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Information technology - Generic coding of moving pictures and associated audio information: Systems

Technologies de l'information - Codage générique des images animées et du son associé: Systèmes

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ICS:

35.040	Nabori znakov in kodiranje informacij	Character sets and information coding
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**Information technology — Generic coding
of moving pictures and associated audio
information: Systems**

*Technologies de l'information — Codage générique des images
animées et des informations sonores associées: Systèmes*

Reference number
ISO/IEC 13818-1:2007(E)



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Tel. + 41 22 749 01 11
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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 13818-1 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*, in collaboration with ITU-T. The identical text is published as ITU-T Rec. H.222.0 (05/2006).

This third edition cancels and replaces the second edition (ISO/IEC 13818-1:2000), which has been technically revised. It also incorporates the Amendments ISO/IEC 13818-1:2000/Amd.1:2003, ISO/IEC 13818-1:2000/Amd.2:2004, ISO/IEC 13818-1:2000/Amd.3:2004, ISO/IEC 13818-1:2000/Amd.4:2005 and ISO/IEC 13818-1:2000/Amd.5:2005, and the Technical Corrigenda ISO/IEC 13818-1:2000/Cor.1:2002, ISO/IEC 13818-1:2000/Cor.2:2002, ISO/IEC 13818-1:2000/Cor.3:2005, ISO/IEC 13818-1:2000/Cor.4:2007.

ISO/IEC 13818 consists of the following parts, under the general title *Information technology — Generic coding of moving pictures and associated audio information*:

- *Part 1: Systems*
- *Part 2: Video*
- *Part 3: Audio*
- *Part 4: Conformance testing*
- *Part 5: Software simulation* [Technical Report]
- *Part 6: Extensions for DSM-CC*
- *Part 7: Advanced Audio Coding (AAC)*
- *Part 9: Extension for real time interface for systems decoders*
- *Part 10: Conformance extensions for Digital Storage Media Command and Control (DSM-CC)*
- *Part 11: IPMP on MPEG-2 systems*

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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.

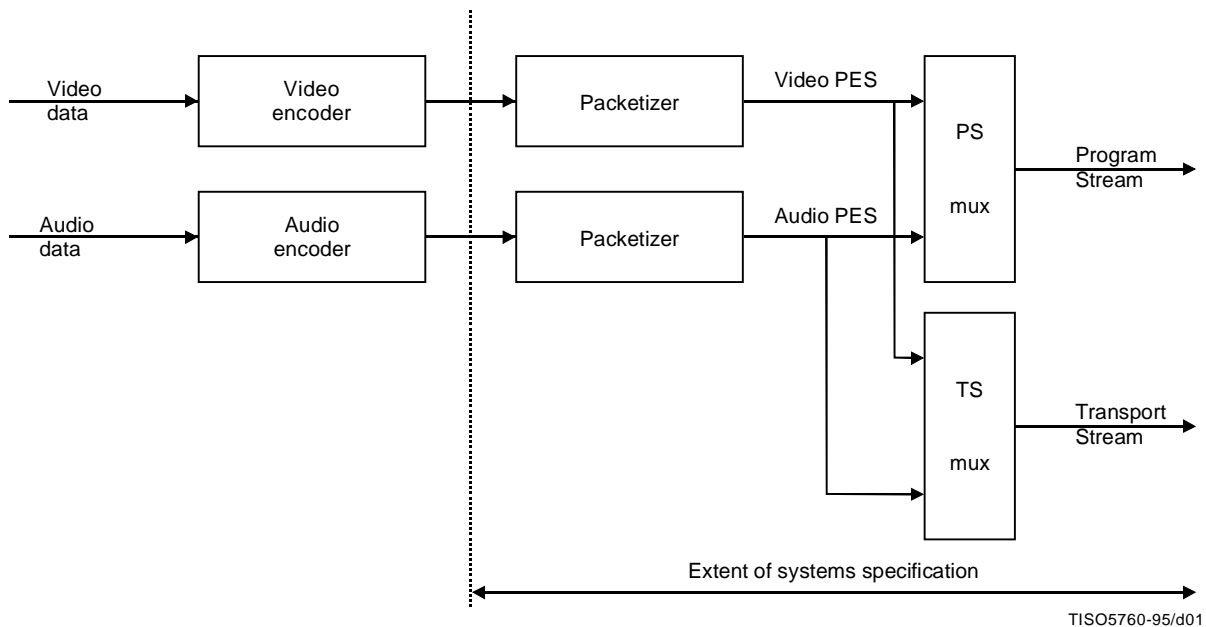


Figure Intro. 1 – Simplified overview of the scope of this Recommendation | International Standard

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.

The Program Stream is designed for use in relatively error-free environments and is suitable for applications which may involve software processing of system information such as interactive multi-media applications. Program Stream packets may be of variable and relatively great length.

The **Transport Stream** combines one or more programs with one or more independent time bases into a single stream. PES packets made up of elementary streams that form a program share a common timebase. The Transport Stream is designed for use in environments where errors are likely, such as storage or transmission in lossy or noisy media. Transport Stream packets are 188 bytes in length.