

# TECHNICAL REPORT

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TR 10167**

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## Information technology — Open Systems Interconnection — Guidelines for the application of Estelle, LOTOS and SDL

**iTeh STANDARD PREVIEW**

*Technologies de l'information — Interconnexion de systèmes ouverts —  
Principes directeurs pour l'application d'Estelle, LOTOS et SDL*

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## Contents

List of Figures	ix
Foreword	xi
Introduction	xiii
<b>1 Scope</b>	<b>1</b>
<b>2 References</b>	<b>1</b>
<b>3 Terminology</b>	<b>1</b>
3.1 Architectural Terms . . . . .	2
3.2 FDT Terms . . . . .	2
<b>4 FDT General Characteristics</b>	<b>2</b>
4.1 Introduction . . . . .	2
4.2 The Nature and Purpose of FDTs . . . . .	2
4.2.1 The Purpose of FDTs . . . . .	2
4.2.2 Use in Development . . . . .	3
4.2.3 Assessment of FDTs . . . . .	3
4.3 Estelle . . . . .	3
4.4 LOTOS . . . . .	3
4.5 SDL . . . . .	3
4.6 Benefits of FDTs . . . . .	4
4.7 Tools for FDTs . . . . .	4
<b>5 Guide to the Examples</b>	<b>5</b>
5.1 Explanation of the Examples . . . . .	5
5.1.1 Examples of Basic FDT Concepts . . . . .	5
5.1.2 Examples of Basic Architectural Concepts . . . . .	5
5.1.3 Daemon Game . . . . .	5
5.1.4 Sliding Window Protocol . . . . .	5
5.1.5 Abracadabra Service and Protocol . . . . .	5
5.1.6 A Transport Protocol . . . . .	5
5.2 How to read the Examples . . . . .	6

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<b>6</b>	<b>Examples of Basic FDT Concepts</b>	<b>7</b>
6.1	Abstraction . . . . .	7
6.1.1	Estelle Representation . . . . .	7
6.1.2	LOTOS Representation . . . . .	7
6.1.3	SDL Representation . . . . .	7
6.2	Information . . . . .	7
6.2.1	Estelle Representation . . . . .	7
6.2.2	LOTOS Representation . . . . .	7
6.2.3	SDL Representation . . . . .	7
6.3	Action . . . . .	7
6.3.1	Estelle Representation . . . . .	7
6.3.2	LOTOS Representation . . . . .	7
6.3.3	SDL Representation . . . . .	7
6.4	Interaction . . . . .	8
6.4.1	Estelle Representation . . . . .	8
6.4.2	LOTOS Representation . . . . .	8
6.4.3	SDL Representation . . . . .	8
6.5	Interaction Point . . . . .	8
6.5.1	Estelle Representation . . . . .	8
6.5.2	LOTOS Representation . . . . .	8
6.5.3	SDL Representation . . . . .	9
<b>7</b>	<b>Examples of Basic Architectural Concepts</b>	<b>9</b>
7.1	Service Access Point . . . . .	9
7.1.1	Estelle Representation . . . . .	9
7.1.2	LOTOS Representation . . . . .	9
7.1.3	SDL Representation . . . . .	10
7.2	Endpoint . . . . .	10
7.2.1	Estelle Representation . . . . .	10
7.2.2	LOTOS Representation . . . . .	10
7.2.3	SDL Representation . . . . .	10
7.3	Service Primitive Parameter . . . . .	11
7.3.1	Estelle Representation . . . . .	11
7.3.2	LOTOS Representation . . . . .	11
7.3.3	SDL Representation . . . . .	11
7.4	Service Data Unit . . . . .	11
7.4.1	Estelle Representation . . . . .	11
7.4.2	LOTOS Representation . . . . .	12
7.4.3	SDL Representation . . . . .	12
7.5	Service Primitive . . . . .	12
7.5.1	Estelle Representation . . . . .	12
7.5.2	LOTOS Representation . . . . .	12
7.5.3	SDL Representation . . . . .	12
7.6	Protocol Entity . . . . .	12

