



Picture Archiving and Sharing Standard

A Joint Initiative

PASS(EVERPLAY)

**Logical Disc
Specification**



VERSION 1.101

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Document History

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| 1.101 | February 22, 2006 | <ul style="list-style-type: none">- Document name changed to PASS(EVERPLAY) Logical Disc Specification.- Table 13. Index manifest structure, Occurrence for migratedVolumes corrected. |

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1.0. PASS Overview

The Picture Archiving and Sharing Standard (PASS) is a digital imaging industry initiative that will allow consumers to easily save, print, playback, and share digital images in ways that have not been accomplished easily or reliably before.

Advancing technology means that digital content exists in many forms: still images, video, audio or music, and graphics. Technology has also enabled these various digital formats to be edited, copied, and merged. Additionally, there are different devices that use different digital formats, such as digital still cameras, DVD players, digital video cameras, and cell phones. However, unlike PCs, these devices cannot handle/playback multiple formats, although this technology is slowly evolving.

The PASS suite of specifications defines how information will be encoded on the physical media so that products from all implementing companies can understand the information on the media. PASS does this by defining the encoding and decoding processes for assets and by describing common user interface requirements for PASS systems. The PASS architecture is based on open system standards that are independent of language and platform, enabling functionality among dissimilar systems.

The current version of the PASS specification suite includes:

- PASS Logical Disc Specification 1.10 (LDS)

- PASS Originating and Authoring System Requirements 1.10 (O/A)

- PASS Receiving and Playback System Requirements 1.10 (R/P)

PASS will have a logo, trademark, and licensing program to ensure that the member companies can offer and make use of common standards. This program will allow member companies to build products that address their business needs and conform to specifications that guarantee functionality and is recognized by consumers by the presence of the PASS Logo.

The specification of PASS can be compared to the standards that have made the traditional consumer photography industry possible: Process C-41, standard filmstrip and cartridge configurations, paper formats, etc. Without these standards, photography would have been limited to hobbyists. With them, photography has grown into a large, highly successful, mainstream consumer industry. The specification of PASS promises to do much the same thing for digital photography.

The PASS initiative invites participation from all companies that handle or manage consumer images/content to fulfill the promise that consumers will be able to easily enjoy their content now, and in the future.

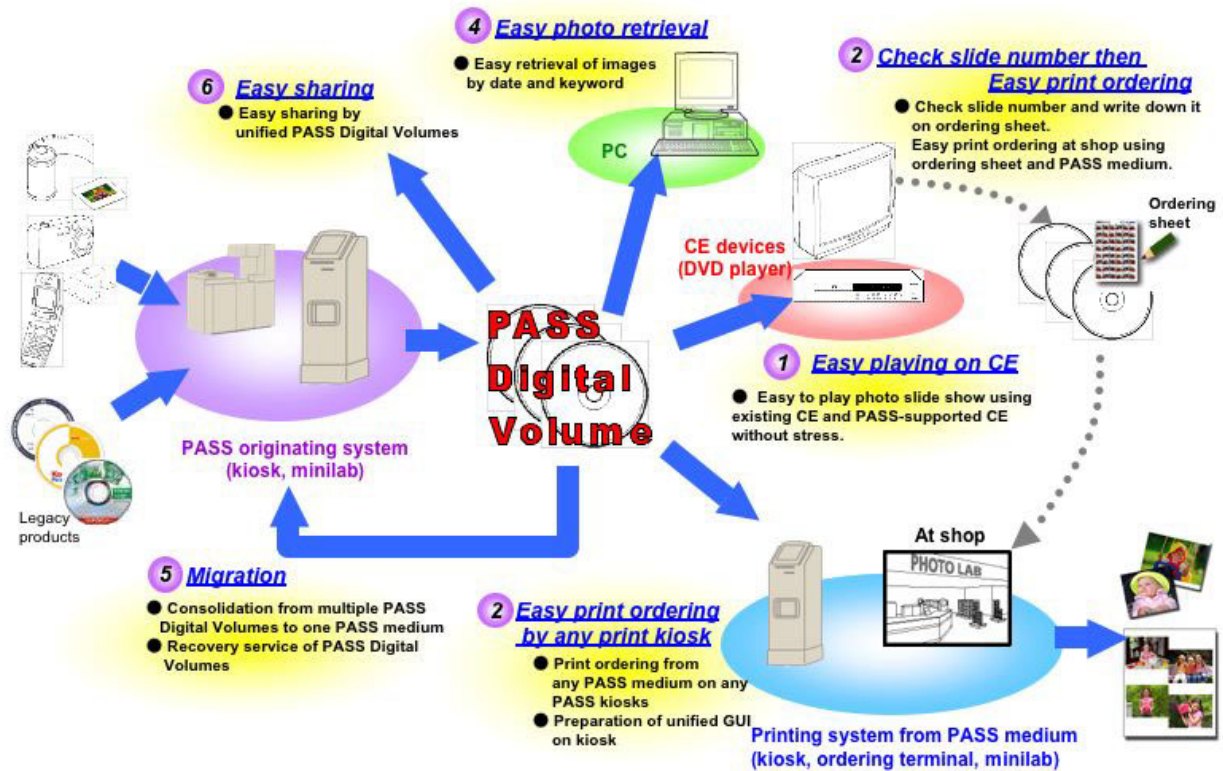
1.1. Major features of PASS

PASS defines a number of features. The table below defines the major features of a PASS system.

Table 1. Features of PASS Digital Volumes

| | |
|--|---|
| Easily use Consumer Electronics (CE) devices to view slide shows | Play a photo slide show on televisions, personal computers, and other CE devices easily using today's DVD players and future PASS-supported DVD players |
| Easily order prints previewed on CE device | Check the slide number you want to order while viewing a slide show. Add it to your photo order sheet. Take your print order to a local photo shop along with your PASS Digital Volume to be processed. |
| Easily order prints using any print kiosk | Use your PASS Digital Volume to order prints at any PASS-supported print Kiosk. |
| Easily retrieve photos | Your PASS Digital Volume means that your images will be available for quick and convenient retrieval of images by date and any keywords you have added. |
| Safely migrate photos | Consolidate various media formats (e.g., CD's, memory cards) to newer, smaller storage devices, such as a DVD. Create a single PASS Digital Volume by combining many others without losing the history of the photo (maintain metadata). |
| Easily share photos | Share your PASS Digital Volume with others without losing information you have added such as date, location, event, names of persons in the individual photos, etc. |

Figure 1. PASS Digital Volume features



1.2. System Overview

The PASS system is made up of the following major systems and components.

1) ORIGINATING SYSTEM

Originating systems, used to create PASS Digital Volumes on PASS medium, typically have the following functions:

- Collect consumer data from a variety of media and convert them to the PASS format in a PASS Digital Volume.
- Collect or generate metadata (date, keyword, etc.) for consumer images on PASS medium.
- Create custom digital albums on PASS medium that are playable on CE

devices as slideshows.

- d) Create a new PASS Digital Volume from multiple PASS media for many generations of creation without loss of consumer data.
- e) Optionally, create short video segments, also playable on existing DVD players.

2) RECEIVING SYSTEM

A PASS receiving system minimally implements the following functions:

- a) Check for PASS asset file formats;
- b) Read PASS Digital Volumes and correctly interpret PASS manifest files;
- c) A playback component or a printing component (at least one of these components must be included in a receiving system).

3) PLAYBACK COMPONENT

The PASS playback component in a receiving system has the following functions:

- a) Display PASS Digital Volumes according to the index manifest file, the default album manifest file(s) or any custom album manifest file(s).
- b) Select a specific album from multiple PASS Digital Volumes on a PASS medium
- c) Optionally, retrieve PASS asset files by date and/or keywords and then display the assets.

4) PRINT IMAGE SELECTION COMPONENT

This component has the following function:

- a) Select still PASS asset files to order prints.

The figures below illustrate these components and their interactions.

Figure 2. Structure of a PASS Digital Volume logical disc

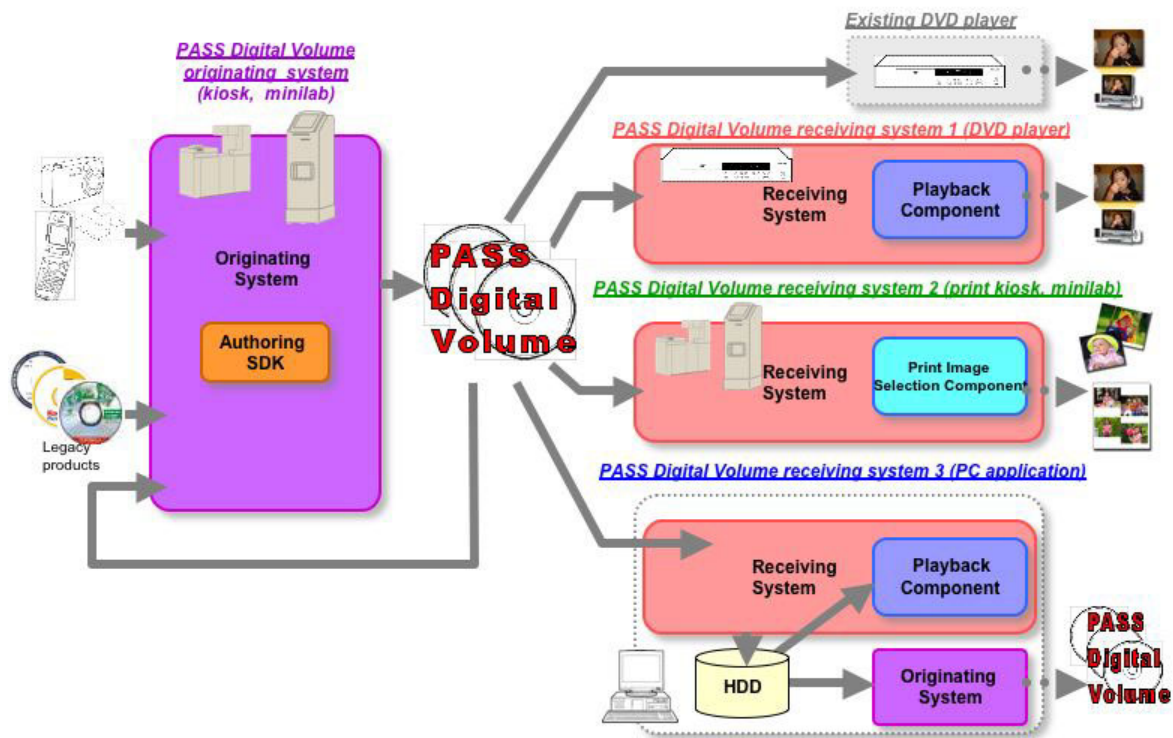


Figure 3. PASS Digital Volume originating system (kiosk, minilab)

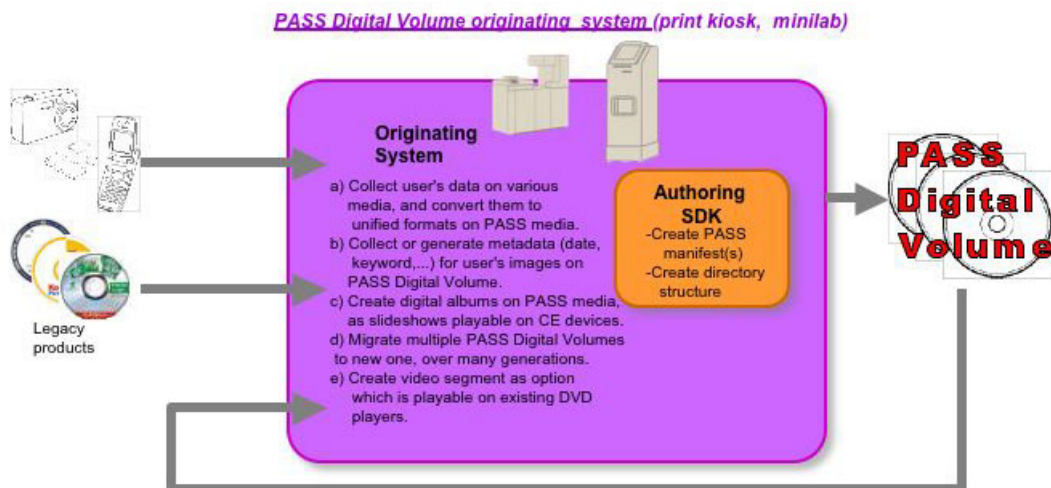


Figure 4. PASS Digital Volume receiving system variation 1 (DVD players)

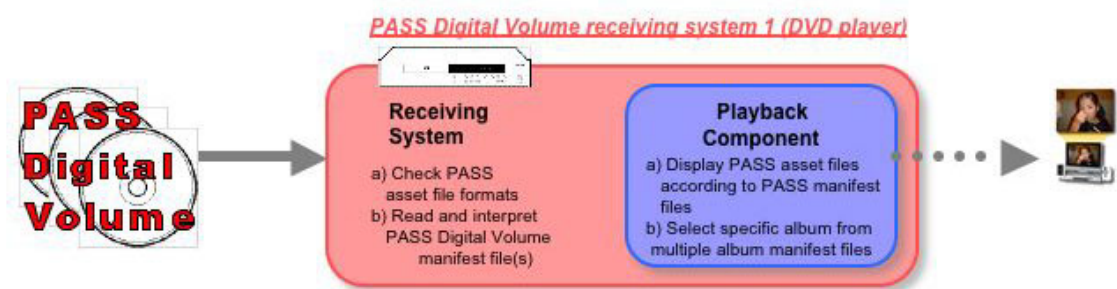


Figure 5. PASS Digital Volume receiving system variation 2 (print kiosks, minilabs)

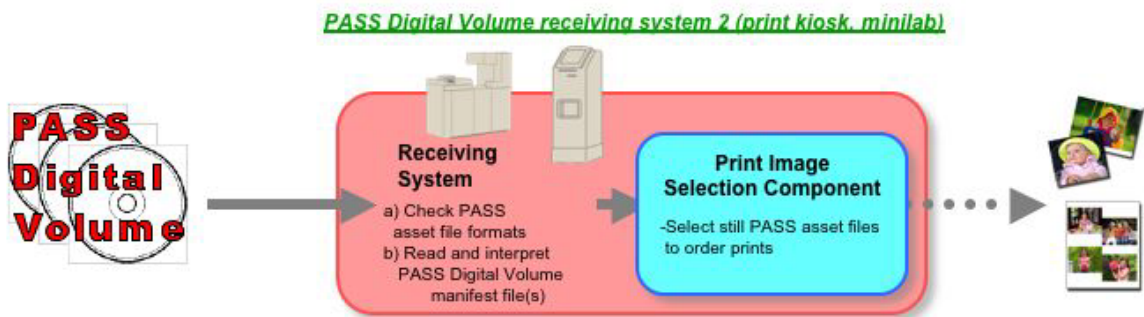
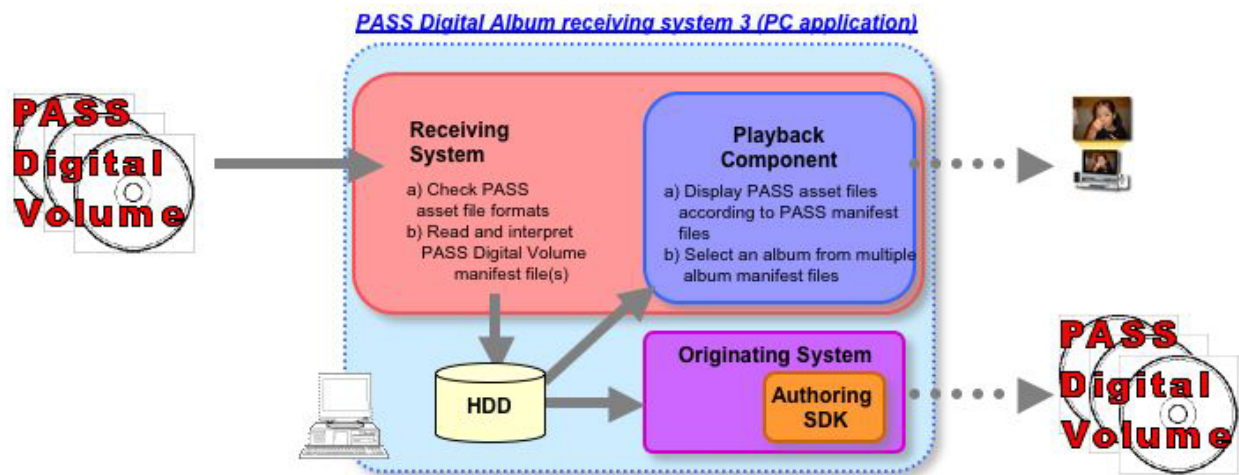


Figure 6. PASS Digital Volume receiving system variation 3 (PC applications)



2.0. Introduction to the PASS Logical Disc Specification

The Logical Disc Specification (LDS) describes the logical data structures that are recorded on a PASS Digital Volume, which could be any removable medium that supports a file structure. The LDS describes the directories (containers) used by a PASS Digital Volume. It also describes the types of files that can be recorded to the PASS Digital Volume and be properly understood by a PASS originating or receiving system.

