOR A STANDARD STRUCTURE

A standard structure will need to have a number of defined elements, which can be completed in as much detail as is required by the user. It is suggested that the following defined elements will be required:

#### **Organization**

Information will be required to (i) identify the organization (name, acronym), (ii) locate it (address), (iii) communicate with it (address, phone, telex, telegram, fax, E-mail), (iv) put it in context (Affiliation, subjects covered, description of activities).

#### **Individual**

Information will be required to (i) identify the individual (name), (ii) locate them (department, organization, address), (iii) communicate with them (address, phone, telex, telegram, fax, E-mail), (iv) put them in context (title, sex, education, job, function, subjects).

#### **Indexing**

The following information will be required to index both of the above: (ASFIS codes, index terms, environment).

#### **House-Keeping**

The following house-keeping information will be required by the database: (header, sort codes, when updated, by whom updated).

### 6. A STANDARD STRUCTURE AND SOFTWARE INDEPENDENCE

The working group strongly recommends the use of UNESCO's CDS/ISIS software for the development of the directory. However, we do recognize the importance of a software independent structure. CDS/ISIS allows for a number of possibilities which may or may not be available in other softwares:

### **Subfields**

CDS/ISIS uses subfields, for linked parts of an entity, e.g. surname, first name, other names, title. In case other softwares do not have this feature each part of the entity has been placed in a separate field. However within CDS/ISIS it would be possible to use the subfields, for example for fields 120-123 (as 120^a, 120^b, 120^c), 130-132 (as 130^a, 130^b, 130^c) etc. For the standard directory we have chosen to use the subfields as little as possible to leave the option to use softwares other than CDS/ISIS.

### **Repeatable Fields**

CDS/ISIS uses repeatable fields, for example for phone numbers where there may be several numbers for an organization. These can be separated by punctuation in other softwares, if repeatable fields are not allowed. Another example would be for several degrees by the individual, e.g. M.Sc and Ph.D in different subjects. In this case the names of fields 320-323 would have to be changed slightly. In the standard directory we have used repeatable fields. When using another software you must therefore identify an acceptable and applicable alternative.

### **Linking Records**

CDS/ISIS links records using a **reference function**, which links together records having a *sort code* in common. This is a function which compensates for a limitation of CDS/ISIS: only one database can be opened. The reference function, in the case of the Directory, will require you to enter the organization information only once for all individuals related to a given organization. The sort code will allow the CDS/ISIS software to retrieve the organization information (of fields 3 to 199) and display it together with the individual-related information (fields 300 to 399) for a particular individual. If you don't use the CDS/ISIS software, then it may be necessary to enter the organization information for all individuals. Alternatively you can create several databases which can be related to each other through the sort codes.

These are the linkages which may be made for the Standard Directory Database:

#### **Linking Individuals to their Organizations**

Each record for an individual need only contain the identification of the related organization (i.e. its sort code in field 316). This identification will allow CDS/ISIS to borrow the desired information on the organization from the relevant organization record, to be included with the output on the individual.

#### **Linking Organizations to a Related Individual**

It may occasionally be necessary to link records in the reverse direction, taking information from individual records to include with an organization record. For example one may wish to include details of the head of the organization with the organization record. The same technique is used, using the sort code in field 3.

#### **Linking ASFIS Codes with their Full Meaning**

By adding to the database a set of records containing the ASFIS Codes (in field 450) and their full meaning (in field 455), the CDS/ISIS Ref Function can be used to produce the ASFIS Codes with their full meaning for all records containing one or more ASFIS Codes (in fields 192 or 392).



## 7. THE STANDARD STRUCTURE

The following standard structure is proposed. It should be noted that the numbering of the fields is for guidance only. Other softwares may have a different requirement for the labelling of fields. Additional fields may be added if needed for a particular reason (see fields 900 onwards). The length of the field, and the field type, are at the discretion of the users of the structure. The structure has been defined to be as wide-ranging as possible. Users may not want, or need, particular sections of it, but the structure tries to cover all eventualities. Please note however that we have used repeatable fields as well as subfields, features which may not be available in all softwares. In that case it may be necessary to add some fields replacing the subfields/repeatable fields.

### 7.1 FIELD LIST

Tag	Up to three figure number label for each field
Name	Name of the field
Length	Maximum number of characters in each field
Field Type	Possible restrictions on data characters in a field: X = alphanumeric characters; N = numeric characters
Rep	Indication of whether field is repeatable
Subfields	Indication of whether there are subdivisions in the field

<i>Tag</i>	<i>Name</i>	<i>Length</i>	<i>Field Type</i>	<i>Rep</i>	<i>Subfields</i>
<i>Main housekeeping field</i>					
1	Record Identifier	20	X	No	No
<i>Fields related to the Organization</i>					
2	Header	20	X	No	No
3	Sort Code	30	X	No	No
21	Completeness of Record	30	X	No	Yes
62	Type of Factual Information	3	X	No	No
100	Organization Name (Original)	100	X	No	No
101	Organization Name (English)	100	X	No	No
105	Acronym	30	X	No	No
110	Affiliation	100	X	No	No
111	Date of Creation	8	N	No	No
120	Number/Letter	10	X	No	No
121	Street	60	X	No	No
122	Building	60	X	No	No
123	The Floor	10	X	No	No
124	PO Box	30	X	No	No
130	Postal Code	20	X	No	No
131	Town/city	60	X	No	No
132	Postal Code	20	X	No	No
140	Postal Code	20	X	No	No
141	County/state/province	60	X	No	No
142	Postal Code	20	X	No	No
150	Postal Code	20	X	No	No