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ISO/IEC TR 10167:1991  
<https://standards.iteh.ai/catalog/standards/sist/23526989-9b3d-4338-a9e1-c1528394cea/iso-iec-tr-10167-1991>

7.6.1	Estelle Representation . . . . .	13
7.6.2	LOTOS Representation . . . . .	13
7.6.3	SDL Representation . . . . .	13
7.7	Protocol . . . . .	13
7.7.1	Estelle Representation . . . . .	13
7.7.2	LOTOS Representation . . . . .	14
7.7.3	SDL Representation . . . . .	14
7.8	Protocol Data Unit . . . . .	15
7.8.1	Estelle Representation . . . . .	15
7.8.2	LOTOS Representation . . . . .	15
7.8.3	SDL Representation . . . . .	15
7.9	Connection . . . . .	16
7.9.1	Estelle Representation . . . . .	16
7.9.2	LOTOS Representation . . . . .	16
7.9.3	SDL Representation . . . . .	16
7.10	Multiplexing . . . . .	16
7.10.1	Estelle Representation . . . . .	16
7.10.2	LOTOS Representation . . . . .	17
7.10.3	SDL Representation . . . . .	17
7.11	Splitting . . . . .	17
7.11.1	Estelle Representation . . . . .	17
7.11.2	LOTOS Representation . . . . .	18
7.11.3	SDL Representation . . . . .	18
7.12	Concatenation . . . . .	18
7.12.1	Estelle Representation . . . . .	18
7.12.2	LOTOS Representation . . . . .	18
7.12.3	SDL Representation . . . . .	19
7.13	Segmentation . . . . .	19
7.13.1	Estelle Representation . . . . .	19
7.13.2	LOTOS Representation . . . . .	20
7.13.3	SDL Representation . . . . .	20
7.14	Service . . . . .	21
7.14.1	Estelle Representation . . . . .	21
7.14.2	LOTOS Representation . . . . .	21
7.14.3	SDL Representation . . . . .	21
<b>8</b>	<b>Daemon Game Example</b> . . . . .	<b>22</b>
8.1	Informal Description . . . . .	22
8.2	Deficiencies in the Informal Description . . . . .	22
8.2.1	Presence of Daemon . . . . .	22
8.2.2	Login to a Current Game . . . . .	22
8.2.3	Attempt to play before Login . . . . .	22
8.2.4	Identification of Players and Games . . . . .	22
8.2.5	Player Use of System Signals . . . . .	22

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ISO/IEC TR 10167:1991  
<https://standards.iteh.ai/catalog/standards/sist/23526989-9b3d-4338-a9e1-c15283b94cea/iso-iec-tr-10167-1991>

8.2.6	Interruption of Probe or Result . . . . .	22
8.2.7	Counting of 'Bump' Signals . . . . .	23
8.3	Estelle Description . . . . .	23
8.3.1	Architecture of the Formal Description . . . . .	23
8.3.2	Explanation of Approach . . . . .	23
8.3.3	Formal Description . . . . .	23
8.3.4	Alternative Formal Description . . . . .	25
8.3.5	Subjective Assessment . . . . .	26
8.4	LOTOS Description . . . . .	26
8.4.1	Architecture of the Formal Description . . . . .	27
8.4.2	Explanation of Approach . . . . .	27
8.4.3	Formal Description . . . . .	27
8.4.4	Alternative Formal Description . . . . .	29
8.4.5	Subjective Assessment . . . . .	31
8.5	SDL Description . . . . .	31
8.5.1	Architecture of the Formal Description . . . . .	31
8.5.2	Explanation of Approach . . . . .	31
8.5.3	Formal Description . . . . .	32
8.5.4	Subjective Assessment . . . . .	33
8.6	Assessment of the Application of the FDTs . . . . .	33
<b>9</b>	<b>Sliding Window Protocol Example</b> . . . . .	<b>38</b>
9.1	Informal Description . . . . .	38
9.1.1	Overview . . . . .	38
9.1.2	Sequence Numbering . . . . .	38
9.1.3	Transmitter Behaviour . . . . .	38
9.1.4	Receiver Behaviour . . . . .	38
9.2	Deficiencies in the Informal Description . . . . .	39
9.2.1	Underlying Medium . . . . .	39
9.2.2	Window Size . . . . .	39
9.2.3	Flow Control . . . . .	39
9.2.4	Delivery of Corrupted Messages . . . . .	39
9.2.5	Value of Time-Out Period . . . . .	39
9.2.6	Consistent Use of NextRequired . . . . .	39
9.2.7	Receive Window Size . . . . .	39
9.2.8	Sequence of Operations . . . . .	39
9.2.9	Transmit Window Size . . . . .	39
9.2.10	Receive Window Size . . . . .	39
9.2.11	Corruption of Messages . . . . .	40
9.2.12	Transfer of Data and Acknowledgements . . . . .	40
9.2.13	Retransmission on Timeout . . . . .	40
9.3	Estelle Description . . . . .	40
9.3.1	Architecture of the Formal Descriptions . . . . .	40
9.3.2	Explanation of Approach . . . . .	40