The current version of the PASS specification suite includes:

PASS Logical Disc Specification 1.10 (LDS)

PASS Originating and Authoring System Requirements 1.10 (O/A)

PASS Receiving and Playback System Requirements 1.10 (R/P)

2.1. Organization of the Logical Disc Specification

PASS uses special descriptor files ('manifests') that are defined by the MusicPhotoVideo Specification (MPV) of Optical Storage Technology Association (OSTA). These manifest files are XML encoded. Specific metadata that is associated with each asset file are encoded in the manifest.

User-supplied files are referred to as *PASS asset files*.

This LDS specifically describes

- a) The PASS manifests files (index, default album, and custom album) together with any associated metadata;
- b) PASS asset file formats;
- c) File and directory structure.

2.2. Definition of Terms

The terms below are used extensively throughout this document. Some of these terms are used only when referring to the PASS Recommend Directory Structure (RDS) and are noted as 'required for RDS' (see section 6.2). Terms used for RDS implementations may also be used by the Open Directory Structure (ODS); however they are not necessarily required (see section 6.1).

Album

A collection of assets, normally in the form of files; where an asset file is as defined below.

Asset file

Asset files may be consumer generated or provided by the PASS Digital Volume Originating and Authoring System. Consumer asset files are typically original assets (i.e., from scanning, digital camera, etc.). [See original asset file definition below.] Recognized types of assets are still photo, still photo with audio, panoramic images, multi-shot sequence images, audio, and movie clips.

Assets directory

A type of container that holds asset roll directories and the shared directory. The name must be ASSETS and formed as directory that is a child of the root directory when implementing RDS.

Asset ID

An identifier for a PASS asset file; identifies any asset in a PASS Digital Volume. The asset ID can be written in default and custom album manifest files. The asset ID is defined as the lower 4 characters of the element <pass:assetID> of each asset file in the default or custom album that contains it. The asset ID along with the asset list ID is used to construct the image ID.

Asset list ID

An identifier for an asset list in any manifest file; indicates the specific asset list within the PASS Digital Volume. The asset list ID is defined as the lower 3 letters of the element <pass:assetlistID> in the corresponding default or custom album manifest files. The asset list ID along with the asset ID is used to construct an individual image ID.

Asset roll directory (AR directory)

A type of container formed as a directory that contains default albums composed of PASS asset files. The PASS Originating and Authoring System determines how the AR directory is populated. For example, digitally acquired or scanned from film. The contents of an AR directory are similar to the pictures of one roll of film in conventional photography or corresponding to pictures taken by a digital still camera between a single insertion and removal of the media. The asset roll directory is required to be within the ASSETS directory for RDS implementations.

BGM

Background music. Custom background music (often stored in the SHARED asset container) may be used for background music to a default album or a custom album.

Common metadata

Metadata that is associated to all the assets included in a particular asset list and is common to the asset list.

Common control metadata (CCM)

Metadata that is associated to all the assets included in a particular album and is common to the album. This common control metadata determines the presentation of all assets in the album unless a particular asset has its own specific control metadata that would then take precedence.

Compound asset

This is a special type of asset that includes one or more individual simple assets. In a default album, the compound asset must be composed only from assets within the same asset roll directory and from

the shared files. In a custom album, the compound asset may be composed from individual assets from many different asset roll directories as well as from shared files.

CE device

CE devices are consumer electronics such as televisions, personal computers, DVD and CD recorder and/or player, cellular telephone, etc.

Custom album directory

A type of container formed as directory to contain custom album manifest files for custom playback. In RDS only, all original assets are stored as part of an AR directory or as shared assets. The custom album directory is a child of the root directory and must be named ALBUMS when implementing the RDS.

Custom album manifest file

The custom album manifest file is a MPV manifest file that contains location information and metadata associated with the referenced asset files and must be composed using files identified in a PASS Digital Volume. The list of assets available for use in a custom album can be found listed in default album manifest file(s). The custom album manifest file must follow prescribed naming requirements when implementing RDS.

Default album manifest file

The default album manifest file is a MPV manifest file that contains location information and metadata associated with the asset files included in the AR directory where it resides. The assets identified by the default album manifest file must be unique. When implementing RDS, there must be only one default album manifest file in each asset roll directory. The default album manifest file must follow prescribed naming requirements when following RDS. A PASS Digital Volume should have at least one default album manifest file.

Derivative (asset)

A derivative, or rendition, of an original asset may be used for specific purposes. These derivatives are often used to facilitate presentation.

Display screen directory

A type of container, characteristically formed as a directory, containing photo images suitable for screen display. For RDS implementations, this directory must be located within the asset roll directory and must have the name DISP_SCR. ODS allows a screen directory with similar functionality to be located anywhere within the PASS Digital Volume.

Display thumbnail directory

A type of container, characteristically formed as a directory, containing images suitable for thumbnail display. For RDS implementations, this directory must be located within the asset roll directory and must have the name DISP_THB. The ODS allows a thumbnail directory with similar functionality to be located anywhere within the PASS Digital Volume.

Image ID

The identifier constructed by a PASS receiving that identifies images for viewing or printing. The image ID is generated by concatenating the lower three characters of asset list ID and the lower four

characters of asset ID. See *asset list ID* and *asset ID* above.

Index manifest file

A particular MPV manifest file that must be located in the root directory and is used to identify all other PASS manifest files on the PASS Digital Volume. The name must be "PASSIDX.PVM."

Medium ID

An identifier for the PASS Digital Volume as declared in the PASS index manifest file (PASSIDX.PVM).

Medium title

A user-friendly medium name that is described in the PASSIDX.PVM file.

Migration

The process of copying one or more PASS Digital Volumes, or one or more asset roll directories, while utilizing the recommended directory structure (RDS) to a new PASS Digital Volume for inheritance. All asset files from the migrating PASS Digital Volume(s), together with associated metadata information, will be inherited to the new PASS Digital Volume. The resulting PASS Digital Volume is written with the same or newer version of the PASS specifications. RDS only.

Open Directory Structure (ODS)

ODS is the open directory structure as documented in the PASS Logical Disc Specification. ODS imposes limited directory structures and file naming conventions. Implementing the ODS allows PASS to accommodate legacy systems.

Original asset file

An asset file originally created by the user. A screen or thumbnail file may be derived from this asset. The originating system has the responsibility of transcoding the file to a PASS prescribed format if necessary. The original asset file is typically the largest file and may not be useful for display on CE devices.

Originating system

Originating systems are used to create PASS Digital Volumes. Typically this will be a photo processing lab, kiosk, or a PC. Refer to the PASS Originating/Authoring System Requirements document for further information.

PASS asset file

The specific files allowed to be referenced by the manifest files of PASS by way of <mpv:LastURL>. Allowable asset file types include JPEG, Motion JPEG, MPEG1, MPEG2, MPEG4, MP3, Wav, AVI, and MOV. See the full reference list in Appendix D and details of formats in section 4 the PASS Logical Disc Specification. Additional file types may reside on the PASS Digital Volume but may not be referenced by the PASS <mpv:LastURL> element.

PASS Digital Volume

Generic name for the logical data structures, written on a storage medium, as described in the PASS specification suite.

PASS medium

The physical media, which must support a file system, where a PASS Digital Volume is recorded. Using current technology, the PASS medium most likely would be optical discs such as CD or DVD.

A PASS medium or PASS Digital Volume is certified to be compliant to the PASS specification.

Playback component

The PASS playback component is part of the receiving system. The playback component enables kiosks, PCs, DVD players, and other CE devices to play the PASS Digital Volume. Refer to the PASS Receiving/Playback System Requirements document for further information.

Print image selection component

A component of the PASS receiving system that provides options for selecting images to print. Refer to the PASS Receiving/Playback System Requirements document for further information.

Receiving system

Receiving systems are those designed to read PASS Digital Volumes. This may kiosks, PCs, DVD players, and other CE devices. Refer to the PASS Receiving/Playback System Requirements document for further information.

Recommended directory structure (RDS)

The recommended directory structure is documented in the PASS Logical Disc Specification. The RDS defines specific directory structures and file naming conventions. Following this recommendation will reduce conflicts during copy and migration procedures.

Rendition

Derivatives of original assets used for specific purposes are renditions. These derivatives are often used to facilitate presentation.

Screen file

A screen file is typically derived from the original asset for the purpose of displaying the asset as part of a presentation to a CE device. Screen files are optional. For RDS implementations, screen files are located in DISP_SCR directory within an asset roll directory with only one derivative for each original in the asset roll directory allowed. Derivative files should be of the same PASS asset file type as the original.

Shared directory

A type of container formed as a directory that contains PASS shared files. Shared files are those referred to by one or more custom album manifest file (generally consumer created) and/or one or more default album manifest file (generally retailer created). The shared container must be located within the ASSETS directory and must be named SHARED for compliance with RDS.

Shared file

A shared file is any file, such as music or image, which may be shared among one or more PASS albums. These may often be non-consumer files such as templates and background music for displaying default albums in a pleasing format. For RDS implementations, shared files must reside in a common directory that must be named SHARED and reside within the ASSETS directory.

Simple asset

An asset that conforms to one of the PASS pre-defined file types is a simple asset. See *PASS asset file* above.

Thumbnail file

Thumbnail files are small size files, typically derived from the original asset file for the purpose of displaying the asset as a member of a list to a CE device. For RDS implementations, thumbnail files are located in DISP_THB directory within an asset roll directory with only one derivative for each original in the asset roll directory allowed.

3.0. Usage of XML in PASS

PASS defines specific XML elements that are unique to the PASS system. These XML elements describe metadata that applies to the entire PASS Digital Volume, the still images, other assets, and the albums described on the PASS Digital Volume. PASS adopts Dublin Core Element Metadata Set (DCES) for general metadata and DIG35 for still image metadata. Any additional required metadata, not defined by DCES or DIG35, is defined in the PASS Specification.

Described within this PASS specification are the following types of metadata.

- Metadata for the entire PASS Digital Volume, described in the PASS index manifest file.
- Metadata for each PASS asset file as described in the PASS default album manifest file(s).
- Metadata for PASS Digital Volume as described in the PASS custom album manifest file(s).

Table 2. PASS XML namespace identifiers

The following table identifies XML namespaces referred to by PASS Digital Volumes.

| Namespace Identifier | Conventional Namespace Prefix |
|---|-------------------------------|
| http://ns.pass-spec.org/PASS/1.1/ | pass: |
| http://ns.osta.org/mpv/1.0/ | mpv: |
| http://ns.osta.org/mpv/basic/1.0/ | mpvb: |
| http://ns.osta.org/mpv/presentation/1.0/ | mpvp: |
| http://ns.osta.org/mpv/presentation/1.0/Control/ | mpvpCtrl: |
| http://ns.osta.org/mpv/presentation/1.0/TransitionFilter/ | mpvpTrans: |
| http://ns.osta.org/manifest/1.0/ | file: |
| http://ns.osta.org/nmf/1.0/ | nmf: |
| http://purl.org/dc/elements/1.1/ | dc: |
| http://www.digitalimaging.org/dig35/1.1/xml | dig35: |
| http://www.w3.org/2001/XMLSchema | xsd: |

3.1. PASS-defined XML elements

When a manifest file contains an asset list, the PASS asset types included within the asset list must reference only PASS-certified file formats (refer to section 4 for allowable formats). XML elements defined by MPV, DIG35, and DC may be used in PASS manifest files, however some elements are restricted in PASS.

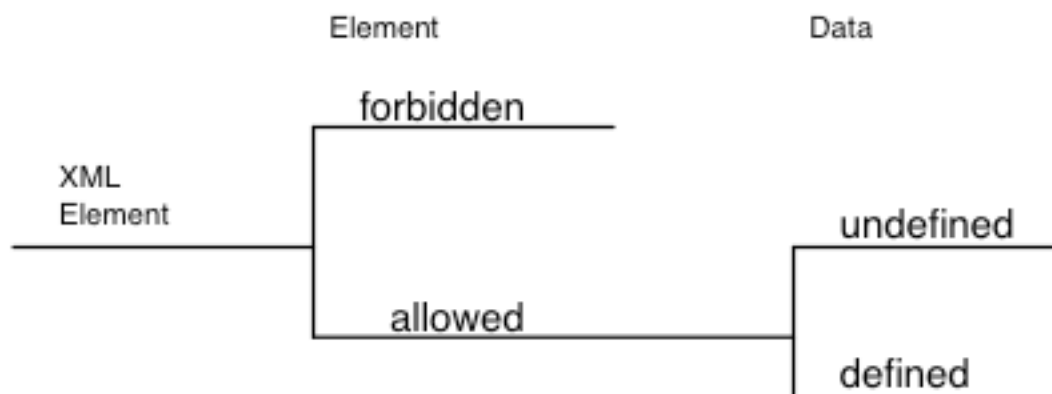
There are three levels of use for XML elements: mandatory, optional, and forbidden. Mandatory or optional elements are ‘allowed’ elements and may have defined or undefined semantics.

Defined: This is an allowable XML element, attribute, or behavior with data that is specifically defined in the PASS specifications.

Undefined: This is an allowable XML element, attribute, or behavior with data that is not defined in the PASS specifications. The XML element may be used if an O/A System creates such. This will not influence the certification of the O/A System.

Forbidden: This is an element, attribute, or behavior that is not permitted in a PASS manifest under any circumstances regardless of the data supplied by an O/A System. If such is present, the O/A System will not be certified.

The following diagram illustrates these use levels.



It is possible to add vendor-specific elements or extensions to a PASS manifest. These extensions must be contained in a vendor-specific namespace.

The following tables provide the details of PASS-defined XML elements. PASS elements have their own XML namespace designated as “<http://ns.pass-spec.org/PASS/1.1/>”.

