
**Information technology — Multimedia
application format (MPEG-A) —**

Part 10:

Video surveillance application format

**AMENDMENT 1: Conformance and
reference software**

*Technologie de l'information — Format pour application multimédia
(MPEG-A) —*

Partie 10: Format pour application à la vidéosurveillance

AMENDEMENT 1: Conformité et logiciel de référence

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Foreword

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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.

Amendment 1 to ISO/IEC 23000-10:2009 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

This Amendment contains details of the conformance specifications and reference software for the Video surveillance application format (VSAF).

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Page 15, after 6.4.1.3 add the following two new clauses:

7 Conformance Points

7.1 Introduction

This Clause provides bitstreams and pointers to the software implementation that can be used to provide a deterministic answer to the following questions:

- Does a given bitstream conform to Video surveillance application format (VSAF) as defined in this part of ISO/IEC 23000, i.e. is it able to be decoded by the informative Video surveillance viewer (VSV) implementation?
- Does a given Video surveillance viewer (VSV) implementation conform to Video surveillance application format (VSAF) as defined in this part of ISO/IEC 23000, i.e. is it able to decode the reference bitstreams contained in this part of ISO/IEC 23000?
- The Video surveillance packer (VSP) software is normative and produces conformance VSAF bitstreams.

The term bitstream is used here to describe the VSAF file format together with its contents.

7.2 AVC Bitstream

MPEG-4 AVC (Advanced Video Coding) bitstreams stored inside a VSAF file shall comply with the specifications of this part of ISO/IEC 23000. An AVC bitstream that conforms to the VSV shall meet the following requirements:

- All AVC bitstreams shall have the same total duration, e.g. all video clips shall be the same length of time. Their physical lengths may vary, e.g. according to fps (frames per second) etc.

7.3 File Format

- VSAF files shall comply with the specifications of this part of ISO/IEC 23000. As an extension of the AVC File Format [ISO/IEC 14496-15:2004], it shall contain AVC file format structure with derivations as specified in 4.5 of this part of ISO/IEC 23000 as well as metadata boxes as specified in 6.2, 6.3, and 6.4 of this part of ISO/IEC 23000.

- The 'major brand' name shall contain 'vsf1' brand name, so the VSV can parse the boxes in the file format that conforms to the file format as specified in 4.5 of this part of ISO/IEC 23000.
- The AVC video track shall conform to the definition as described in Clause 5 of this part of ISO/IEC 23000.

7.4 Metadata

- All the XML metadata shall conform to the sets of ISO/IEC 15938 Parts 1 (Systems), 2 (DDL), 3 (Visual) and 5 (MDS) specified for VSAF. Every element shall comply with the specifications of this part of ISO/IEC 23000.
- The semantics of XML metadata shall conform to the specifications of this part of ISO/IEC 23000.

7.5 Measurement procedure

The procedure to check the conformance points is as follows:

- The VSV parses the VSAF file and displays its contents. The video tracks it contains are playable, the binary metadata and MPEG-7 metadata are processed and displayed.
- The VSV parses the SPS (sequence parameter sets) NAL (network abstraction layer) unit of the AVC bitstream inside the AVC video track.

There is no tolerance in measurement procedure. The diagnosis is pass or fail, however, it is possible to identify which parts of a VSV do and which do not comply.

7.6 Conformance files

A number of conformance files have been produced using the Video surveillance packer (VSP) software. The files are listed in Table AMD1.1.

The VSAF specification supports AVC bitstreams up to level 3.1; therefore different conformance files have been produced reflecting a sample of the appropriate range. The files are designed to test VSAF functionality and not the complete range of compliant AVC levels.

The conformance files are based upon the video bitstream "foreman.264". An external software module was used to generate the ISO/IEC 15938 meta-data included.

Table AMD1.1 — Use the VSV implementation.

File	Conformance test	Pass/fail (o/ x)
1.mp4	single camera (track), testing: AVC bitstream profile and level conformance correct mandatory binary metadata major brand the video tracks are the same length	
2.mp4	two cameras, testing: as above the ability for the format to contain more than one camera (i.e. video track) the file's MAIdentification box Predecessor field references 1.mp4 the file's MAIdentification box Successor field references 3.mp4	
3.mp4	two cameras, testing: as above ISO/IEC 15938 file- and track-level metadata elements are present	

8 Reference Software

8.1 Introduction

This Clause describes a cross-platform software implementation in the C++ programming language of Video surveillance application format (VSAF) as part of this part of ISO/IEC 23000.

- Video surveillance packer (VSP) – normative
- Video surveillance viewer (VSV) – informative

The VSAF reference software is normative in the sense that it correctly implements the normative clauses contained in this part of ISO/IEC 23000. Conforming this part of ISO/IEC 23000 implementations are not expected to follow the algorithms or the programming techniques used by the VSAF reference software. Although the packing software is considered normative, it is not expected to add anything normative to the VSAF textual clauses included in this part of ISO/IEC 23000. At present, the software compiles under Windows and Linux.

If present, ISO/IEC 15938 descriptors containing DominantColor are processed to provide a demonstration of content-based image retrieval.

8.2 Architecture

The architecture of the software as depicted in Figure AMD1.1 has three main components comprising a packer, with which to create conformance VSAF files, a viewer with which to inspect the conformance VSAF files and the various shared software libraries.