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<https://standards.iteh.ai/catalog/standards/sist/23526989-9b3d-4338-a9e1-c15283194cca/iso-iec-tr-10167-1991>

9.3.3	Formal Description of the Protocol . . . . .	40
9.3.4	Formal Description of the Medium . . . . .	43
9.3.5	Subjective Assessment . . . . .	44
9.4	LOTOS Description . . . . .	44
9.4.1	Architecture of the Formal Descriptions . . . . .	44
9.4.2	Explanation of Approach . . . . .	47
9.4.3	Formal Description of the Protocol . . . . .	47
9.4.4	Formal Description of the Medium . . . . .	54
9.4.5	Subjective Assessment . . . . .	56
9.5	SDL Description . . . . .	56
9.5.1	Architecture of the Formal Descriptions . . . . .	56
9.5.2	Explanation of Approach . . . . .	56
9.5.3	Formal Description of the Protocol . . . . .	57
9.5.4	Formal Description of the Medium . . . . .	57
9.5.5	Subjective Assessment . . . . .	57
9.6	Assessment of the Application of the FDTs . . . . .	57
<b>10</b>	<b>Abacadabra Service and Protocol Example</b> . . . . .	<b>72</b>
10.1	Informal Description . . . . .	72
10.1.1	Introduction . . . . .	72
10.1.2	Service Description . . . . .	72
10.1.3	Protocol Description . . . . .	72
10.1.4	Communications Medium Service Description . . . . .	73
10.1.5	Model . . . . .	73
10.2	Deficiencies in the Informal Description . . . . .	73
10.2.1	Flow Control . . . . .	73
10.2.2	Premature Transmission of DT . . . . .	74
10.2.3	Stopping Retransmission on Error . . . . .	74
10.2.4	Retransmission Limit and Period . . . . .	74
10.2.5	Repeated ConReq . . . . .	74
10.2.6	DR when Disconnected . . . . .	74
10.2.7	Connection Refusal . . . . .	74
10.2.8	Connection Refusal . . . . .	75
10.2.9	Ignoring Out-of-sequence Data . . . . .	75
10.3	Estelle Description . . . . .	75
10.3.1	Architecture of the Formal Descriptions . . . . .	75
10.3.2	Explanation of Approach . . . . .	76
10.3.3	Formal Description of the Service . . . . .	77
10.3.4	Formal Description of the Protocol . . . . .	79
10.3.5	Subjective Assessment . . . . .	85
10.4	LOTOS description . . . . .	85
10.4.1	Architecture of the Formal Descriptions . . . . .	85
10.4.2	Explanation of Approach . . . . .	86
10.4.3	Formal Description of the Service . . . . .	86

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ISO/IEC TR 10167:1991  
<https://standards.iteh.ai/catalog/standards/sist/23526989-9b3d-4338-a9e1-c1b283f94cea/iso-iec-tr-10167-1991>