Table 3. Volume metadata defined by the PASS LDS for PASS Digital Volumes

| PASS Elements | Description | Type | Permitted Value | Semantics | Authoring | Requirement XML Value Displayable |
|----------------------|--|------------|--|--|---|-----------------------------------|
| generalInfo | General information for an entire PASS Digital Volume. | | | | M | Not Applicable |
| mediumID | The identifier to specify one PASS Digital Volume from among all PASS Digital Volumes. | xsd:string | Restricted to UUID, encoding in 8-4-4-4-12 character format. | | M | O |
| originator | The manufacture name, product name, and product version of the Authoring/Originating System. | xsd:string | Example: "SomeCorp. MyOriginatingSystem v1.0" | | M | O |
| specificationVersion | The version number of LDS to which this PASS Digital Volume conforms. | xsd:string | Restricted to 'major dot minor 2 digits' Example: "1.10". | | M | O |
| structure | The metadata that shows what structure the PASS Digital Volume uses. | xsd:string | "RDS" or "OPEN" | | M | O |
| albumInfo | Album information as recorded in the index manifest file. | | | | M | Not Applicable |
| albumType | The metadata that identifies an album as a default or custom album. | xsd:string | "DEFAULT" or "CUSTOM" | | M | O |
| migrationMetadata | PASS migration metadata. | | | Elements below apply only to albums that have been previously migrated | M (When migration operations are performed) | Not Applicable |

| migrationEvent | The specific migration event identification. | pass:migrationEventNameType | | This element and its associated structure is inserted into the PASSIDX.PVM file each time an O/A System migrates a set of PASS Digital Volumes | M | O |
|----------------|--|-----------------------------|--------------------|--|---|---|
| | migrationDateTime | xsd:dateTime | | | M | O |
| | migrationSystem | xsd:string | | Determined by the O/A System | M | O |
| | migratedVolumes | pass:migratedVolumesType | | | M | |
| | migratedVolumeID | xsd:string | Restricted to UUID | Read from the Digital Volume, corresponds to the pass:MediumID | M | O |
| | migratedVolumeTitle | xsd:string | | | M | O |
| | migratedComponents | - | | | M | |
| | migratedAssetRollDirectory | xsd:string | | This element is the name of the migrated asset roll directory. There is one of these elements for each migrated Asset Roll directory. | M | O |
| | migratedCustomAlbum | xsd:string | | This element is the name of the migrated custom album manifest file. There is one of these elements for each migrated Custom Album manifest. | O | O |

Table 4. Album metadata defined by the PASS LDS for default and custom album manifests

| PASS Elements | Description | Type | Permitted Value | Semantics | Authoring | Requirement XML Value Displayable |
|---------------|---|---------------------|-------------------------|--|-----------|-----------------------------------|
| albumInfo | Album information as recorded in default album and custom album manifest files. | | | | O | |
| albumFavorite | Likeability or priority of the album. | xsd:positiveInteger | "1", "2", "3", "4", "5" | PASS compliant system should interpret the value "5" as the most favorite or highest priority. The value "1" means low priority. If this value is not specified, it means ordinary priority and means less priority than the value "1". | O | O |

Table 5. Asset metadata defined for default and custom album manifest files

| PASS Elements | Description | Type | Permitted Value | Semantics | Authoring | Requirement XML Value Displayable |
|---------------|---|------------|--|-----------|-----------|--|
| assetlistInfo | Asset list information in album manifest files. | | | | M | |
| assetlistID | The identifier for the asset list. | xsd:string | Fixed length 8 digits, consisting of capital alphabet[A-Z] and/or numeric[0-9]. The lower 3 digits must be unique within a PASS | | M | Optionally display ImageID which is generated using the last three digits (xxx) of pass:assetlistID and last four digits (YYYY) of pass:assetID |

| | | | | | | | | |
|---------------|---|---------------------|--|---|--|---|--|--|
| | | | | Digital Volume. Example: "ALIDZ001" | | | | (ex:xxx-YYYY) |
| assetInfo | Asset information metadata. | | | | | M | | |
| assetFavorite | Likeability or priority of the asset. | xsd:positiveInteger | | "1", "2", "3", "4", "5" | | O | PASS compliant system should interpret the value "5" as the most favorite or highest priority. The value "1" means low priority. If this value is not specified, it means ordinary priority and means less priority than the value "1". | O |
| assetID | The identifier for the asset. The lower 4 digits must be unique within any asset list. | xsd:string | | Fixed length 8 digits, consisting of capital alphabet[A-Z] and/or numeric[0-9]. The lower 4 digits must be unique within any asset list. | | M | | Optionally display ImageID which is generated using the last three digits (xxx) of pass:assetID and last four digits (YYYY) of pass:assetID (ex:xxx-YYYY) |
| assetType | The metadata that shows the type of asset. | xsd:string | | "SHARED" | | O | Required only if the asset is shared. Otherwise this is not allowed. | |

Table 6. Dublin Core metadata elements with defined uses and restrictions in PASS Digital Volumes

| Dublin Core Elements | Description | Type | Permitted Value | Semantics | Authoring | Requirement |
|---------------------------------|--|------------|------------------------------|-----------|-----------|---------------------------|
| | | | | | | XML Element Value Display |
| [nmf:Metadata dc:Properties] | The date of creation of PASS Digital Volume or the | xsd:string | Formatted as xsd:dateTime | | M | O |

| dc:date | album or the asset. | | Example: "2005-03-26T10:22:34" | | |
|---|--|------------|--------------------------------|---|---|
| [nmf:Metadata dc:Properties] dc:title | The title of PASS Digital Volume or the album or asset files. Mandatory for PASS Digital Volume, albums and original assets. Optional for screen and thumbnail files. | xsd:string | Example: "Memories in 2003" | M | O |

Additional Dublin Core elements may be used as defined by Dublin Core. See Appendix A.

Table 7. DIG35 metadata elements with defined uses and restrictions in PASS Digital Volumes

| DIG35 Elements | Description | Type | Permitted Value | Semantics | Authoring | Requirement Still Image Display |
|--|--|------------------------------|-------------------------|---|------------------|---|
| [BASIC_IMAGE_PARAM BASIC_IMAGE_INFO COLOR_INFO COLORSPACE] PROFILE_NAME | Colorspace of still image | dig35:tLangString (40961) | "sRGB" or "AdobeRGB" | Display the still image according to the colorspace specification. Default is sRGB | O | Mandatory for displaying image as sRGB. |
| [IMAGE_CREATION CAMERA_CAPTURE CAMERA_SETTINGS ORIENTATION] ROLL | In DIG35, orientation of still image is described by the three elements <pitch>, <yaw>, and <roll>. PASS has specific usages for the <ROLL> element. | dig35:tDegree (274) | "0", "90", "180", "-90" | 0: no rotation. 90: clockwise rotation by 90 degree. 180: clock-wise rotation by 180 degree. -90: clock-wise rotation by 270 degree. If there is no description and/or values other than those identified here, treat as 0. | O | If there is a ROLL value, it must be used for all displays. ROLL must be ignored in displaying images as a slide show; use mpvp:ShowRotated in that case. |

Additional DIG35 elements may be used as defined by DIG35. See Appendix A.

Table 8. MPV Basic Profile namespace metadata elements with defined uses and restrictions in PASS Digital Volumes

| MPV Elements | Description | Type | Permitted Value | Semantics | Requirement | |
|--------------|-------------|------|-----------------|-----------|-------------|---------------------------|
| | | | | | Authoring | XML Element Value Display |
| MarkList | | | | | Forbidden | Not Applicable |

Table 9. MPV namespace elements with defined uses and restrictions in PASS Digital Volumes

| MPV Elements | Description | Type | Permitted Value | Semantics | Requirement | |
|--------------------------|---|--|-------------------------|--|-------------|---------------------------|
| | | | | | Authoring | XML Element Value Display |
| Audio | An audio asset | WAVE (.wav), MP3 (.mp3) | | The R/P system must be capable of displaying the asset files that have Minimum Audio Attributes described in clause 4.4.3. | O | Refer to R/P |
| Still | A still image asset | EXIF or JFIF with JPEG encoding (.jpg) | | The R/P system must be capable of displaying the asset files that are defined as PASS assets. | O | Refer to R/P |
| Rendition:renditionUsage | A rendition is a derivative of an asset. "renditionUsage" is an attribute of the rendition element. | | "screen" or "thumbnail" | Any other renditionUsage value is undefined. | O | Not Applicable |
| StillMultishotSequence | A sequence of still images | | | The R/P system must display according to mpvpCtrl:Dur and mpvpCtrl:TransitionFilter, not CaptureRate when there is mpvpCtrl:Dur and mpvpCtrl:TransitionFilter. | O | Refer to R/P |

| StillPanoramaSequence | A sequence of images taken to create a panorama | | | CapturePath is undefined. | O | Refer to R/P |
|-----------------------|---|--|--|---|---|----------------|
| StillWithAudio | A still image asset with one or more audio assets | | | When there is mpvpCtrl:Dur, the R/P system must use mpvpCtrl:Dur for slideshow. When there is not mpvpCtrl:Dur and there is CaptureDur, the R/P system may use CaptureDur. | O | Refer to R/P |
| Video | A video asset | | | The R/P system must be capable of displaying the asset files that have Minimum Video Attributes described in clause 4.4.1. | O | Refer to R/P |
| Par | | | | | Forbidden | Not Applicable |
| ParRef | | | | | Forbidden | Not Applicable |
| Print | | | | | Forbidden | Not Applicable |
| PrintRef | | | | | Forbidden | Not Applicable |
| Related | | | | | Forbidden | Not Applicable |
| Seq | | | | | Forbidden | Not Applicable |
| SeqRef | | | | | Forbidden | Not Applicable |
| Text | | | | | Forbidden | Not Applicable |
| TextRef | | | | | Forbidden | Not Applicable |
| ManifestLink | | | | This element must only be used in the mpv:AssetList element. | Forbidden in a default or custom album manifest | Not Applicable |

Additional MPV namespace elements may be used as defined by MPV . See Appendix A.

Table 10. mpvp namespace elements with defined uses and restrictions in PASS Digital Volumes

| mpvp Elements | Description | Type | Permitted Value | Semantics | Authoring | Requirement XML Element Value Reference Display |
|---------------|--|---------------------------------------|-----------------|---|-----------|--|
| Album | A collection of media assets | See section 4 for list of asset types | | The MarkList and the RelationElemGroup are forbidden as children of Album | O | Forbidden in an index manifest. Mandatory in a default or custom album manifest. |
| AlbumRef | | | | | Forbidden | Not Applicable |
| Foreground | A collection of assets organized conceptually into foreground content. | | | In the case of audio, foreground sound blanks out background sound, there is no fading. | O | Refer to R/P |
| Background | A collection of assets organized conceptually into background content. | | | In the case of audio, foreground sound blanks out background sound, there is no fading. | O | Refer to R/P |

Additional mpvp namespace elements may be used as defined by MPV. See Appendix A.

Table 11. mpvpCtrl namespace elements with defined uses and restrictions in PASS Digital Volumes

| mpvpCtrl Elements | Description | Type | Permitted Value | Semantics | Authoring | Requirement XML Element Value Reference Display |
|-------------------|--|------|-----------------|--|-----------|--|
| Fit | The behavior if the intrinsic height and width of a visual media asset differ from the values specified by the height and width attributes in the "region" element | | | Mandatory to support 'meet' or 'slice' for PASS. Any other is 'Undefined.' Substitute one of mandatory fit options if an Undefined option is | O | M |

| | | | | | | |
|-----------------------|--|-------------|-----------------|--|-----------|----------------|
| ShowRotated | The total degrees from 0 to 360 for rotation of the asset when presented | xsd:integer | 0, 90, 180, 270 | not supported. | M | M |
| RepeatCount attribute | | | | ShowRotated (mpvCtrl element) is used for slide show display. ROLL (DIG35 orientation) is used for individual and selection screen display. If there is a dig35:ROLL metadata where value is non-zero, the OA system should write the value to ShowRotated ControlProperties according to the guidelines in the O/A. | Forbidden | Not Applicable |
| RepeatDur attribute | | | | | Forbidden | Not Applicable |
| StillDur attribute | | | | | Forbidden | Not Applicable |

Additional mpvpCtrl namespace elements may be used as defined by MPV. See Appendix A.

Table 12. mpvpTrans namespace elements with defined uses and restrictions in PASS Digital Volumes

| mpvpTrans Elements | Description | Type | Permitted Value | Semantics | Authoring | Requirement XML Value Displayable |
|--------------------|----------------------------------|------|-----------------|---|-----------|-----------------------------------|
| Type | The type or family of transition | | | “barWipe”, “irisWipe”, “clockWipe” and “snakeWipe” are recommended. | O | O |
| SubType | | | | | Forbidden | Not Applicable |

Additional mpvpTrans namespace elements may be used as defined by MPV. See Appendix A.

3.2. PASS manifest overview

Three categories of XML descriptors are used in PASS. These descriptors, which adhere to the MPV specification, are called “manifests.”

The MPV manifests used by PASS are:

- Index manifest file (PASSIDX.PVM)
- Default album manifest files
- Custom album manifest files

3.2.1. MPV conformance

PASS Digital Volumes are compliant with the MPV Specification. PASS Digital Volumes comply to the following rules:

- All manifest files must include one <file:Profile> element with the value of “http://ns.osta.org/mpv/basic/1.0”.
- All asset definitions in PASS manifest files must have the mpv:id attribute defined.
- All PASS manifest files must have a minimum of one <file:Profile> element defined (see above).
- PASS prohibits duplicated Dublin Core elements within an object.
- PASS prohibits use of divided Dublin Core elements in the dc:Properties element.
- <mpv:LastURL> element must be described in UTF8 and processed using “URL encoding”.
- <LastURL> must be relative path, if it is Local Path.
- Default album and custom album manifest files must have <file:Profile> with the value defined as “http://ns.osta.org/mpv/presentation/1.0”.
- URL Component Delimiter must be “/”.

3.2.2. Relationship of XML elements within PASS manifest files

XML elements may be found in each of the manifest file types that are alike yet contain unique values.

For example, the Dublin Core Element of date may be found in the index manifest file describing the date of the medium while in the default manifest file it will be describing the date of the asset roll and in the custom manifest file it will be describing the date of creation of the custom album.

The creation date-time of a parent container must be later or equal to the creation date-time of its children.

Similarly, some XML elements may be found in more than one manifest file with the same data. The <file:Profile> element is found in all manifest files and must have a value of http://ns.osta.org/mpv/basic/1.0/.

3.2.3. Common metadata

Frequently the assets in the asset list have a set of common metadata. For example, colorspace may be common within an asset list. In that case, it is redundant to describe such metadata for each asset. The default and custom album manifest files may include common metadata that is applied to each asset identified in the asset list.

- Common metadata can be located directly following the <mpv:AssetList> element.
- Such metadata will be interpreted so that they are applied to each asset, including any compound assets, in the asset list.

3.2.4 Album metadata

Frequently the assets in an album have a common set of effects and transitions. In that case, it is redundant to describe control metadata for each asset reference in the album. The default and custom album manifest files may include common control metadata (CCM) that is applied to each asset reference in the album. This control metadata is described in the MPV Presentation Profile and is associated with the <mpvCtrl:ControlProperties> element.

- Common control metadata can be located directly following the <mpvp:foreground> element if common control metadata applies to the foreground of the album, or directly following the <mpvp:background> element if common control metadata applies to the background of the album. In all cases, the common control metadata will be bracketed by the <nmf:Metadata> element as described in the MPV specifications.
- Such control metadata will be interpreted so that they are applied to each asset, including compound asset(s), in the asset list of the album.
- When a particular asset reference in an album has defined control metadata that conflicts with the common control metadata for the album, the control metadata of that particular asset reference will override the common values.

3.3. PASS manifest categories

This section describes the PASS-defined manifest files, their uses, and structures.

3.3.1. Index manifest

The PASS index manifest (PASSIDX.PVM) is the entry point of a PASS system. As the entry point to the PASS Digital Volume, the index manifest file may provide a “first play” for consumers. In such case, it must be capable of providing a listing for every default and custom album within the entire system. This listing is composed of both titles and a representative image thumbnail.

The index manifest file contains path information to all manifest files associated with the PASS Digital Volume. These manifest files include the PASS default album(s)

manifest file within the album roll(s) and any custom album manifest files. The index manifest file contains direct reference links to all other PASS manifest files on the PASS Digital Volume.

The index manifest also identifies specific thumbnail files to use for the both default and custom albums. For RDS, default and custom album icons are defined as thumbnail files within the SHARED directory. See section 6 for additional structure information.

The PASS index manifest also includes the PASS medium ID and all other metadata about the PASS medium.

There must be only one PASS index manifest file on a PASS Digital Volume and it must be located in the root directory with a fixed file name of PASSIDX.PVM. The index manifest file must be an MPV manifest. The top element of the index manifest file is <file:Manifest>.