<i>Tag</i>	<i>Name</i>	<i>Length</i>	<i>Field Type</i>	<i>Rep</i>	<i>Subfields</i>
151	Nation	60	X	No	No
152	Postal Code	20	X	No	No
160	Postal Code	20	X	No	No
161	Country (Original)	60	X	No	No
162	Postal Code	20	X	No	No
163	Country (English)	60	X	No	No
164	ISO Country Code	2	X	No	No
170	Head of Organization (Surname)	60	X	No	No
171	Other Names	80	X	No	No
172	Title	40	X	Yes	No
173	Position in Organization	60	X	Yes	No
180	Phone	80	X	Yes	No
181	Fax	80	X	Yes	No
182	Telex	80	X	Yes	No
183	Telegram	80	X	No	No
184	E-mail	80	X	Yes	No
190	Description of Activities	500	X	Yes	No
191	Subjects	500	X	Yes	No
192	ASFIS Codes	500	X	Yes	No
193	Environment	60	X	Yes	No
199	Notes	500	X	No	No

*Fields related to the Individual*

300	Name	60	X	No	No
301	Other Names	80	X	No	No
302	Title	40	X	Yes	No
303	Function	60	X	Yes	No
304	Sex	10	X	No	No
315	Department	100	X	No	No
316	Sort Code	30	X	No	No
320	Degree	20	X	No	No
321	Degree Institution	60	X	No	No
322	Degree Institution Location	60	X	No	No
323	Date of Degree (Year)	4	N	No	No
324	Subject of Degree	160	X	No	No
325	Professional Qualification	80	X	No	No
326	Institution Awarding Qualification	60	X	No	No
327	Institution Location	60	X	No	No
328	Date of Qualification (Year)	4	N	No	No
329	Subject of Qualification	160	X	No	No
370	Number of Publications	3	N	No	No
380	Phone - Work	80	X	Yes	No
381	Phone - Home	80	X	Yes	No
382	Fax - Work	80	X	Yes	No
384	E-Mail	80	X	Yes	No
390	Description of Activities	500	X	Yes	No
391	Subjects	500	X	Yes	No
392	ASFIS Codes	500	X	Yes	No

<i>Tag</i>	<i>Name</i>	<i>Length</i>	<i>Field Type</i>	<i>Rep</i>	<i>Subfields</i>
<b>393</b>	<b>Environment</b>	60	X	Yes	No
<b>399</b>	<b>Notes</b>	500	X	No	No

*Fields for the ASFIS descriptors*

<b>450</b>	<b>ASFIS code</b>	4	X	No	No	No
<b>455</b>	<b>ASFIS code description</b>	120	X	No	No	No

*Housekeeping Fields*

<b>511</b>	<b>Date of Original Entry</b>	8	N	No	No
<b>512</b>	<b>Last Update</b>	8	N	No	No
<b>513</b>	<b>Keyboarder</b>	60	X	No	No

**900** All the 900's are for locally defined fields, to cater for specific needs.

## 7.2 FIELD DESCRIPTIONS

<i>Tag</i>	<i>Name</i>	<i>Length</i>	<i>Field Type</i>	<i>Rep-eatable</i>	<i>Subfields</i>
<b>1</b>	<b>Record Identifier</b>	20	X	No	No

This field provides a unique identifier of the record and is user-defined. Accordingly you can define your proper format.

e.g.: DIR12345

<b>2</b>	<b>Header</b>	20	X	No	No
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This is a global field which appears in all records, and allows one to select a set of all records, by using the same keyword. For example the name of the database could be used (WIODIR, UKMERG)

<b>3</b>	<b>Sort Code</b>	30	X	No	No
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This is a code to link records together. It will be unique to each subsection of the main organization, or to each organization, depending on whether subsections are entered as separate records or not. The Sort Code can be of the form ISO Country Code/city or town/organization, e.g. KE/ MOMBASA/ KMFRI for the organization, KE/ MOMBASA/ KMFRIA for the first department, KE/ MOMBASA/ KMFRI B for the second department etc., or a simpler solution would be K/M/K, using the same elements, but ensuring that each sort code is unique

<i>Tag</i>	<i>Name</i>	<i>Length</i>	<i>Field Type</i>	<i>Rep-eatable</i>	<i>Subfields</i>
<b>21</b>	<b>Completeness of record</b>	30	X	No	Yes

This is an indication of whether the record includes mandatory, optional or local data elements: whether it is a CIP (cataloguing in Publications) record, or it has been prepared using the published item.

subfields

^c: completeness code :

1: 1= only standard (i.e. mandatory or optional) data elements present in the record

2= local data elements present in the record

0= not specified

2: 0

^l: level of completeness (A= all mandatory and all optional elements provided)

(B= all mandatory elements provided)

(C= Less than all mandatory elements provided)

e.g. ^c10^lAB (the record contains only the mandatory elements)

<b>62</b>	<b>Type of Factual Information</b>	3	X	No	No
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This indicates which kind of information is included in the record. For the directory there are 3 types:

