AS/NZS 13818.1:2002
ISO/IEC 13818-1:2000
ISO/IEC 13818-1:2000/Corr.1:2002

Australian/New Zealand Standard™

Information technology– Generic coding of moving pictures and associated audio information

Part 1: Systems

Standards Australia
STANDARDS NEW ZEALAND
Paerewa Aotearoa

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee IT-001, Information Systems—Interconnections. It was approved on behalf of the Council of Standards Australia on 23 August 2002 and on behalf of the Council of Standards New Zealand on 20 August 2002. It was published on 28 November 2002.

The following are represented on Committee IT-001:

Australian Bureau of Statistics
Australian Chamber of Commerce and Industry
Australian Communications Industry Forum
Australian Information Industry Association
Australian Telecommunications Users Group
Australian Vice-Chancellors Committee
Electrical Compliance Testing Association
Information Technology Association of New Zealand
Internet Industry Association
Telstra Corporation

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Australia web site at www.standards.com.au or Standards New Zealand web site at www.standards.co.nz and looking up the relevant Standard in the on-line catalogue.

Alternatively, both organizations publish an annual printed Catalogue with full details of all current Standards. For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia International or Standards New Zealand at the address shown on the back cover.

This Standard was issued in draft form for comment as DR 02306.

Australian/New Zealand Standard™

Information technology—Generic coding of moving pictures and associated audio information

Part 1: Systems

Originated as part of AS/NZS 13818.1 Supp 1:1997, AS/NZS 1318.1 Supp 1:1999 and AS/NZS 13818.1 Supp 2:1999.
AS/NZS 13818.1:1997, AS/NZS 13818 Supp 1:1999 and AS/NZS 13818 Supp 2:1999 jointly revised, amalgamated and redesignated as AS/NZS 13818.1:2002.

Jointly published by Standards Australia International Ltd, GPO Box 5420, Sydney, NSW 2001 and Standards New Zealand, Private Bag 2439, Wellington 6020

ISBN 0 7337 4807 4

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee IT-001, Information Systems—Interconnections. This Standard is identical with and has been reproduced from ISO/IEC 13818-1:2000, *Information technology—Generic coding of moving pictures and associated audio information*, Part 1: *Systems*, and Technical Corrigendum 1:2002 which is bound at the back of this Standard.

The objective of this Standard is to specify the systems layer of the coding. It was developed principally to support the combination of the video and audio coding methods defined in Parts 2 and 3 of ISO/IEC 13818.

This Standard is Part 1 of AS/NZS 13818, *Information technology—Generic coding of moving pictures and associated audio information*, which is published in parts as follows:

Part 1: Systems (this Standard)
Part 2: Video
Part 3: Audio
Part 4: Conformance testing
Part 5: Software simulation
Part 6: Extensions for DSM-CC
Part 7: Advanced audio coding
Part 9: Extension for real time interface for systems decoders
Part 10: Conformance extensions for digital storage media command and control

The terms 'normative' and 'informative' have been used in this Standard to define the application of the annex to which they apply. A 'normative' annex is an integral part of a Standard, whereas an 'informative' annex is only for information and guidance.

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(b) In the source text 'this International Standard' should read 'this Australian/New Zealand Standard'.

(c) A full point should be substituted for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to equivalent Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard		*Australian/New Zealand Standard*	
ISO/IEC 11172	Information technology—Coding of moving pictures and associated audio for digital storage media at up to about 1.5 Mbit/s	4230	Information technology—Coding of moving pictures and associated audio for digital storage media at up to about 1.5 Mbit/s
11172-1	Part 1: Systems	4230.1	Part 1: Systems
11172-2	Part 2: Video	4230.2	Part 2: Video
11172-3	Part 3: Audio	4230.3	Part 3: Audio

ISO/IEC			
13818	Information technology—Generic coding of moving pictures and associated audio information	13818	Information technology—Generic coding of moving pictures and associated audio information
13818-2	Part 2: Video	13818.2	Part 2: Video
13818-3	Part 3: Audio	13818.3	Part 3: Audio
13818-6	Part 6: Extensions for DSM-CC	13818.6	Part 6: Extensions for DSM-CC
13818-7	Part 7: Advanced Audio Coding (AAC)	13818.7	Part 7: Advanced Audio Coding (AAC)
14496	Information technology—Coding of audio-visual objects	14496	Information technology—Coding of audio-visual objects
14496-1	Part 1: Systems	14496-1	Part 1: Systems
14496-2	Part 2: Visual	14496-2	Part 2: Visual
14496-3	Part 3: Audio, Amendment 1: Audio extensions	14496-3	Part 3: Audio, Amendment 1: Audio extensions

CONTENTS

Page

Page

Page

Page

Page

INTRODUCTION

The systems part of this Recommendation | International Standard addresses the combining of one or more elementary streams of video and audio, as well as other data, into single or multiple streams which are suitable for storage or transmission. Systems coding follows the syntactical and semantic rules imposed by this Specification and provides information to enable synchronized decoding of decoder buffers over a wide range of retrieval or receipt conditions.

