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General Purpose Stereoscopic Data Descriptor

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Overview

This document defines a set of values which represent the stereoscopic attributes of a data file. Together, these values comprise a descriptor which is embedded in a stereoscopic file. By incorporating a common descriptor, an application can write a stereo data file in a manner that is most efficient for displaying on the targeted viewing device (i.e. interleaved for interlaced displays, side-by-side for page flipped). Other applications simply read the descriptor and load the file in the appropriate manner. For existing files, the descriptor can be inserted without disturbing the original contents of the file.

Stereoscopic Descriptor

A stereoscopic descriptor, (regardless of the file format) will always include the following 32-bit value which will sufficiently describe the stereoscopic attributes of the data file. The first 16 bits of the descriptor will describe the media type of the file. The next 16 bits are specific to the media type and will be defined in the section that describes the media type.



Depending on the media type, a descriptor may require additional data. Any additional data will immediately follow this 32-bit value. Currently there is no additional data defined.

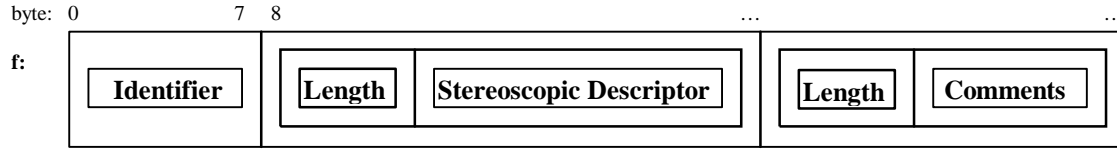
Media Types

Currently there are 2 media types defined:

SD_MTYPE_MONOSCOPIC_IMAGE	0x00
SD_MTYPE_STEREOSCOPIC_IMAGE	0x01

Stereoscopic Descriptor for JPEG

A stereoscopic descriptor for a JPEG file is implemented as a JPEG marker. The APP3 marker is used for this descriptor. The descriptor for a JPEG consists of 3 blocks: Identifier, Descriptor, and Comments. The Identifier is always a fixed length (8 bytes). The Descriptor and Comments blocks can be a variable length and are preceded by a 16-bit value that indicates the length of the block.



- Identifier:** A unique identifier used to distinguish this APP3 marker as a stereoscopic descriptor. These 8 bytes should always be “_JPSJPS_” (0x5F,0x4A,0x50,0x53,0x4A,0x50,0x53,0x5F).
- Length:** 16 bit value that determines the length of a block. This value should be written Most Significant Byte first.
- Stereo Descriptor:** At least 4 bytes which contain the 32-bit stereoscopic descriptor previously defined. This 32-bit value should be written Most Significant Byte first. In some cases, additional data may follow. Currently no additional data is defined.
- Comments:** Optional, application specific, comments. Should be an ASCII string.

Notes

- A JPEG file that contains this descriptor should have an extension “.jps”
- A JPEG marker is limited to 65533 bytes. An application should limit the size of the Comments block accordingly.

Assumptions

If a JPEG file is thought to contain a stereo image, but a stereoscopic descriptor is not present, an application should assume the layout of the stereo image to be: Side-by-Side, Full Height, Right Field First.

```

#ifndef __SDFLAGS_H__
#define __SDFLAGS_H__
/* =====
*
* sdflags.h -- general purpose stereoscopic descriptor
*
*===== */

/*
* MEDIA TYPE
*/
#define SD_MTYPE_MONOSCOPIC_IMAGE 0x00
#define SD_MTYPE_STEREOSCOPIC_IMAGE 0x01

/*
* LAYOUT options
*/
#define SD_LAYOUT_INTERLEAVED 0x0100
#define SD_LAYOUT_SIDEBYSIDE 0x0200
#define SD_LAYOUT_OVERUNDER 0x0300
#define SD_LAYOUT_ANAGLYPH 0x0400

/*
* MISC FLAGS bits
*/
#define SD_FULL_HEIGHT 0x000000
#define SD_HALF_HEIGHT 0x010000
#define SD_FULL_WIDTH 0x000000
#define SD_HALF_WIDTH 0x020000
#define SD_RIGHT_FIELD_FIRST 0x000000
#define SD_LEFT_FIELD_FIRST 0x040000

/*
* handy macros
*/
#define LAYOUT(f) f & 0x0000FF00
#define IS_FULL_HEIGHT(f) f & SD_HALF_HEIGHT
#define IS_HALF_HEIGHT(f) !(f & SD_HALF_HEIGHT)
#define IS_LEFT_FIRST(f) f & SD_LEFT_FIELD_FIRST
#define IS_RIGHT_FIRST(f) !(f & SD_LEFT_FIELD_FIRST)
#define FIELD_SEPARATION(f) f & 0xFF000000

/*
* defaults
*/
#define SD_JPS_DEFAULT SD_MTYPE_STEREOSCOPIC_IMAGE |
                    SD_LAYOUT_SIDEBYSIDE |
                    SD_FULL_HEIGHT |
                    SD_RIGHT_FIELD_FIRST

/*
* defines for SD_MTYPE_MONOSCOPIC_IMAGE
*/
#define SD_EYE_BOTH 0x0000
#define SD_EYE_LEFT 0x0100
#define SD_EYE_RIGHT 0x0200

#endif /* __SDFLAGS_H__ */

```