INS: Institutional information

PER: Personal Information

ASF: ASFA Code

<b>100</b>	<b>Organization Name (Original)</b>	100	X	No	No
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The name of the organization in its original language

e.g.: Centre de Recherches Océanologiques

<b>101</b>	<b>Organization Name (English)</b>	100	X	No	No
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The name of the organization in English, if the original name is in another language

e.g.: Oceanological Research Centre

<b>105</b>	<b>Acronym</b>	30	X	No	No
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The acronym of the original language organization name

e.g.: CRO

<i>Tag</i>	<i>Name</i>	<i>Length</i>	<i>Field Type</i>	<i>Rep- eatable</i>	<i>Subfields</i>
<b>110</b>	<b>Affiliation</b>	100	X	No	No
	The institution controlling/responsible for/advising the organization] e.g.: Ministry of Research, Science and Technology				
<b>111</b>	<b>Date of Creation</b>	8	N	No	No
	The date of creation of the organization in the form YYYYMMDD e.g. 19680312				
<b>120</b>	<b>Number/Letter</b>	10	X	No	No
	The number/letter in the street] e.g.: 201				
<b>121</b>	<b>Street</b>	60	X	No	No
	The name of the street e.g.: Ocean Front Lane				
<b>122</b>	<b>Building</b>	60	X	No	No
	The name of the Building e.g.: Whale Memorial Building				
<b>123</b>	<b>The Floor</b>	10	X	No	No
	The floor in the Building e.g.: 5th Floor				
<b>124</b>	<b>PO Box</b>	30	X	No	No
	The Post Office Box Number e.g.: 2456				

<i>Tag</i>	<i>Name</i>	<i>Length</i>	<i>Field Type</i>	<i>Rep- eatable</i>	<i>Subfields</i>
<b>130</b>	<b>Postal Code</b>	20	X	No	No
	The numbers/letters <b>before the town/city name</b> e.g.: 1000 ( <i>as in 1000 Brussels</i> )				
<b>131</b>	<b>Town/city</b>	60	X	No	No
	The name of the town or city in the original language e.g.: Brussels				
<b>132</b>	<b>Postal Code</b>	20	X	No	No
	The numbers/letters <b>after the town/city name</b> e.g.: PL1 2PB ( <i>as in Plymouth PL1 2PB</i> )				
<b>140</b>	<b>Postal Code</b>	20	X	No	No
	The numbers/letters <b>before the county/state/province name</b>				
<b>141</b>	<b>County/state/province</b>	60	X	No	No
	The name of the county/state/province in the original language e.g.: CA ( <i>as in California</i> )				
<b>142</b>	<b>Postal Code</b>	20	X	No	No
	The numbers/letters <b>after the county/state/province name</b> e.g.: 92093-0175 ( <i>as in CA 92093-0175</i> )				
<b>150</b>	<b>Postal Code</b>	20	X	No	No
	The numbers/letters <b>before the name of the nation</b>				

<i>Tag</i>	<i>Name</i>	<i>Length</i>	<i>Field Type</i>	<i>Rep- eatable</i>	<i>Subfields</i>
<b>151</b>	<b>Nation</b>	60	X	No	No
	The name of the nation in the original language e.g.: Scotland				
<b>152</b>	<b>Postal Code</b>	20	X	No	No
	The numbers/letters <b>after the name of the nation</b>				
<b>160</b>	<b>Postal Code</b>	20	X	No	No
	The numbers/letters <b>before the name of the country</b>				
<b>161</b>	<b>Country (Original)</b>	60	X	No	No
	The name of the country in the original language e.g.: Nederland				
<b>162</b>	<b>Postal Code</b>	20	X	No	No
	The numbers/letters <b>after the name of the country</b> e.g.: K1A 0E6 ( <i>as in Canada K1A 0E6</i> )				
<b>163</b>	<b>Country (English)</b>	60	X	No	No
	The name of the country in English e.g.: The Netherlands				
<b>164</b>	<b>ISO Country Code</b>	2	X	No	No
	The ISO 3166 2-letter Country Code as shown in Annex I e.g: NL				
<b>170</b>	<b>Head of Organization (Surname)</b>	60	X	No	No
	The surname of the head of the organization e.g.: Murillo				

<i>Tag</i>	<i>Name</i>	<i>Length</i>	<i>Field Type</i>	<i>Repeatable</i>	<i>Subfields</i>
<b>171</b>	<b>Other Names</b>	80	X	No	No
	The other names of the head of the institution e.g: Eduardo T.				
<b>172</b>	<b>Title</b>	40	X	Yes	No
	The title(s) of the head of the head of the organization. Separate each title by a percentage (%) sign e.g.: Professor%Dr%Mr				
<b>173</b>	<b>Position in Organization</b>	60	X	Yes	No
	The organizational title(s) of the head of the organization, e.g. Director, Head, Dean. Separate each title by a percentage (%) sign e.g.: Dean, Faculty of Science%Head of Zoology Department				
<b>180</b>	<b>Phone</b>	80	X	Yes	No
	The main phone number(s) of the organization, in the international format, i.e. country code, area code, number. Each number will be separated by a percentage (%) sign e.g.: 254-11-471129%254-11-472527				
<b>181</b>	<b>Fax</b>	80	X	Yes	No
	The main fax number(s) of the organization, in the international format, i.e. international code, area code, number. Each number will be separated by a percentage (%) sign e.g.: 32-2-6413403				
<b>182</b>	<b>Telex</b>	80	X	Yes	No
	The telex number of the organization, followed by the Answerback, followed by the network (when applicable), each separated by a semi-colon and three spaces. Each number will be separated by a percentage (%) sign e.g.: 23456; OCEAN W; Sprint				