10.4.4 Formal Description of the Protocol . . . . .	91
10.4.5 Subjective Assessment . . . . .	98
10.5 SDL Description . . . . .	98
10.5.1 Architecture of the Formal Descriptions . . . . .	98
10.5.2 Explanation of Approach . . . . .	99
10.5.3 Formal Description of the Service . . . . .	99
10.5.4 Formal Description of the Protocol . . . . .	99
10.5.5 Subjective Assessment . . . . .	99
10.6 Assessment of the Application of the FDTs . . . . .	116
<b>11 A Transport Protocol Example</b> . . . . .	<b>117</b>
11.1 Informal Description . . . . .	117
11.1.1 Origins . . . . .	117
11.1.2 Transport Functions . . . . .	117
11.1.3 Connection Establishment and Termination Procedures . . . . .	118
11.1.4 Description of Data Transfer Procedures . . . . .	118
11.1.5 Treatment of Procedure Errors . . . . .	119
11.1.6 Formats . . . . .	119
11.1.7 Invalid TPDU's . . . . .	124
11.2 Deficiencies in the Informal Description . . . . .	125
11.2.1 Service Definitions . . . . .	125
11.2.2 Description of Procedures . . . . .	126
11.2.3 Protocol Classes . . . . .	126
11.2.4 Missing Definitions . . . . .	126
11.2.5 Unspecified Functions . . . . .	127
11.2.6 Non-Use of Concatenation . . . . .	127
11.2.7 Responding Address . . . . .	127
11.2.8 Multiple SAP Connections . . . . .	127
11.2.9 Reaction to Incorrect TCA . . . . .	127
11.3 Estelle Description . . . . .	127
11.3.1 Architecture of the Formal Description . . . . .	127
11.3.2 Explanation of Approach . . . . .	128
11.3.3 Formal Description . . . . .	129
11.3.4 Subjective Assessment . . . . .	138
11.4 LOTOS Description . . . . .	138
11.4.1 Structure of the Formal Description . . . . .	138
11.4.2 Explanation of Approach . . . . .	139
11.4.3 Formal Description . . . . .	140
11.4.4 Subjective Assessment . . . . .	171
11.5 SDL Description . . . . .	171
11.5.1 Architecture of the Formal Description . . . . .	171
11.5.2 Explanation of Approach . . . . .	172
11.5.3 Formal Description . . . . .	172
11.5.4 Subjective Assessment . . . . .	172

11.6 Assessment of the Application of FDTs . . . . .	172
<b>Annexes</b>	<b>196</b>
<b>A Bibliography</b>	<b>196</b>
A.1 International Standards . . . . .	196
A.2 Documents . . . . .	196
<b>B FDT Characteristics</b>	<b>196</b>
B.1 Specifications and Implementations . . . . .	196
B.2 Formal Specifications . . . . .	196
B.3 Levels of Abstraction . . . . .	196
B.4 FDT Terms . . . . .	197
B.4.1 Formalisation . . . . .	197
B.4.2 Abstraction . . . . .	197
B.4.3 Specification, Description, and Implementation . . . . .	197
B.4.4 Model . . . . .	197
B.4.5 Interpretation . . . . .	198
B.4.6 Constructive . . . . .	198
B.4.7 Information . . . . .	198
B.4.8 Action . . . . .	198
B.4.9 Interaction . . . . .	198
B.4.10 Composition . . . . .	198
B.4.11 Non-Determinism . . . . .	198
<b>C FDT Objectives</b>	<b>198</b>
C.1 Scope of Application . . . . .	198
C.2 General Requirements . . . . .	198
C.3 Appropriate Level of Abstraction . . . . .	199
C.4 Design Support . . . . .	199
C.5 Implementation Support . . . . .	199
<b>D Evaluating Formal Descriptions</b>	<b>200</b>
D.1 Layer-Independent Checklists . . . . .	200
D.1.1 General . . . . .	200
D.1.2 Service Descriptions . . . . .	200
D.1.3 Protocol Descriptions . . . . .	200
D.2 Layer-Independent and FDT-Dependent Checklists . . . . .	200
D.2.1 General . . . . .	200
D.2.2 Description of a Single Object . . . . .	200
D.2.3 Description of Several Interconnected Objects . . . . .	200
D.2.4 Different Descriptions of Same Object . . . . .	200
D.3 Verification Methods and Tools . . . . .	201
D.4 Validation Methods and Tools . . . . .	201

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<https://standards.iteh.ai/catalog/standards/sist/23526989-9b3d-4338-a9e1-c15283f94cea/iso-iec-tr-10167-1991>

