ISO/TR 16056-2:2004-07 (E)

Health informatics - Interoperability of telehealth systems and networks - Part 2: Real-time systems

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative References 1

3 Terms and definitions 2

4 Abbreviations 12

5 Multimedia Conferencing Standards 13
5.1 General 13
5.2 H.320 recommendations 16
5.3 H.321 and H.310 Recommendations 17
5.4 H.323 Recommendations 19
5.4.1 H.323 Terminals 19
5.4.2 Gateways 21
5.4.3 Gatekeeper 21
5.4.4 Multipoint control unit 21
5.5 H.324 Recommendations 22
5.6 T.120 Recommendations 23
5.6.1 T120 Overview 23
5.6.2 T.120 Layer composition 23
5.6.3 T.120 Interoperability 24

6 Telehealth applications 24
6.1 General 24
6.2 Telelearning 25
6.3 Teleconsultation 26

7 Interoperability issues 28
7.1 General 28
7.2 Standard-related sources of interoperability issues 28
7.2.1 Loose adaptation of previous protocols 29
7.2.2 Loosely defined encoding and decoding methods 29
7.2.3 Inconsistent definition of mandatory/optional requirements 29
7.2.4 Gaps in the recommendations 29
7.2.5 No specifications for data encoding in the H.320/H.323 Recommendations 30
7.2.6 Evolving T.120 Recommendations 30
7.2.7 Loosely defined specifications for an MCU 30
7.2.8 Evolving/undefined specifications for Gateways and Gatekeepers 30
7.2.9 Loosely defined bandwidth management 31
7.2.10 Poor standardization of media conferencing 31
7.3 Product-related Sources of Interoperability Issues 31
7.3.1 Time delay between the standards (ever-evolving) and products 31
7.3.2 Implementation of a different subset of the standards 32
7.3.3 Proprietary solutions 32
7.4 Implementation-related sources of interoperability issues 32
7.4.1 Undefined specifications for Gatekeeper Communication 32

7.4.2 Gateway to Gatekeeper Communication 32
7.4.3 A decentralized multipoint conference 33

8 Interoperability requirements 33
8.1 General 33
8.2 Call Setup 34
8.3 Acquisition, processing, and transmission of multimedia data 35
8.4 Controlling near- and far-end devices 36

ISO TR 16056-2:2004(E) 8.5 Call termination 36

9 Interoperability in heterogeneous telehealth networks 36
9.1 General 36
9.2 Interoperability of H.320 systems over frame relay network 36
9.3 Interoperability of h.3xx-compliant systems over heterogeneous networks 37
9.3.1 Gatekeeper functions 38
9.3.2 MCU functions 39
9.3.3 Design requirements - Telehealth solutions 40

10 Framework for interoperable architectures 41
10.1 General 41
10.2 Telehealth component boundaries 41
10.2.1 User interface 41
10.2.2 Medical Devices 42
10.2.3 Data manager 42
10.2.4 Processing Manager 42
10.2.5 Communications Manager 43
10.2.6 Resource Manager 43
10.2.7 Integration Manager 43

Bibliography 45

List of Figures Figure 1 - The H.320 Terminal 16

Figure 2 - A multipoint configuration 17

Figure 3 - The H.321 Terminal 18

Figure 4 - The H.323 Terminal 20

Figure 5 - The H.324 Terminal 22

Figure 6 - The T.120 Recommendations 23

Figure 7 - Parties contributing to telehealth interoperability 28

Figure 8 - Interoperability dimensions for real-time telehealth services 34

Figure 9 - H.320 video services incorporated into existing data and voice networks over frame relay 37

Figure 10 - Connectivity in a heterogeneous system and network environment 38

List of Tables Table 1 - Summary of the multimedia conferencing standards 15

Table 2 - Summary of the H.320 Recommendations 17

Table 3 - The H.323 and T.120 protocol stack 20

Table 4 - Summary of the H.323 Recommendations 21

Table 5 - Summary of functionality of a telelearning system 25

Table 6 - Summary of functionality of a teleconsultation system 26