<i>Tag</i>	<i>Name</i>	<i>Length</i>	<i>Field Type</i>	<i>Rep- eatable</i>	<i>Subfields</i>
<b>183</b>	<b>Telegram</b> The telegraphic address  e.g.: OCEANS MOMBASA	80	X	No	No
<b>184</b>	<b>E-mail</b>  The E-mail address(es), each in the form of E-mail Network, followed by semicolon and three spaces, followed by the Address, and each address separated by a percentage (%) sign  e.g.: omnet; ioc.secretariat	80	X	Yes	No
<b>190</b>	<b>Description of Activities</b>  A brief description of the activities of the organization. Paragraphs in the text may be separated by a percentage (%) sign  e.g.: The CRO is involved in oceanological research. The main research fields are (i) pollution of the Mondego Bay; (ii) aquaculture of mangrove oysters; (iii) coastal erosion. The CRO has an advisory role to the Ministry of Tourism as well as to the Ministry of Planning. The CRO has several cooperation agreements with national institutions such as University of Malalang, University of Boma, as well as with international agencies such as UNESCO, IDRC, IOC and FAO.	500	X	Yes	No
<b>191</b>	<b>Subjects</b>  A keyword description of the activities of the organization, which can be taken from the ASFIS Thesaurus (ASFIS REFERENCE SERIES, No. 6 Revision 1), separated by a percentage (%) sign  e.g.: Pollution Control% Pollution Detection% Aquaculture% Coastal Erosion	500	X	Yes	No
<b>192</b>	<b>ASFIS Codes</b>  The ASFIS codes describing the activities of the organization, separated by a percentage (%) sign A full list of ASFIS codes is included as Annex II  e.g.: 1521% 1820	500	X	Yes	No
<b>193</b>	<b>Environment</b>  The environments in which the organization is working, i.e. brackish, fresh, marine, separated by a percentage (%) sign  e.g.: marine% brackish	60	X	Yes	No

<i>Tag</i>	<i>Name</i>	<i>Length</i>	<i>Field Type</i>	<i>Rep- eatable</i>	<i>Subfields</i>
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<b>199</b>	<b>Notes</b>	500	X	No	No
------------	--------------	-----	---	----	----

Any additional information about the organization

e.g.: Was previously called Centre for Oceanographic Research

<b>300</b>	<b>Name</b>	60	X	No	No
------------	-------------	----	---	----	----

The name of the individual

e.g. Murillo

<b>301</b>	<b>Other Names</b>	80	X	No	No
------------	--------------------	----	---	----	----

The other names of the individual

e.g.: Eduardo T.

<b>302</b>	<b>Title</b>	40	X	Yes	No
------------	--------------	----	---	-----	----

The title(s) of the individual. Separate each title by a percentage (%) sign

e.g.: Professor%Dr%Mr

<b>303</b>	<b>Function</b>	60	X	Yes	No
------------	-----------------	----	---	-----	----

The function(s) of the individual. Separate each function by a percentage (%) sign

e.g.:Project leader%administrator

<b>304</b>	<b>Sex</b>	10	X	No	No
------------	------------	----	---	----	----

The sex of the individual

e.g.: Male

<b>315</b>	<b>Department</b>	100	X	No	No
------------	-------------------	-----	---	----	----

The department, division etc to which the individual belongs

e.g.: Department of Marine Botany

<i>Tag</i>	<i>Name</i>	<i>Length</i>	<i>Field Type</i>	<i>Rep- eatable</i>	<i>Subfields</i>
<b>316</b>	<b>Sort Code</b>	30	X	No	No
	The sort code of the organization or department. See field 3 for the format				
<b>320</b>	<b>Degree</b>	20	X	No	No
	The highest level degree				
	e.g.: PhD				
<b>321</b>	<b>Degree Institution</b>	60	X	No	No
	The institution where the degree was obtained				
	e.g.: University of Nairobi				
<b>322</b>	<b>Degree Institution Location</b>	60	X	No	No
	The location of the institution where the degree was awarded				
	e.g.: Nairobi				
<b>323</b>	<b>Date of Degree (Year)</b>	4	N	No	No
	The year in which the degree was awarded				
	e.g.: 1987				
<b>324</b>	<b>Subject of Degree</b>	160	X	No	No
	The subject of the degree thesis				
	e.g.: The effect of Hg on the female reproductive system of <i>Crassostrea cuculata</i>				
<b>325</b>	<b>Professional Qualification</b>	80	X	No	No
	The highest level professional qualification held by the individual, e.g. membership of a professional body, diploma in a subject, or other non-degree qualification				
	e.g. Special Certificate in Aquaculture				

<i>Tag</i>	<i>Name</i>	<i>Length</i>	<i>Field Type</i>	<i>Rep- eatable</i>	<i>Subfields</i>
------------	-------------	---------------	-------------------	-------------------------	------------------

<b>326</b>	<b>Institution Awarding Qualification</b>	60	X	No	No
------------	---	----	---	----	----

The institution where the qualification was obtained

e.g.: Bomba Fisheries College

<b>327</b>	<b>Institution Location</b>	60	X	No	No
------------	-----------------------------	----	---	----	----

The location of the institution where the qualification was obtained

e.g.: Mondego

<b>328</b>	<b>Date of Qualification (Year)</b>	4	N	No	No
------------	-------------------------------------	---	---	----	----

The year when the qualification was obtained

e.g.: 1993

<b>329</b>	<b>Subject of Qualification</b>	160	X	No	No
------------	---------------------------------	-----	---	----	----

The subject of the qualification

e.g.: Accelerated aquaculture of *Crassostrea cucculata* in a laboratory environment

<b>370</b>	<b>Number of Publications</b>	3	N	No	No
------------	-------------------------------	---	---	----	----

The number of publications by the individual

e.g.: 15

<b>380</b>	<b>Phone - Work</b>	80	X	Yes	No
------------	---------------------	----	---	-----	----

The work phone number, if there is a direct line, in the international format, i.e. country code, area code, number. Otherwise extension number or both. Separate each phone number with a percentage (%) sign.

e.g.: 324-2-520005%324-324-2-520000 ext. 234

<i>Tag</i>	<i>Name</i>	<i>Length</i>	<i>Field Type</i>	<i>Rep- eatable</i>	<i>Subfields</i>
------------	-------------	---------------	-------------------	-------------------------	------------------