Table 13. Index manifest structure

| Element | | Occurrence |
|----------------------------|--|------------|
| file:Manifest | | 1 |
| mpv:Metadata | | 1 |
| pass:generalInfo | | 1 |
| pass:mediumID | | 1 |
| pass:originator | | 1 |
| pass:specificationVersion | | 1 |
| pass:structure | | 1 |
| mpv:Metadata | | 0-1 |
| migrationMetadata | | 0-1 |
| migrationEvent | | 1-* |
| migrationDateTime | | 1 |
| migrationSystem | | 1 |
| migratedVolumes | | 1-* |
| migratedVolumeID | | 1 |
| migratedVolumeTitle | | 1 |
| migratedComponents | | 1 |
| migratedAssetRollDirectory | | 1-* |

| | | |
|--|--|--|
| | migratedCustomAlbum | 0-* |
| | nmf:Metadata | 1 |
| | file:ManifestProperties | 1 |
| | file:ProfileBag | 1 |
| | file:Profile | 1-* |
| | dc:Properties | 1 |
| | dc:date | 1 |
| | dc:title | 1 |
| | mpv:AssetList | 1 |
| | mpv:ManifestLink | 1-* |
| | mpv:LastURL | 1-* |
| | mpv:Metadata | 1 |
| | pass:albumInfo | 1 |
| | pass:albumType | 1 |
| | nmf:Metadata | 1 |
| | dc:Properties | 1 |
| | dc:title | 1 |
| | mpv:Rendition renditionUsage="thumbnail" | 0-1 (A renditionUsage attribute value must be unique with in the same parent element.) |
| | mpv:StillRef | 1 (If rendiotnUsage="thumbnail", the asset reference must be StillRef) |

Note: PASS allows multiple descriptions of mpv:Metadata and child elements within nmf:Metada as long as they comply with MPV specification.

Table 14. Forbidden MPV XML Elements in the index manifest file

| Forbidden XML Elements | |
|------------------------|--|
| mpv:ManifestLinkIDRef | This attribute must not be used. |
| mpv:AlbumRef | This element must not be used. |
| mpvp:Album | This element must not be used. |
| mpv:ManifestLink | This element must only be used in the mpv:AssetList element. |

3.3.2. Default album manifest

The default album manifest describes references to PASS asset files. In the

OPEN directory structure (refer to section 6.1) a default album manifest describes references to asset files in any location on the PASS Digital Volume. In the RDS directory structure (refer to section 6.2) the default album manifest file describes references to the asset files included in a particular asset roll directory. Each asset roll directory will have only one PASS default album manifest file and must follow the naming conventions outlined in 6.2. As is the case with all PASS manifest files, the default album manifest files are referenced by the PASS index manifest file (PASSIDX.PVM). The PASS default album manifest files contain XML elements that define metadata for each PASS asset file described. This may include user-entered metadata as well as pre-existing metadata from EXIF tags, and so on. Default albums are exclusive to each other: an asset described by one default album manifest must not be redundantly described by any other default album manifest. A particular asset file must be included in one default album only unless the asset file is a shared file and resides in the SHARED directory. However, a single asset may be referred to by many custom album manifest files.

Table 15. Default album manifest structure

| Element | | Occurrence |
|---------------|-------------------------|---|
| file:Manifest | | 1 |
| | nmf:Metadata | 1 |
| | file:ManifestProperties | 1 |
| | file:ProfileBag | 1 |
| | file:Profile | 2-* |
| | mpvp:Album | 1 |
| | mpv:Metadata | 0-1 |
| | pass:albumInfo | 1 |
| | pass:albumFavorite | 1 |
| | nmf:Metadata | 1 |
| | dc:Properties | 1 |
| | dc:date | 1 |
| | dc:title | 1 |
| | mpvp:Background | 0-1 (mpvp:Background can have common control metadata.) |
| | mpv:AssetRef | 0-* (Each AssetRef can have control metadata.) |

| | | |
|--|---------------------|---|
| | mpvp:Foreground | 0-1 (mpvp:Foreground can have common control metadata.) |
| | <i>mpv:AssetRef</i> | 0-*(Each AssetRef can have control metadata.) |
| | mpv:AssetList | 1 (mpv:AssetList can have common metadata.) |
| | mpv:Metadata | 1 |
| | pass:assetlistInfo | 1 |
| | pass:assetlistID | 1 |
| | mpv:Assets | 0-* |
| | mpv:LastURL | 1-* |
| | mpv:Metadata | 0-1 |
| | [dig35:METADATA] | 0-* |
| | mpv:Metadata | 1 |
| | pass:assetInfo | 1 |
| | pass:assetFavorite | 0-1 |
| | pass:assetID | 1 |
| | pass:assetType | 0-1 |
| | nmf:Metadata | 1 |
| | dc:Properties | 1 |
| | dc:date | 1 |
| | dc:title | 1 |
| | [dc:METADATA] | 0-* |
| | mpv:Rendition | 0-* |
| | <i>mpv:AssetRef</i> | 1 |

Note: [dig35:METADATA] and [dc:METADATA] refers to the collection of DIG35 and DC metadata which could be included here.

Note: PASS allows multiple descriptions of mpv:Metadata and child elements within nmf:Metada as long as they comply with the MPV specification.

mpv:Assets

mpv:Still, mpv:Video, mpv:Audio, mpv:StillMultishotSequence,
mpv:StillPanoramaSequence, mpv:StillWithAudio

mpv:AssetRef

mpv:StillRef, mpv:VideoRef, mpv:AudioRef, mpv:StillMultishotSequenceRef,
mpv:StillPanoramaSequenceRef, mpv:StillWithAudioRef

Table 16. Forbidden MPV XML Elements in the default album manifest file

| Forbidden XML Elements | Asset references |
|------------------------|---------------------------------|
| mpv:manifestLinkIdRef | This attribute must not be used |
| mpv:ManifestLink | This element must not be used |
| mpv:AlbumRef | This element must not be used |

3.3.3. Custom album manifest

The custom album manifest file describes the collection of asset references that corresponds to a PASS Digital Volume custom album. Additionally, a custom album manifest file describes a presentation program for that custom album using XML elements defined by the *MPV Presentation Profile*.

Custom albums mirror the use and function of default albums with one exception. Custom albums are NOT exclusive to each other: any assets described by one custom album manifest can be redundantly described by any other custom album manifest. A particular asset file may be included in plural custom album.

Table 17. Custom album manifest structure

| Element | Occurrence |
|-------------------------|---|
| file:Manifest | 1 |
| nmf:Metadata | 1 |
| file:ManifestProperties | 1 |
| file:ProfileBag | 1 |
| file:Profile | 2-* |
| mpvp:Album | 1 |
| mpv:Metadata | 0-1 |
| pass:albumInfo | 1 |
| pass:albumFavorite | 1 |
| nmf:Metadata | 1 |
| dc:Properties | 1 |
| dc:date | 1 |
| dc:title | 1 |
| mpvp:Background | 0-1 (mpvp:Background can have common control metadata.) |
| mpv:AssetRef | 0-* (Each AssetRef can have control metadata.) |
| mpvp:Foreground | 0-1 (mpvp:Foreground can have common control metadata.) |

| | | |
|--|---------------------------|---|
| | <i>mpv:AssetRef</i> | 0-* (mpvp:Foreground can have common control metadata.) |
| | <i>mpv:AssetList</i> | 1 (mpv:AssetList can have common metadata.) |
| | <i>mpv:Metadata</i> | 1 |
| | <i>pass:assetlistInfo</i> | 1 |
| | <i>pass:assetlistID</i> | 1 |
| | <i>mpv:Assets</i> | 0-* |
| | <i>mpv:LastURL</i> | 1-* |
| | <i>mpv:Metadata</i> | 0-1 |
| | <i>[dig35:METADATA]</i> | 0-* |
| | <i>mpv:Metadata</i> | 1 |
| | <i>pass:assetInfo</i> | 1 |
| | <i>pass:assetFavorite</i> | 0-1 |
| | <i>pass:assetID</i> | 1 |
| | <i>pass:assetType</i> | 0-1 |
| | <i>nmf:Metadata</i> | 1 |
| | <i>dc:Properties</i> | 1 |
| | <i>dc:date</i> | 1 |
| | <i>dc:title</i> | 1 |
| | <i>[dc:METADATA]</i> | 0-* |
| | <i>mpv:Rendition</i> | 0-* |
| | <i>mpv:AssetRef</i> | 1 |

Note: [dig35:METADATA] and [dc:METADATA] refers to the collection of DIG35 and DC metadata which could be included here.

Note: PASS allows multiple description of mpv:Metadata and child elements within nmf:Metada as long as they comply with MPV specification.

mpv:Assets

mpv:Still, *mpv:Video*, *mpv:Audio*, *mpv:StillMultishotSequence*,
mpv:StillPanoramaSequence, *mpv:StillWithAudio*

mpv:AssetRef

mpv:StillRef, *mpv:VideoRef*, *mpv:AudioRef*, *mpv:StillMultishotSequenceRef*,
mpv:StillPanoramaSequenceRef, *mpv:StillWithAudioRef*

Table 18. Forbidden MPV XML Elements in the custom album manifest file

| Forbidden XML Elements | Asset references |
|------------------------|----------------------------------|
| mpv:manifestLinkIdRef | This attribute must not be used. |
| mpv:ManifestLink | This element must not be used |
| mpv:AlbumRef | This element must not be used |

3.3. Asset Metadata

PASS asset files are primarily user-supplied. The asset list may contain references to many asset files of various types as defined in section 4.

- DIG35 metadata will be applicable to still image assets in the asset list.
- Dublin Core metadata will be applicable to any assets in the asset list.
- When an asset has defined metadata that conflicts with the common metadata, the asset (local) metadata will override default values.

4.0. Format of PASS Asset Files

This section defines asset file formats that are compatible with the PASS Logical Disc Specification.

4.1. Still

The mandatory file format for still image PASS asset files is:

Exif or JFIF with JPEG encoding

Still image files must be non-progressive JPEG files as defined in the following clauses:

- The Codec must handle the JPEG baseline process, excluding extended DCT-based, lossless and hierarchical processes (refer to ISO 10918-1).
- The file extension used must be .JPG , .jpg, or .jpeg.
- Minimum resolution must be 32 x 32.
- There is NO maximum resolution.
- Image aspect ratio must be between 1:4 and 4:1.
- Pixel composition and sampling must be YCbCr 4:2:2 and YCbCr 4:2:0.
- Pixel aspect ratio must be square (1:1).
- Thumbnail files shall be JPEG files with the same Codec and pixel composition and sampling properties as original image files as defined in the DCF specification. Thumbnail files shall have dimensions of 160x120 or 120x160. If the image has a margin, the margin shall be filled in BLACK (RGB 0:0:0) like the DCF.

4.2. Video

This section identifies the allowable file formats for PASS video asset file(s) when they are included on the PASS Digital Volume.

- AVI - "Audio Video Interleaved". A container format for video with synchronized audio. An AVI file can contain different compressed video and audio-streams.
EXTENSIONS ALLOWED: .avi
- MOV - A container format for video with synchronized audio. MOV format can hold a variety of media types such as audio, video, Macromedia Flash, text, images and sprites. Each of these media types is stored as a separate track. A MOV file can contain different compressed video and audio-streams.

EXTENSIONS ALLOWED: .mov

- MPEG1

EXTENSIONS ALLOWED: .mpg, .mpeg

- MPEG2

EXTENSIONS ALLOWED: .mpg, .mpeg

- MPEG4

EXTENSIONS ALLOWED: .mp4

4.3. Audio

This section identifies the allowable file formats for PASS audio asset file(s) when they are included on the PASS Digital Volume.

- Wave

EXTENSIONS ALLOWED: .wav

- MP3

EXTENSIONS ALLOWED: .mp3

4.4. Data Encoding Restrictions

This section identifies the data encoding attributes of PASS Digital Volume asset files.

4.4.1. Minimum Video Attributes

- Minimum frame rate: 10fps
- Minimum image size: 64x64 pixels
- Minimum bits per sample: 8bits per channel
- Minimum bitrate: 32Kbps
- FrameScan: interlace (only on 480-line and 576-line video) and/or progressive
- Aspect ratio: support non-square pixels
- Rate control support: constant bit rate (CBR) and variable bit rate (VBR)
- Multiplexing support: program stream (audio and video tracks are interleaved together into one track).

4.4.2. Minimum Video Compression Methods Supported

- Motion JPEG
- MPEG-1 Video
 - CIF: 300 Kbps – 4 Mbps, horizontal resolution. 160 – 352, Audio 32 –

- 192 Kbps
- [Common Intermediate Format, 352x288 in (PAL), 352x240 in (NTSC)]
- QCIF: 200 Kbps – 4 Mbps, horizontal resolution. 160 – 352, Audio 32 – 192 Kbps
- [Quarter Common Intermediate Format, 176x144 (PAL), 176x120 (NTSC)]

Each supporting a video frame rate of:

- 25 fps for PAL
- 29.97 fps for NTSC

- MPEG-2 Video

- Simple Profile

Permits the use of intra-coded (I) frames and predicted (P) frames. A conformance point for this bitstream exists at the Main level (see ISO/IEC 13818), with a broadcast-stream picture size of 720x576 pixels (non-square pixels), color sampling of 4:2:0, and a maximum data rate of 15 Mb/s.

- Main Profile

Permits the use of intra-coded (I) frames, predicted (P) frames, and bidirectionally predicted (B) frames. Conformance points for this bitstream exist at the following levels: Low, Main, High-1440, and High. At the Main level, the broadcast-stream picture size is 720x576 pixels (non-square pixels), with color sampling of 4:2:0 and a maximum data rate of 15 Mb/s.

- 4:2:2 Profile

Permits the use of intra-coded (I) frames, predicted (P) frames, and bidirectionally predicted (B) frames. The ISO/IEC specifications establish a conformance point for this bitstream at Main level, with a broadcast-stream picture size of 720x576 pixels (non-square pixels), color sampling of 4:2:2, and a maximum data rate of 50 Mb/s. A separate SMPTE specification establishes High level conformance, with a maximum picture size of 1920x1080, color sampling of 4:2:2, and a maximum data rate of 300 Mb/s.

- MPEG-4 Video

- Simple Profile level 0 excluding Multiple Bit rate/Stream

4.4.3. Minimum Audio Attributes

- Minimum Channels: Mono
- Minimum Sample rate: 8 kHz
- Minimum Bits per sample: 8
- Minimum Bitrate: 8Kbps
 - Rate control support: Constant bit rate (CBR) and variable bit rate (VBR)

4.4.4. Audio Compression Methods Supported

- MPEG Layer 1
- MPEG Layer 2
- MPEG Layer 3
- LPCM
- Dolby AC-3
- AAC Low Complexity audio (MPEG4 audio)
- ULaw 2:1
- ALaw 2:1

5.0. PASS simple and compound asset types

Simple assets are composed of a single asset, for example an EXIF asset for a consumer image or a WAV file for the consumer's audio asset.

However, when consumer assets are initially captured, the capture device may create two distinct files associated with one capture event. An example of this would be the simultaneous creation of both image and audio files. These files are placed in a common directory with a related filename. A PASS Digital Volume retains the association of these files by creating a special asset described in metadata (Still with Audio in this example). Such an association is known in the PASS Digital Volume as a compound asset.

5.1. Simple asset

An asset is a simple asset when the asset identified in the PASS manifest file references a single asset file.

In PASS, <mpv:Still>, <mpv:Video>, and <mpv:Audio> are permitted as simple assets. Refer to the MPV standard for details of these asset types.

5.2. Compound asset

A compound asset can be identified in PASS manifest files by referencing more than one asset file.

In PASS, <mpv:StillWithAudio>, <mpv:StillMultishotSequence>, and <mpv:StillPanoramaSequence> are permitted as compound assets. Refer to the MPV standard for details of these asset types.

When a compound asset is present, the metadata associated with the entire compound asset must appear immediately following the MPV element identifying the compound asset.

5.3. Asset derivatives (renditions)

A rendition, or derivative, is the result of creating an alternate representation of the original asset that will be used for special purposes such as displaying image files.

For example, a derivative may be made from an original image file by reducing its image resolution for display on a screen. Such an image file may be required for viewing on an output device of a low resolution.

Simple assets may have derivatives. The derivatives are referenced by <mpv:StillRef>, <mpv:AudioRef>, <mpv:VideoRef> and any compound assets which include the simple assets. A compound asset, however, might have a thumbnail associated with it for display on a selection screen. That thumbnail is encoded as a MPV rendition to the compound asset itself.

For PASS implementations, there are two categories of asset derivatives: screen files and thumbnail files.

