

SMPTE STANDARD

Stereoscopic 3D in MXF for Operations — OP-Atom or Single Track OP-1a Mapping



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Foreword

SMPTE (the Society of Motion Picture and Television Engineers) is an internationally-recognized standards developing organization. Headquartered and incorporated in the United States of America, SMPTE has members in over 80 countries on six continents. SMPTE's Engineering Documents, including Standards, Recommended Practices, and Engineering Guidelines, are prepared by SMPTE's Technology Committees. Participation in these Committees is open to all with a bona fide interest in their work. SMPTE cooperates closely with other standards-developing organizations, including ISO, IEC and ITU.

SMPTE Engineering Documents are drafted in accordance with the rules given in its Standards Operations Manual.

SMPTE ST 2070-3 was prepared by Technology Committee 31FS.

Intellectual Property

At the time of publication no notice had been received by SMPTE claiming patent rights essential to the implementation of this Engineering Document. However, attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. SMPTE shall not be held responsible for identifying any or all such patent rights.

Introduction

There are requirements for both interleaved and separated stereoscopic (3D) content. While the timing relationship between each pair of images is especially important during stereoscopic acquisition and display, during post-production and distribution image pairs may be dealt with in non-real time as outlined in this suite of documents.

When content is created for distribution, left eye and right eye pictures might be interleaved. When content needs to be edited or manipulated in post-production, it might be stored as separated files. In stereoscopic acquisition, either an interleaved or separated structure can be used. As a stereoscopic 3D asset moves from production, through post-production to distribution (whether broadcast, web, on-demand or other), these can be transcoded and rewrapped. Upon playout of a file compliant with this suite of standards, the timing relationships between left-eye images and right-eye images must be recreated. SMPTE ST 2063 discusses this requirement (and others germane to high quality stereoscopic 3D production) in detail, and may be helpful to implementers.

The SMPTE ST 2070 document suite therefore addresses such use cases based on the common provisions defined in the part 1 document. The part 2 document specifies the interleaved wrapping using OP-1a and this part 3 document provides the single track wrapping using OP-Atom or OP-1a.

Dual image stereoscopic 3D imaging systems deliver two images (left eye and right eye) that are arranged to be seen simultaneously, or near simultaneously, by the left and right eyes. Viewers then perceive increased depth in the picture, which becomes more like the natural binocular viewing experience. Regardless of how the pair of images are created, it is assumed that they are properly aligned in space and time at the input of the MXF file system. This standard therefore describes means by which the MXF file system can be as transparent as possible to the time and space alignment of the image pair.

The SMPTE D-Cinema family of standards describes a MXF mapping for stereoscopic images within that application space. The ST 2070 suite of documents is not intended to be used in the D-Cinema application space.