<b>381</b>	<b>Phone - Home</b>	80	X	Yes	No
------------	---------------------	----	---	-----	----

The home phone number, in the international format, i.e. country code, area code, number.  
Separate different numbers with a percentage (%) sign

e.g.: 324-2-564673

<b>382</b>	<b>Fax - Work</b>	80	X	Yes	No
------------	-------------------	----	---	-----	----

The work fax number, if there is a direct line, in the international format, i.e. country code, area code, number. Separate different numbers with a percentage (%) sign

e.g.: 254-2-520560

<b>384</b>	<b>E-Mail</b>	80	X	Yes	No
------------	---------------	----	---	-----	----

The personal E-mail address(es), each in the form of E-mail Network, followed by semicolon and three spaces, followed by the Address, and each address separated by a percentage (%) sign

e.g.: omnet; p.pissierssens%bitnet; scppi@frunes21

<b>390</b>	<b>Description of Activities</b>	500	X	Yes	No
------------	----------------------------------	-----	---	-----	----

A brief description of the work carried out by the individual. Paragraphs can be separated by a percentage (%) sign.

e.g.: Aquaculture of the oyster *Crassostrea cucullata* in laboratory and on semi-industrial scale%Special attention is given to the impact of chronic or acute pollution effects of heavy metals such as Hg and Cd in view of presence of industry in the area of the culture site.

<b>391</b>	<b>Subjects</b>	500	X	Yes	No
------------	-----------------	-----	---	-----	----

A keyword description of the work of the individual, which can use the ASFIS Thesaurus, each separated by a percentage (%) sign

e.g.: Aquaculture%Pollution effects%Heavy metals

<b>392</b>	<b>ASFIS Codes</b>	500	X	Yes	No
------------	--------------------	-----	---	-----	----

The ASFIS codes describing the work of the individual, each separated by a percentage (%) sign  
A complete list of the ASFIS codes is included as Annex II

e.g.: 1521%1620

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<i>Tag</i>	<i>Name</i>	<i>Length</i>	<i>Field Type</i>	<i>Rep- eatable</i>	<i>Subfields</i>
<b>393</b>	<b>Environment</b>	60	X	Yes	No
	The environment(s) in which the individual is working, i.e. brackish, fresh, marine, each separated by %				
<b>399</b>	<b>Notes</b>	500	X	No	No
	Any additional information about the individual				
<b>450</b>	<b>ASFIS code</b>	4	X	No	No
	This field will contain the 4-digit ASFIS code which is described in full in field 455. For each ASFIS code a separate record will be used with only fields 450 and 455 filled.				
	e.g.: 1306				
<b>455</b>	<b>ASFIS code description</b>	120	X	No	No
	In this field the numeric code of field 450 is described in full.				
	e.g.: Entomology - Physiology, biochemistry, biophysics				
<b>511</b>	<b>Date of Original Entry</b>	8	N	No	No
	Date of the original entry in the form YYYYMMDD				
	e.g.: 19940129				
<b>512</b>	<b>Last Update</b>	8	N	No	No
	Date of the last update, in the form YYYYMMDD				
	e.g.: 19940210				
<b>513</b>	<b>Keyboarder</b>	60	X	No	No
	Name of the person filling in record, in form first initial and surname				
	e.g.: T Okinawa				
<b>900</b>	All the 900's are for locally defined fields, to cater for specific needs.				

## 8. IMPLEMENTATION OF THE STANDARD STRUCTURE USING MICRO CDS/ISIS

In view of the use of the reference function linking the individual, institutional and ASFIS records, it may be rather difficult for the novice user to define the necessary FDT, FST and PFT files. We therefore provide these in this manual. We thank Dr. Egbert De Smet (University of Antwerp, Antwerp, Belgium) for developing these files.

### 8.1 FDT FILE FOR THE STANDARD DIRECTORY RECORD STRUCTURE

W:STADI ASFIS  
 F:STADIRSTASOR  
 S:STADIR  
 \*\*\*

Record Identifier	1 20 0 0
Header	2 20 0 0
Sort Code	3 30 0 0
Completeness of Record	21 30 0 0
Type of Factual Information	62 3 0 0
Organization Name (Original)	100 100 0 0
Organization Name (English)	101 100 0 0
Acronym	105 30 0 0
Affiliation	110 100 0 0
Date of Creation	111 8 2 0
Number/Letter	120 10 0 0
Street	121 60 0 0
Building	122 60 0 0
Floor	123 10 0 0
PO Box	124 30 0 0
Postal Code	130 20 0 0
Town/City	131 60 0 0
Postal Code	132 20 0 0
Postal Code	140 20 0 0
County/State/Province	141 60 0 0
Postal Code	142 20 0 0
Postal Code	150 20 0 0
Nation	151 60 0 0
Postal Code	152 20 0 0
Postal Code	160 20 0 0
Country (Original)	161 60 0 0
Postal Code	162 20 0 0
Country (English)	163 60 0 0
ISO Country Code	164 2 0 0
Head of Organization (Surname)	170 60 0 0
Other Names	171 80 0 0
Position in Organisation	172 40 0 1
Function	173 60 0 1
Phone	180 80 0 1
Fax	181 80 0 1