5.3.1. Screen file derivatives

A screen file is defined for use in presentations. The screen files are populated to the DISP_SCR directory in the asset roll directory according to the requirements outlined in the table below. Please refer to section 6.2.4 for additional information.

Table 19. Screen file requirements

| | |
|-------------|--|
| Asset type | Asset type should generally be the same as the original asset type. |
| Color space | The color spaces allowed are Adobe RGB or sRGB. sRGB is the default if color space is not defined or if color space is defined to be other than Adobe RGB or sRGB.. |
| Resolution | For still assets, from 640 x 480 pixels (VGA) to 1920 x 1080 pixels (HDTV1080) |

5.3.2. Thumbnail file derivatives

A thumbnail file is often both lower in resolution and smaller in size. These are typically used as part of a list or preview for consumer choice options. Thumbnail files are populated to the DISP_THB directory in the asset roll directory according to the requirements outlined in the table below. Please refer to section 6.2.4 for additional information.

Table 20. Thumbnail file requirements

| | |
|-------------|---------------------------------|
| File format | Exif or JFIF with JPEG encoding |
| Color space | sRGB |
| Resolution | 160x120 / 120x160 |

6.0. PASS Directory Structure

All PASS Digital Volumes utilize MPV manifests to locate assets, capture metadata, and describe albums.

The PASS index manifest file must reside in the root directory of a PASS Digital Volume as the entry point to other manifest files on the PASS medium. This index manifest file is located through the file system. Therefore any manifest files can be traced from the index manifest file.

All PASS receiving systems will be able to access all of the manifests within a PASS Digital Volume by referring to the index manifest file in the root directory. Likewise, PASS receiving systems will be able to access the contents described by the manifest files.

The PASS index file must always be in the PASS root directory. All other PASS manifest files, asset files, and subdirectories may or may not have constraints, depending on which one of two configurations of directory structure the PASS Digital Volume uses.

6.1. Open Directory Structure

The PASS Open Directory Structure (ODS) is defined to provide maximum flexibility to for the directory structure implementation while assuring the consumer's playback experience. The ODS is the path for conversion of legacy systems to the PASS Digital Volume.

All features of the PASS system will be available for the ODS with the exception of migration. It is not possible to migrate an ODS to a new PASS Digital Volume without first transforming the ODS to a PASS Recommended Directory Structure (RDS).

6.1.1. Structure Restrictions

Index manifest file

There must be only one index manifest file in the PASS Digital Volume.
The file must exist in the PASS root directory.

Default album manifest file

One or more files must exist in the PASS Digital Volume.

Custom album manifest file

Zero or more files may exist in the PASS Digital Volume.

Asset file

One or more file must exist in the PASS Digital Volume.

Screen file

Zero or one file may exist for each asset file in the PASS Digital Volume.

Thumbnail file

Zero or one file may exist for each asset file in the PASS Digital Volume.

6.1.2. Restrictions for naming manifest files

Index manifest file

The file must be named PASSIDX.PVM.

Default album manifest file

The filename must have a file extension “.PVM” .

Custom album manifest file

The filename must have a file extension “.PVM” if the custom album manifest file exists.

Asset file

There is no restriction to asset file names.

Screen file

There is no restriction to screen file names.

Thumbnail file

There is no restriction to thumbnail file names.

6.2. Recommended Directory Structure

The PASS Recommend Directory Structure provides best option for migrating data without loss of metadata or asset.

6.2.1. Generated Date Information

In naming conventions for PASS Digital Volume containers and assets, as explained below, the date is identified as:

YYYY corresponds to the year using characters “0 through 9”

MM is the number of month using characters “0 through 9”

DD is the number of the day of the month using characters “0 through 9”

The date is always followed by the underscore (“_”) character in the naming convention.

6.2.2. Container Types

The PASS Recommended Directory Structure makes use of containers. In general, containers hold a collection of files that corresponds to the directories in a file system. In a disc conforming to the PASS Logical Disc Specification, the containers hold files of similar types as described below. Some of the containers may also contain other containers where such containers are of a similar type.

6.2.3. Structure Restrictions

6.2.3.1. File restrictions

Index manifest file

One only index manifest file must exist in the PASS Digital Volume root directory.

Default album manifest file

One or more default album manifest files must exist in the PASS Digital Volume within asset roll container(s).

One only default album manifest file may exist in any asset roll container.

Custom album manifest file

Zero or more custom album manifest file(s) must exist in the PASS Digital Volume.

All custom album file(s) must exist in the ALBUMS directory.

Asset file

A PASS Digital Volume must contain one or more asset files. Asset files may exist within the ASSETS directory, must exist within each existing asset roll directory, and may exist within the SHARED Directory.

6.2.3.2. Directory restrictions

Assets directory

One directory must be named ASSETS and must be located at the PASS Digital Volume root.

Asset roll directory

One or more asset roll directories must exist within the ASSETS directory.

Each asset roll directory must include only one default album manifest file.

Assets within this directory must be described in the default album manifest file in this directory.

Custom album directory

Zero or one ALBUMS directory may exist.

This directory, if existing, must be located only in the PASS Digital Volume root directory.

Display screen directory

Zero or more display screen directories may exist in the PASS Digital Volume.

The directory name must be DISP_SCR.

Each asset roll directory existing must contain zero or one DISP_SCR directory.

Display thumbnail directory

Zero or more display thumbnail directories may exist in the PASS Digital Volume.

The directory name must be DISP_THB.

Each asset roll directory existing must contain zero or one DISP_THB directory.

A thumbnail file representing each album must reside in the shared directory.

Thumbnail files in the asset roll thumbnails directory must be described in the default album manifest file in the parent directory.

Shared directory

Zero or one shared directory may exist in the PASS Digital Volume. This directory must be named SHARED and must be located within the ASSETS directory. This directory contains shared files and thumbnail files for custom albums.

6.2.4. Naming restrictions

PASS convention restricts naming to the use to ASCII and uppercase in the Recommended Directory Structure. Additional naming conventions are listed below.

6.2.4.1. File names

Index manifest file

The name of the index manifest file must be PASSIDX.PVM

Default album manifest file

The default album manifest file(s) (generated for each asset roll directory) shall have a file name that begins with the characters "AS", and the remaining characters are equal to the name of the asset roll directory that corresponds to that default album manifest file.

Custom album manifest file

Custom album manifest file(s) names begin with the characters "PL" and the remaining characters have a date component, YYYYMMDD, corresponding to the creation date of the custom album manifest file.

The date component, YYYYMMDD, should be the creation date of the custom album manifest file.

The TUID should be generated at the time of file creation by an originating system. If there is a Custom album manifest file ("PL" prefix) with the same date component, a new TUID should be generated by incrementing to the largest TUID among Custom album manifest files having the same date. When a Custom album manifest file is copied, there is a possibility that more than one Custom album manifest file will have the same date component and TUID. In this case, the old TUID should be incremented by one until no collision is found, and the new unique TUID should be used.

PASS asset file

When the Recommended Directory Structure is used, the PASS asset files in the AR directory will have a name that begins with the fixed characters "OR" followed by YYYYMMDD_XXXXXXXXX.

The date component, YYYYMMDD, should be the creation date of the asset file.

The TUID should be generated at the time of file creation by an originating system. If

there is a PASS asset file (“OR” prefix) with the same date component, a new TUID should be generated by incrementing to the largest TUID among PASS asset files having the same date. When a PASS asset file is copied, there is a possibility that more than one PASS asset file will have the same date component and TUID. In this case, the old TUID should be incremented by one until no collision is found, and the new unique TUID should be used.

Shared files

The asset files in the SHARED directory will have file names following this pattern: SHYYYYMMDD_XXXXXXXXX.ZZZ. The date component, YYYYMMDD, should be the creation date of the asset file.

Screen file

Screen images will be generated with a name that begins with the characters “TT” and has a date component and a TUID that are the same as the corresponding original asset file.

Thumbnail file

Thumbnail files will be generated with a name that begins with the characters “TT” and has a date component and a TUID that are the same as the corresponding original asset file.

6.2.4.2. Directory names

Assets directory

Must be named ASSETS

Asset roll directory

The asset roll directory shall have a name that begins with the fixed characters “AR” followed by YYYYMMDD_XXXXXXXXX.

The date component, YYYYMMDD, should be the oldest creation date of the asset file.

The TUID should be generated at the time of directory creation.

When initially creating an asset roll directory, if there is an asset roll directory with the same date component, a new TUID should be generated by incrementing to the largest TUID value (in radix 36) among asset roll directories having the same date.

When an asset roll directory is migrated, there is a possibility that more than one asset roll directory will have the same date component and TUID because of multiple migrations. In this case, the old TUID should be incremented by one until no collision is found, and the new unique TUID should be used.

Custom album directory

This directory has one permitted name; ALBUMS.

Display screen directory

This directory will have one permitted name, DISP_SCR.

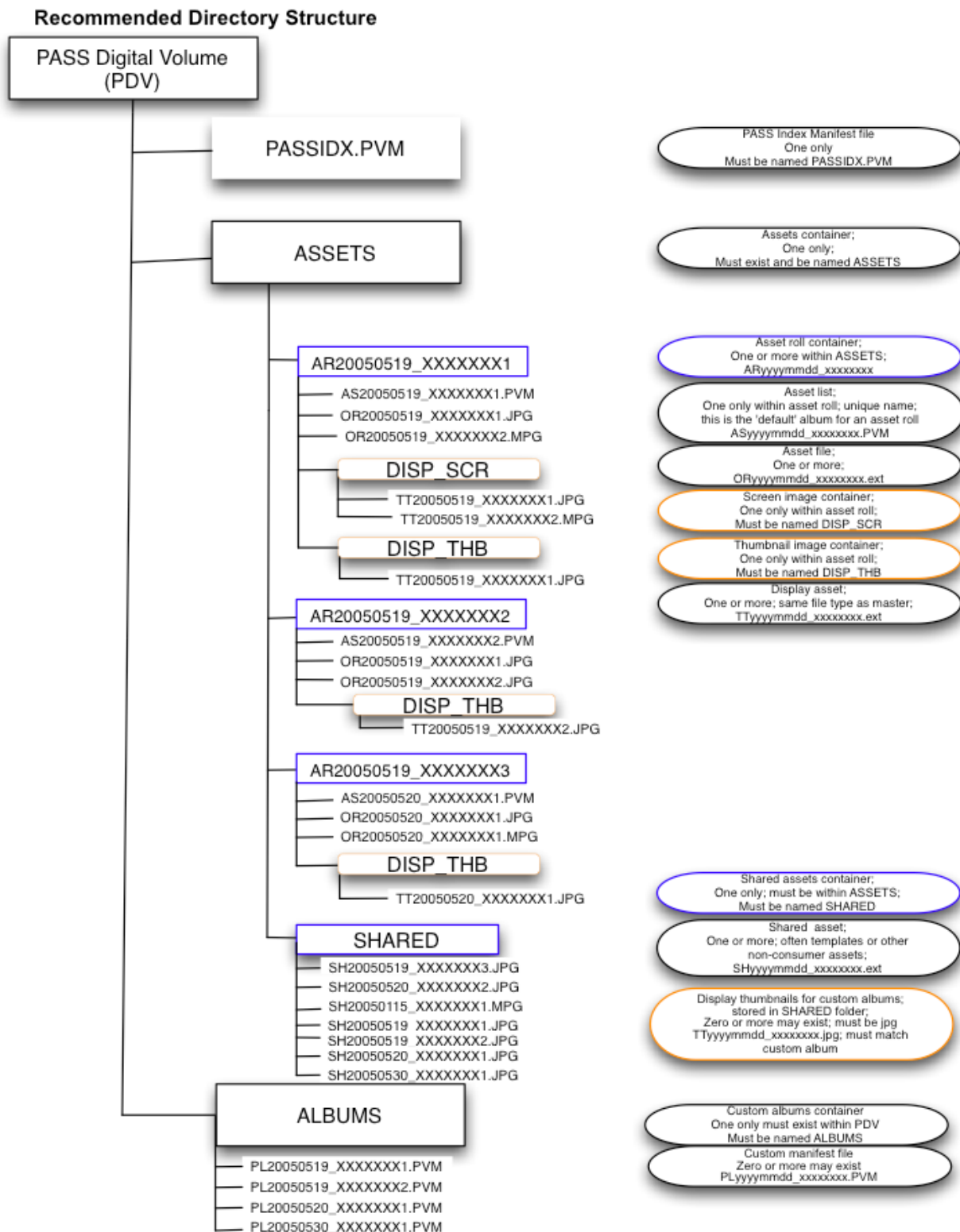
Display thumbnail directory

This directory will have only one permitted name, DISP_THB.

Shared directory

This directory will have only one permitted name, SHARED.

Figure 7. Recommended Directory Structure



7.0. Migration

A PASS system permits migration of one or more entire PASS Digital Volumes or specific PASS albums into a single new PASS Digital Volume. This is effectively a merge of distinct PASS Digital Volumes into one PASS Digital Volume. In a PASS system, a new PASS Digital Volume is recorded in each migration. The PASS system does not allow information to be appended to an existing PASS Digital Volume.

See the PASS Originating and Authoring System Specification for information on migrating PASS Digital volume.

Appendix A. Additional XML Usage — Informative

Table A1. Dublin Core metadata used as defined in the Dublin Core specification

| Element | Description |
|---|---|
| nmf:Metadata dc:Properties dc:creator | The creator of the PASS Digital Volume or the album or the asset. |
| nmf:Metadata dc:Properties dc:description | The description of PASS Digital Volume or the album or the asset. |

Table A2. DIG35 still image metadata used as defined in the DIG35 specification

| DIG35 element | Description |
|--|---|
| METADATA BASIC_IMAGE_PARAM BASIC_IMAGE_INFO IMAGE_SIZE WIDTH | Width of still image |
| METADATA BASIC_IMAGE_PARAM BASIC_IMAGE_INFO IMAGE_SIZE HEIGHT | Height of still image |
| IMAGE_CREATION CAMERA_CAPTURE CAMERA_SETTINGS SUBJECT_POSITION | Position of subject within still image |
| IMAGE_CREATION CAMERA_CAPTURE CAMERA_SETTINGS CAMERA_POSITION | GPS Information of capturing location |
| CONTENT_DESCRIPTION LOCATION | The location of the image, longitude/latitude/altitude |
| CONTENT_DESCRIPTION PERSON PERSON_NAME NAME_COMP | A person name within the image, “Given” name and “Family” name are supported as the attributes of NAME_COMP |
| CONTENT_DESCRIPTION PERSON POSITION | The position of each person within the image, A rectangular area is supported as position data type. |
| CONTENT_DESCRIPTION PERSON COMMENT | Any comment for each person within the image |
| CONTENT_DESCRIPTION THING NAME | The name of each thing within the image |

| | |
|--|---|
| CONTENT_DESCRIPTION THING POSITION | Any position of each thing within the image |
| CONTENT_DESCRIPTION THING COMMENT | Any comment for each thing within the image |
| CONTENT_DESCRIPTION EVENT EVENT_TYPE | Type of event |
| CONTENT_DESCRIPTION EVENT DESCRIPTION | Description of the event within the image |
| CONTENT_DESCRIPTION EVENT COMMENT | Any comment for the event of the image. |

Table A3. mpv namespace elements used as defined in the MPV specification

| mpv element | Description |
|---------------------------|---|
| AssetList | An unordered set of assets |
| AudioRef | A reference to Audio |
| ContentID | Content-based Identification |
| Document | An arbitrary document file; undefined. |
| DocumentRef | A reference to Document |
| DocumentID | An identifier that is the same for all instances including the original and derivatives |
| InstanceID | An identifier that uniquely identifies the asset |
| LastURL | A local filename or remote URL |
| ManifestLink | Link to another MPV manifest |
| ManifestLinkRef | Link to another Photo/Video manifest |
| Metadata | A data that is used to describe asset related information |
| SeqRef | A reference to Seq |
| Still | An image asset |
| StillRef | A reference to still |
| StillMultishotSequenceRef | A reference to StillMultishotSequence |
| StillPanoramaSequence | A sequence of images taken to create a panorama. CapturePath is undefined. |
| StillPanoramaSequenceRef | A reference to StillPanoramaSequence |
| StillWithAudioRef | A reference to StillWithAudio |
| VideoRef | A reference to Video |

Table A4. mpvpCtrl namespace

| mpvpCtrl element name | Description |
|------------------------------|---|
| BackgroundColor | The background color of the element and all sub-elements |
| Dur | The simple duration |
| Margin | The percentage of the height and width of the region that should be allocated as a margin area around the media asset element |
| TransitionFilter | The transitionFilter that should be applied to the media asset |

Table A5. mpvpTrans namespace

| mpvpTrans element name | Description |
|-------------------------------|----------------------|
| Dur | The default duration |

Appendix B. TUID

In naming conventions for PASS Digital Volume assets as explained below, the Truncated Universal Identifier component (TUID) is generated as an eight-character GUID using “0-9” and “A-Z”.

