

# ISO/IEC 8211:1994-10 (E)

## Information technology - Specification for a data descriptive file for information interchange

---

### Contents

Page

Foreword .....	vii
Introduction .....	viii
1 Scope .....	1
2 Normative references .....	1
3 Conformance .....	2
4 Definitions and abbreviations .....	2
4.1 Definitions .....	2
4.2 Abbreviations .....	5
5 Interchange file and logical record structure .....	6
5.1 File and logical record structure .....	7
5.1.1 Interchange logical records .....	7
5.1.2 Padding of records and media blocks .....	7
5.2 Logical records - leaders and directories .....	7
5.2.1 Logical record leader .....	8
5.2.1.1 record length field (LR RP 0-4) .....	8
5.2.1.2 leader identifier field (LR RP 6) .....	8
5.2.1.3 ISO/IEC 8211 Version number (LR RP 8) .....	8
5.2.1.4 Base address of field area (LR RP 12-16) .....	8
5.2.1.5 Entry map field (LR RP 20-23) .....	9
5.2.1.5.1 Size of field length field (LR RP 20) .....	9
5.2.1.5.2 Size of field position field (LR RP 21) .....	9
5.2.1.5.3 Reserved for future standardization (LR RP 22) .....	9
5.2.1.5.4 Size of field tag field (LR RP 23) .....	9
5.2.1.6 Alternate forms of counts and field positions .....	9
5.2.2 Logical record directory .....	10
5.2.2.1 Field tag field .....	10
5.2.2.2 Field length field .....	10
5.2.2.3 Field position field .....	10
5.3 Logical record field areas .....	10
5.3.1 Field area of the DDR .....	10
5.3.2 The field areas of the DRs 1 .....	11
5.3.2.1 User data fields .....	11
5.3.2.1.1 Elementary data fields .....	11
5.3.2.1.2 Compound data fields .....	11
6 Description of user data types and structures .....	11
6.1 DDR leader fields related to data description .....	11
6.1.1 Interchange level field (DDR RP 5) .....	11
6.1.2 Inline code extension indicator (DDR RP 7) .....	12
6.1.3 Application indicator field (DDR RP 9) .....	12
6.1.3.1 Reference to other Standards .....	12
6.1.4 Field control length field (DDR RP 10-11) .....	12
6.1.5 Extended character set indicator field (DDR RP 17-19) .....	12
6.2 Special field tags (tags = 0.0 to 0.9) .....	12
6.2.1 File control field (tag = 0.0) .....	12
6.2.1.1 Field control field .....	13
6.2.1.2 External file title field .....	13
6.2.1.3 List of Field tag pairs .....	13
6.2.2 Record identifier field (tag = 0.1) .....	13
6.2.3 User application field (tag 0.2) .....	13

6.2.4	Announcer sequence or feature identifier field (tag 0.3)	13
6.2.5	Fields reserved for future standardization	13
6.2.6	Recursive tree LINKS field (tag = 0.9)	14
6.2.7	Order of special field tags in the DDR	14
6.3	Data descriptive fields in level 1 files	14
6.4	Data descriptive fields in level 2 and 3 files	14
6.4.1	Tabular summary of data descriptive fields of level 2 and 3 files	14
6.4.2	Field controls	15
6.4.2.1	Data structure Code (RP 0)	16
6.4.2.2	Data type code (RP 1)	16
6.4.2.3	Auxiliary controls (RP 2-3)	16
6.4.2.4	Printable graphics (RP 4-5)	16
6.4.2.5	Truncated escape sequence (RP 6-8)	16
6.4.3	Data field names, array descriptors and format controls	16
6.4.3.1	Data field name	16
6.4.3.2	Array descriptors	16
6.4.3.2.1	Numeric array descriptor	17
6.4.3.2.2	Subfield labels	17
6.4.3.2.3	Vector labels	17
6.4.3.2.4	Cartesian label	17
6.4.3.2.5	Description of concatenated structures	17
6.4.3.3	Format controls	19
6.4.4	Order of array descriptors, labels and arrays	21
6.4.4.1	Order of numeric array descriptors	21
6.4.4.2	Order of cartesian labels	21
6.4.4.3	Storage order of array elements	21
7	Use of coded character sets	22
7.1	Announcement of coded character set extension	22
7.1.1	Scope of active character sets	22
7.1.2	Length of fields and subfields	22
7.1.3	Use of multiple octet character sets	23
7.2	ISO 2022 coded character set extension	23
7.2.1	Designation of ISO 2022 coded character sets	23
7.2.1.1	Use in the 7-bit environment	23
7.2.2	Designation of default code set for file	23
7.2.3	Designation of default code sets for fields	23
7.2.4	ISO 2022 announcer sequence field (tag 0.3)	24
7.3	ISO/IEC 10646 coded character sets	24
7.3.1	Announcement of filewise default character set	24
7.3.2	Announcement of fieldwise default character set	24
7.3.3	ISO/IEC 10646 feature identifier field (tag 0.3)	24
Annex AASN.1 and FTAM Registrations		26
A.1	Abstract syntax identifier	26
A.2	Transfer syntax identifier	26
A.3	FTAM document type definitions	26
A.3.1	ISO DDF unstructured document type	26
A.3.1.1	Entry number: DDF-1	26
A.3.1.2	Information objects	26
A.3.1.3	Scope and field of application	26
A.3.1.4	References	26
A.3.1.5	Definitions	26
A.3.1.6	Abbreviations	27
A.3.1.7	Document semantics	27
A.3.1.8	Abstract syntactic structure	27
A.3.1.9	Definition of transfer	27
A.3.1.9.1	Datatype definition	27
A.3.1.9.2	Presentation data values	27
A.3.1.9.3	Sequence of presentation data values	27
A.3.1.10	Transfer syntax	27
A.3.1.11	ASE specific specifications	27
A.3.1.11.1	ISO 8571 - FTAM	27