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Telex	182 80 0 1
Telegram	183 80 0 0
E-Mail	184 80 0 1
Description of Activities	190 500 0 1
Subjects	191 500 0 1
ASFIS Codes	192 500 0 1
Environment	193 60 0 1
Notes	199 500 0 0
Name	300 60 0 0
Other Names	301 80 0 0
Title	302 40 0 1
Function	303 60 0 1
Sex	304 10 0 0
Department	315 100 0 0
Sort Code	316 30 0 0
Degree	320 20 0 0
Degree Institution	321 60 0 0
Degree Institution Location	322 60 0 0
Date of Degree (Year)	323 4 2 0
Subject of Degree	324 160 0 0
Professional Qualification	325 80 0 0
Institution Awarding Qualification	326 60 0 0
Institution Location	327 60 0 0
Date of Qualification (Year)	328 4 2 0
Subject of Qualification	329 160 0 0
Number of Publications	370 3 2 0
Phone - Work	380 80 0 1
Phone - Home	381 80 0 1
Fax - Work	382 80 0 1
E-Mail	384 80 0 1
Description of Activities	390 500 0 1
Subjects	391 500 0 1
ASFIS Codes	392 500 0 1
Environment	393 60 0 1
Notes	399 500 0 0
ASFIS Code	450 4 0 0
ASFIS Code Description	455 120 0 0
Date of Original Entry	511 8 2 0
Last Update	512 8 2 0
Keyboarder	513 60 0 0



## 8.2 FST FILE FOR THE STANDARD DIRECTORY RECORD STRUCTURE

1 4 v1  
2 4 v2  
3 4 v3  
3 0 If p(v100) Then »|v3 Fi  
21 4 v21  
62 4 v62  
100 1 v100  
100 4 v100  
101 1 v101  
101 4 v101  
105 0 v105  
110 4 v110  
131 4 v131  
141 4 v141  
151 4 v151  
161 4 v161  
163 4 v163  
164 4 v164  
170 0 v170|, |v171  
172 0 v172  
172 4 v172  
182 4 v182  
184 4 v184  
190 4 mpl,(v190|%)  
191 0 mpl,(v191|%)  
192 1 mpl,(|AC=|v192|%)  
193 0 (v193|%)  
300 0 v300|, |v301  
300 0 »|v300|, |v301  
315 0 v315  
315 4 v315  
316 4 v316  
384 4 v384  
390 4 mpl,(v390|%)  
391 0 mpl,(v391|%)  
392 0 mpl,(|AC=|v392|%)  
393 0 (v393|%)  
450 0 |«|v450

### 8.3 PFT FILE FOR STANDARD DIRECTORY RECORD STRUCTURE

```
mfn(4)/If p(v100) Then "ORGANIZATION: "v100," ("v101"),"
["v105"]/"AFFILIATION: "v110/"ADDRESS: "v120," "v121,/v122," "v123/v124/v130,"
"v131," "v132/v140," "v141," "v142/v150," "v151," "v152/v160," ("v163")," "v161,"
"v162/"ISO CODE: "v164/#"HEAD OF ORGANIZATION: "v172" "v171" "v170,"
("v173")/"#Phone : "v180; |/"Fax: "v181; |/"Telex: "v182; |/"Telegram: "v183/"E-mail:
"v184; |/"# DESCRIPTION OF ACTIVITIES: "v190; |/"SUBJECTS: "v191+;
|/"ASFIS CODES: "v192( 13,13) x1 REF(L(«|v192),(|v455|);|)/("ENVIRONMENT:
"v193+; |)"/NOTES: "v199/## Else 'INDIVIDUAL: 'v302," "v301," "v300,"
("v303")/"Sex="v304/"DEPARTMENT: "v315,/Ref(1(»'v316),|ORGANIZATION: |v100,|
(|v101|),/|Address: |v120 |, |v121|, |v122|, |v123|, |v124|, |v130|, |v131|, |v132|,
|v161),/"DEGREE: "v320," "v321," "v322," ("v323")," "v324/"PROFESSIONAL
QUALIFICATION: "v325," "v326," "v327," ("v328")," "v329/"NUMBER OF
PUBLICATIONS: "v370/"Phone - Work: "v380; |," Phone - Home: "v381; |/"Fax -
Work: "v382; |/"E-mail: "v384; |/"DESCRIPTION OF ACTIVITIES: " v390;
|/"SUBJECTS: "v391+; |)/("ASFIS CODES: "v392(13,13) x1
REF(L(«|v392),(|v455|);|)/("ENVIRONMENT: "v393+; |)"/NOTES: "v399/#FI"Date of
Original Entry: "v511/"Last Update: "v512/"Keyboarder: "v513###
```

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Annex I

ANNEX I

ISO-3166 2-LETTER COUNTRY CODES

(1993)

This list does not constitute an official list of names of countries or other political entities. The name of the entity is given in its short form in English.

Afghanistan	AF	Christmas Island	CX
Albania	AL	Cocos (Keeling) Islands	CC
Algeria	DZ	Colombia	CO
American Samoa	AS	Comoros	KM
Andorra	AD	Congo	CG
Angola	AO	Cook Islands	CK
Anguilla	AI	Costa Rica	CR
Antarctica	AQ	Cote d'Ivoire	CI
Antigua and Barbuda	AG	Croatia	HR
Argentina	AR	Cuba	CU
Armenia	AM	Cyprus	CY
Aruba	AW	Czech Republic	CZ
Australia	AU	Denmark	DK
Austria	AT	Djibouti	DJ
Azerbaijan	AZ	Dominica	DM
Bahamas	BS	Dominican Republic	DO
Bahrain	BH	East Timor	TP
Bangladesh	BD	Ecuador	EC
Barbados	BB	Egypt	EG
Belarus	BY	El Salvador	SV
Belgium	BE	Equatorial Guinea	GQ
Belize	BZ	Eritrea	ER
Benin	BJ	Estonia	EE
Bermuda	BM	Ethiopia	ET
Bhutan	BT	Falkland Islands (Malvinas)	FK
Bolivia	BO	Faroe Islands	FO
Bosnia and Herzegovina	BA	Fiji	FJ
Botswana	BW	Finland	FI
Bouvet Island	BV	France	FR
Brazil	BR	France, Metropolitan	FX
British Indian Ocean Territory	IO	French Guiana	GF
Brunei Darussalam	BN	French Polynesia	PF
Bulgaria	BG	French Southern Territories	TF
Burkina Faso	BF	Gabon	GA
Burundi	BI	Gambia	GM
Cambodia	KH	Georgia	GE
Cameroon	CM	Germany, Federal Republic	DE
Canada	CA	Ghana	GH
Cape Verde	CV	Gibraltar	GI
Cayman Islands	KY	Greece	GR
Central African Republic	CF	Greenland	GL
Chad	TD	Grenada	GD
Chile	CL	Guadeloupe	GP
China	CN	Guam	GU