ISO/IEC TR 10167:1991

## List of Figures

4.1	Development through Refinement . . . . .	3
5.1	Typical Layout of an Example . . . . .	6
8.1	Architecture of the Daemon Game in Estelle . . . . .	23
8.2	Alternative Architecture of the Daemon Game in Estelle . . . . .	25
8.3	SDL Specification of Daemon Game . . . . .	34
9.1	Transmitter Window Parameters . . . . .	38
9.2	Receiver Window Parameters . . . . .	38
9.3	Architecture of the Sliding Window Protocol in Estelle . . . . .	40
9.4	Architecture of the Sliding Window Protocol in LOTOS . . . . .	45
9.5	Outline Decomposition of the Sliding Window Protocol in LOTOS . . . . .	45
9.6	Processes of the Sliding Window Protocol in LOTOS . . . . .	46
9.7	Outline Decomposition of Sliding Window Medium in LOTOS . . . . .	46
9.8	Processes of Sliding Window Medium in LOTOS . . . . .	46
9.9	SDL Specification of Sliding Window Protocol . . . . .	58
9.10	SDL Specification of Sliding Window Medium . . . . .	69
10.1	Relationship between Abracadabra Service Primitives . . . . .	72
10.2	Abracadabra Protocol Data Units . . . . .	72
10.3	Communications Medium Service Primitives . . . . .	73
10.4	Abracadabra Service and Protocol Model . . . . .	74
10.5	Architecture of the Abracadabra Service in Estelle . . . . .	75
10.6	Architecture of the Abracadabra Protocol in Estelle . . . . .	75
10.7	Outline Decomposition of the Abracadabra Service in LOTOS . . . . .	85
10.8	Outline Decomposition of the Abracadabra Protocol in LOTOS . . . . .	85
10.9	SDL Specification of Abracadabra Service . . . . .	100
10.10	SDL Specification of Abracadabra Protocol . . . . .	107
11.1	Receiving Terminal Reaction to TCR Addressing Options . . . . .	119
11.2	Calling Terminal Reaction to TCA Addressing Options . . . . .	119
11.3	Parameter Element Coding Structure . . . . .	120
11.4	General Block Structure . . . . .	120
11.6	Transport Connection Request Block . . . . .	120
11.5	Transport Layer Block Types . . . . .	121
11.7	Extended Addressing . . . . .	122
11.8	Transport Data Block Size Parameter . . . . .	122
11.9	Transport Connection Accept Block . . . . .	122
11.10	Transport Connection Clear Block . . . . .	123
11.11	Additional Clearing Information Parameter . . . . .	123
11.12	Transport Block Reject Block . . . . .	123
11.13	Rejected Block Parameter . . . . .	123

**ISO/IEC TR 10167 : 1991 (E)**

11.14 Transport Data Block . . . . .	124
11.15 Architecture of A Transport Protocol in Estelle . . . . .	128
11.16 Constraint-Oriented Decomposition of a Transport Protocol Entity . . . . .	139
11.17 Decomposition of Process TPEConnection . . . . .	139
11.18 SDL Specification of A Transport Protocol . . . . .	173
B.1 Domain of Applicability of an FDT . . . . .	197

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[ISO/IEC TR 10167:1991](https://standards.iteh.ai/catalog/standards/sist/23526989-9b3d-4338-a9e1-c15283f94cea/iso-iec-tr-10167-1991)

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## Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

The main task of technical committees is to prepare International Standards, but in exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types: [ISO/IEC TR 10167:1991](https://standards.iteh.ai/catalog/standards/sist/23526989-9b3d-4338-a9e1-35e1c1e1e1e1)

[https://standards.iteh.ai/catalog/standards/sist/23526989-9b3d-4338-a9e1-](https://standards.iteh.ai/catalog/standards/sist/23526989-9b3d-4338-a9e1-35e1c1e1e1e1)

- type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;
- type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;
- type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/IEC TR 10167, which is a Technical Report of type 3, was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*.

Annexes A, B, C and D of this Technical Report are for information only.