The TUID should be generated as follows.

STEP 1: Obtain time information from the authoring system and represent the time information by HH: MM: SS. CC, as defined here:

HH: hour (0-23)

MM: minute (0-59)

SS: second (0-59)

CC: sub-second (0-99)

STEP 2: Calculate time code as follows:

$$T = ((CC*60+SS)*60+MM)*24+HH$$

STEP 3: Obtain three bytes from MAC address (or any unique code)

M: 0-(256⁶-1) [256]:[256]:[256]:[256]:[256]:[256] (B₁ - B₆)

Extract 3rd, 5th, and 6th bytes and combine them as follows:

$$M = B_3*256*256+B_5*256+B_6$$

NOTE 1: Another example of unique code would be “serial number of the device.”

NOTE 2: B₁ - B₃: Manufacturer code, B₄ - B₆: Machine code.

STEP 4: Obtain the unique number.

$$N_TUID = \text{mod}(T + M * M_{\text{max}}, TUID_{\text{max}})$$

Where, $M_{\text{max}} = 256^3$, $TUID_{\text{max}} = 36^8$,

STEP 5: Convert it into ASCII characters (0-9, A -Z)

(1) convert it to radix 36 based figure. Di can be calculated by:

$$D_i = \text{mod}(\text{int}(N_TUID/36^i), 36)$$

where, Di: i-th digit number in radix 36 (0-7. here, LSB=0)

(2) convert Di into ASCII by the following table:

Table B. Convert Di to ASCII

| radix 10 | radix 36 | radix 10 | radix 36 | radix 10 | radix 36 | radix 10 | radix 36 |
|----------|----------|----------|----------|----------|----------|----------|----------|
| 0 | 0 | 10 | A | 20 | K | 30 | U |
| 1 | 1 | 11 | B | 21 | L | 31 | V |
| 2 | 2 | 12 | C | 22 | M | 32 | W |
| 3 | 3 | 13 | D | 23 | N | 33 | X |
| 4 | 4 | 14 | E | 24 | O | 34 | Y |
| 5 | 5 | 15 | F | 25 | P | 35 | Z |
| 6 | 6 | 16 | G | 26 | Q | | |
| 7 | 7 | 17 | H | 27 | R | | |
| 8 | 8 | 18 | I | 28 | S | | |
| 9 | 9 | 19 | J | 29 | T | | |

Appendix C. Examples — Informative

The following examples are provided to help implementers understand the XML coding for PASS Digital Volumes.

Example: Index Manifest File

```
<?xml version="1.0" encoding="UTF-8"?>
<file:Manifest xmlns:mpvp="http://ns.osta.org/mpvp/presentation/1.0/" xmlns:nmf="http://ns.osta.org/nmf/1.0/"
xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:pass="http://ns.pass-spec.org/PASS/1.1/"
xmlns:file="http://ns.osta.org/manifest/1.0/" xmlns:mpv="http://ns.osta.org/mpv/1.0/">
  <nmf:Metadata>
    <ManifestProperties xmlns="http://ns.osta.org/manifest/1.0/">
      <ProfileBag>
        <Profile>http://ns.osta.org/mpv/basic/1.0/</Profile>
      </ProfileBag>
    </ManifestProperties>
    <Properties xmlns="http://purl.org/dc/elements/1.1/">
      <date>2005-08-18T11:00:00+09:00</date>
      <description>PASS 1.1 Golden Disc v110-06 RDS</description>
      <title>Sample PASS Volume RDS</title>
    </Properties>
  </nmf:Metadata>
  <!-- PASS general info -->
  <mpv:Metadata>
    <pass:generalInfo>
      <pass:mediumID>5EEDD030-4596-4B7A-9FA3-839AE8889B06</pass:mediumID>
      <pass:originator>My PASS Editor v1.1</pass:originator>
      <pass:specificationVersion>1.10</pass:specificationVersion>
      <pass:structure>RDS</pass:structure>
    </pass:generalInfo>
  </mpv:Metadata>
  <!-- Asset List -->
  <mpv:AssetList>
    <mpv:ManifestLink mpv:id="ID0001">
      <mpv:LastURL>ASSETS/AR20040812_U9CZFSAO/AS20040812_U9CZFSAO.PVM</mpv:LastURL>
      <mpv:Metadata>
        <pass:albumInfo>
          <pass:albumType>DEFAULT</pass:albumType>
        </pass:albumInfo>
      </mpv:Metadata>
      <nmf:Metadata>
        <dc:Properties>
          <dc:title>Default Album No.1</dc:title>
        </dc:Properties>
      </nmf:Metadata>
      <mpv:Rendition mpv:renditionUsage="thumbnail">
        <mpv:StillRef mpv:idRef="IDTH0001"/>
      </mpv:Rendition>
    </mpv:ManifestLink>
    <mpv:ManifestLink mpv:id="ID0002">
      <mpv:LastURL>ASSETS/AR20050405_288C1V5S/AS20050405_288C1V5S.PVM</mpv:LastURL>
      <mpv:Metadata>
        <pass:albumInfo>
          <pass:albumType>DEFAULT</pass:albumType>
        </pass:albumInfo>
      </mpv:Metadata>
      <nmf:Metadata>
        <dc:Properties>
          <dc:title>Default Album No.2</dc:title>
        </dc:Properties>
      </nmf:Metadata>
      <mpv:Rendition mpv:renditionUsage="thumbnail">
```

```

    <mpv:StillRef mpv:idRef="IDTH0002"/>
  </mpv:Rendition>
</mpv:ManifestLink>
<mpv:ManifestLink mpv:id="ID0003">
  <mpv:LastURL>ASSETS/AR20040807_USV30074/AS20040807_USV30074.PVM</mpv:LastURL>
  <mpv:Metadata>
    <pass:albumInfo>
      <pass:albumType>DEFAULT</pass:albumType>
    </pass:albumInfo>
  </mpv:Metadata>
  <nmf:Metadata>
    <dc:Properties>
      <dc:title>Default Album No.3</dc:title>
    </dc:Properties>
  </nmf:Metadata>
  <mpv:Rendition mpv:renditionUsage="thumbnail">
    <mpv:StillRef mpv:idRef="IDTH0003"/>
  </mpv:Rendition>
</mpv:ManifestLink>
<mpv:ManifestLink mpv:id="ID0004">
  <mpv:LastURL>ALBUMS/PL20050408_10000001.PVM</mpv:LastURL>
  <mpv:Metadata>
    <pass:albumInfo>
      <pass:albumType>CUSTOM</pass:albumType>
    </pass:albumInfo>
  </mpv:Metadata>
  <nmf:Metadata>
    <dc:Properties>
      <dc:title>Custom Album</dc:title>
    </dc:Properties>
  </nmf:Metadata>
  <mpv:Rendition mpv:renditionUsage="thumbnail">
    <mpv:StillRef mpv:idRef="IDTH0004"/>
  </mpv:Rendition>
</mpv:ManifestLink>
<mpv:Still mpv:id="IDTH0001">
  <mpv:LastURL>ASSETS/SHARED/SH20040726_VVR9FY8A.JPG</mpv:LastURL>
</mpv:Still>
<mpv:Still mpv:id="IDTH0002">
  <mpv:LastURL>ASSETS/SHARED/SH20050817_A38DHF6T.JPG</mpv:LastURL>
</mpv:Still>
<mpv:Still mpv:id="IDTH0003">
  <mpv:LastURL>ASSETS/SHARED/SH20040807_MCCVUAKH.JPG</mpv:LastURL>
</mpv:Still>
<mpv:Still mpv:id="IDTH0004">
  <mpv:LastURL>ASSETS/SHARED/SH20050817_A38DHF6U.JPG</mpv:LastURL>
</mpv:Still>
</mpv:AssetList>
</file:Manifest>

```

Example: Default album manifest file

```

<?xml version="1.0" encoding="UTF-8"?>
<file:Manifest xmlns:mpvp="http://ns.osta.org/mpv/presentation/1.0/" xmlns:nmf="http://ns.osta.org/nmf/1.0/"
xmlns:pass="http://ns.pass-spec.org/PASS/1.1/" xmlns:dc="http://purl.org/dc/elements/1.1/"
xmlns:file="http://ns.osta.org/manifest/1.0/" xmlns:mpv="http://ns.osta.org/mpv/1.0/">
  <nmf:Metadata>
    <ManifestProperties xmlns="http://ns.osta.org/manifest/1.0/">
      <ProfileBag>
        <Profile>http://ns.osta.org/mpv/basic/1.0/</Profile>
        <Profile>http://ns.osta.org/mpv/presentation/1.0/</Profile>
      </ProfileBag>
    </ManifestProperties>
  </nmf:Metadata>
  <!-- Album -->

```

```

<mpvp:Album mpv:id="ID0001">
  <!-- PASS Album info -->
  <mpv:Metadata>
    <pass:albumInfo>
      <pass:albumFavorite>3</pass:albumFavorite>
    </pass:albumInfo>
  </mpv:Metadata>
  <!-- NMF metadata -->
  <nmf:Metadata>
    <Properties xmlns="http://purl.org/dc/elements/1.1/">
      <date>2005-04-08T11:00:00+09:00</date>
      <description>Default album for AR20040807_USV30074</description>
      <title>Default Album No.3</title>
    </Properties>
  </nmf:Metadata>
  <!-- BGM -->
  <mpvp:Background>
    <mpv:AudioRef mpv:idRef="ASID1001"/>
    <mpv:AudioRef mpv:idRef="ASID1002"/>
  </mpvp:Background>
  <!-- Foreground -->
  <mpvp:Foreground>
    <!-- Default control for foreground items. -->
    <nmf:Metadata>
      <ControlProperties xmlns="http://ns.osta.org/mpv/presentation/1.0/Control/">
        <BackgroundColor>Blue</BackgroundColor>
        <Dur>3.0</Dur>
        <Fit>slice</Fit>
        <TransitionFilter>
          <TransitionFilterProperties xmlns="http://ns.osta.org/mpv/presentation/1.0/TransitionFilter/">
            <Type>barWipe</Type>
          </TransitionFilterProperties>
        </TransitionFilter>
      </ControlProperties>
    </nmf:Metadata>
    <!-- still -->
    <mpv:StillRef mpv:idRef="ASID0001">
      <nmf:Metadata>
        <!-- Control properties for asset -->
        <ControlProperties xmlns="http://ns.osta.org/mpv/presentation/1.0/Control/">
          <Fit>meet</Fit>
          <TransitionFilter>
            <TransitionFilterProperties xmlns="http://ns.osta.org/mpv/presentation/1.0/TransitionFilter/">
              <Type>irisWipe</Type>
            </TransitionFilterProperties>
          </TransitionFilter>
        </ControlProperties>
      </nmf:Metadata>
    </mpv:StillRef>
    <!-- still -->
    <mpv:StillRef mpv:idRef="ASID0002">
      <nmf:Metadata>
        <!-- Control properties for asset -->
        <ControlProperties xmlns="http://ns.osta.org/mpv/presentation/1.0/Control/">
          <Fit>meet</Fit>
          <TransitionFilter>
            <TransitionFilterProperties xmlns="http://ns.osta.org/mpv/presentation/1.0/TransitionFilter/">
              <Type>clockWipe</Type>
            </TransitionFilterProperties>
          </TransitionFilter>
        </ControlProperties>
      </nmf:Metadata>
    </mpv:StillRef>
  </mpvp:Foreground>
</mpvp:Album>
<!-- Asset List -->
<mpv:AssetList>

```

```

<!-- PASS AssetList info -->
<mpv:Metadata>
  <pass:assetlistInfo>
    <pass:assetlistID>AL000003</pass:assetlistID>
  </pass:assetlistInfo>
</mpv:Metadata>
<!-- Still 0001-->
<mpv:Still mpv:id="ASID0001">
  <mpv:LastURL>OR20040807_MCCVUAKG.JPG</mpv:LastURL>
  <!-- DIG35 metadata -->
  <mpv:Metadata mpv:schemaURI="http://www.digitalimaging.org/dig35/1.1/xml">
    <METADATA xmlns="http://www.digitalimaging.org/dig35/1.1/xml">
      <BASIC_IMAGE_PARAM>
        <BASIC_IMAGE_INFO>
          <IMAGE_SIZE>
            <WIDTH>1840</WIDTH>
            <HEIGHT>1232</HEIGHT>
          </IMAGE_SIZE>
        </BASIC_IMAGE_INFO>
        <COLOR_INFO>
          <COLORSPACE>
            <PROFILE_NAME>sRGB</PROFILE_NAME>
          </COLORSPACE>
        </COLOR_INFO>
      </BASIC_IMAGE_PARAM>
      <IMAGE_CREATION>
        <CAMERA_CAPTURE>
          <CAMERA_SETTINGS>
            <SUBJECT_POSITION>
              <RECT>
                <X>0.5</X>
                <Y>0.5</Y>
                <WIDTH>0.1</WIDTH>
                <HEIGHT>0.1</HEIGHT>
              </RECT>
            </SUBJECT_POSITION>
            <CAMERA_LOCATION>
              <COMMENT>CAMERA_LOCATION/COMMENT for 0001</COMMENT>
            </CAMERA_LOCATION>
            <ORIENTATION>
              <ROLL>0</ROLL>
            </ORIENTATION>
          </CAMERA_SETTINGS>
        </CAMERA_CAPTURE>
      </IMAGE_CREATION>
      <CONTENT_DESCRIPTION>
        <LOCATION>
          <ADDRESS>
            <COUNTRY>Japan</COUNTRY>
          </ADDRESS>
        </LOCATION>
        <PERSON ID="0001">
          <PERSON_NAME>
            <NAME_COMP TYPE="Given">0001givenName</NAME_COMP>
            <NAME_COMP TYPE="Family">0001familyName</NAME_COMP>
          </PERSON_NAME>
          <COMMENT>PERSON1/COMMENT for 0001</COMMENT>
          <POSITION>
            <RECT>
              <X>0.3</X>
              <Y>0.3</Y>
              <WIDTH>0.1</WIDTH>
              <HEIGHT>0.1</HEIGHT>
            </RECT>
          </POSITION>
        </PERSON>
      </CONTENT_DESCRIPTION>
    </METADATA>
  </mpv:Metadata>
</mpv:Still>
</mpv:Still mpv:id="0002">