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Guatemala	GT	Moldova, Republic of	MD
Guinea	GN	Monaco	MC
Guinea-Bissau	GW	Mongolia	MN
Guyana	GY	Montserrat	MS
Haiti	HT	Morocco	MA
Heard and McDonald Islands	HM	Mozambique	MZ
Honduras	HN	Myanmar	MM
Hong Kong	HK	Namibia	NA
Hungary	HU	Nauru	NR
Iceland	IS	Nepal	NP
India	IN	Netherlands	NL
Indonesia	ID	Netherlands Antilles	AN
Iran (Islamic Republic of)	IR	New Caledonia	NC
Iraq	IQ	New Zealand	NZ
Ireland	IE	Nicaragua	NI
Israel	IL	Niger	NE
Italy	IT	Nigeria	NG
Jamaica	JM	Niue	NU
Japan	JP	Norfolk Island	NF
Jordan	JO	Northern Mariana Islands	MP
Kazakhstan	KZ	Norway	NO
Kenya	KE	Oman	OM
Kiribati	KI	Pakistan	PK
Korea, Democratic Republic	KP	Palau	PW
Korea, Republic of	KR	Panama	PA
Kuwait	KW	Papua New Guinea	PG
Kyrgyzstan	KG	Paraguay	PY
Lao People's Democratic Republic	LA	Peru	PE
Latvia	LV	Philippines	PH
Lebanon	LB	Pitcairn	PN
Lesotho	LS	Poland	PL
Liberia	LR	Portugal	PT
Libyan Arab Jamahiriya	LY	Puerto Rico	PR
Liechtenstein	LI	Qatar	QA
Lithuania	LT	Reunion	RE
Luxembourg	LU	Romania	RO
Macau	MO	Russian Federation	RU
Macedonia, The former Yugoslav Republic of	MK	Rwanda	RW
Madagascar	MG	Saint Helena	SH
Malawi	MW	Saint Kitts and Nevis	KN
Malaysia	MY	Saint Lucia	LC
Maldives	MV	Saint Pierre and Miquelon	PM
Mali	ML	Saint Vincent and the Grenadines	VC
Malta	MT	Samoa	WS
Marshall Islands	MH	San Marino	SM
Martinique	MQ	Sao Tome and Principe	ST
Mauritania	MR	Saudi Arabia	SA
Mauritius	MU	Senegal	SN
Mayotte	YT	Seychelles	SC
Mexico	MX	Sierra Leone	SL
Micronesia (Federated States of)	FM	Singapore	SG
		Slovakia	SK

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Solomon Islands	SB
Somalia	SO
South Africa	ZA
South Georgia and the South Sandwich Islands	GS
Spain	ES
Sri Lanka	LK
Sudan	SD
Suriname	SR
Svalbard and Jan Mayen	SJ
Swaziland	SZ
Sweden	SE
Switzerland	CH
Syrian Arab Republic	SY
Taiwan, Province of China	TW
Tajikistan	TJ
Tanzania	TZ
Thailand	TH
Togo	TG
Tokelau	TK
Tonga	TO
Trinidad and Tobago	TT
Tunisia	TN
Turkey	TR
Turkmenistan	TM
Turks and Caicos Islands	TC
Tuvalu	TV
Uganda	UG
Ukraine	UA
United Arab Emirates	AE
United Kingdom	GB
United States	US
United States Minor Outlying Islands	UM
Uruguay	UY
Uzbekistan	UZ
Vanuatu	VU
Vatican City State (Holy See)	VA
Venezuela	VE
Viet Nam	VN
Virgin Islands (British)	VG
Virgin Islands (US)	VI
Wallis and Futuna Islands	WF
Western Sahara	EH
Yemen	YE
Yugoslavia	YU
Zaire	ZR
Zambia	ZM
Zimbabwe	ZW

ANNEX II

LIST OF ASFIS CODES

ASFA-1 SUBJECT CATEGORIES

GENERAL ASPECTS

- 1101 General works
- 1102 Institutes and organizations
- 1103 Information services
- 1104 Personal
- 1105 Research programmes, expeditions and vessels
- 1106 Conferences and other meetings
- 1107 History and development
- 1108 Education
- 1109 Books, atlases and charts
- 1110 Translations

1121 LAW, POLICY, ECONOMICS AND SOCIAL SCIENCES

BIOLOGY

BIOLOGY: GENERAL

- 1181 General
- 1182 Methods and instruments
- 1183 Taxonomy and morphology
- 1184 Reproduction and development
- 1185 Genetics and evolution
- 1186 Physiology, biochemistry, biophysics
- 1187 Palaeontology