A.3. 1.1 1.2 ISO/IEC 8211 implementation support .....	27
A.3.1. 11. 2.1 The EXTEND operation .....	27
A.3. 1.1 1.2.2 The REPLACE operation .....	28
A.3.1. 11. 2.3 Relaxations ! .....	28
A.3.2 ISO DDF Structured document type .....	28
A.3.2.1 Entry number: DDF-2.....	28
A.3.2.2 Information objects.....	28
A.3.2.3 Scope and field of application.....	28
A. 3.2.4 References.....	28
A.3.2.5 Definitions .....	28
A.3.2.6 Abbreviations .....	28
A.3.2.7 Document semantics ; .....	29
A.3.2.8 Abstract syntactic structure .....	29
A.3.2.9 Definition of transfer .....	29
A.3.2.9.1 Datatype definition .....	29
A.3.2.9.2 Presentation data values .....	29
A.3.2.9.3 Sequence of presentation data values .....	29
A.3.2.10 Transfer Syntax.....	29
A.3.2,11 ASE specific specifications .....	30
A.3.2.11.1 ISO 8571 -FTAM.....	30
A.3.2.11.2 ISO/IEC 8211 implementation support .....	30
A.3.2.1 1.2.1 The EXTEND Operation.....	30
A.3.2.11.2.2 The REPLACE Operation .....	30
A.3.2.11.2.3 Relaxations.....	30
Annex B ISO/IEC 8211 Application Specifications .....	31
B.1 Specification of ISO/IEC 8211 Exchange File Sets .....	31
B.2 ISO/IEC 8211 data field description .....	33
B.2.1 General specifications.....	33
B.2.1.1 End of line.....	33
B.2.1.2 White space .....	33
B.2.1.3 Comments .....	33
B.2.1.4 Quoted strings .....	33
B.2.1.5 Notation .....	34
B.2.1.6 The INCLUDE construct .....	34
B.2.1.7 Order of Constructs.....	34
B.2.2 File Identification .....	34
B.2.3 DDR leader specifications .....	35
B.2.4 Global default specification.....	35
B.2.5 Data field specifications.....	35
B.2.6 Special forms of field constructs .....	37
B.2.6.1 Null first vector label .....	37
B.2.6.2 Correspondence of format and last vector label.....	37
B.2.6.3 Special DDR tagged fields .....	37
B.2.7 Special constructs .....	38
B.3 Examples of exchange set specification.....	38
Annex C Informal Introduction to ISO/IEC 8211 .....	42
C.1 ISO/IEC 8211 File, logical record and field constructs .....	42
C.1.1 Media record constructs .....	42
C.1.2 Logical record constructs.....	42
C.1.3 Logical record structure .....	43
C.1.3.1 Leader (RP 0 - 23).....	43
C.1.3.2 Directory .....	43
C.1.3.3 Field area .....	44
C.1.4 File characteristics and processing.....	44
C.1.5 Variant logical records .....	45
C.1.5.1 Long ISO/IEC 8211 records.....	45
C.1.5.2 Fixed-formats - repeating leaders and directories .....	45
C.1.6 ISO/IEC 8211 End-of-data conditions .....	45
C.1.7 Summary of the logical record and field constructs.....	46
C.2 Data description and Identification.....	46