```

```

<PERSON_NAME>
  <NAME_COMP TYPE="Given">0001givenName2</NAME_COMP>
  <NAME_COMP TYPE="Family">0001familyName2</NAME_COMP>
</PERSON_NAME>
<COMMENT>PERSON2/COMMENT for 0001</COMMENT>
<POSITION>
  <RECT>
    <X>0.5</X>
    <Y>0.3</Y>
    <WIDTH>0.1</WIDTH>
    <HEIGHT>0.1</HEIGHT>
  </RECT>
</POSITION>
</PERSON>
<THING ID="0001">
  <NAME>Present</NAME>
  <COMMENT>THING/COMMENT for 0001</COMMENT>
  <POSITION>
    <RECT>
      <X>0.35</X>
      <Y>0.3</Y>
      <WIDTH>0.05</WIDTH>
      <HEIGHT>0.05</HEIGHT>
    </RECT>
  </POSITION>
</THING>
<EVENT ID="0001">
  <EVENT_TYPE>Birthday</EVENT_TYPE>
  <DESCRIPTION>EVENT/DESCRIPTION for 0001</DESCRIPTION>
  <COMMENT>EVENT/COMMENT for 0001</COMMENT>
</EVENT>
</CONTENT_DESCRIPTION>
</METADATA>
</mpv:Metadata>
<!-- PASS Asset info -->
<mpv:Metadata>
  <pass:assetInfo>
    <pass:assetFavorite>2</pass:assetFavorite>
    <pass:assetID>AS000001</pass:assetID>
  </pass:assetInfo>
</mpv:Metadata>
<!-- NMF metadata -->
<nmf:Metadata>
  <Properties xmlns="http://purl.org/dc/elements/1.1/">
    <creator>0001creator</creator>
    <date>2004-08-07T19:20:01</date>
    <description>description for 0001</description>
    <title>0001title</title>
  </Properties>
</nmf:Metadata>
<!-- Screen rendition -->
<mpv:Rendition mpv:renditionUsage="screen">
  <mpv:StillRef mpv:idRef="ASIDS0001"/>
</mpv:Rendition>
</mpv:Still>
<!-- Still 0001 screen rendition asset-->
<mpv:Still mpv:id="ASIDS0001">
  <mpv:LastURL>DISP_SCR/TT20040807_MCCVUAKG.JPG</mpv:LastURL>
</mpv:Still>
<!-- Still 0002-->
<mpv:Still mpv:id="ASID0002">
  <mpv:LastURL>OR20040807_MCCVUAKH.JPG</mpv:LastURL>
<!-- DIG35 metadata -->
<mpv:Metadata mpv:schemaURI="http://www.digitalimaging.org/dig35/1.1/xml">
  <METADATA xmlns="http://www.digitalimaging.org/dig35/1.1/xml">
    <BASIC_IMAGE_PARAM>
    <BASIC_IMAGE_INFO>

```

```

    <IMAGE_SIZE>
      <WIDTH>1840</WIDTH>
      <HEIGHT>1232</HEIGHT>
    </IMAGE_SIZE>
  </BASIC_IMAGE_INFO>
  <COLOR_INFO>
    <COLORSPACE>
      <PROFILE_NAME>sRGB</PROFILE_NAME>
    </COLORSPACE>
  </COLOR_INFO>
</BASIC_IMAGE_PARAM>
</METADATA>
</mpv:Metadata>
<!-- PASS Asset info -->
<mpv:Metadata>
  <pass:assetInfo>
    <pass:assetFavorite>2</pass:assetFavorite>
    <pass:assetID>AS000002</pass:assetID>
  </pass:assetInfo>
</mpv:Metadata>
<!-- NMF metadata -->
<nmf:Metadata>
  <Properties xmlns="http://purl.org/dc/elements/1.1/">
    <creator>0002creator</creator>
    <date>2004-08-07T19:19:58</date>
    <description>description for 0002</description>
    <title>0002title</title>
  </Properties>
</nmf:Metadata>
<!-- Screen rendition -->
<mpv:Rendition mpv:renditionUsage="screen">
  <mpv:StillRef mpv:idRef="ASIDS0002"/>
</mpv:Rendition>
</mpv:Still>
<!-- Still 0002 screen rendition asset-->
<mpv:Still mpv:id="ASIDS0002">
  <mpv:LastURL>DISP_SCR/TT20040807_MCCVUAKH.JPG</mpv:LastURL>
</mpv:Still>
<!-- Audio 0001 -->
<mpv:Audio mpv:id="ASID1001">
  <mpv:LastURL>../SHARED/SH20040329_Z146KV0G.WAV</mpv:LastURL>
<!-- PASS Asset info -->
<mpv:Metadata>
  <pass:assetInfo>
    <pass:assetFavorite>1</pass:assetFavorite>
    <pass:assetID>AS001001</pass:assetID>
    <pass:assetType>SHARED</pass:assetType>
  </pass:assetInfo>
</mpv:Metadata>
<!-- NMF metadata -->
<nmf:Metadata>
  <Properties xmlns="http://purl.org/dc/elements/1.1/">
    <creator>1001creator</creator>
    <date>2004-03-29T11:56:40</date>
    <description>description for 1001</description>
    <title>1001title</title>
  </Properties>
</nmf:Metadata>
</mpv:Audio>
<!-- Audio 0002 -->
<mpv:Audio mpv:id="ASID1002">
  <mpv:LastURL>../SHARED/SH20050405_EWZMSFSL.MP3</mpv:LastURL>
<!-- PASS Asset info -->
<mpv:Metadata>
  <pass:assetInfo>
    <pass:assetFavorite>1</pass:assetFavorite>
    <pass:assetID>AS001002</pass:assetID>

```

```

    <pass:assetType>SHARED</pass:assetType>
  </pass:assetInfo>
</mpv:Metadata>
<!-- NMF metadata -->
<nmf:Metadata>
  <Properties xmlns="http://purl.org/dc/elements/1.1/">
    <creator>1002creator</creator>
    <date>2004-04-05T11:56:40</date>
    <description>description for 1002</description>
    <title>1002title</title>
  </Properties>
</nmf:Metadata>
</mpv:Audio>
</mpv:AssetList>
</file:Manifest>

```

Example: Custom album manifest file

```

<?xml version="1.0" encoding="UTF-8"?>
<file:Manifest xmlns:mpvp="http://ns.osta.org/mpv/presentation/1.0/" xmlns:nmf="http://ns.osta.org/nmf/1.0/"
xmlns:pass="http://ns.pass-spec.org/PASS/1.1/" xmlns:dc="http://purl.org/dc/elements/1.1/"
xmlns:file="http://ns.osta.org/manifest/1.0/" xmlns:mpv="http://ns.osta.org/mpv/1.0/">
  <nmf:Metadata>
    <ManifestProperties xmlns="http://ns.osta.org/manifest/1.0/">
      <ProfileBag>
        <Profile>http://ns.osta.org/mpv/basic/1.0/</Profile>
        <Profile>http://ns.osta.org/mpv/presentation/1.0/</Profile>
      </ProfileBag>
    </ManifestProperties>
  </nmf:Metadata>
  <!-- Album -->
  <mpvp:Album mpv:id="ID0001">
    <!-- PASS Album info -->
    <mpv:Metadata>
      <pass:albumInfo>
        <pass:albumFavorite>5</pass:albumFavorite>
      </pass:albumInfo>
    </mpv:Metadata>
    <!-- NMF metadata -->
    <nmf:Metadata>
      <Properties xmlns="http://purl.org/dc/elements/1.1/">
        <date>2005-04-08T11:00:00+09:00</date>
        <description>My custom album</description>
        <title>Custom album</title>
      </Properties>
    </nmf:Metadata>
    <!-- BGM -->
    <mpvp:Background>
      <mpv:AudioRef mpv:idRef="ASID0001"/>
    </mpvp:Background>
    <!-- Foreground -->
    <mpvp:Foreground>
      <!-- Default control for foreground items. -->
      <nmf:Metadata>
        <ControlProperties xmlns="http://ns.osta.org/mpv/presentation/1.0/Control/">
          <BackgroundColor>Black</BackgroundColor>
          <Dur>3.0</Dur>
          <Fit>meet</Fit>
          <TransitionFilter>
            <TransitionFilterProperties xmlns="http://ns.osta.org/mpv/presentation/1.0/TransitionFilter/">
              <Type>barWipe</Type>
            </TransitionFilterProperties>
          </TransitionFilter>
        </ControlProperties>
      </nmf:Metadata>
      <mpv:StillRef mpv:idRef="ASID0001"/>
    </mpvp:Foreground>
  </mpvp:Album>

```



```

<mpv:StillRef mpv:idRef="ASID0002"/>
<mpv:StillRef mpv:idRef="ASID0010">
  <nmf:Metadata>
    <!-- Control properties for asset -->
    <ControlProperties xmlns="http://ns.osta.org/mpv/presentation/1.0/Control/">
      <Fit>meet</Fit>
      <TransitionFilter>
        <TransitionFilterProperties xmlns="http://ns.osta.org/mpv/presentation/1.0/TransitionFilter/">
          <Type>clockWipe</Type>
        </TransitionFilterProperties>
      </TransitionFilter>
    </ControlProperties>
  </nmf:Metadata>
</mpv:StillRef>
<!-- still multishot sequence represented on default control -->
<mpv:StillMultishotSequenceRef mpv:idRef="ASID0019"/>
<mpv:VideoRef mpv:idRef="ASID0012"/>
<mpv:VideoRef mpv:idRef="ASID0013"/>
</mpv:Foreground>
</mpvp:Album>
<!-- Asset List -->
<mpv:AssetList>
  <!-- PASS AssetList info -->
  <mpv:Metadata>
    <pass:assetlistInfo>
      <pass:assetlistID>AL000004</pass:assetlistID>
    </pass:assetlistInfo>
  </mpv:Metadata>
  <!-- Video 0012-->
  <mpv:Video mpv:id="ASID0012">
    <mpv:LastURL>../ASSETS/AR20050405_288C1V5S/OR20050404_RLQXJ01W.MPG</mpv:LastURL>
    <!-- PASS Asset info -->
    <mpv:Metadata>
      <pass:assetInfo>
        <pass:assetFavorite>4</pass:assetFavorite>
        <pass:assetID>AS000012</pass:assetID>
      </pass:assetInfo>
    </mpv:Metadata>
    <!-- NMF metadata -->
    <nmf:Metadata>
      <Properties xmlns="http://purl.org/dc/elements/1.1/">
        <creator>0012creator</creator>
        <date>2005-04-04T11:00:00</date>
        <description>description for 0012</description>
        <title>0012title</title>
      </Properties>
    </nmf:Metadata>
  </mpv:Video>
  <!-- Video 0013-->
  <mpv:Video mpv:id="ASID0013">
    <mpv:LastURL>../ASSETS/AR20050405_288C1V5S/OR20050404_RLQXJ01X.MPG</mpv:LastURL>
    <!-- PASS Asset info -->
    <mpv:Metadata>
      <pass:assetInfo>
        <pass:assetFavorite>4</pass:assetFavorite>
        <pass:assetID>AS000013</pass:assetID>
      </pass:assetInfo>
    </mpv:Metadata>
    <!-- NMF metadata -->
    <nmf:Metadata>
      <Properties xmlns="http://purl.org/dc/elements/1.1/">
        <creator>0013creator</creator>
        <date>2005-04-04T11:00:00</date>
        <description>description for 0013</description>
        <title>0013title</title>
      </Properties>
    </nmf:Metadata>
  </mpv:Video>
</mpv:AssetList>

```

```

</mpv:Video>
<!-- Still 0004-->
<mpv:Still mpv:id="ASID0004">
  <mpv:LastURL>../ASSETS/AR20050405_288C1V5S/OR20050403_VVR9FY83.JPG</mpv:LastURL>
  <!-- DIG35 metadata -->
  <mpv:Metadata mpv:schemaURI="http://www.digitalimaging.org/dig35/1.1/xml">
    <METADATA xmlns="http://www.digitalimaging.org/dig35/1.1/xml">
      <BASIC_IMAGE_PARAM>
        <BASIC_IMAGE_INFO>
          <IMAGE_SIZE>
            <WIDTH>1600</WIDTH>
            <HEIGHT>1200</HEIGHT>
          </IMAGE_SIZE>
        </BASIC_IMAGE_INFO>
        <COLOR_INFO>
          <COLORSPACE>
            <PROFILE_NAME>sRGB</PROFILE_NAME>
          </COLORSPACE>
        </COLOR_INFO>
      </BASIC_IMAGE_PARAM>
    </METADATA>
  </mpv:Metadata>
  <!-- PASS Asset info -->
  <mpv:Metadata>
    <pass:assetInfo>
      <pass:assetFavorite>4</pass:assetFavorite>
      <pass:assetID>AS000004</pass:assetID>
    </pass:assetInfo>
  </mpv:Metadata>
  <!-- NMF metadata -->
  <nmf:Metadata>
    <Properties xmlns="http://purl.org/dc/elements/1.1/">
      <creator>0004creator</creator>
      <date>2005-04-03T21:15:35</date>
      <description>description for 0004</description>
      <title>0004title</title>
    </Properties>
  </nmf:Metadata>
  <!-- Screen rendition -->
  <mpv:Rendition mpv:renditionUsage="screen">
    <mpv:StillRef mpv:idRef="ASIDS0004"/>
  </mpv:Rendition>
</mpv:Still>
<!-- Still 0004 screen rendition asset-->
<mpv:Still mpv:id="ASIDS0004">
  <mpv:LastURL>../ASSETS/AR20050405_288C1V5S/DISP_SCR/TT20050403_VVR9FY83.JPG</mpv:LastURL>
</mpv:Still>
<!-- Still 0005-->
<mpv:Still mpv:id="ASID0005">
  <mpv:LastURL>../ASSETS/AR20050405_288C1V5S/OR20050403_VVR9FY84.JPG</mpv:LastURL>
  <!-- DIG35 metadata -->
  <mpv:Metadata mpv:schemaURI="http://www.digitalimaging.org/dig35/1.1/xml">
    <METADATA xmlns="http://www.digitalimaging.org/dig35/1.1/xml">
      <BASIC_IMAGE_PARAM>
        <BASIC_IMAGE_INFO>
          <IMAGE_SIZE>
            <WIDTH>1600</WIDTH>
            <HEIGHT>1200</HEIGHT>
          </IMAGE_SIZE>
        </BASIC_IMAGE_INFO>
        <COLOR_INFO>
          <COLORSPACE>
            <PROFILE_NAME>sRGB</PROFILE_NAME>
          </COLORSPACE>
        </COLOR_INFO>
      </BASIC_IMAGE_PARAM>
    </METADATA>

```

```

</mpv:Metadata>
<!-- PASS Asset info -->
<mpv:Metadata>
  <pass:assetInfo>
    <pass:assetFavorite>4</pass:assetFavorite>
    <pass:assetID>AS000005</pass:assetID>
  </pass:assetInfo>
</mpv:Metadata>
<!-- NMF metadata -->
<nmf:Metadata>
  <Properties xmlns="http://purl.org/dc/elements/1.1/">
    <creator>0005creator</creator>
    <date>2005-04-03T21:15:37</date>
    <description>description for 0005</description>
    <title>0005title</title>
  </Properties>
</nmf:Metadata>
<!-- Screen rendition -->
<mpv:Rendition mpv:renditionUsage="screen">
  <mpv:StillRef mpv:idRef="ASIDS0005"/>
</mpv:Rendition>
</mpv:Still>
<!-- Still 0005 screen rendition asset-->
<mpv:Still mpv:id="ASIDS0005">
  <mpv:LastURL>../ASSETS/AR20050405_288C1V5S/DISP_SCR/TT20050403_VVR9FY84.JPG</mpv:LastURL>
</mpv:Still>
<!-- Still 0006-->
<mpv:Still mpv:id="ASID0006">
  <mpv:LastURL>../ASSETS/AR20050405_288C1V5S/OR20050403_VVR9FY85.JPG</mpv:LastURL>
<!-- DIG35 metadata -->
<mpv:Metadata mpv:schemaURI="http://www.digitalimaging.org/dig35/1.1/xml">
  <METADATA xmlns="http://www.digitalimaging.org/dig35/1.1/xml">
    <BASIC_IMAGE_PARAM>
      <BASIC_IMAGE_INFO>
        <IMAGE_SIZE>
          <WIDTH>1600</WIDTH>
          <HEIGHT>1200</HEIGHT>
        </IMAGE_SIZE>
      </BASIC_IMAGE_INFO>
      <COLOR_INFO>
        <COLORSPACE>
          <PROFILE_NAME>sRGB</PROFILE_NAME>
        </COLORSPACE>
      </COLOR_INFO>
    </BASIC_IMAGE_PARAM>
  </METADATA>
</mpv:Metadata>
<!-- PASS Asset info -->
<mpv:Metadata>
  <pass:assetInfo>
    <pass:assetFavorite>4</pass:assetFavorite>
    <pass:assetID>AS000006</pass:assetID>
  </pass:assetInfo>
</mpv:Metadata>
<!-- NMF metadata -->
<nmf:Metadata>
  <Properties xmlns="http://purl.org/dc/elements/1.1/">
    <creator>0006creator</creator>
    <date>2005-04-03T21:15:39</date>
    <description>description for 0006</description>
    <title>0006title</title>
  </Properties>
</nmf:Metadata>
<!-- Screen rendition -->
<mpv:Rendition mpv:renditionUsage="screen">
  <mpv:StillRef mpv:idRef="ASIDS0006"/>
</mpv:Rendition>