The formal descriptions in this Technical Report have been prepared with care, and have been checked by tools wherever practicable. However, the aim of this Technical Report is to be tutorial rather than defin-

## ISO/IEC TR 10167 : 1991 (E)

itive in nature. The emphasis has therefore been on giving timely guidance on the use of FDTs.

It is therefore possible that some errors remain in the formal descriptions. Readers are encouraged to report these. Errors in SDL descriptions should be reported to:

CCITT Secretariat  
(SG X Question X/1 - FDT)  
Rue Varembé 2  
GENEVA  
Switzerland

Errors in Estelle or LOTOS descriptions should be reported to:

ISO/IEC JTC 1/SC 21 Secretariat  
(Project 1.21.45)  
1430 Broadway  
NEW YORK  
NY 10018  
USA

via the appropriate National Standards Body.

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## Introduction

Formal Description Techniques have been developed to be used in the formal specification of OSI and other telecommunications services and protocols. SDL in particular has been developed for application in the wider field of telecommunications systems, but in this Technical Report the focus is on the specification of OSI services and protocols.

The purpose of this Technical Report is:

- a) to aid the users of the FDTs (*Formal Description Techniques*) Estelle, LOTOS, and SDL; and
- b) to assist and encourage the use of the FDTs for specifying OSI services and protocols; and
- c) to introduce the FDTs through a carefully chosen set of graded examples; and
- d) to assist and encourage the use of the FDTs for defining unambiguous requirements for implementation and conformance testing; and
- e) to illustrate the errors and ambiguities which can arise with natural language descriptions; and
- f) to illustrate how basic architectural ideas may be represented using FDTs.

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# Information technology — Open Systems Interconnection — Guidelines for the application of Estelle, LOTOS and SDL

## 1 Scope

This Technical Report provides:

- an introduction to the nature and purpose of FDTs; and
- formal descriptions in each of the FDTs for selected examples described in natural language; and
- guidance to the FDT users as to how to judge and improve the quality of formal descriptions; and
- management guidance to FDT users as to how to handle the relationship between informal and formal descriptions, and between formal descriptions; and
- an implicit basis for comparison of the FDTs.

This Technical Report does not provide:

- tutorials on the FDTs and the OSI architecture; and
- a means of formally mapping between descriptions produced using different FDTs; and
- an explicit comparison of the FDTs.

The definition of each FDT, a tutorial on its usage, and the definition of the OSI architecture are indicated in clause 2.

The intended audience for this Technical Report is those who require to develop formal descriptions, and those who require to use FDTs generally.

of IEC and ISO maintain registers of currently valid International Standards.

A bibliography of related documents is given in Annex A.

ISO 7498 : 1987, *Information processing systems — Open Systems Interconnection — Basic Reference Model*.

ISO/TR 8509 : 1987, *Information processing systems — Open Systems Interconnection — Service conventions*.

ISO 8807 : 1989, *Information processing systems — Open Systems Interconnection — LOTOS — A formal description technique based on the temporal ordering of observational behaviour*.

ISO 9074 : 1989, *Information processing systems — Open Systems Interconnection — Estelle — A formal description technique based on an extended state transition model*.

ISO/TR 10023 : —<sup>1</sup>, *Information processing systems — Open Systems Interconnection — Formal description of ISO 8072 (transport service definition) in LOTOS*.

CCITT T.70, *Network-Independent Basic Transport Service for the Telematic Services* (Red Book).

CCITT Z.100, *SDL, Specification and Description Language* (Blue Book).

CCITT Z.100 Annex D, *SDL User Guidelines* (Blue Book).

CCITT Z.100 Annex F, *SDL Formal Definition* (Blue Book).

CCITT Z.200, *Open Systems Interconnection Basic Reference Model* (Red Book).

## 2 References

The following standards contain provisions that, through reference in this text, constitute provisions of this Technical Report. At the time of publication, the editions indicated were valid. All standards are subject to revision, so parties to agreements based on this Technical Report are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members

## 3 Terminology

The following terms are referenced within the Technical Report. Where a term is used with a particular meaning (e.g. an FDT concept, keyword, or variable) it is given in **face type**.

<sup>1</sup>To be published