System coding shall be specified in two forms: the **Transport Stream** and the **Program Stream**. Each is optimized for a different set of applications. Both the Transport Stream and Program Stream defined in this Recommendation | International Standard provide coding syntax which is necessary and sufficient to synchronize the decoding and presentation of the video and audio information, while ensuring that data buffers in the decoders do not overflow or underflow. Information is coded in the syntax using time stamps concerning the decoding and presentation of coded audio and visual data and time stamps concerning the delivery of the data stream itself. Both stream definitions are packet-oriented multiplexes.

The basic multiplexing approach for single video and audio elementary streams is illustrated in Figure Intro. 1. The video and audio data is encoded as described in ITU-T Rec. H.262 | ISO/IEC 13818-2 and ISO/IEC 13818-3. The resulting compressed elementary streams are packetized to produce **PES packets**. Information needed to use PES packets independently of either Transport Streams or Program Streams may be added when PES packets are formed. This information is not needed and need not be added when PES packets are further combined with system level information to form **Transport Streams** or **Program Streams**. This systems standard covers those processes to the right of the vertical dashed line.

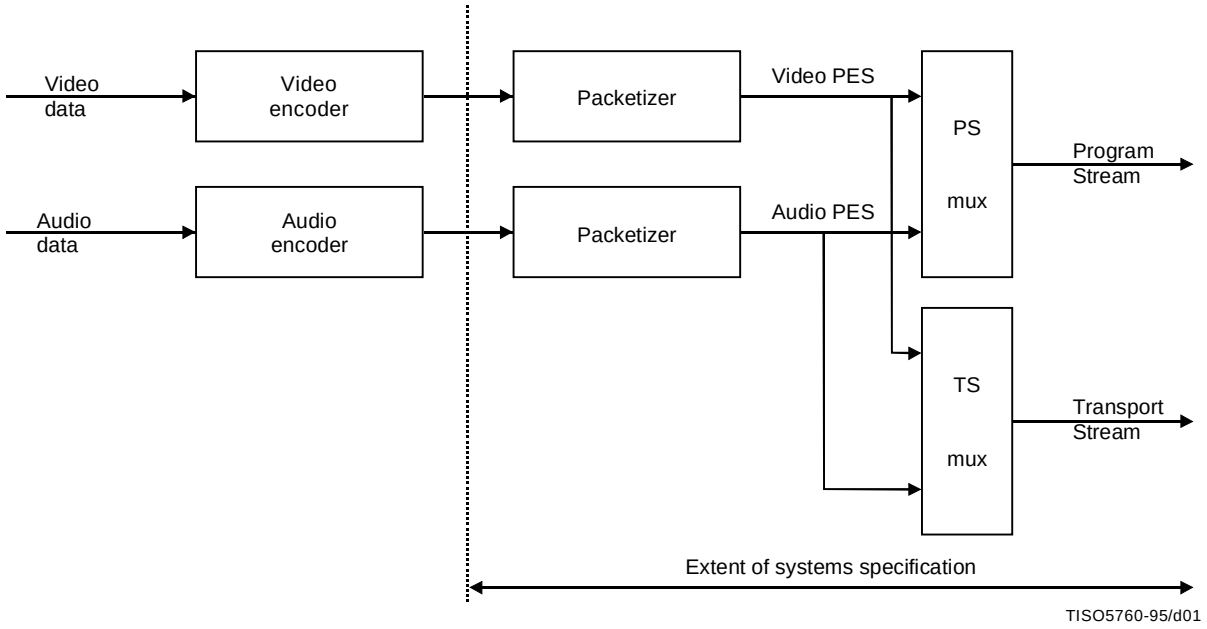

Figure Intro. 1 – Simplified overview of the scope of this Recommendation | International Standard

The **Program Stream** is analogous and similar to ISO/IEC 11172 Systems layer. It results from combining one or more streams of PES packets, which have a common time base, into a single stream.

For applications that require the elementary streams which comprise a single program to be in separate streams which are not multiplexed, the elementary streams can also be encoded as separate Program Streams, one per elementary stream, with a common time base. In this case the values encoded in the SCR fields of the various streams shall be consistent.

Like the single Program Stream, all elementary streams can be decoded with synchronization.