C.2.1 Components of data description .....	46
C.2.1.1 Data extent .....	46
C.2.1.2 Data position.....	46
C.2.1.3 Data structure .....	46
C.2.1.4 Data type and syntax .....	46
C.2.1.5 Intra-field tree structure.....	46
C.2.2 Data Identification .....	47
C.2.2.1 Application semantics .....	47
C.3 File and record contents .....	47
C.4 Binary directories.....	47
Annex D Introduction to ISO/IEC 8211 Data Description.....	48
D.1 Data description - user data.....	48
D.2 Consistency of data description and data - Validation .....	48
D.2.1 Complexity of data description.....	48
D.2.2 Level 1 data description .....	49
D.2.3 Level 2 and 3 data description.....	49
D.3 Data description constructs.....	50
D.3.1 Subfield extents.....	50
D.3.2 Data types .....	50
D.3.3 Field Identification .....	50
D.3.4 Data structure without subfield Identification.....	50
D.3.5 Data structure with subfield Identification .....	51
D.4 Large application data structures .....	51
D.5 Intra-record tree structures .....	51
D.6 Coded character set extensions.....	51
Annex E Examples of Data Description.....	53
E.1 Leader and file title field .....	53
E.2 Examples of formats .....	54
E.2.1 Elementary data fields .....	54
E.2.2 Linear structures .....	54
E.2.3 Multi-dimensioned arrays.....	54
E.3 Examples of bit fields .....	55
E.4 Examples of binary forms .....	56
E.5 Examples of subfield labelling.....	56
E.5.1 Redundant elementary field label.....	56
E.5.2 Vector labels .....	56
E.5.3 Cartesian labels.....	57
E.5.4 Concatenated data structures.....	57
Annex F DDF Hierarchical and Network Data Structures .....	58
F.1 DDF hierarchical data structures .....	58
F.1.1 Forests.....	58
F.2 Conversion to corresponding binary tree.....	58
F.3 Network data structures .....	61
Annex G Database Data Transfer .....	62
G.1 Essential features of data base management systems .....	62
G.1.1 Relational data base management systems .....	62
G.1.2 Hierarchical data base management systems .....	63
G.1.3 Network data base management systems .....	63
G.2 Reduction to relational forms .....	63
Annex H Relationship to Other OSI Work .....	64
H.1 OSI basic reference model .....	64
H.1.1 Other presentation layer considerations.....	64
H.1.2 Remote versus local processing considerations .....	65
H.2 Relationship to FTAM Virtual filestore model .....	65
H.2.1 Correspondence of ISO/IEC 821 1 file constructs to FTAM.....	66
H.2.2 ISO/IEC 8211 access methodology .....	67
H.2.3 Relationship of documents to files .....	67

H.2.4 File naming .....	67
H.3 Relationship to other syntax notations .....	67
H.3.1 Abstract syntax notation one .....	67
H.3.2 Transfer Syntax Description Notation .....	68
H.4 Relationship to data base management models .....	68
H.5 Bibliography .....	68
H.6 Summary of data types in other projects .....	69

**List of figures**

Figure 1 - Schematic of ISO/IEC 8211 File and Logical Records .....	6
Figure 2 - File Schematic Representation .....	7
Figure 3 - Logical Record Schematic .....	7
Figure 4 - LR Leader Schematic .....	8
Figure 5 - LR Entry Map Schematic .....	9
Figure 6 - LR Directory Entry Schematic .....	10
Figure 7 - File Control Field Schematic .....	13
Figure 8 - Schematic of Level 2 and 3 Data Descriptive Fields .....	15
Figure F.1 - Examples of Ordered Rooted Trees .....	59
Figure F.2 - Generic Structure of a Logical Record .....	59
Figure F.3 - Instance of a User Data Tree based on F.2 .....	60
Figure F.4 - Corresponding Binary Tree to the Tree of F.2 .....	61

**List of tables**

Table 1 - Delimiters and Their Uses .....	15
Table 2 - Data Descriptive Field Components .....	15
Table 3 - Extensions of Bitfield Data Descriptions .....	20
Table A.1 Information Objects in the Unstructured Text Document Type .....	26
Table A.2 Information Objects In the Structured Text Document Type .....	28