```

```

</mpv:Still>
<!-- Still 0006 screen rendition asset-->
<mpv:Still mpv:id="ASIDS0006">
  <mpv:LastURL>../ASSETS/AR20050405_288C1V5S/DISP_SCR/TT20050403_VVR9FY85.JPG</mpv:LastURL>
</mpv:Still>
<!-- Still 0007-->
<mpv:Still mpv:id="ASID0007">
  <mpv:LastURL>../ASSETS/AR20050405_288C1V5S/OR20050403_VVR9FY86.JPG</mpv:LastURL>
  <!-- DIG35 metadata -->
  <mpv:Metadata mpv:schemaURI="http://www.digitalimaging.org/dig35/1.1/xml">
    <METADATA xmlns="http://www.digitalimaging.org/dig35/1.1/xml">
      <BASIC_IMAGE_PARAM>
        <BASIC_IMAGE_INFO>
          <IMAGE_SIZE>
            <WIDTH>1600</WIDTH>
            <HEIGHT>1200</HEIGHT>
          </IMAGE_SIZE>
        </BASIC_IMAGE_INFO>
        <COLOR_INFO>
          <COLORSPACE>
            <PROFILE_NAME>sRGB</PROFILE_NAME>
          </COLORSPACE>
        </COLOR_INFO>
      </BASIC_IMAGE_PARAM>
    </METADATA>
  </mpv:Metadata>
  <!-- PASS Asset info -->
  <mpv:Metadata>
    <pass:assetInfo>
      <pass:assetFavorite>4</pass:assetFavorite>
      <pass:assetID>AS000007</pass:assetID>
    </pass:assetInfo>
  </mpv:Metadata>
  <!-- NMF metadata -->
  <nmf:Metadata>
    <Properties xmlns="http://purl.org/dc/elements/1.1/">
      <creator>0007creator</creator>
      <date>2005-04-03T21:15:41</date>
      <description>description for 0007</description>
      <title>0007title</title>
    </Properties>
  </nmf:Metadata>
  <!-- Screen rendition -->
  <mpv:Rendition mpv:renditionUsage="screen">
    <mpv:StillRef mpv:idRef="ASIDS0007"/>
  </mpv:Rendition>
</mpv:Still>
<!-- Still 0007 screen rendition asset-->
<mpv:Still mpv:id="ASIDS0007">
  <mpv:LastURL>../ASSETS/AR20050405_288C1V5S/DISP_SCR/TT20050403_VVR9FY86.JPG</mpv:LastURL>
</mpv:Still>
<!-- StillMultishotSequence asset 0019 -->
<mpv:StillMultishotSequence mpv:id="ASID0019">
  <!-- PASS Asset info -->
  <mpv:Metadata>
    <pass:assetInfo>
      <pass:assetFavorite>4</pass:assetFavorite>
      <pass:assetID>AS000019</pass:assetID>
    </pass:assetInfo>
  </mpv:Metadata>
  <!-- NMF metadata -->
  <nmf:Metadata>
    <Properties xmlns="http://purl.org/dc/elements/1.1/">
      <creator>0019creator</creator>
      <date>2005-04-13T11:00:00</date>
      <description>description for 0019</description>
      <title>0019title</title>
    </Properties>
  </nmf:Metadata>

```

```

</Properties>
</nmf:Metadata>
<mpv:StillRef mpv:idRef="ASID0004"/>
<mpv:StillRef mpv:idRef="ASID0005"/>
<mpv:StillRef mpv:idRef="ASID0006"/>
<mpv:StillRef mpv:idRef="ASID0007"/>
<!-- Screen rendition -->
<mpv:Rendition mpv:renditionUsage="screen">
  <mpv:StillRef mpv:idRef="ASIDS0004"/>
</mpv:Rendition>
</mpv:StillMultishotSequence>
<mpv:Still mpv:id="ASID0001">
  <mpv:LastURL>../ASSETS/AR20040807_USV30074/OR20040807_MCCVUAKG.JPG</mpv:LastURL>
  <!-- DIG35 metadata -->
  <mpv:Metadata mpv:schemaURI="http://www.digitalimaging.org/dig35/1.1/xml">
    <METADATA xmlns="http://www.digitalimaging.org/dig35/1.1/xml">
      <BASIC_IMAGE_PARAM>
        <BASIC_IMAGE_INFO>
          <IMAGE_SIZE>
            <WIDTH>1840</WIDTH>
            <HEIGHT>1232</HEIGHT>
          </IMAGE_SIZE>
        </BASIC_IMAGE_INFO>
        <COLOR_INFO>
          <COLORSPACE>
            <PROFILE_NAME>sRGB</PROFILE_NAME>
          </COLORSPACE>
        </COLOR_INFO>
      </BASIC_IMAGE_PARAM>
    </METADATA>
  </mpv:Metadata>
  <!-- PASS Asset info -->
  <mpv:Metadata>
    <pass:assetInfo>
      <pass:assetFavorite>2</pass:assetFavorite>
      <pass:assetID>AS000001</pass:assetID>
    </pass:assetInfo>
  </mpv:Metadata>
  <!-- NMF metadata -->
  <nmf:Metadata>
    <Properties xmlns="http://purl.org/dc/elements/1.1/">
      <creator>0001creator</creator>
      <date>2004-08-07T19:20:01</date>
      <description>description for 0001</description>
      <title>0001title</title>
    </Properties>
  </nmf:Metadata>
  <!-- Screen rendition -->
  <mpv:Rendition mpv:renditionUsage="screen">
    <mpv:StillRef mpv:idRef="ASIDS0001"/>
  </mpv:Rendition>
</mpv:Still>
<!-- Still 0001 screen rendition asset-->
<mpv:Still mpv:id="ASIDS0001">
  <mpv:LastURL>../ASSETS/AR20040807_USV30074/DISP_SCR/TT20040807_MCCVUAKG.JPG</mpv:LastURL>
</mpv:Still>
<!-- Still 0002-->
<mpv:Still mpv:id="ASID0002">
  <mpv:LastURL>../ASSETS/AR20040807_USV30074/OR20040807_MCCVUAKH.JPG</mpv:LastURL>
  <!-- DIG35 metadata -->
  <mpv:Metadata mpv:schemaURI="http://www.digitalimaging.org/dig35/1.1/xml">
    <METADATA xmlns="http://www.digitalimaging.org/dig35/1.1/xml">
      <BASIC_IMAGE_PARAM>
        <BASIC_IMAGE_INFO>
          <IMAGE_SIZE>
            <WIDTH>1840</WIDTH>
            <HEIGHT>1232</HEIGHT>

```

```

    </IMAGE_SIZE>
  </BASIC_IMAGE_INFO>
  <COLOR_INFO>
    <COLORSPACE>
      <PROFILE_NAME>sRGB</PROFILE_NAME>
    </COLORSPACE>
  </COLOR_INFO>
</BASIC_IMAGE_PARAM>
</METADATA>
</mpv:Metadata>
<!-- PASS Asset info -->
<mpv:Metadata>
  <pass:assetInfo>
    <pass:assetFavorite>2</pass:assetFavorite>
    <pass:assetID>AS000002</pass:assetID>
  </pass:assetInfo>
</mpv:Metadata>
<!-- NMF metadata -->
<nmf:Metadata>
  <Properties xmlns="http://purl.org/dc/elements/1.1/">
    <creator>0002creator</creator>
    <date>2004-08-07T19:19:58</date>
    <description>description for 0002</description>
    <title>0002title</title>
  </Properties>
</nmf:Metadata>
<!-- Screen rendition -->
<mpv:Rendition mpv:renditionUsage="screen">
  <mpv:StillRef mpv:idRef="ASIDS0002"/>
</mpv:Rendition>
</mpv:Still>
<!-- Still 0002 screen rendition asset-->
<mpv:Still mpv:id="ASIDS0002">
  <mpv:LastURL>../ASSETS/AR20040807_USV30074/DISP_SCR/TT20040807_MCCVUAKH.JPG</mpv:LastURL>
</mpv:Still>
<!-- Still 0010-->
<mpv:Still mpv:id="ASID0010">
  <mpv:LastURL>../ASSETS/AR20040812_U9CZFSAO/OR20040726_VVR9FY80.JPG</mpv:LastURL>
<!-- DIG35 metadata -->
<mpv:Metadata mpv:schemaURI="http://www.digitalimaging.org/dig35/1.1/xml">
  <METADATA xmlns="http://www.digitalimaging.org/dig35/1.1/xml">
    <BASIC_IMAGE_PARAM>
      <BASIC_IMAGE_INFO>
        <IMAGE_SIZE>
          <WIDTH>2592</WIDTH>
          <HEIGHT>1944</HEIGHT>
        </IMAGE_SIZE>
      </BASIC_IMAGE_INFO>
      <COLOR_INFO>
        <COLORSPACE>
          <PROFILE_NAME>sRGB</PROFILE_NAME>
        </COLORSPACE>
      </COLOR_INFO>
    </BASIC_IMAGE_PARAM>
  </METADATA>
</mpv:Metadata>
<!-- PASS Asset info -->
<mpv:Metadata>
  <pass:assetInfo>
    <pass:assetFavorite>2</pass:assetFavorite>
    <pass:assetID>AS000010</pass:assetID>
  </pass:assetInfo>
</mpv:Metadata>
<!-- NMF metadata -->
<nmf:Metadata>
  <Properties xmlns="http://purl.org/dc/elements/1.1/">
    <creator>0001creator</creator>

```

```

<date>2004-07-26T11:34:25</date>
<description>description for 0001</description>
<title>Title 0001</title>
</Properties>
</nmf:Metadata>
<!-- Screen rendition -->
<mpv:Rendition mpv:renditionUsage="screen">
  <mpv:StillRef mpv:idRef="ASIDS0010"/>
</mpv:Rendition>
<mpv:Rendition mpv:renditionUsage="thumbnail">
  <mpv:StillRef mpv:idRef="ASIDT0010"/>
</mpv:Rendition>
</mpv:Still>
<!-- Still 0001 screen rendition asset-->
<mpv:Still mpv:id="ASIDS0010">
  <mpv:LastURL>../ASSETS/AR20040812_U9CZFSAO/DISP_SCR/TT20040726_VVR9FY80.JPG</mpv:LastURL>
</mpv:Still>
<!-- Still 0001 thumbnail rendition asset-->
<mpv:Still mpv:id="ASIDT0010">
  <mpv:LastURL>../ASSETS/AR20040812_U9CZFSAO/DISP_THB/TT20040726_VVR9FY80.JPG</mpv:LastURL>
</mpv:Still>
<!-- Audio 0001 -->
<mpv:Audio mpv:id="ASID1001">
  <mpv:LastURL>../ASSETS/SHARED/SH20040329_Z146KV0G.WAV</mpv:LastURL>
<!-- PASS Asset info -->
<mpv:Metadata>
  <pass:assetInfo>
    <pass:assetFavorite>1</pass:assetFavorite>
    <pass:assetID>AS001001</pass:assetID>
    <pass:assetType>SHARED</pass:assetType>
  </pass:assetInfo>
</mpv:Metadata>
<!-- NMF metadata -->
<nmf:Metadata>
  <Properties xmlns="http://purl.org/dc/elements/1.1/">
    <creator>1001creator</creator>
    <date>2004-03-29T11:56:40</date>
    <description>description for 1001</description>
    <title>1001title</title>
  </Properties>
</nmf:Metadata>
</mpv:Audio>
</mpv:AssetList>
</file:Manifest>

```

Appendix D. References — Informative

There are two types of references listed below. A specific document (which may be a stand-alone document or one document in a series), is noted as “[Fixed].” A series where any version of the documents within the series may be helpful, is noted as “[Series].” Listed below are the latest versions of the document or series at the time this publication was released

AVI, MICROSOFT AVI FOR WINDOWS format is described at:

http://whidbey.msdn.microsoft.com/library/default.asp?url=/library/en-us/directx9_c/directx/htm/aviriffilreference.asp

An unofficial but very detailed description of AVI and CODECs can be found at:

<http://www.jmcgowan.com/avi.html>

CANON INC, EASTMAN KODAK COMPANY, FUJI PHOTO FILM CO., LTD., MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD., “DPOF (Digital Print Order Format) Specification Version 1.1”, (2000) [Fixed]

CUBE MICROSYSTEMS, “JPEG File Interchange Format, Version 1.02”; (1992) [Fixed].

INTERNATIONAL IMAGING INDUSTRY ASSOCIATION, “DIG35 Specification – Metadata for Digital Images, Version 1.1”, (2001). See <http://www.i3a.org/> for more information. [Fixed]

INTERNATIONAL STANDARDS ORGANIZATION (ISO)

For information, see <http://www.iso.org/>.

15836: 2003, “Information and documentation — The Dublin Core metadata element set” [Fixed]

9660:1988, “Information processing - Volume and file structure of CD-ROM for Information Interchange” [Series]

11172-2:1993 [MPEG-1] “Information technology -- Coding of moving pictures and associated audio for digital storage media at up to about 1,5 Mbit/s -- Part 2: Video” [Series]

11172-3:1993 [MPEG-1] “Information technology -- Coding of moving pictures and associated audio for digital storage media at up to about 1,5 Mbit/s -- Part 3: Audio” [Series]

13818-2:2000 [MPEG-2] “Information technology -- Generic coding of moving pictures and associated audio information: Video” [Series]

14496-2: 2004 “Information technology -- Coding of audio-visual objects -- Part 2: Visual” [Series]

JAPAN ELECTRONICS AND INFORMATION TECHNOLOGY INDUSTRIES ASSOCIATION

For information, see <http://www.jeita.or.jp/>.

CP-3461, “Design rule for Camera File System DCF, Version 2.0” (2003) [Series]

CP-3451, “Exchangeable image file format for digital still cameras: Exif Version 2.2”, (2002) [Series]

CP-3451-1, “Exchangeable image file format for digital still cameras: Exif Version 2.21 (Amendment Ver2.2)”, (2003) [Series]

MPEG, MOTION PICTURE EXPERTS GROUP OR ISO/IEC JTC1/SC29 WG11. See references above. Additional useful links for information on the MPEG specification series can be found at:

<http://en.wikipedia.org/wiki/MPEG>

MOV, APPLE COMPUTER QUICKTIME MOVIE FORMAT described at:

<http://developer.apple.com/documentation/QuickTime/FileFormatSpecification-date.html>

OPTICAL STORAGE TECHNICAL ASSOCIATION.

For information, see <http://www.osta.org/>.

“MPV Dublin Core-Normalized Metadata Format Profile Specification rev. 1.01” (2003). [Fixed]

“MPV XML Manifest Specification rev. 1.01”, (2003). [Fixed]

“MPV Basic Profile Specification rev. 1.01” (2002) [Fixed]

“MPV Core Specification rev. 1.01”; (2003) [Fixed]

“MPV Presentation Profile Specification rev. 1.01”; (2002) [Fixed]

“MPV Normalized Metadata Format Specification rev. 1.01”; (2002) [Fixed]

“Universal Disk Format Specification rev. 2.50”; (2003) [Series]

WAV, MICROSOFT WAVEFORM AUDIO FILE FORMAT FOR WINDOWS has a good description at this unofficial web site:

<http://ccrma.stanford.edu/CCRMA/Courses/422/projects/WaveFormat/>

WAV has several other reference documents and sites that may be useful:

“Waveform Audio File Format, Multimedia Programming Interface and Data Specification v1.0”, Issued by IBM & Microsoft, 1991.

<ftp://ftp.cwi.nl/pub/audio/RIFF-format>,

<http://keck.ucsf.edu/~jwright/RIFF-format.html>,

<http://www.seanet.com/HTML/Users/matts/riffmci/riffmci.html>