MICROBIOLOGY

- 1201 General
- 1202 Geographic distribution
- 1203 Taxonomy and morphology
- 1204 Reproduction and development
- 1205 Genetics and evolution
- 1206 Physiology, biochemistry, biophysics

BOTANY

- 1221 General
- 1222 Geographic distribution
- 1223 Taxonomy and morphology
- 1224 Reproduction and development
- 1225 Genetics and evolution
- 1226 Physiology, biochemistry, biophysics

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**INVERTEBRATE BIOLOGY: GENERAL**  
(excluding Molluscs, Crustaceans, Insects)

- 1241 General
- 1242 Geographic distribution
- 1243 Taxonomy and morphology
- 1244 Reproduction and development
- 1245 Genetics and evolution
- 1246 Physiology, biochemistry, biophysics

**MALACOLOGY**

- 1261 General
- 1262 Geographic distribution
- 1263 Taxonomy and morphology
- 1264 Reproduction and development
- 1265 Genetics and evolution
- 1266 Physiology, biochemistry, biophysics

**CARCINOLOGY**

- 1281 General
- 1282 Geographic distribution
- 1283 Taxonomy and morphology
- 1284 Reproduction and development
- 1285 Genetics and evolution
- 1286 Physiology, biochemistry, biophysics

**ENTOMOLOGY**

- 1301 General
- 1302 Geographic distribution
- 1303 Taxonomy and morphology
- 1304 Reproduction and development
- 1305 Genetics and evolution
- 1306 Physiology, biochemistry, biophysics

**CHORDATE BIOLOGY: GENERAL**  
(excluding Fish, Birds, Mammals)

- 1321 General
- 1322 Geographic distribution
- 1323 Taxonomy and morphology
- 1324 Reproduction and development
- 1325 Genetics and evolution
- 1326 Physiology, biochemistry, biophysics

**ICHTHYOLOGY**

- 1341 General
- 1342 Geographic distribution
- 1343 Taxonomy and morphology

- 1344 Reproduction and development
- 1345 Genetics and evolution
- 1346 Physiology, biochemistry, biophysics

#### ORNITHOLOGY

- 1361 General
- 1362 Geographic distribution
- 1363 Taxonomy and morphology
- 1364 Reproduction and development
- 1365 Genetics and evolution
- 1366 Physiology, biochemistry, biophysics

#### MAMMALOLOGY

- 1371 General
- 1372 Geographic distribution
- 1373 Taxonomy and morphology
- 1374 Reproduction and development
- 1375 Genetics and evolution
- 1376 Physiology, biochemistry, biophysics

#### ECOLOGY AND ECOSYSTEMS

##### AQUATIC ECOLOGY

- 1381 General
- 1382 Ecological techniques and apparatus
- 1383 Biogeography and biogeographic regions

##### AUTECOLOGY

- 1421 Migrations and rhythms
- 1422 Environmental effects
- 1423 Behavior
- 1424 Age and growth
- 1425 Nutrition and feeding habits

##### POPULATION STUDIES

- 1441 Population structure
- 1442 Population dynamics
- 1443 Population genetics

##### AQUATIC COMMUNITIES

- 1461 Plankton
- 1462 Benthos
- 1463 Habitat community studies
- 1464 Other aquatic community studies



**PRODUCTIVITY, ECOSYSTEMS, SPECIES INTERACTIONS**

- 1481 Productivity
- 1482 Ecosystems and energetics
- 1483 Species interactions: general
- 1484 Species interactions: parasites and diseases
- 1485 Species interactions: pests and control

**FOULING AND BORING**

- 1541 Biology of fouling and boring organisms
- 1542 Prevention and control

**FISHERIES**

**PRACTICAL ASPECTS OF FISHERIES**

- 1561 General
- 1562 Fishing vessels and harbours
- 1563 Fishing gear and methods
- 1564 Instruments, tools, equipment
- 1565 Policy, legislation and sociology
- 1566 Fishery charts, grounds and water areas
- 1567 Fishery oceanography and limnology

**AQUACULTURE**

- 1581 General
- 1582 Fish culture
- 1583 Shellfish culture
- 1584 Culture of other aquatic animals
- 1585 Plant culture
- 1586 Aquaria

**FISHABLE STOCKS**

- 1601 General
- 1602 Surveying and prospecting
- 1603 Fishery statistics and sampling
- 1604 Stock assessment and management
- 1605 Sport fishing

**AQUATIC PRODUCTS AND THEIR UTILIZATION**

- 1621 General
- 1622 Primary products
- 1623 Processing methods, instruments and factories
- 1624 Secondary products
- 1625 Non-edible products
- 1626 Food technology
- 1627 Food quality and standards

MARKETING AND ECONOMICS OF AQUATIC PRODUCTS

- 1641 General
- 1642 Storage, transport and packing
- 1643 Marketing
- 1644 Economics
- 1645 Commodity and trade statistics

ASFA-2 SUBJECT CATEGORIES

GENERAL ASPECTS

- 2101 General works
- 2102 Institutes and organizations
- 2103 Information services
- 2104 Personal
- 2105 Research programmes and expeditions
- 2106 Conferences and other meetings
- 2107 History and development
- 2108 Education
- 2109 Books, atlases and charts
- 2110 Translations

LAW, POLICY, ECONOMICS AND SOCIAL SCIENCES

- 2121 General
- 2122 Legislation
- 2123 Conservation
- 2124 Coastal zone management
- 2125 Recreation
- 2126 Sociology
- 2127 General papers on resources

THE PHYSICAL ENVIRONMENT

DESCRIPTIVE OCEANOGRAPHY AND LIMNOLOGY

- 2141 General
- 2142 Methods and instruments
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